

ABSTRACT

Robin Calcutt, PROGRAM EVALUATION OF *READING PLUS*: STUDY OF THE IMPACT ON READING ACHIEVEMENT FOR MIDDLE SCHOOL STUDENTS IN MOORE COUNTY SCHOOLS (Under the direction of Dr. James McDowelle) Department of Educational Leadership, November 7, 2014.

The Superintendent of Moore County Schools requested a program evaluation to support the use of the *Reading Plus* program for reading intervention. The schools or administrators across the system had chosen a variety of different intervention programs without LEA coordination or internal analysis. Therefore, the program evaluation was to determine the extent, if any, of the *Reading Plus* intervention program on the reading achievement of students at middle (grades 6, 7, and 8) in the Moore County Schools so that the administration could make informed decisions about the program. According to the analysis of student Lexile scores and teacher survey information, the impact of the *Reading Plus* program on student academic achievement in reading for those students enrolled in the program in Grades 6–8 was significant. Based upon the description of the program cost of the RP program and comparable reading intervention programs, the cost of the *Reading Plus* program was cost effective in the consideration of the overall *Reading Plus* program benefits.

PROGRAM EVALUATION OF *READING PLUS*: STUDY OF THE IMPACT ON
READING ACHIEVEMENT FOR MIDDLE SCHOOL STUDENTS
IN MOORE COUNTY SCHOOLS

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by

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

LIST OF TABLES	viii
LIST OF FIGURES	ix
CHAPTER 1: INTRODUCTION	1
Explication of Problem of Practice	1
History of Problem.....	5
Statement of Problem of Practice	10
Research Questions and Methodology.....	12
Definitions.....	15
CHAPTER 2: REVIEW OF LITERATURE.....	18
History of Reading Instruction.....	19
The <i>Reading Wars</i>	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.....	37

History of the <i>Reading Plus</i> Program	38
<i>Reading Plus</i> Program Instructional Methods	40
Current Reading Initiatives	42
Assessing Reading	44
Motivating Readers	47
The Challenge for Older Readers	49
CHAPTER 3: METHODOLOGY	52
Purpose of the Study	52
Statement of Problem of Purpose	54
Design of Study.....	57
CIPP Product Evaluation	59
Setting of the Study.....	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
History of Problem Review	73
Program Evaluation Purpose.....	76
Program Evaluation Process	76
Literature Context	77

Delineating the Expectations	82
Obtainments of the <i>Reading Plus</i> Program.....	84
Data Collection	85
Data Analysis	87
Data Analysis Description	88
Description of the Setting	90
Description of the Students.....	91
Description of the Implementation of the <i>Reading Plus</i> Program.....	91
Time Implementation of RP Classes.....	96
Session Implementation of RP Classes.....	99
Description of the Impact of the RP Program on Students' Lexile Scores.....	99
Student Lexile Score Growth.....	99
Student Lexile Score Decline.....	107
Student Lexile Score Comparisons.....	108
Comparison of Encore and Flex Class Models.....	116
Teacher Survey Results.....	122
Survey Results: Impact on Program Implementation	123
Survey Results: Impact on Reading Components.....	126
Student Comprehension	126
Student Fluency	128
Student Vocabulary.....	130
Student Phonemic Awareness.....	132
Student Phonics Development	132

Student Reading Stamina.....	135
Student Non-Verbal and Motivation Survey Results	137
Non-Verbal Student Behaviors.....	137
Student Motivation.....	140
Summary of Survey Information	141
Program Costs Description	147
Provided Recommendations	151
Conclusion	157
REFERENCES	160
APPENDIX A: CONTEXT-INPUT-PROCESS-PRODUCT (CIPP) DECISION MODEL.....	182
APPENDIX B: PROGRAM EVALUATION CYCLE.....	183
APPENDIX C: CIPP RELATIONSHIP OF EVALUATION TO DECISION-MAKING	184
APPENDIX D: TEACHER SURVEY QUESTIONS.....	185
APPENDIX E: SUPERINTENDENT’S REQUEST FOR PROGRAM EVALUATION	187
APPENDIX F: CORRELATIONS OF GUIDED READING AND OTHER MEASURES.....	188
APPENDIX G: PERCENT OF LEXILE GROWTH BY GRADE LEVELS, 2012-2013	189
APPENDIX H: PERCENT OF LEXILE GROWTH BY GRADE LEVELS AND GENDER, 2012-2013.....	190
APPENDIX I: INSTITUTIONAL REVIEW BOARD APPROVAL LETTER.....	192

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
4. Achievement Level Ranges for the North Carolina End-of-Grade Tests Reading Comprehension at Grades 3–8	89

LIST OF FIGURES

1. Comparison of student details of <i>Reading Plus</i> class groups at Grades 6-8 during 2012–2013	92
2. Comparison of average time completed by students enrolled in flex and encore <i>Reading Plus</i> class groups at grades 6–8 during 2012–2013.....	98
3. Comparison of completed sessions by students enrolled in flex and encore <i>Reading Plus</i> class groups at grades 6–8 during 2012–2013.....	100
4. Comparison of Lexile impact by students at grades 6–8 during 2012–2013.....	102
5. Comparison of average Lexile Growth of sixth- to eighth-grade students enrolled in the <i>Reading Plus</i> Program by Grade Level and Gender during 2012-2013	104
6. Comparison of Lexile Growth of exceptional education sixth- to eighth- grade students enrolled in the <i>Reading Plus</i> program during 2012–2013	105
7. Comparison of Lexile Growth by ethnicity of sixth- to eighth-grade students enrolled in the <i>Reading Plus</i> program during 2012–2013	106
8. Comparison of average SRI Growth by grade level of students in <i>Reading Plus</i> Program at grades 6–8 during 2012–2013	109
9. Comparison of EOY average Lexile Score by grade level of students enrolled in the <i>Reading Plus</i> program at grades 6–8 during 2012–2013.....	110
10. Comparison of Lexile highest and lowest levels by grade level of students enrolled in the <i>Reading Plus</i> program at grades 6–8 during 2012–2013.....	111
11. Comparison of predicted Lexile and actual EOY Lexile Growth levels by students enrolled in the <i>Reading Plus</i> program at grades 6–8 during 2012–2013.....	112
12. Comparison of predicted Lexile and actual EOY Lexile Growth levels by grade 6 students enrolled in the <i>Reading Plus</i> program during 2012–2013	113
13. Comparison of predicted Lexile and actual EOY Lexile Growth levels by grade 7 students enrolled in the <i>Reading Plus</i> program during 2012–2013	114
14. Comparison of predicted Lexile and actual EOY Lexile Growth levels by grade 8 students enrolled in the <i>Reading Plus</i> program during 2012–2013	115

15. Comparison of Lexile Growth by predicted and final Lexile Scores of sixth- to eighth-grade students enrolled in the <i>Reading Plus</i> program during 2012–2013.....	117
16. Comparison of Lexile Growth of grade 6 students enrolled in the <i>Reading Plus</i> Program by encore and flex class model during 2012–2013.....	119
17. Comparison of Lexile Growth of grade 7 students enrolled in the <i>Reading Plus</i> Program by encore and flex class model during 2012–2013.....	120
18. Comparison of Lexile Growth of grade 8 students enrolled in the <i>Reading Plus</i> Program by encore and flex class model during 2012–2013.....	121
19. <i>Reading Plus</i> Observations: Item #1 training and support of teachers/facilitators in 2012–2013.....	125
20. <i>Reading Plus</i> Observations: Item #2 program implementation of RP in 2012–2013.....	127
21. <i>Reading Plus</i> Observations: Item #3 impact on student comprehension in 2012–2013.....	129
22. <i>Reading Plus</i> Observations: Item #4 impact on student fluency in 2012–2013.....	131
23. <i>Reading Plus</i> Observations: Item #5 impact on student vocabulary in 2012–2013.....	133
24. <i>Reading Plus</i> Observations: Item #5 impact on phonemic awareness in 2012–2013.....	134
25. <i>Reading Plus</i> Observations: Item #5 impact on phonics in 2012–2013.....	136
26. <i>Reading Plus</i> Observations: Item #5 impact on reading stamina in 2012–2013.....	138
27. <i>Reading Plus</i> Observations: Overview of results from teacher/facilitators in 2012–2013.....	142
28. <i>Reading Plus</i> Guided: Reading comprehension skills totals chart (2012).....	143
29. <i>Reading Plus</i> Quote for services provided to New Century Middle School (2012).....	148
30. <i>Reading Plus</i> Quote for services provided to Moore County Schools for four years (2012).....	150

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 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 (Payne, 2005).

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 (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* (NCDPI, 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.
(NCDPI, 2013)

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 (Flesch, 1955). 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" (Freidel & Sidey, 2006).

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, Inc., 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. (National Reading Panel, 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 National Reading Panel (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 National Reading Panel of 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

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* (Anderson, 2000; Pearson, 2004; National Education Association, 2013; & Williams, 2009) 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 National Reading Panel 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 National Reading Panel’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 National Reading Panel (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 stated that “the most important use of eye-movement measures has been to discover the fundamental nature of oculomotor habits in various reading situations” (Tinker, 1933, 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. (National Reading Panel, 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 National Reading Panel (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 National Reading Panel 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 National Reading Panel (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 National Reading Panel (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* (Taylor Associates/Communications, 2011b). 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 National Reading Panel (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 National Reading Panel (2000) regarding research-based reading skills in *The Report of the National Reading Panel: Teaching children to read* (National Reading Panel, 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, 2007) 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 National Reading Panel (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 cited a longitudinal study in which phonics was effectively taught when using a synthetic approach of teaching sounds in association with the corresponding letters (Rose, 2006). 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* methodology contained structures to scaffold content, rate, repetition intensity and lesson formats to build independent reading skills (*Reading Plus*, n.d.).

Assessing Reading

In 2000, the National Reading Panel 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).

Scientifically-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 (National Reading Panel (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 National Reading Panel (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 National Reading Panel (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

Purpose of the Study

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 to 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" (Freidel & Sidey, 2006). 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 program evaluation 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.

Setting of the Study

The study 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 E).

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, Inc., 2008). A score at Level three was considered a passing score or an indication of reading proficiency. For the 2011–2012 school year NCEOG

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).

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 data) 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 evaluators 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 comment opportunities.

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 evaluators 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 evaluators 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 evaluators. 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 evaluator 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 evaluators 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 evaluators 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

History of Problem Review

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 middle (Grades 6, 7, and 8), so that the administration could make informed decisions about the program. In 2012–2013 Moore County Schools had 13 different reading programs in place across the district. Some of the schools used programs that were already in place while some Principals searched for reading programs to support students that were not on grade level. The middle school and high school principals did not receive support from the district to select reading programs. Principals and teachers were concerned that some students promoted to the next level were not reading on grade level. These students would struggle with the higher stakes assessments required by the then-new Common Core curriculum. Parents rely on school administrators and teachers to provide educational expertise to support their children academically.

In an attempt to prevent failure of at-risk students due to reading deficiencies, Moore County Schools' Principals implemented a variety of reading programs. Each of these reading intervention programs targeted academic needs of students in one or more of the students' reading deficiencies. Each intervention program claimed that its program was based on the goals and skills established for the purpose of reading and that the use of the program improved students' skills such as fluency, phonics, vocabulary, or comprehension.

Based on the study design, two questions were pertinent to this research at the grades six through eight levels:

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 six through eight based on the student Lexile scores generated from the Scholastic Reading Inventory (SRI)?
2. To what extent should the cost of the *Reading Plus* program be considered in evaluating the overall *Reading Plus* program?

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 program evaluation followed an evaluation model 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 et al., 2011). While program evaluations were a relatively recent phenomenon, the process of planned social evaluation dates 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" (Freidel & Sidey, 2006).

Use of this model provided information to improve the quality of decisions made by stakeholders and leaders of 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 evaluator followed the CIPP model (see Appendix A), (Fitzpatrick et al., 2011), to determine the effectiveness of the RP

program. The CIPP model allowed the evaluator with an acceptable evaluation model of Context-Input-Process-Product (Stufflebeam, 2004, 2005) to assess the processes used by the school and the outcomes achieved by the students involved in the RP program. 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, 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.

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.

Program Evaluation Purpose

The purpose of this program evaluation was to determine the effectiveness of *Reading Plus* (RP), a computer-based reading fluency and comprehension intervention system that developed silent reading fluency and overall reading proficiency, on student achievement at the middle (Grades 6–8) level. 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).

This chapter contains the evaluation of the activities that were implemented with the use of the *Reading Plus* software program on middle (Grades 6-8) students. The overall reading achievement was measured by a standardized test of reading achievement, the Scholastic Reading Inventory (SRI) and a teacher survey. The teacher survey was used to gather descriptive data in an effort to understand an overview of the effects of the program on student's reading behavioral responses such as confidence, motivation and reading success within the classroom environment from an educational professional's viewpoint. Also provided are recommendations based upon the teachers' survey results and the information provided by student SRI results.

Program Evaluation Process

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 survey questions 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 six teachers from the middle school.

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. The evaluator will provide a report to the Moore County Schools' Superintendent, Dr. Bob Grimesey by June 2015.

Literature Context

The literature review revealed the importance of beginning reading skills at an early age. Children need the support of their parents and family members to develop dispositions as early as two years old that support reading habits and ocular abilities by ages 4-5. Government officials, educators and pediatricians support early reading strategies through various programs

and supplies for parents that need assistance. In some cases, hospitals send a book home with newborns, schools collect books to share with students to increase summer reading and government officials require reading gateways to progress to the next grade level. It was noted that from a student's physical status, decoding and comprehension, depend on the student's cognitive abilities and memory and fluency depends upon a student's ocular movements.

Until early 1960s the *deaf mute* (whole language) method of learning to read was followed. Most likely, classrooms from the 1930s to the 1960s were quiet places, where students were given a book, told to read and then assessed on the content. The factory model was in place and students were Sound type readers who learned to pronounce the words by *sounding them out* which theoretically opened the mind to multi-tasks. Readers could interpret the word and move forward with understanding the content. The reader was not hampered with using context clues (within the deaf mute method) to comprehend the passage. Phonics advocates continued to advocate this method of using sound to help students decode. This conflict between the two philosophies (Phonics versus Whole Language) led to the *Reading Wars* (Anderson, 2000; Pearson, 2004; National Education Association, 2013; Williams, 2009).

Reading instruction methodologies are a constant point of contention for educators as described by Flesch (1955), Smith (1963), Chall (1967), Williams (2009), Rodgers (2001), Torgesen et al. (1994), and from groups such as the National Education Association (2013) and National Reading Panel (2000). 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. In 2000, the National Reading Panel (NRP) spent thousands of dollars and much time to determine the primary skills of reading known as the *Big Five*, including (a) phonemic awareness, (b) phonics,

(c) fluency, (d) vocabulary, and (e) comprehension. The NRP ultimately emphasized that the phonetic method with the inclusion of phonemic awareness and phonics within the five primary skills of reading would lead to significant reading gains. Yet, the Panel did not specifically proclaim the value of one instructional method over another. This ambiguity left school leaders to continue to search for their own methods and for publishers to continue to market their methods based upon their own expert research.

An area of interest that emerged from the literature review was the significance of a child's ocular abilities during reading. Ocular movement emerged as a critical factor for students that struggled with reading stamina and focus. The literature review included research by Rayner (1998), Williams (2009), Webber et al. (2011), Traxler et al. (2012), and Brown et al. (2012), and contained evidence of early investigations of physicians, optometrists, and researchers on the effects of poor ocular movements on reading abilities. Tinker's (1933) findings were 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. This understanding of the impact of ocular movement is significant for reading instruction due to the nature of the physical relationship between eye-movement and the reader's comprehension. Students that struggle with reading may have a physical ocular limitation that causes them to struggle with a cognitive process. If the student can improve his/her physical limitation, it is possible that the cognitive, comprehension skills will improve. Solan, Shelley-Tremblay, Larson, and Mounts (2006) agree that while the current literature reviews suggest that phonological awareness is a critical skill for reading, there is also the implication that "visual attention and visual temporal processing deficits may also contribute to reading problems in children" (Solan et al., 2006, p. 149). Research indicates the correlation between a reader's fluency and his/her ocular fixations, the duration of

fixations and ocular regressions (Kennedy, 1983; Kennedy & Murray, 1987a, 1987b; Murray & Kennedy, 1988; Taylor, 1959; Frazier & Rayner, 1982).

In Raleigh and Pinehurst, North Carolina, Dr. Nancy Mackowsky, OD, PA (2011) offers therapeutic services at her Visual Learning and Rehabilitation Clinic for patients with learning-related vision problems. Dr. Mackowsky informs her patients that “as many as one out of four children struggle with reading and learning because of undiagnosed vision problems” (personal communication, August 4, 2014). Dr. Mackowsky includes research from the November/December 2003 *Journal of Learning Disabilities College of Optometrists in Vision Development* within her pamphlets for parents. The article provided to her patients written by Solan, Shelley-Tremblay, Ficarra, Silverman, and Larson (2003) explained the value of visual attention therapy to “significantly improve reading comprehension and test scores by up to two grade levels” (p. 276). It was interesting to note that the researchers used the *Reading Plus PAVE* system as a therapeutic tool. Dr. Solan, the principal investigator for the study, clearly supported the development of visual attention skills by programs of vision therapy that would lead to improvements in reading and learning.

A primary component of the *Reading Plus* program is the training of the eyes through visual-perceptual skill development to sweep across the text with consistency. According to *Reading Plus*, visual-perceptual skills involve the ability to accurately interpret or give meaning to what is seen. Each RP session begins with a warm-up activity, called *PAVE*, which stands for Perceptual Accuracy/Visual Efficiency. *PAVE* consists of two activities labeled *Scan* and *Flash*. *Scan* is the first activity within *PAVE* and requires the student to scan for and count a particular number or letter as various letters move from left to right across the screen. *Scan* helps students increase their scanning rate while they improve skills such as visual coordination and directional

attack, visual discrimination and instant recognition. *Scan* also helps students improve visual-perceptual skills such as visual discrimination, visual memory, and visual sequential memory. *Flash* is the second activity within *PAVE* that requires students to view a set of flashed characters and then type what they saw.

The Scholastic Reading Inventory (SRI) assessment measures students' reading skills by their ability to read text and answer questions. If the student is able to read and answer questions correctly then the SRI assessment ranks them according to the Lexile level of the passage. A textual passage is ranked by readability by the MetaMetric Corporation's Lexile Analyzer® according to the length of the sentence and frequency of words. Longer sentences with fewer word repetitions are ranked higher in Lexile points than shorter sentences with more frequently used words. Moore County Schools' administrators and teachers use the SRI assessment tool to determine student's reading ability. The MetaMetric Corporation explained that the Lexile measure is a general range that will help students find a reading selection that is in a range of their Lexile level. The SRI assessment is administered at least two times per school year at the beginning and end of the year. Students in remediation or support programs are encouraged to take the assessment three times per year.

Current reading initiatives continually seek to improve reading supports and processes for students. Early interventions with the Response to Intervention process, the Common Core Curriculum that increased a focus on overall literacy including writing, reading, speaking and communication and an emergence of analysis tools such as Scholastic Reading Inventory, mClass and DIBELS enabled educators to diagnose and support students with increased knowledge.

School and teacher accountability continued to gain public attention through the lens of testing within local, state and national guidelines. Reading scores were one of the primary measures by which students and their schools were ranked at each of these levels and the results were published worldwide. The implementation of NCLB brought heightened attention to student growth, instructional practice, financial support and school leadership. School administrators, parents, and local governments sought to support and improve student reading with a higher level of concern. School leaders and teachers searched for programs and methods that would meet the needs of their students. They used their professional expertise and financial supports to decide what methods worked for their students and relied on small group, classroom instruction, purchased reading programs and individualized tutoring to fill in any gaps of grade level deficiency.

Delineating the Expectations

Moore County Schools' district level administrators expected school principals and teachers to provide support to all students that struggled with basic reading skills and consequently were not able to demonstrate progress with grade level content or perform at a passing level on NC End-of-Grade (NCEOG) Reading scores. As principals searched for appropriate supports, most selected programs upon recommendation from their peers or from attending state conference vendor events. The high stakes testing environment and the implementation of the new Common Core curriculum created a sense of urgency for school administrators to support students performing below grade level in reading. A former high school English teacher, Ms. Melonie Jones, recommended the *Reading Plus* program. Ms. Jones based her recommendation upon her experience with the program when she used it in Florida with her English as Second Language (ESL) students. When she joined Moore County Schools,

she and the Pinecrest High School principal, Mr. Joel County, implemented the program at the district's largest high school. The success of her students led her to share the benefits with others in the district during a Common Core curriculum event in the summer of 2010. Soon a second high school, middle school and an elementary school began piloting the program. As more schools relied on the program to support their students, the district implemented a yearly program evaluation requirement (K. Kennedy, personal communication, August 1, 2012).

Dr. Kathy Kennedy, Moore County Schools Assistant Superintendent for Instructional Design and Innovation stated in a personal message: "Curriculum needs to be very involved in this process. The data I have reviewed thus far isn't indicating we need to expand at this point. We probably need to see end of year data first" (K. Kennedy, personal communication, August 1, 2012). From a personal email message on May 28, 2013, Dr. Kennedy, required administrators to "review the EOY *Reading Plus* data and compare it to the SRI data for the students participating in RP to determine next steps. (RP is) . . . very expensive now so we have to ensure we are getting the results to continue" (K. Kennedy, personal communication, May 28, 2013).

Following the recommendation of district administrators, the Scholastic Reading Inventory measurement system was used to benchmark student Lexile growth. Dr. Kennedy, recommended the process outlined in the *Growth Expectations: Setting Achievable Goals* by Kimberly A. Knutson, EdD (2011), of Scholastic Research, and MetaMetrics® to outline how teachers could use Scholastic Reading Inventory (SRI), a test of reading comprehension developed by Scholastic Inc., to set reading growth goals and to evaluate students' responsiveness to instruction by evaluating actual fall-to-spring growth expectations. Dr. Knutson (2011) explained the criteria for setting goals for struggling readers:

. . . growth expectations for a particular grade can be viewed as a minimum starting point. In other words, students who start the year reading below grade level will likely need additional, targeted support to exceed the growth expectation for their Lexile band, in order to accelerate to grade-level performance. (p. 6)

Dr. Knutson (2011) explained that a student is considered grade level proficient when the student is performing at the 50th percentile for the grade level, based on SRI national normative data. Middle school students demonstrate less growth after the fifth grade due to the phenomenon that students increase Lexile levels when they are learning to read rather than reading to learn (Knutson, 2011). This creates a challenge for growth in reading skills during the middle and high school years of school. Reading instruction is not a specific course for middle school students and the curriculum requires higher-level Lexile level ability in order to understand the content (Common Core State Standards, 2012b). According to Dr. Knutson (2011) the 50th percentile that represents Spring or End of Year (EOY) Lexile grade level for sixth graders is 880 (800–1050 range), for seventh graders, 955 (850–1100 range), and for eighth graders, 1000 (900–1150 range). Lexile point gains expected to demonstrate growth are for sixth graders: 115 points; seventh graders: 118 points; and for eighth graders: 102 points.

Lexile level gains are expected to increase beyond the average growth for a student's initial Lexile level score and if the gains are not sufficient, an "increase in intensity of services or a new placement may be needed" (Knutson, 2011, p. 13).

Obtainments of the *Reading Plus* Program

Information collected and described in this chapter include: a review of the student Lexile scores of the students that participated in the 2012-2013 *Reading Plus* program at New Century Middle School. This information includes a description of the results from their Scholastic

Reading Inventory (SRI) scores, a description of the class sessions of *Reading Plus*, a description of the results from a ten-item questionnaire teacher survey titled *Reading Plus* Observations and a description of program costs.

Data Collection

Assessment data was collected from 2012–2013 data files for 162 students who were enrolled in the *Reading Plus* program at New Century Middle 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 RP assessment data, Scholastic Reading Inventory (SRI) scores were collected for review and comparison. Students enrolled for less than the nine-month school year were not included in the data analysis. Additionally, if the student did not have sufficient data from any of these required measures they were not included in the study. Free/reduced lunch designation was not available due to privacy issues.

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 RP to determine the amount of growth from the beginning of the school year. The pretest scores from the Scholastic Reading Inventory 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. The growth and grade level expectation chart from MetaMetric's *Growth Expectations: Setting Achievable Goals* (Knutson, 2011) was used to reference expected Lexile levels for the students. As required by the Moore County Schools Internal Review Board (MCSIRB), all student data was and will remain confidential.

The qualitative portion of this study was based on the responses to a ten-item evaluator-developed survey sent to the teachers administering the *Reading Plus* program in the middle school where data were collected. The purpose of the survey was to evaluate their perceptions of the effectiveness of the *Reading Plus* program in their schools. 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 ten-item questionnaire designed by the evaluators 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). A pilot administration of the survey was administered to five teachers to establish validity. The participants were assured that their comments were kept confidential and their participation was voluntary. The survey was distributed to a specific selection of teachers via email communication in May 2014 and the participants were requested to complete it within five days. This selection of teachers included participating English Language Arts (Grades 6–8) 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.

All data collection instruments were in the participants' academic language. The research setting was New Century Middle 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 evaluators 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 evaluators and the dissertation chair. 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 evaluators. Student data collected from the district was housed on a disc that only the Dissertation Chair could access. Data will be kept for three years and the evaluator will dispose of the data at the end of that period.

Unless the Superintendent granted permission, the evaluators 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 presentation to the Superintendent was set for January 2015.

Data Analysis

The assessment data were analyzed with regard to progress by grade level, gender, race, and students with disabilities. Forms of data included program implementation data designed by the *Reading Plus* program and the Scholastic Reading Inventory beginning-of-year (BOY) and end-of-year (EOY) assessment Lexile scores. SRI (Lexile) 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 in regards to type of class configuration. 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 evaluators 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 survey were collected using a Google form so that information was available in percentage form and was displayed in a chart for interpretation. Trends and patterns of related phenomena were noted to discover possible answers to the research questions.

Data Analysis Description

In 2012–2013 school year, sixth-grade through eighth-grade students enrolled at New Century Middle School were selected to participate in the *Reading Plus* program based upon their 2011–2012 NCEOG reading scores and a reading fluency pre-assessment designed by the school. 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, Inc., 2008). A score at Level three on the NCEOG was considered a passing score or an indication of reading proficiency. For the 2011–2012 school year NCEOG achievement level ranges (NCDPI, 2008) were as follows in Table 4.

Table 4

*Achievement Level Ranges for the North Carolina End-of-Grade Tests Reading Comprehension
at Grades 3–8 (2008)*

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.

The students were selected to participate in the *Reading Plus* program if their NCEOG Reading score was between levels II (345-sixth grade, 348-seventh grade, 350-eighth grade) and a low level III (351-sixth grade, 356-seventh grade, 358-eighth grade) at each grade level or if their fluency rate was low according to the school-designed fluency assessment.

Description of the Setting

The selected students were enrolled in either an Encore class or a Flex class for their RP support. Encore classes met in a computer lab with desktop computers, five days a week for 45 minutes, facilitated by a non-English Language Arts teacher. All of the New Century Middle School teachers received professional development on reading pedagogy during the school years of 2008–2011. This professional development was unique for New Century Middle School and was paid for by a military funded grant received to increase reading scores through a school-wide effort to use new technology resources. While the teachers selected to facilitate the RP classes during the 2012–2013 school year were band, orchestra and choral teachers, they received this professional development on reading instruction so the principal was confident that they could support the students.

Certified English Language Arts (ELA) teachers facilitated the Flex classes. Students in the Flex classes were placed following a research-based, Response to Intervention model. Teacher teams analyzed previous NCEOG Reading and Math scores and used the school-designed fluency assessment to place students in either a small remediation group or an enrichment group. The smaller remediation groups focused on increasing student achievement in reading or math by providing time for the content-certified teacher to deliver focused instruction or support to students. These ELA certified teachers used the RP program to support students reading skills during this small group time. The teachers decided how often the students

would use the program during this allotted time period. Flex classes met four days a week for approximately 40 minutes in a classroom setting using laptops. There were many times due to school-wide assemblies, fire drills or special events when the Flex classes were interrupted. The *Reading Plus* program recorded the amount of time students spent using the program regardless of when they used the program.

Description of the Students

One hundred sixty-two students participated in the RP program in 2012–2013. One hundred-thirty-five students had sufficient data while 27 students had insufficient data caused by lack of Beginning-of-Year (BOY) and/or End-Of-Year (EOY) SRI assessment scores. For the 2012–2013 school year a comparison of student details were as follows in Figure 1.

A total of 63 students were enrolled in the RP program during the Encore period: 23 in sixth-grade Encore; 17 in seventh-grade Encore; and 23 in eighth-grade Encore. Sixty-nine students participated in RP during the FLEX period: 14 in sixth grade, 24 in seventh grade, and 31 in eighth grade. The following students were identified by special categories: 28 students were exceptional education students: six in sixth grade, 11 in seventh grade, and 11 in eighth grade; one student had a 504 plan and one student was academically gifted. There were a total of 88 male students and 55 female students enrolled in RP; sixth grade: 28 male and 12 female; seventh grade: 30 male and 19 female; eighth grade: 30 male and 12 female. Student totals by ethnicity were four Hispanic, 100 Caucasian, 29 Black, one Asian, and one Multi-Racial.

Description of the Implementation of the *Reading Plus* Program

As described previously (see Table 4 and Figure 1), the students were selected to participate in the *Reading Plus* program if their NCEOG Reading score was between levels II (345-sixth grade, 348-seventh grade, 350-eighth grade) and a low level III (351-sixth grade, 356-

Student Details

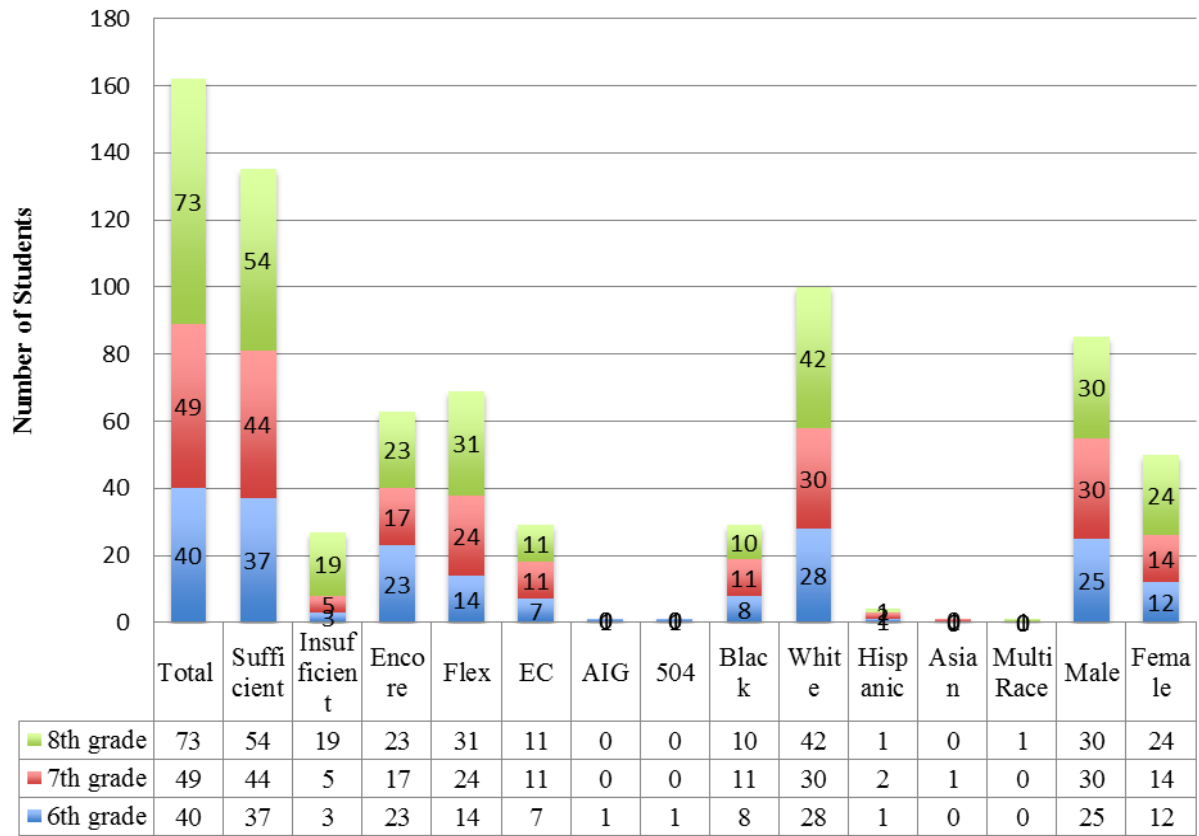


Figure 1. Comparison of student details of *Reading Plus* class groups at grades 6–8 during 2012–2013.

seventh grade, 358-eighth grade) at each grade level or if their fluency rate was low according to the school-designed fluency assessment.

The selected students and their parents received a letter from the principal describing the program and were counseled about the RP format by the teacher facilitators. The students were assigned a class time on the school's data management system (Flex class or Encore class) during the school day and were enrolled in the RP program by an administrator. The student was provided a unique user name and password to access the RP online program. The students met their teacher facilitator each day during the assigned class time and completed the RP lessons within a 45 minute time block. Students had the potential to participate in the RP class for one semester of 90 days. There were interruptions in the school day due to school-wide assemblies, fire drills or weather-related interruptions. The students could work on their RP lessons at any time they had access to an Internet connection.

Reading Plus methodology included four critical components that were described as *Keys to success with the Reading Plus program* (Taylor Associates/Communications, 2011b). 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. The school attempted to follow these steps with fidelity.

The teacher facilitators of the *Reading Plus* program followed the first implementation steps for the students by requiring each student to complete the Reading Placement Appraisal (RPA™) (Taylor Associates/Communications, 2011a). The RPA™ automatically assigned students to the appropriate practice level based on components of literal understanding, comprehension, vocabulary and if necessary, a perceptual memory appraisal.

The *Visagraph*TM was a goggle set that assessed student visual, perceptual and information processing deficiencies that hindered reading development (Taylor Associates/Communications, 2011a). This information assisted RP facilitators to identify challenges with binocular coordination, visual memory and information processing efficiency (Taylor Associates/Communications, 2011a). This tool was not provided at New Century Middle School, so it was not used for placement.

During a RP session, students participated in each component of the intervention program including visual and perceptual skill-building activities, silent reading practice and vocabulary and contextual analysis activities. Comprehension skill-building lessons were available in an off-line format if the teacher noticed that students needed extra support.

PAVE (Perceptual Accuracy/Visual EfficiencyTM) was used each session with two activities, *Scan* and *Flash*, to warm-up and develop the student's visual skills and visual memory (Taylor Associates/Communications, 2011a). Students were asked to position their eyes about 18 inches from the screen to develop near-point visual skills (Taylor Associates/Communications, 2011a). *Scan* challenged the students to count the number of times a target (number or letter) appeared in a left-to-right manner (Taylor Associates/Communications, 2011a). *Flash* challenged students to type in what they saw during a 1/6 of a second exposure of a set of elements (numbers, uppercase or lowercase letters) (Taylor Associates/Communications, 2011a). Through the combination of these tasks, students developed basic letter recognition, left-to-right configuration that led to the ability to identify elements in a single fixation.

Guided ReadingTM was the major component of the RP program that enabled students to practice their silent reading in an efficient manner (Taylor Associates/Communications, 2011a).

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 (Taylor Associates/Communications, 2011a).

Facilitators received a *Results* (Taylor Associates/Communications, 2011a) report for each student at the end of each lesson, combining the independent, guided and comprehension scores. As students reached their goals, the program gave them a Level Award and moved them to the next highest content level. The teachers would print out a certificate that signified the student's accomplishments and typically the student would receive an award, a piece of candy, or a free time certificate.

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 (Taylor Associates/Communications, 2011a). The teachers found that the focus on surrounding text increased the student's ability to use context to predict and infer for greater comprehension and vocabulary. Twenty lessons at each level used social studies and science topics and used a Type and Flash (Taylor Associates/Communications, 2011a) format to introduce new words. Following this warm-up, meaning and syntax completion activities were used to reinforce vocabulary usage. Finally, a vocabulary awareness activity challenged students to type and select the correct meaning of the word.

*Reading Around Words*TM (RAW) (Taylor Associates/Communications, 2011a) was a vocabulary component that increased vocabulary within context passages. Students learned to unlock the meaning of unfamiliar words with this component. This technique was provided for students on RP grade levels 4-12 grades through 16 lessons containing 15 words for a total of 240 possibly new, key vocabulary words for practice per level.

*Word Memory*TM was an optional program that the teacher/facilitator could choose to implement for students at the lower levels of reading (Grades 1-3). While it used the scan and flash techniques of the Guided Reading, the words were for lower level readers (Taylor Associates/Communications, 2011a).

*D-Code*TM was a second optional component for students that needed practice with the 60 major letter clusters in the English language (Taylor Associates/Communications, 2011a). Students learned to sound out letters and letter clusters in whole words. The teachers that consistently monitored student progress were able to make the decision to use these techniques. Within the information provided by Taylor Associates/Communications (2011a) it clarified their philosophy concerning phonics reinforcement, that “all key phonetic and structural analysis [are] without reference to applying or remembering rules and principles” (p. 20).

Time Implementation of RP Classes

Implementation with fidelity was a critical factor to ensure the success of students using the RP program. The *Keys to Success with the Reading Plus program* (Taylor Associates/Communications, 2011b) recommended frequent practice on the program with three to five sessions per week of 45 minutes each. According to this guideline of implementation, an average of four times per week at 45 minutes each would correlate to the potential time of 180 minutes or three hours per week. The RP program monitored for fidelity of use in regards to

time and would alert the administrators if there were an issue. Vacation and weather-related absences were not scheduled on the RP calendar system in 2012–2013, which caused the RP fidelity report to record a lapse in the required time for student use. The RP lead teacher at the middle school did not receive instruction to alter the RP calendar to reflect school-wide absences.

Within the 36-week school year at NCMS approximately 33 weeks were available for implementation of the RP program, for a potential average of 99 hours of RP support. During the year there was an impact on the school’s basic instructional schedule due to school-wide assembly events, testing and safety drills. Based on the RP program’s recorded average time completed, the students in the RP Encore classes completed more time than students in the RP Flex classes at all grade levels. There was a significant difference of completion time between the Encore and Flex classes in the sixth grade of 42 hours while the seventh- and eighth-grade classes were a difference of 11 hours (seventh grade) and four hours (eighth grade.)

For the 2012–2013 school year student average hours of completion ranges were as follows in Figure 2. The difference between recommended implementation time and actual average implementation times were the following by grade level: sixth grade: Encore-54 hours, Flex-12 hours; seventh grade: Encore-45 hours, Flex-34 hours; eighth grade: Encore-32 hours, Flex-28 hours.

Each student in the RP program completed a different number of individual usage hours. The highest number of hours completed by individual students at each grade level were the following: sixth grade: Encore-75 hours, Flex-15 hours; seventh grade: Encore-74 hours, Flex-52 hours; eighth grade: Encore-57 hours, Flex-49 hours. The lowest numbers of hours completed by individual students at each grade level were the following: sixth grade: Encore-26 hours,

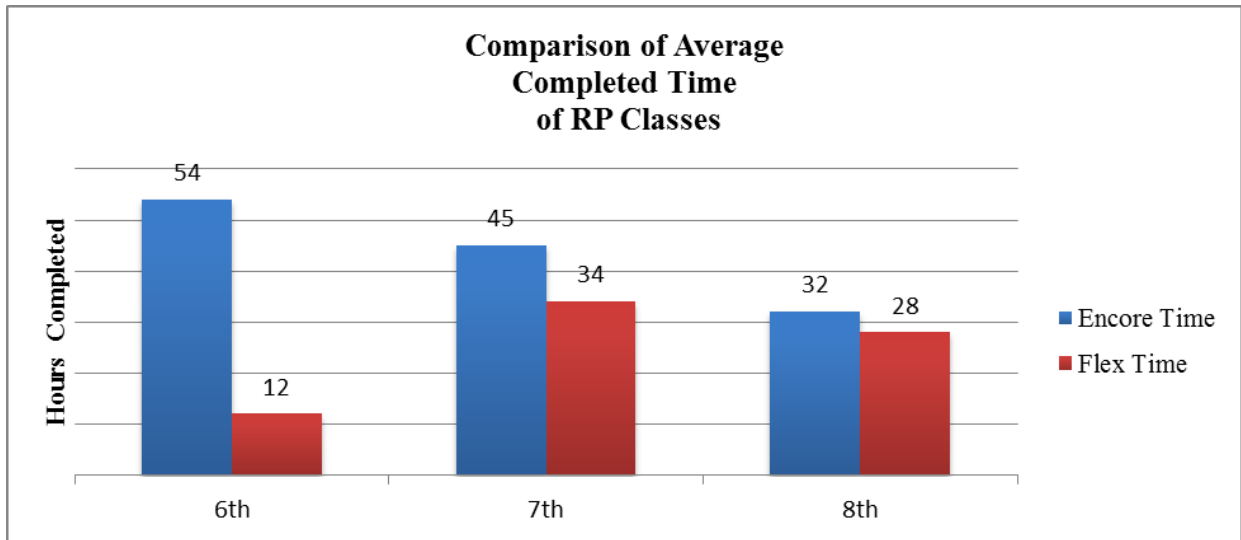


Figure 2. Comparison of average time completed by students enrolled in flex and encore *Reading Plus* class groups at grades 6–8 during 2012–2013.

Flex-8 hours; seventh grade: Encore-22 hours, Flex-11 hours; eighth grade: Encore-13 hours, Flex-11 hours.

Session Implementation of RP Classes

During 2012–2013 the NCMS students had the potential of receiving 165 sessions during RP Encore class and 132 sessions in RP Flex classes. During the 2012–2013 school year students the average numbers of completed RP sessions are provided in Figure 3. The average numbers of completed sessions for the students in the classes were as follows: sixth grade: Encore-96 sessions, Flex-27 sessions; seventh grade: Encore-87 sessions, Flex-70 sessions; eighth grade: Encore-60 sessions, Flex-55 sessions.

The difference between recommended implementation sessions and actual implementation sessions were the following by grade level: sixth grade: Encore-69 sessions, Flex-105 sessions; seventh grade: Encore-78 sessions, Flex-62 sessions; eighth grade: Encore-100 sessions, Flex-77 sessions. There was a significant difference in the number of recommended sessions by the *Keys to success with the Reading Plus program* (Taylor Associates/Communications, 2011b) guide and the actual number of sessions completed by the students. The Encore classes in the sixth grade came closest to meeting the required number, but were 69 sessions away from the goal of 165 according to the school calendar of available sessions. The Flex classes were not successful in providing the adequate number of sessions for the students participating in RP.

Description of the Impact of the RP Program on Students' Lexile Scores

Student Lexile Score Growth

Student Lexile scores were assessed at the beginning of the school year in August 2012 and at the end of the school year in May 2013 using the MetaMetrics®'s Scholastic

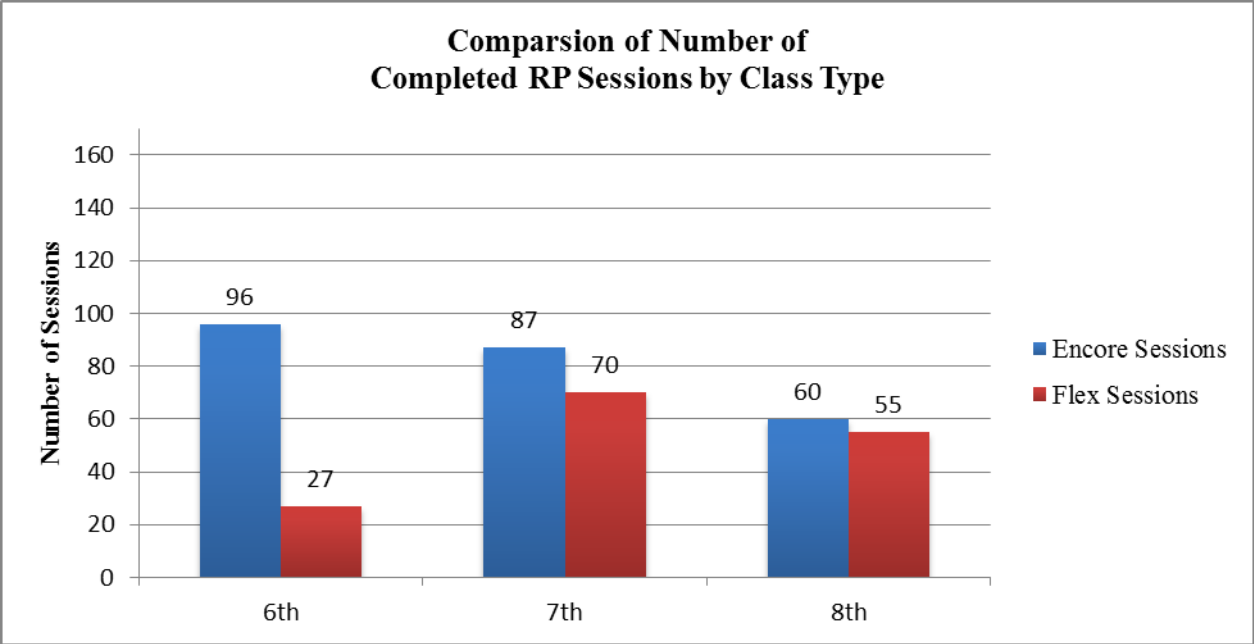


Figure 3. Comparison of completed sessions by students enrolled in flex and encore Reading Plus class groups at grades 6–8 during 2012–2013.

Reading Inventory. Every student in the school participated so that teachers and administrators could assess reading Lexile growth and students could receive personalized reading lists to increase student achievement. ELA teachers managed the process for the school. Teachers could decide how to manage the SRI assessment process and some teachers selected to use desktop or laptop stations in their classrooms while other teachers took their classes to the computer lab. The SRI assessment required the students to log onto an online portal managed by MetaMetrics, select an area of reading interest and then take the 20-minute, computer-adaptive assessment using either a desktop or laptop computers. Once the student completed the assessment, he/she received a personalized reading list based on their chosen interests and measured reading level (Lexile measure). For the 2012–2013 school year a comparison of Lexile Impact by students participating in RP in Grades 6-8 were as shown in Figure 4.

Sixty-five percent of sixth graders, 66% of seventh graders, and 67% of eighth graders increased their Lexile scores by May 2013 (see Appendix G). The average range of completed RP session time for these students ranged from 9 hours to 74 hours (see Figure 2). In detail, 24 sixth graders (4 EC students, 1 AIG student, 1 504 student; 5 female, 19 male; 6 black, 18 white), 29 seventh graders (seven EC students; 10 female, 19 male; 7 black, 1 Hispanic, 1 Asian, 20 white), and 36 eighth graders (seven EC students; 17 female, 19 male; six black, one Multi-Race, one Hispanic, 28 white) demonstrated an increase in Lexile scores.

The sixth grade, black male that made the highest gains with 401 Lexile points totaled RP Encore 119 sessions and 65.5 hours. A sixth grade, EC, white female student, with the most regression of 31 Lexile points participated during 113 sessions and 59 hours during an RP Encore class. The seventh grader, white male, which made the highest gains of 505 Lexile points participated in a RP Flex class with 60 sessions and 27 hours.

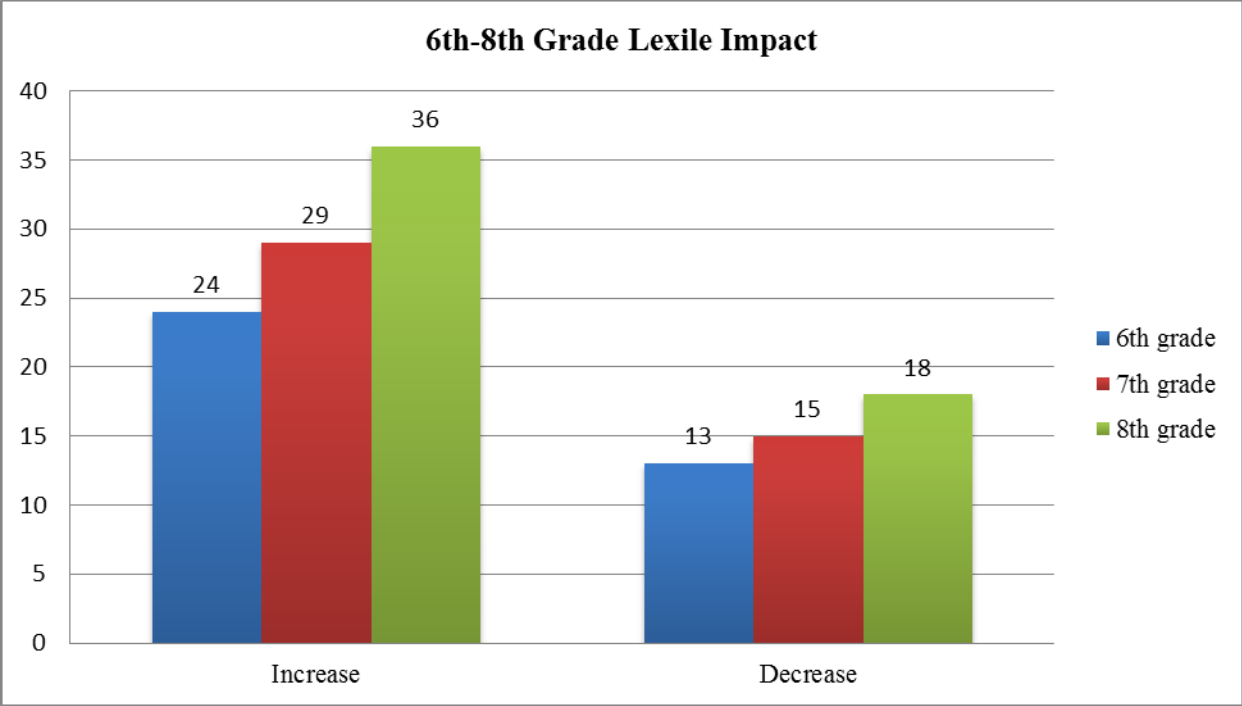


Figure 4. Comparison of Lexile impact by students at grades 6–8 during 2012–2013.

For the 2012–2013 school year details by student descriptions of Lexile Growth comparison were as follows in Figures 5, 6, and 7. In regards to impact according to gender, sixth-grade females increased by a 15-point average; seventh-grade females increased by a 51-point average, and eighth-grade females increased by a 94-point average. Male students in sixth grade increased by a 60-point average; seventh-grade male students increased by a 38-point average, and eighth-grade male students decreased by a 138-point average. Individual student data points are used to describe a positive trend by individual scores when compared by gender and grade level (see Appendix H). There were more males than females selected to participate in the RP program with sixth grade 25 male and 12 female; seventh grade 30 male and 14 female; eighth grade 30 male and 24 female. In the sixth and seventh grades both males and females made adequate progress; however, in the eighth grade female students progressed at a higher rate while eighth grade male students declined in Lexile levels. This is most likely due to the fact that the female students took RP more seriously and saw the value in progressing out of the program. In the evaluator’s opinion, male eighth grade students did not see the value and lacked motivation as noted by the teacher survey results.

Twenty-eight exceptional education (EC) students with sufficient data demonstrated a variety of growth and decline points (see Figure 6). The average BOY Lexile level for EC students was 574 (range of 151 to 1166) and the average EOY Lexile level for EC students was 594 (range of 203 to 1099). Fifty-seven percent (11 EC students) demonstrated an average increase of 147 Lexile points. EC students in sixth grade averaged an increase of 127 Lexile points; seventh-grade students demonstrated the most growth with an average gain of 170 Lexile points and eighth-grade students’ average increase was 144 Lexile points. Forty-two percent (eight EC students) demonstrated an average decrease of 90 Lexile points. One sixth-grade

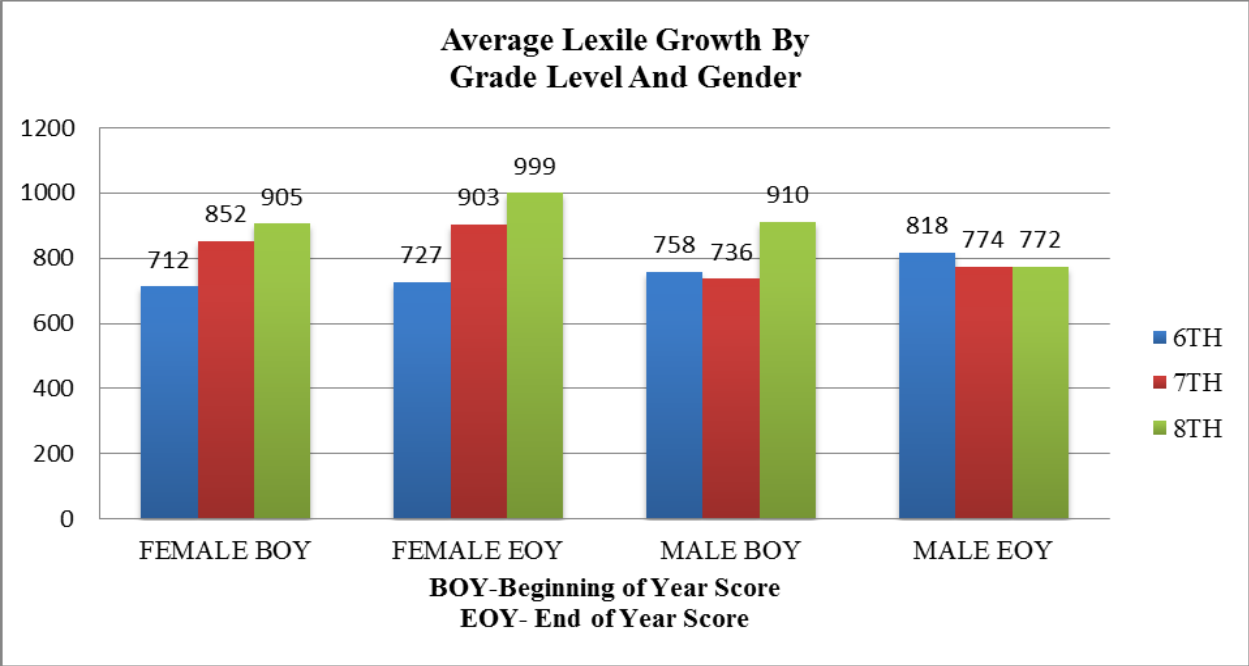


Figure 5. Comparison of average Lexile growth of sixth- to eighth-grade students enrolled in the *Reading Plus* program by grade level and gender during 2012–2013.

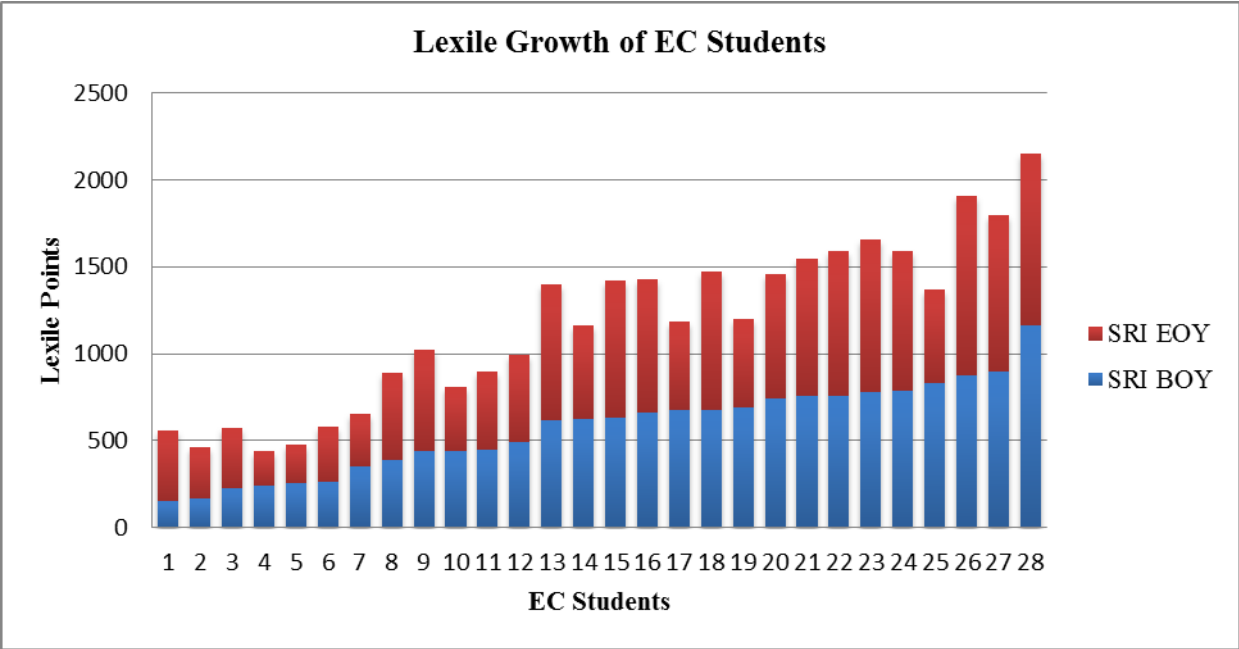


Figure 6. Comparison of Lexile growth of exceptional education sixth- to eighth-grade students enrolled in the *Reading Plus* program during 2012–2013.

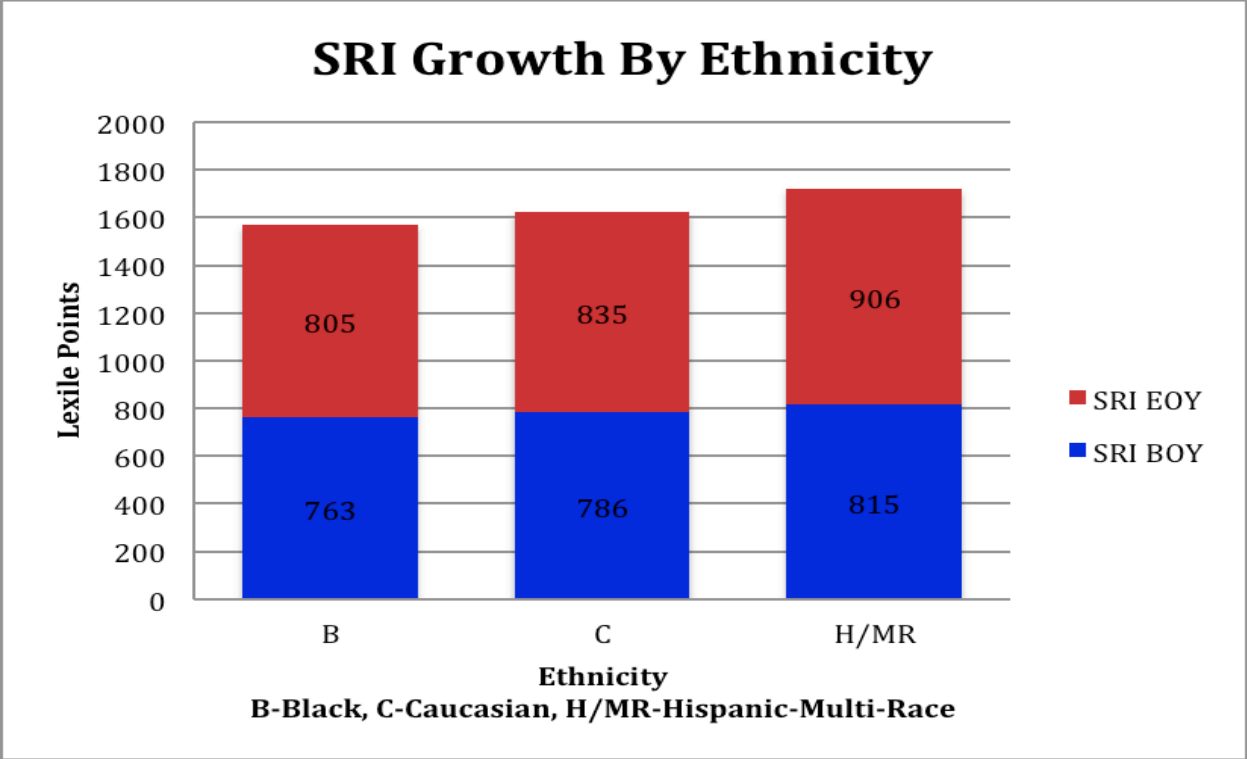


Figure 7. Comparison of Lexile growth by ethnicity of sixth- to eighth-grade students enrolled in the *Reading Plus* program during 2012–2013.

female student decreased her BOY SRI score by 31 Lexile points; four seventh graders decreased by an average of 84 Lexile points, and three eighth-grade students decreased by an average of 62 Lexile points.

Comparing RP impact by student ethnicity, Hispanic and Multi-Race students demonstrated the most growth with an average increase in Lexile levels by 91 points. Black students increased by an average increase of 42 points and Caucasian students had an average increase of 49 points (see Figure 7).

Student Lexile Score Decline

Thirty-five percent of sixth graders, 34% of seventh graders, and 33% of eighth graders decreased their Lexile scores by May 2013 (see Appendix G). The average range of completed RP time was 54 hours to 12 hours (see Figure 2) which may have impacted the decline rate. In detail, 13 sixth graders (two EC students; six female, seven male; two black, one Hispanic, 10 white) exhibited a decline in Lexile scores. Fifteen seventh graders (four EC students; four female, 11 male; four black, one Hispanic, 10 white) exhibited a decline in Lexile scores. Eighteen eighth graders (four EC students; seven female, 12 male; four black, no Hispanic, 14 white) students exhibited a decline in Lexile scores.

A seventh-grade EC black male student regressed by 295 Lexile points and participated in a RP Encore class with 141 sessions and 74 hours. An eighth-grade white male student regressed by 399 Lexile points and participated in an RP Flex class with 76 sessions and 32 hours. It was interesting that the white male student that declined had a BOY Lexile score at grade level 1,118 but dropped to 719. According to the MetaMetrics Growth Scale his Lexile score was predicted as 1,154.

Student Lexile Score Comparisons

The comparison of Lexile scores from the BOY to the EOY was a data analysis point of the program evaluation. A description of the details of Lexile scores revealed that the average Lexile score increased in all grade levels by at an average of 50 points. For the 2012–2013 school year a comparison of Lexile Range Of Growth by students in grades 6–8 were as follows in Figure 8. For the 2012–2013 school year a comparison of average EOY Lexile Scores by students in Grades 6–8 were as follows in Figure 9.

Reading Plus is an individualized support program and individual students exhibited Lexile scores of the highest and lowest points to demonstrate the range of growth. For the 2012–2013 school year a comparison of high/low EOY Lexile Scores by students in Grades 6–8 were as follows in Figure 10. It is interesting to note that even with a broad range of Lexile levels, students demonstrated growth across all grade levels.

The *Growth Expectations: Setting Achievable Goals* by Kimberly A. Knutson, Ed.D. (2011), of Scholastic Research, and MetaMetrics® outlined how teachers could use the Scholastic Reading Inventory (SRI), to set reading growth goals and to evaluate students' responsiveness to instruction by evaluating actual fall-to-spring growth expectations. Using the data points provided in this document a description of a comparison of predicted and actual EOY Lexile scores by students enrolled in the RP program as follows in Figure 11.

As displayed in the linear graphs in Figures 12, 13, and 14, by groups of individual students, it is clear that the growth of the students followed a positive trend. The SRI predicted score (blue line) is shadowed by the SRI EOY score (red line). Eighty-six percent of students participating in the RP program met or exceeded the predicted Lexile Level according to their EOY Lexile results. For the 2012–2013 school year a comparison of the number of students that

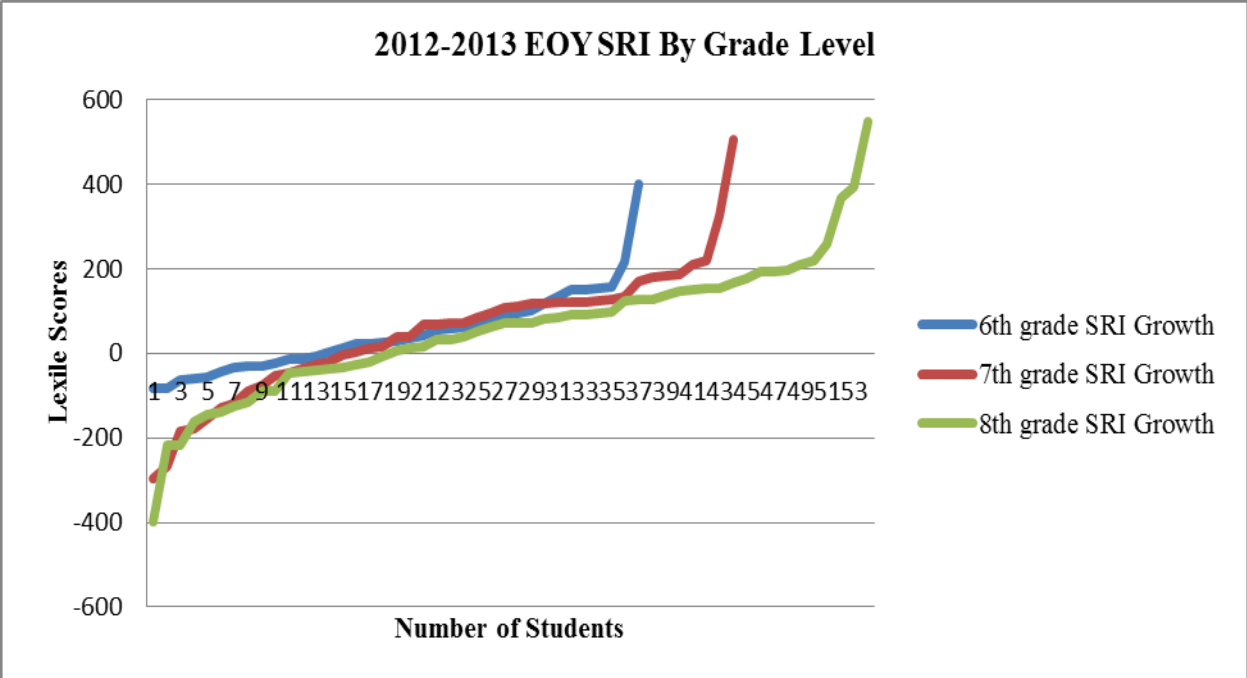


Figure 8. Comparison of average SRI range of growth by grade level of students in *Reading Plus* program at grades 6–8 during 2012–2013.

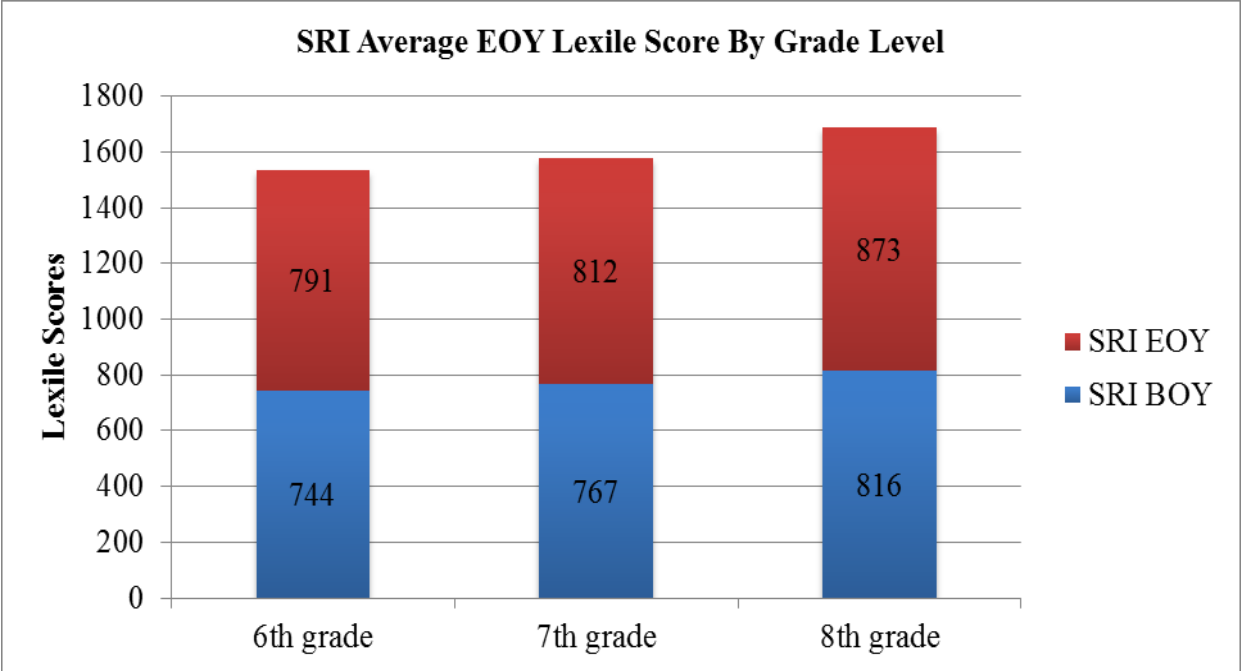


Figure 9. Comparison of EOY average Lexile score by grade level of students enrolled in the *Reading Plus* program at grades 6–8 during 2012–2013.

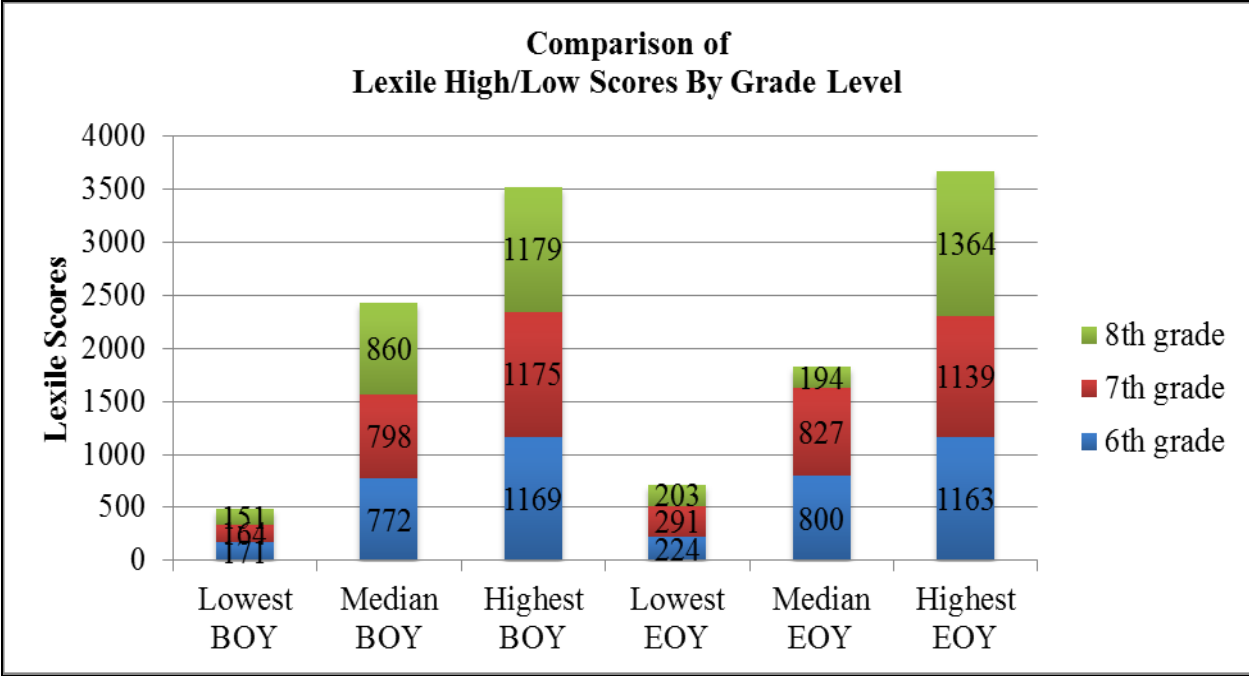


Figure 10. Comparison of Lexile highest and lowest levels by grade level of students enrolled in the *Reading Plus* program at grades 6–8 during 2012–2013.

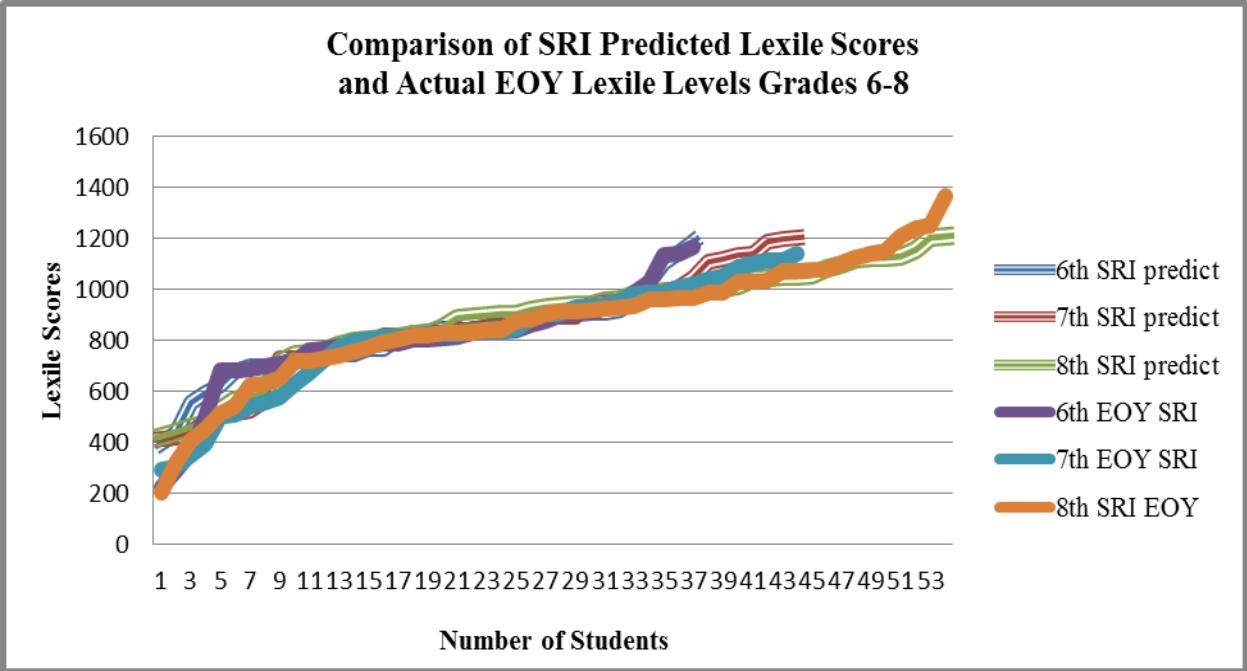


Figure 11. Comparison of predicted Lexile and actual EOY Lexile growth levels by students enrolled in the *Reading Plus* program at grades 6–8 during 2012–2013.

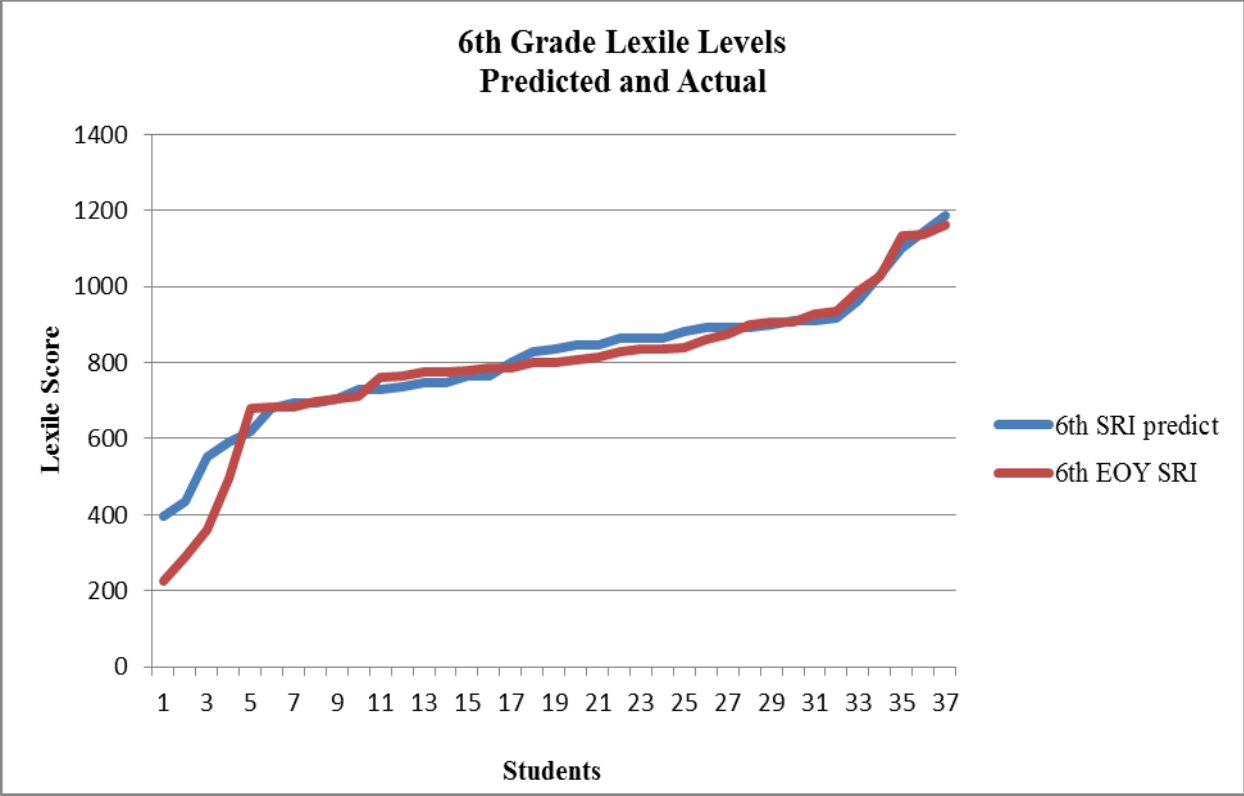


Figure 12. Comparison of predicted Lexile and actual EOY Lexile growth levels by grade 6 students enrolled in the *Reading Plus* program during 2012–2013.

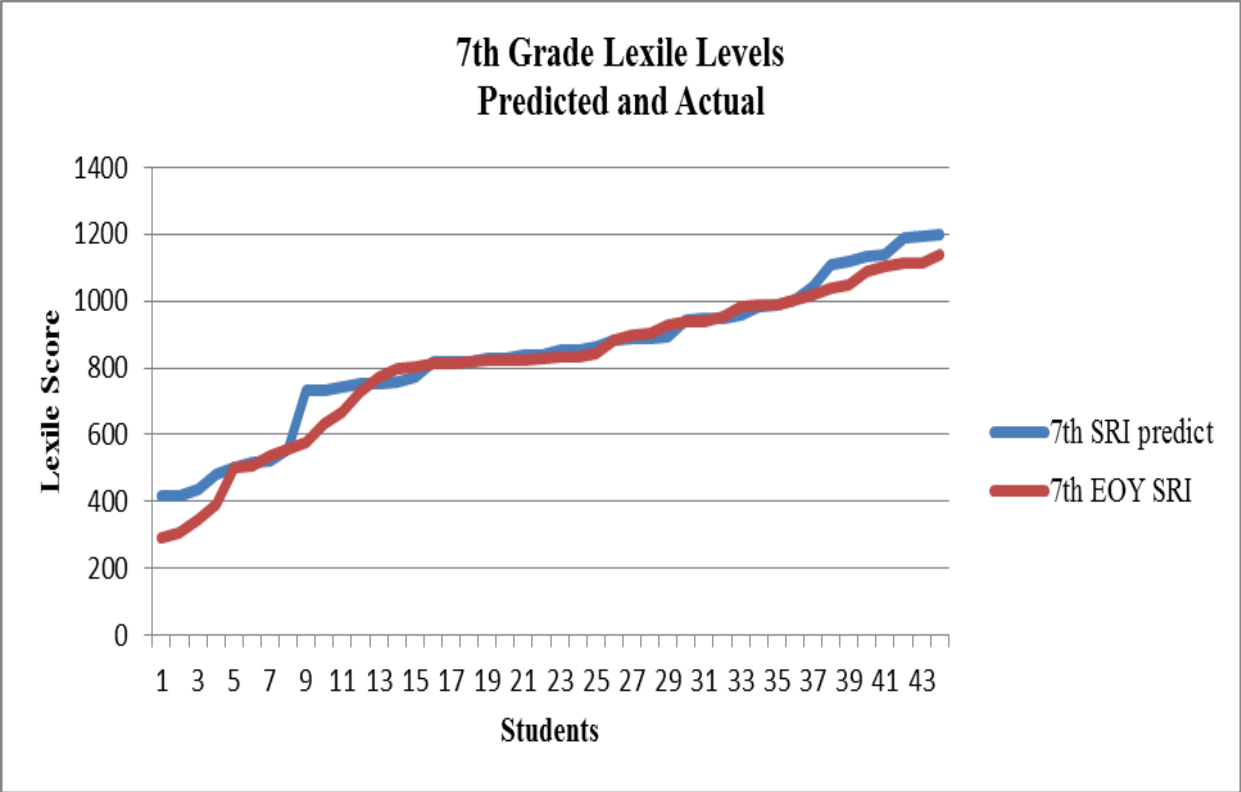


Figure 13. Comparison of predicted Lexile and actual EOY Lexile growth levels by grade 7 students enrolled in the *Reading Plus* program during 2012–2013.

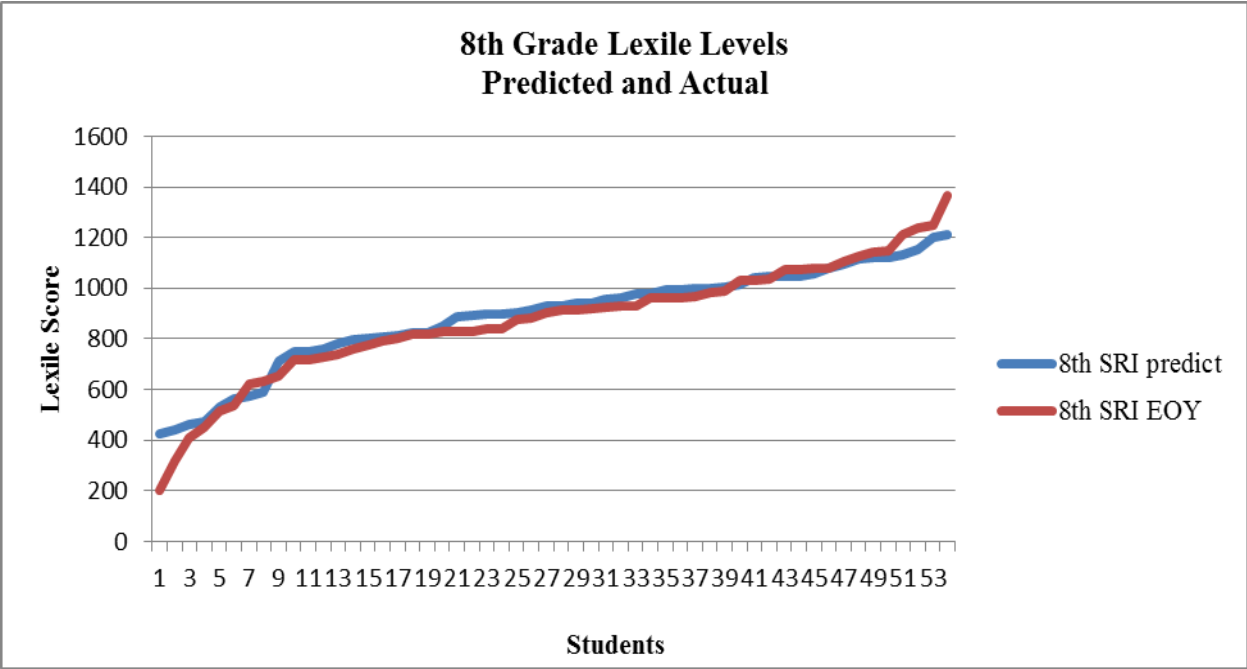


Figure 14. Comparison of predicted Lexile and actual EOY Lexile growth levels by grade 8 students enrolled in the *Reading Plus* program during 2012–2013.

exceeded, met, or did not meet the predicted Lexile Growth by students in Grades 6–8 were as follows in Figure 15.

Comparison of Encore and Flex Class Models

The fidelity of time and amount of sessions of RP implementation was described in the *Keys to Success with the Reading Plus program* implementation guide supplied to the school by Taylor Associates/ Communications in 2011. The RP implementation guide recommends that students receive an uninterrupted schedule of three to five times per week; 45-minute sessions in a lab environment. New Century Middle School implemented the RP program within an Encore class model in which the administration selected the students and provided a daily schedule that was built into the master schedule, facilitated by non-ELA teachers and the Flex model in which the ELA teacher decided which students would participate and when within their intervention period (4 days a week) the students would complete their sessions.

The Encore RP students were the lower NCEOG level students for which the school administration required immediate reading support. Within the Flex model, the ELA teachers directed the intervention methods that might include RP or other supports such as vocabulary development, silent reading or small group work. Students participating in the Flex model were students identified by teacher data analysis and were students scoring in the Level 3-4 NCEOG levels. The teachers requested *seats* for student participation after an analysis of the school designed student fluency assessment. Student seats were not limited by financial concerns due to the support by Taylor Associates/Communications of the school program. There were student gains in both models of implementation; however, comparing the Encore and Flex class model, the student growth was very unique.

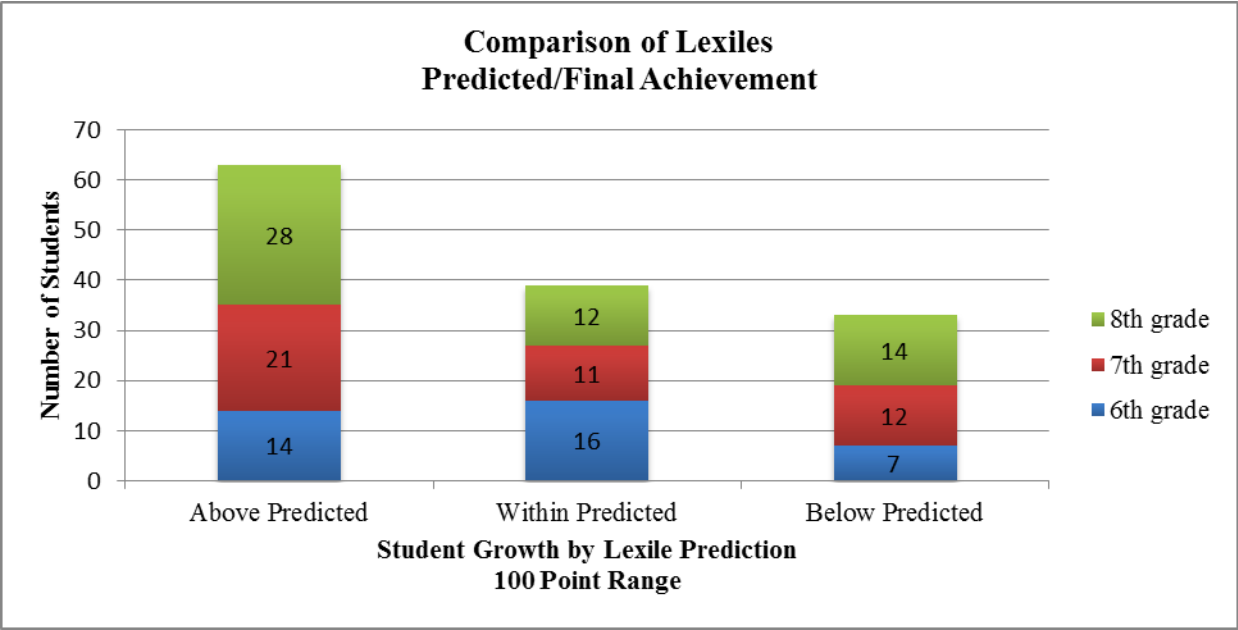


Figure 15. Comparison of Lexile growth by predicted and final Lexile scores of sixth- to eighth-grade students enrolled in the *Reading Plus* program during 2012–2013.

The sixth grade Encore and Flex RP groups demonstrated overall growth as follows in Figure 16. The graphs compare the individual student's BOY and EOY Lexile score within his/her assigned group. A sixth grader in the Encore classes increased Lexile points by 401 while one student dropped by 60 points. Within the Flex classes one sixth grade student increased his Lexile by 82 points and one student declined by 81 points. There were fewer students involved in the Flex RP program at the sixth grade level and a certified ELA teacher directed the intervention.

The seventh grade Encore students demonstrated overall growth as follows in Figure 17; however, there were many individual differences. For example, a seventh-grade student that began the year with a Lexile score of 1,166 ended the year with a score of 1,017. Another example was a student in the Flex class that began with a Lexile score of 164 and ended with 392, an increase of 228 points. According to both MetaMetrics and Taylor Associates/Communications the second student that ended with a 392 Lexile score is reading at a second grade reading level. There were seven more students participating in the Flex RP program compared to the number of students in the Encore program at the seventh grade level that implies a greater interest and implementation by the seventh grade teachers in this intervention tool.

Results were similar with the eighth-grade Encore and Flex groups as follows in Figure 18. There was considerable participation in the Flex RP class at the eighth-grade level that demonstrates ELA teacher involvement. Again, ELA teachers were permitted to select their students and implement the program intervention support. It is interesting that the Flex classes were not implemented to time fidelity, but they show the most average growth by individual students by 24 points. Thirteen percent of the students in the Flex RP classes compared to

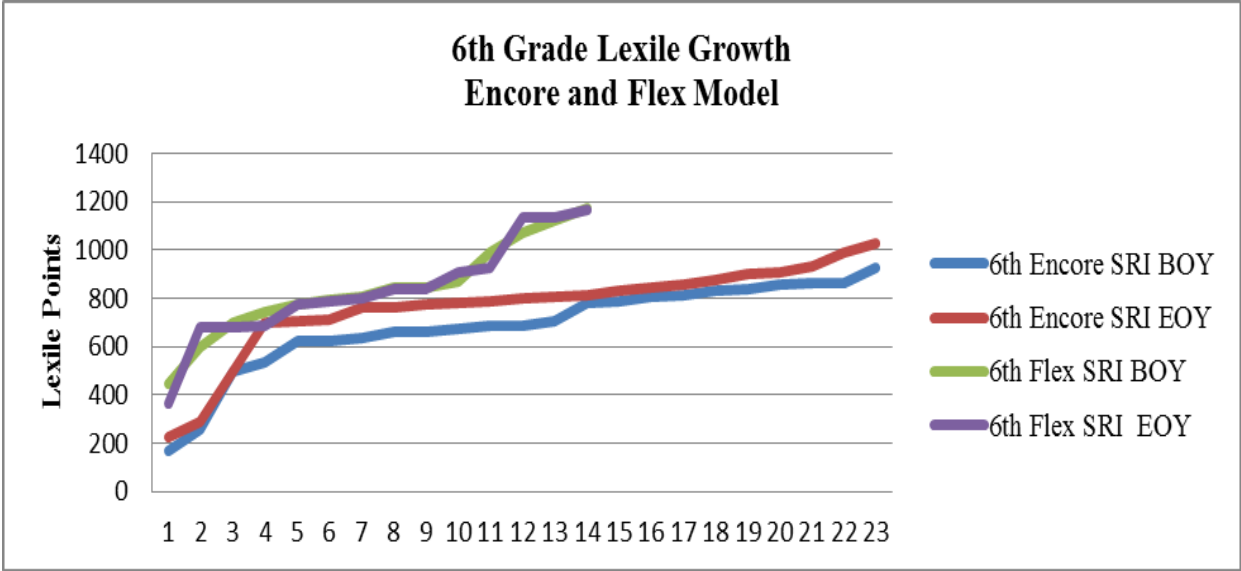


Figure 16. Comparison of Lexile growth of grade 6 students enrolled in the *Reading Plus* program by Encore and Flex Class Model during 2012–2013.

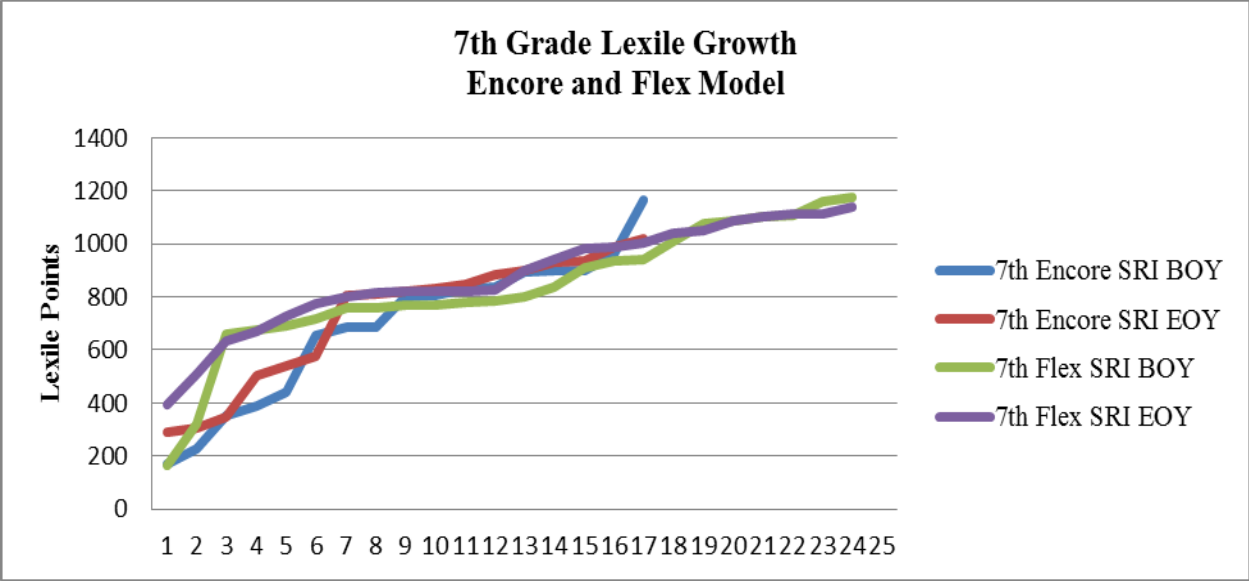


Figure 17. Comparison of Lexile growth of grade 7 students enrolled in the *Reading Plus* program by Encore and Flex Class Model during 2012–2013.

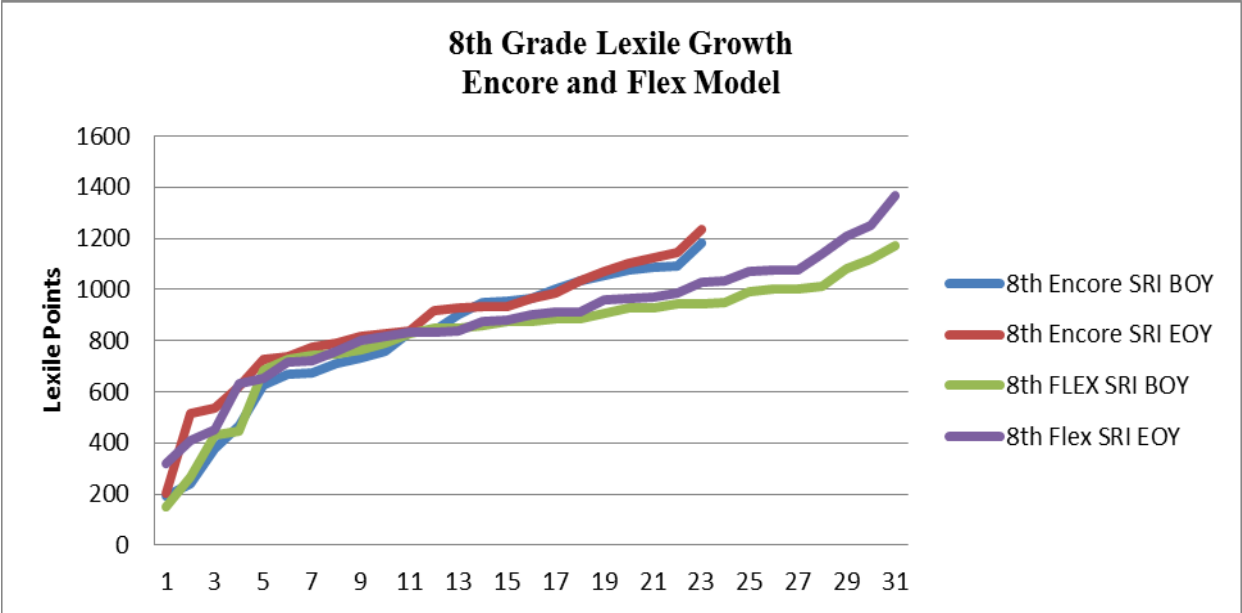


Figure 18. Comparison of Lexile growth of grade 8 students enrolled in the *Reading Plus* program by Encore and Flex Class Model during 2012–2013.

twenty-one percent of the students in the Encore RP classes did not increase Lexile points. The lower scores may also reflect the lower level of the students enrolled in the Encore RP class.

Teacher Survey Results

A survey of the classroom teachers who facilitated *Reading Plus* was used to glean qualitative data from the 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 six teachers from the middle school. The survey was sent to 14 teachers and 10 responded for 71% response rate.

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 evaluators and was 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 included a continuous scale (strongly agree to strongly disagree) and categorical scales that ranks 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 May 2014. 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* in

2012–2013. 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 that included short answer questions.

Questions included in the survey referenced (a) training and support, (b) program implementation, (c) comprehension, (d) fluency, (e) vocabulary, (f) phonemic awareness, (g) phonics, (h) reading stamina, (i) non-verbal behaviors, and (j) motivation strategies. The survey was sent to fourteen teachers who had facilitated the *Reading Plus* program in the three specific schools. Respondents were asked to mark each item on a scale of one (lowest) to five (highest) and offer comments. Ten teachers (71%) responded with completed surveys. Two of the ten (20%) who responded were elementary teachers. Six of the ten (60%) who responded were middle school teachers. Two of the ten (20%) were high school teachers.

Survey Results: Impact on Program Implementation

Item #1 addressed teacher training, preparation and support in the facilitation of the RP program. The training in August 2012 at New Century Middle School included on-site support from the RP representative, Mr. Greg Taylor, personal visits from teachers from another school and online modules that the teachers were responsible for viewing beforehand. The on-site training sessions were a total of three to five hours and focused on components of the program, as well as specific implementation of the *Reading Plus* program. In addition, a representative for the program conducted one-on-one training in person and over the phone to personalize the training with teachers who were preparing to implement the program. The webinars were accessed from the RP website and required a password to access the documents. Mr. Taylor also provided the principal with a notebook of implementation documents and digital PDF guides that described supportive practices for the fidelity of the program.

New Century Middle School invited Ms. Melonie Jones and Ms. Terrie Daughtery, two teachers from the high school that had successfully implemented the program, to visit and conference with the teachers in a small group setting in October 2012. Ms. Jones and Ms. Daughtery shared best practices answered questions and explained implementation strategies for the teachers. These teachers had first-hand experience with implementation together at the high school. Ms. Jones was the teacher that had used RP to support her students from a previous school in Florida.

On the scale of one to five (with one being “no training/support” and five being “significant training/support”), 80% of the respondents noted a score of four with regard to the sufficiency of the training/preparation. Ten percent (one respondent) noted a score of five, which was the highest level of training/support. These results indicate that teachers/facilitators felt that they received adequate training and support to implement the RP program at the middle school as follows in Figure 19.

Fidelity of the student schedule of the RP program was outlined in a document, *Implementation Guide: Administrative Planning for Optimal Results*, provided to the school’s principal by Taylor Associates/Communications. RP considered fidelity as the amount of time/number of sessions completed by the student and suggests that the RP schedule and the school’s schedule and resources must match in order to be successful. The guide included a recommended schedule of time and sessions that were most effective. The research provided by the company stated that students complete 40 or more sessions for the greatest gains in reading.

Item #2 asked teachers to reply through a specific question whether or not they had implemented the *Reading Plus* program with fidelity. On the scale of one to five (with one being “no fidelity of implementation” and five being “significant fidelity of implementation”), 30% of

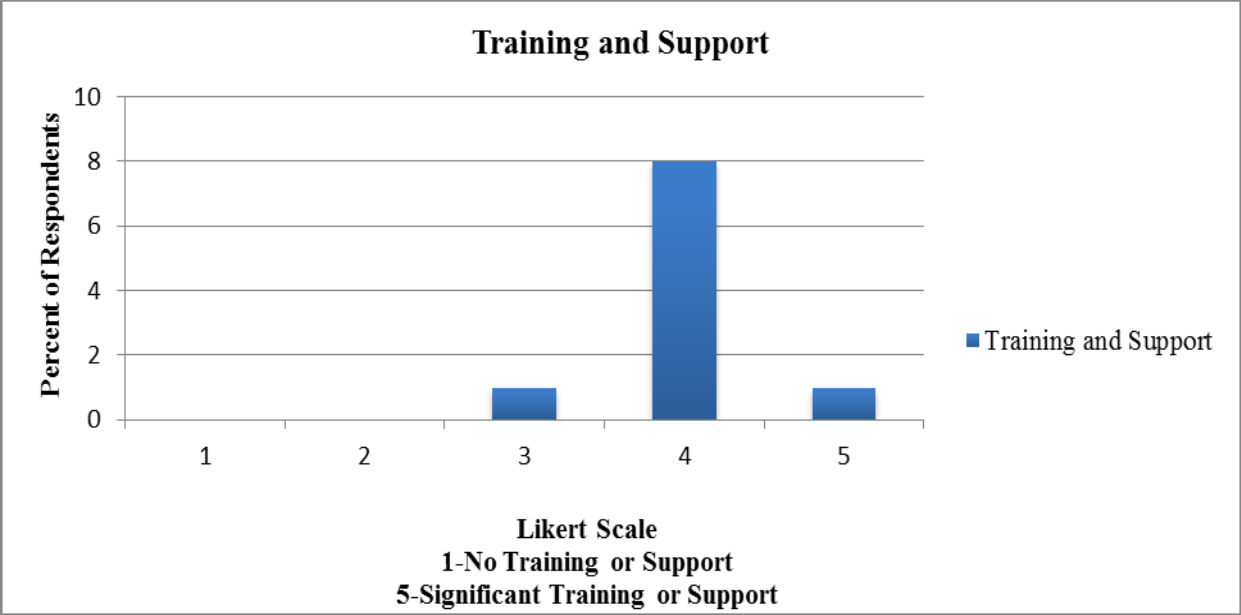


Figure 19. *Reading Plus* Observations: Item #1 training and support of teachers/facilitators in 2012–2013.

the respondents noted that they had implemented the program with the highest level of fidelity (five) and 70% noted program implementation with high fidelity (four). These results indicate that teachers/facilitators felt that the RP program was implemented with fidelity as follows in Figure 20.

Survey Results: Impact on Reading Components

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” (p. 1) between the student’s ability to read fluently and the student’s ability to comprehend what he is reading. Each of these components was included in the survey to support, clarify and/or explain the quantitative results.

Student Comprehension

Item #3 addressed the impact of RP on student comprehension. On the scale of one to five (with one being “no impact on student comprehension” and five being “significant impact on student comprehension”), 40% of the respondents noted that there had been a high level of impact on student comprehension (four), 30% noted comprehension with highest impact (five) while 10% (three) noted a moderate impact on student comprehension.

When asked to make comments on comprehension impact, a teacher stated:

Students who were rarely absent and who worked diligently showed significant improvement. Three to five years in reading level per the reading plus program occurred. A Lexile test given at the beginning of the year, mid-year and at the end of the year showed significant gains for 78% of my students enrolled in the program. An average gain of 85% occurred with all students in all classes enrolled in the program this year.

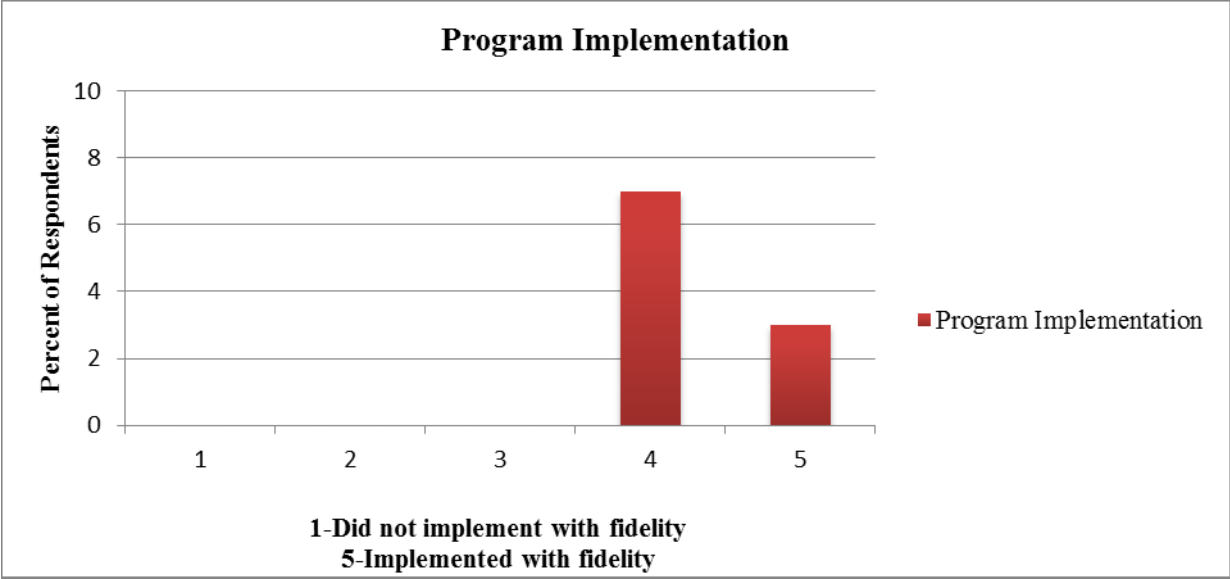


Figure 20. Reading Plus Observations: Item #2 program implementation of RP in 2012–2013.

Comprehension improved in the areas of inference, main ideas, theme, point of view and tone.

Other teachers commented:

Students increased their rate of retention by leaps and bounds. I also noticed that students learned new vocabulary and retained it because it was reinforced during the comprehension exercises. *Reading Plus* increased the students' knowledge of words through the *Read Around* section and encouraged the students to look back in the text to help answer questions.

These results indicate that teachers/facilitators felt that the RP program impacted student comprehension at a high level as follows in Figure 21.

Student Fluency

Item #4 addressed the impact of RP on student fluency. On the scale of one to five (with one being “no impact on student fluency” and five being “significant impact on student fluency”), 40% of the respondents noted that there had been a high level of impact on student fluency (four), 20 % noted fluency with highest impact (five) while 20% (three) noted a moderate impact on student fluency.

Teacher comments concerning the impact on student fluency included:

It required my students to read more quickly while simultaneously paying attention to the content. The speed progression was incremental, but overtime—significant. Students are able to read more quickly because of the exercises involving eye movement. I often ask my students to read a question out loud. I have noticed that they are reading much more fluidly than they did in the beginning of the year. The Guided reading slot helps them to close read and continue reading; encouraging better fluency. *Reading Plus* helped

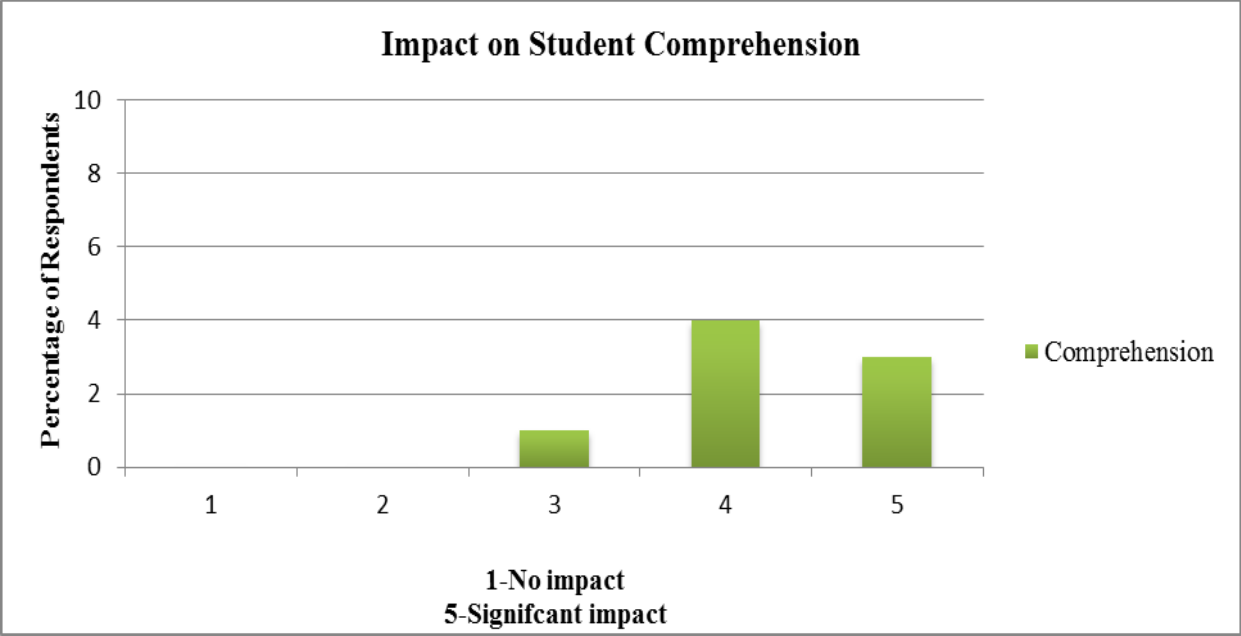


Figure 21. Reading Plus Observations: Item #3 impact on student comprehension in 2012–2013.

increase the fluency skills by letting the students decide when they were ready to move forward. If the program detected 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.

These results indicate that teachers/facilitators felt that the RP program impacted student fluency at a high level as follows in Figure 22.

Student Vocabulary

Item #5 addressed the impact of RP on student vocabulary. On the scale of one to five (with one being “no impact on student vocabulary” and five being “significant impact on student vocabulary”), 60% of the respondents noted that there had been the highest level of impact on student vocabulary ($n = 5$), 10% noted vocabulary with high impact ($n = 4$), while 10% ($n = 3$) noted a moderate impact on student vocabulary. Teacher respondents commented, “I especially noticed improvement in my students’ use of context clues and prefix and suffix variations of base words” and “The students were not only introduced to new vocabulary-they were asked to use it every day. The stories in *See Reader* reinforced the vocabulary over and over.”

Teacher comments concerning the impact on student vocabulary included:

I especially noticed improvement in my students’ use of context clues and prefix and suffix variations of base words. If implemented correctly, teachers can use the appropriate grade level (most frequent) vocabulary words to improve vocabulary knowledge and words in context. The students were not only introduced to new vocabulary-they were asked to use it every day. The stories in *See Reader* reinforced the vocabulary over and over.

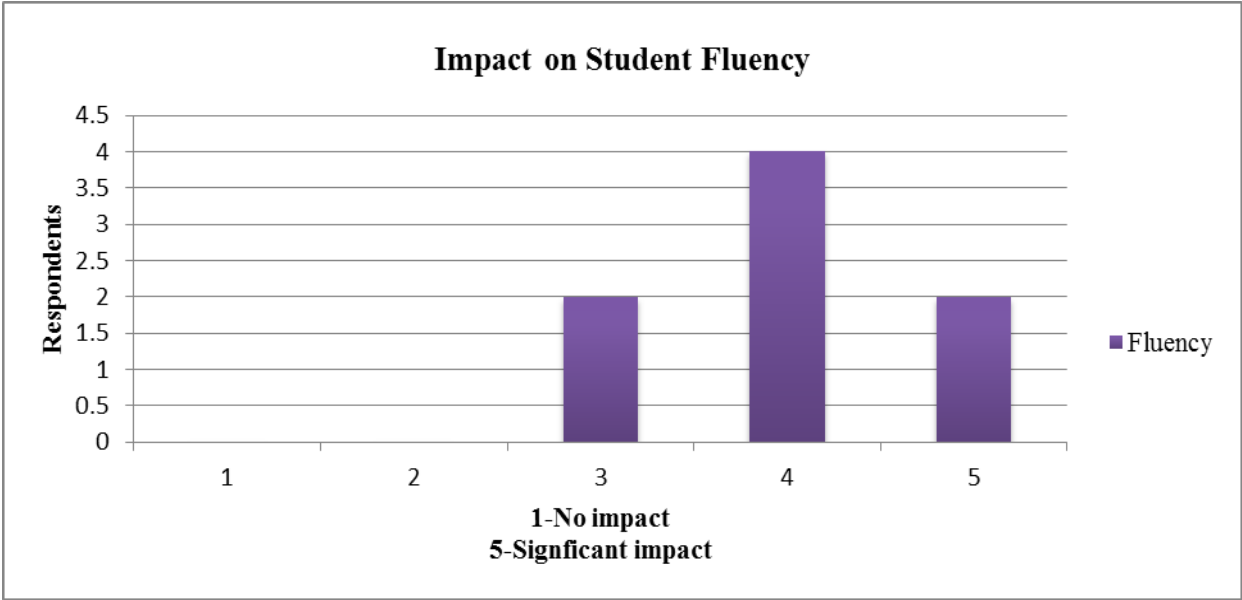


Figure 22. Reading Plus Observations: Item #4 impact on student fluency in 2012–2013.

These results indicate that teachers/facilitators felt that the RP program impacted student vocabulary at a high level as follows in Figure 23.

Student Phonemic Awareness

Item #6 addressed the impact of RP on student phonemic awareness. On the scale of 1 to 5 (with one being “no impact on phonemic awareness” and five being “significant impact on phonemic awareness”), 30% of the respondents noted that there had been a moderate level of impact on phonemic awareness ($n = 3$), 20% noted phonemic awareness with high impact ($n = 4$), 20 % noted phonemic awareness with low impact ($n = 2$), while 10% ($n = 1$) noted no impact on phonemic awareness.

Most respondents did not respond to the opportunity to share comments. Those teacher/facilitators that did respond concerning the impact on student phonemic awareness stated:

This is a difficult area to measure. Much individual help was necessary to help students with pronunciation of new vocabulary. For most of my students, phonemic awareness was not a critical or weak skill. Students are having less difficulty pronouncing words. I also saw many students making connections between words with similar spellings, patterns, etc.

These results indicate that teachers/facilitators felt that the RP program impacted phonemic awareness at a moderate to low level as follows in Figure 24.

Student Phonics Development

Item #7 addressed the impact of RP on phonics development. On the scale of one to five (with one being “no impact on phonics” and five being “significant impact on phonics”), 20% of

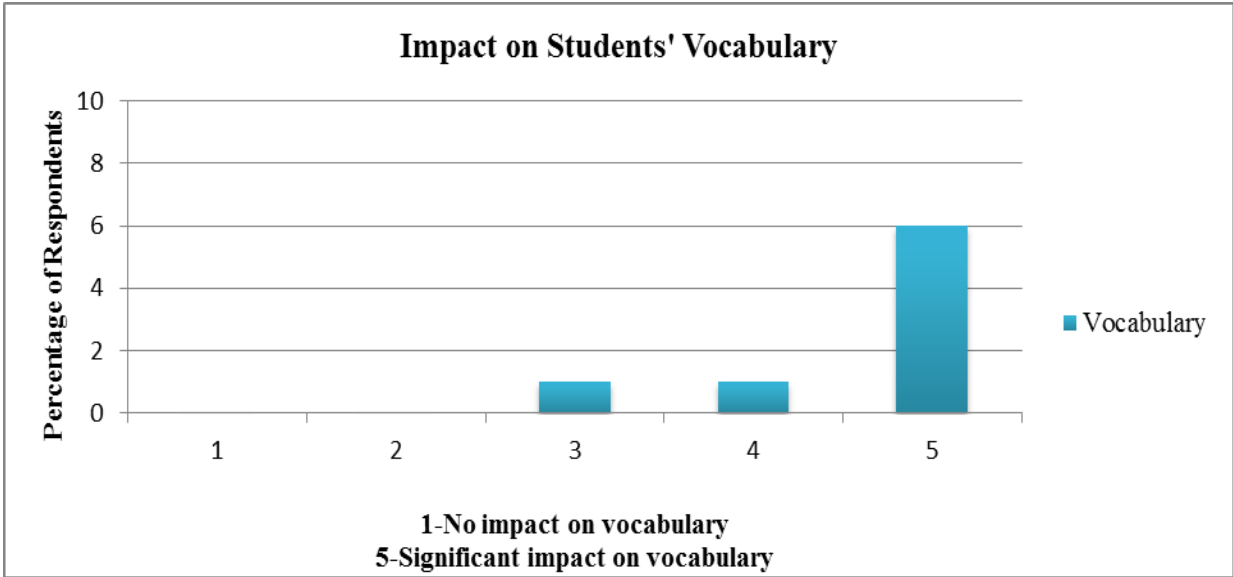


Figure 23. Reading Plus Observations: Item #5 impact on student vocabulary in 2012–2013.

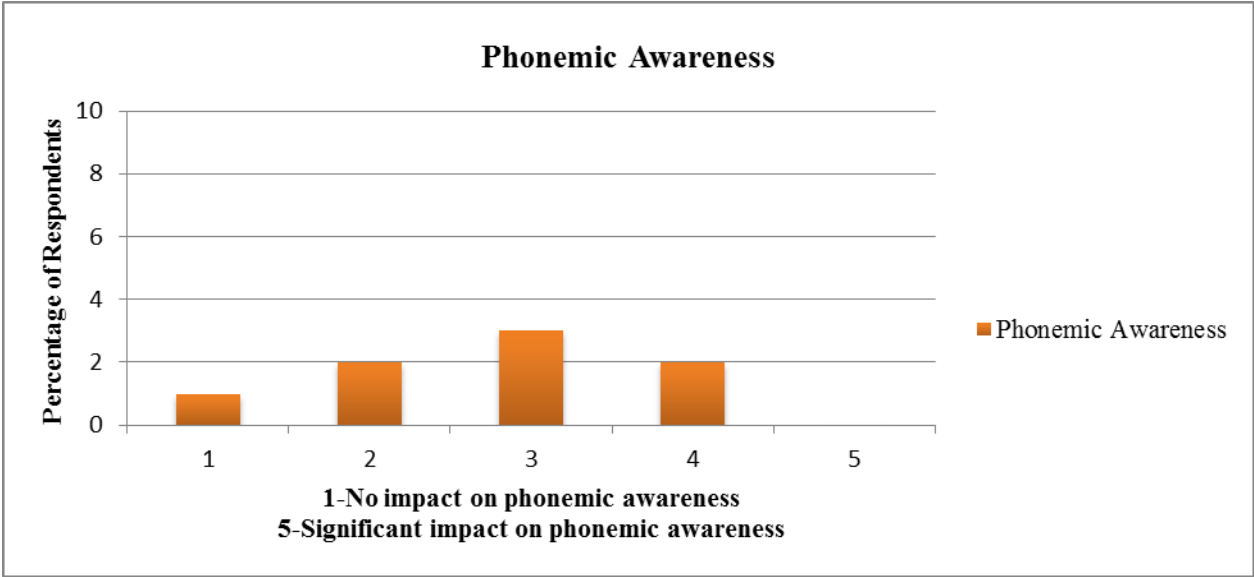


Figure 24. Reading Plus Observations: Item #5 impact on phonemic awareness in 2012–2013.

the respondents noted that there had been no impact on phonics (one). Twenty percent noted a low impact on phonics (two), 20 % noted a moderate impact on phonics (two), while 10% (four) noted a high impact on phonics.

Teacher/Facilitator comments concerning the impact on student vocabulary included:

My students did not start at this level in *Reading Plus*. [An] exposure to new words forces the student to sound them out and use context clues.

These results indicate that teachers/facilitators felt that the RP program impacted phonics at a moderate to low level as follows in Figure 25.

Student Reading Stamina

Item #8 addressed the impact of RP on reading stamina. On the scale of one to five (with one being “no impact on reading stamina” and five being “significant impact on reading stamina”), 50% of the respondents noted that there had been high impact on reading stamina (four) and 30% noted a significant impact on reading stamina (five).

Teacher/Facilitator comments concerning the impact on student reading stamina included:

Reading stamina is one of the most difficult skills to develop for my struggling readers. I saw improvement in at least 2/3 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. Students are able to handle much longer passages now in comparison to the beginning of the year. This is due to the gradual increase in length of the comprehension exercises. Students were compelled to stay with a selection until it was completed on the same day. Students quickly found that if they started a selection, they wanted to finish it the same day so they would not forget the story and make below an 80 on the See Reader assessment.

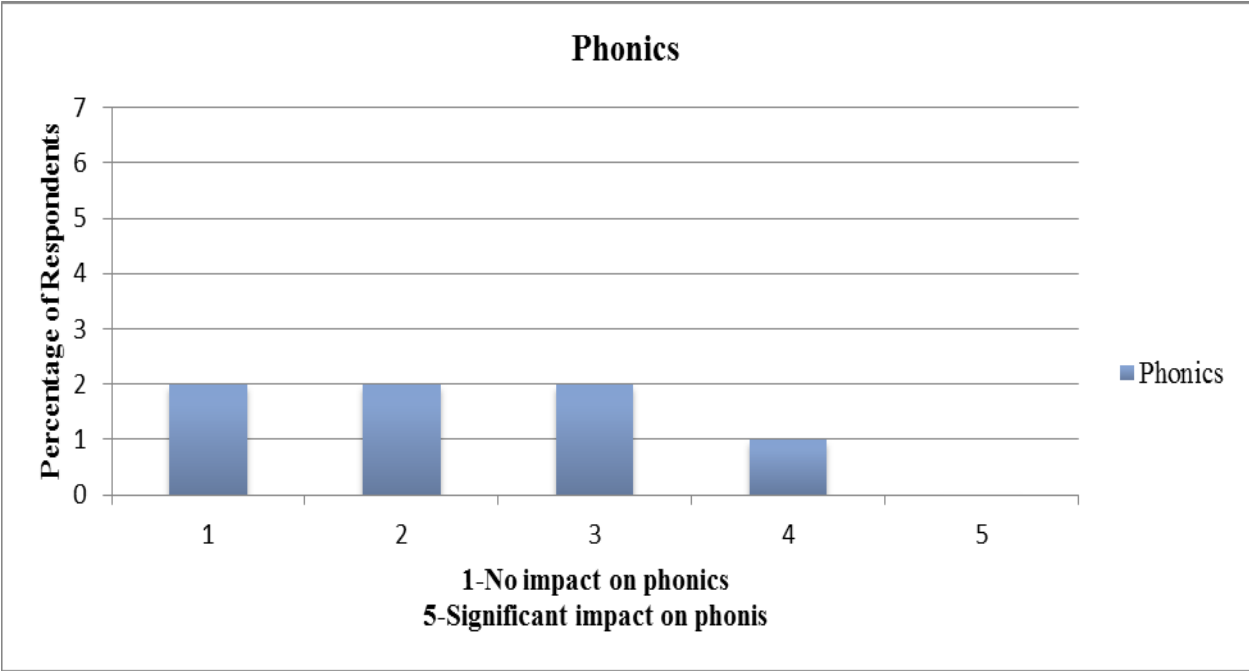


Figure 25. Reading Plus Observations: Item #5 impact on phonics in 2012–2013.

These results indicate that teachers/facilitators felt that the RP program impacted reading stamina at a high to significant level as follows in Figure 26.

Student Non-Verbal and Motivation Survey Results

Student non-verbal and motivation information were gathered through survey questions to capture the impact of RP on behaviors that indicated student engagement and participation. The survey included questions that teacher/facilitators could describe student observations and descriptions of their actions that may indicate program implementation and student success. These observations serve as qualitative results that describe the factors that led to the successful implementation of the program.

Non-Verbal Student Behaviors

Teachers/Facilitators were asked to describe non-verbal student behaviors during their interactions with RP students. Teachers' comments described excitement and happiness of their students on many occasions. Teachers described joyous facial expressions as they [students] achieved a 90% or leveled up. Students constantly "could be seen smiling at what they had accomplished or yelling out loud by accident or out of excitement after seeing what they had accomplished. Each level or combo was a time for celebration."

Other teachers described a more serious nature of their students citing that their students were "usually focused on the program" and would work on the lessons on their own.

Many students were interested in their progress and requested their award print outs for student portfolios and parents. As a student moved up on levels and became much more serious about this program over the year they responded well to individual and class goals. They also liked competition!

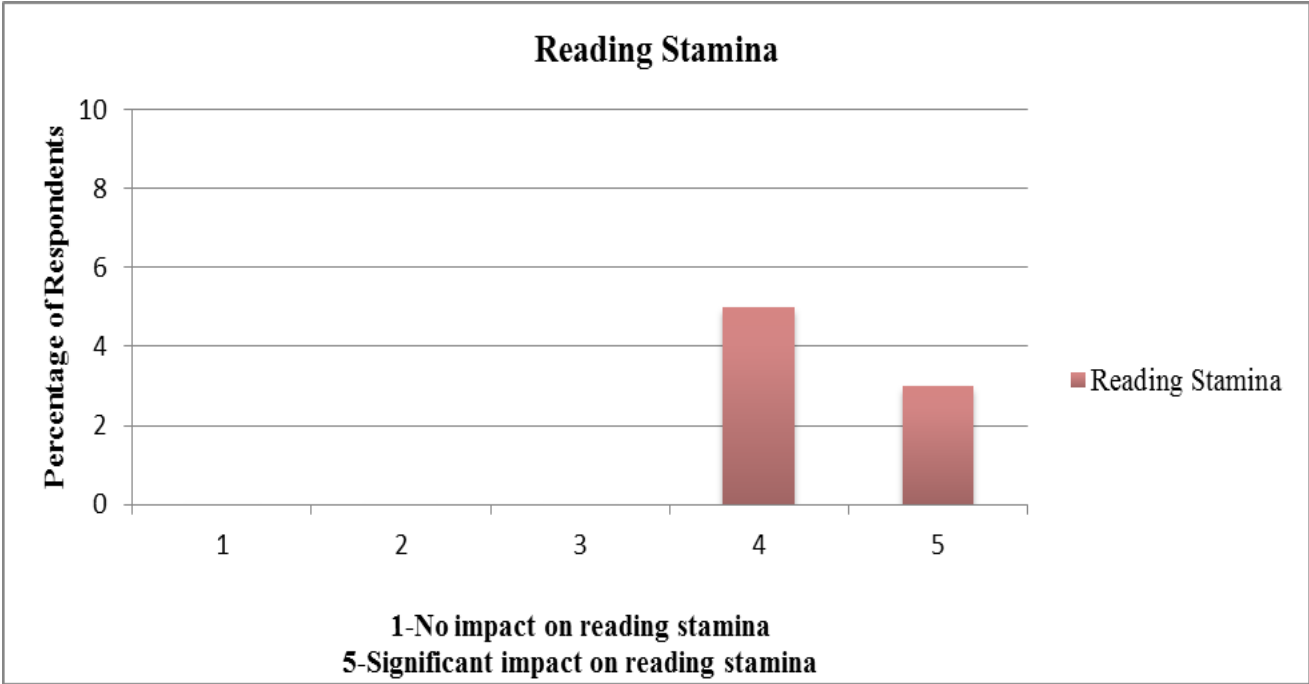


Figure 26. Reading Plus Observations: Item #5 impact on reading stamina in 2012–2013.

Teachers commented that as students worked on RP, behaviors included tracking-focused, focused attention to reading, sitting up, and going back to passages to find answers. When students feel successful, they behave better. The fluency work often helps low readers stop moving their head, and start moving their eyes to track when reading.

Teacher/Facilitator comments concerning observed negative non-verbal behaviors included witnessing a sense of frustration and distraction in some students. Teachers explained that students were frustrated if the program did not record a score as quickly or level up as the student expected. If the teacher perceived that the student had an ADHD [attention deficit-hyperactive disorder] diagnosis and was un-medicated, they witnessed a loss of interest and motivation in some. The “combo” was frustrating to some was an observation of one teacher. Another teacher was concerned about Extend 2 [exceptional education] students that did not qualify for a specially designed reading program for exceptional education students and stated that she/he saw little improvement and students struggle.

Distractibility was cited as a non-verbal behavior exhibited by some RP students. Teachers noticed that some students would move to other websites while on their Chromebooks. Other students would make frequent requests to use the bathroom or to get a drink at the water fountain or would arrive late or continue to have absences during the FLEX time period. One teacher/facilitator shared a detailed description about student distractibility:

I have only two students who seem to “zone” out. They have weeks of very productive work, then it trails off. I think this may have more to do with other classes and stresses. When I talk to them and explain their goals, they do respond.

Student Motivation

Motivating students to complete the components of the RP program is one of the most important factors of student success. Included in the RP Implementation Guide for Administrators were examples of motivation practices that would support students. Suggestions include that administrators ensure that everyone understands the system and its benefits, provide students and teachers with resources to implement the system, acknowledge accomplishments of teachers/facilitators who do an outstanding job and highlight student accomplishments.

The teacher/facilitators were encouraged by the administrators to design motivational strategies for their student groups on their own. Many facilitators used their own motivational strategies including candy treats, printing student award certificates and providing free time on Fridays for students to play computer games. One teacher shared that students were awarded free time if all goals were met with 85% or better. One teacher printed all “level up” awards for the Read Around and See Reader with the principal signature and posted them on the walls of the classroom. If a student received 90% or higher on See Reader one teacher gave them a wrapped piece of candy.

Conferences with students as they worked on RP occurred daily or weekly with students was a strategy that one teacher claimed increased student motivation. Many facilitators shared that they configured the settings for individual students and did not rely on RP program settings. One teacher commented that she reminded students of the connections between their ELA classwork and their RP improvements. She also conferenced with parents through the student’s personal education plans. Another teacher commented, “We also offered encouraging words to students and held individual conferences to discuss progress and areas of improvement.” One teacher explained in great detail, his motivation strategy for students.

Students may earn “free time” on Fridays if they complete all assigned work. Also, if they complete more work than assigned, they earn bonus points for extra free time and extra credit at the end of the 6 weeks. My students also responded well to class goals. For instance, I gave them a goal at the beginning of each class based on completion of work. Each Monday, our goal was to complete 20–25% of our work for this week. This allowed them to pace themselves and also “plan” out their work for the week. This also made the number of assignments seem a little less over-whelming.

Free time on Fridays was mentioned by many of the teacher/facilitators. Most facilitators asked the students to complete a certain amount of sessions in order to gain the free time.

Teacher facilitators mentioned the use of verbal and non-verbal praise as they worked through the program. One teacher explained, “when students gain confidence and feel successful (by extrinsic rewards—candy, stickers, certificates, celebrations), they begin to behave better and gain the intrinsic motivation to read and achieve.

Summary of Survey Information

According to the survey results teacher/facilitators felt that the RP program was successfully implemented through training and support with 80% of the respondents selecting highly impact. An overview of these results is provided as follows in Figure 27. Teachers also noted that RP increased their students’ comprehension, fluency, vocabulary and reading stamina with high to significant results. The potential for the support of comprehension skills were addressed throughout the RP process across the reading levels over 7,700 times as follows in Figure 28.

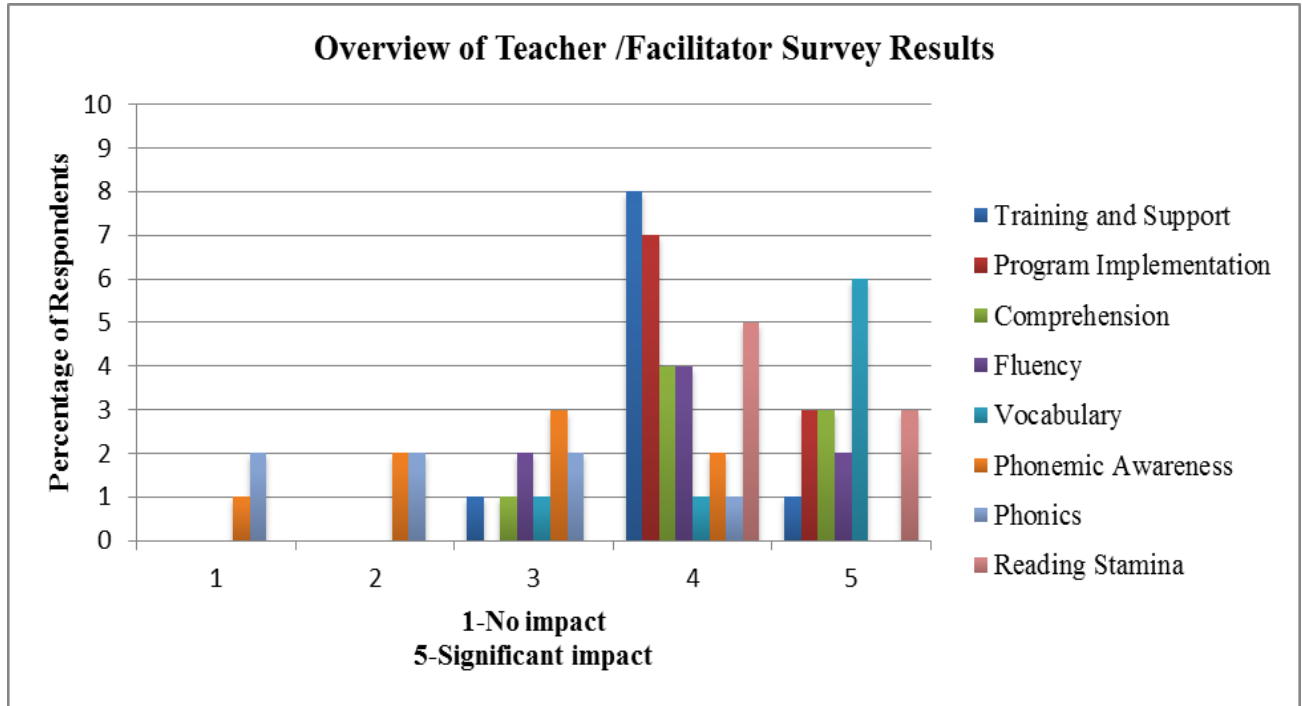


Figure 27. *Reading Plus* Observations: Overview of results from teacher/facilitators in 2012–2013.

Reading Plus® Guided Reading™ Comprehension Skills Totals																			
Number of Questions by Level																			
Num	Skill	Pre A	A	B	C	HI A	HI B	HI C	D	E	F	G	H	I	J	K	L	M	Totals
1	Recalling Information and Details	53	228	111	42	46	67	51	154	96	68	94	84	91	76	102	93	46	1502
2	Following Sequence of Ideas and Events	5	28	20	14	8	10	6	31	16	21	15	11	9	23	23	19	10	269
3	Identifying Speaker	11	30	15	5	2	6	1	19	7	3	6	3	8	2	4	3	5	130
4	Main Idea	20	60	40	20	25	25	26	43	27	28	28	28	28	27	27	25	22	499
5	Making Inferences	7	120	48	30	32	35	27	102	49	56	58	68	60	52	44	41	40	869
6	Predicting Outcomes	1	5	3	1	3	4	3	22	12	14	10	3	9	11	8	5	12	126
7	Drawing Conclusion	6	43	42	25	33	21	34	81	52	59	57	49	56	51	45	36	43	733
8	Interpreting Figurative Language	0	0	2	1	3	11	3	16	17	25	19	30	18	26	34	17	8	230
9	Visualizing	0	4	6	2	1	1	2	12	9	8	4	11	9	8	5	7	6	95
10	Paraphrasing	3	10	16	2	16	3	12	15	14	25	21	28	22	21	20	16	17	261
11	Comparing and Contrasting	0	2	11	20	6	7	9	34	28	25	25	22	30	31	31	32	21	334
12	Recognizing Cause and Effect	0	15	20	6	17	13	10	62	39	32	51	42	42	32	36	27	26	470
13	Classifying	0	6	12	11	7	4	5	42	21	26	14	21	12	18	19	22	30	270
14	Reasoning	2	26	14	0	14	11	17	56	38	45	48	39	35	36	34	31	29	475
15	Identifying Analogies	0	1	0	0	0	0	0	1	1	6	1	1	2	4	2	2	7	28
16	Deducing Author's Purpose	0	0	0	0	3	2	6	6	12	9	11	13	12	11	11	20	15	131
17	Understanding Persuasion	0	0	0	0	0	0	0	0	4	3	1	5	1	5	4	1	3	27
18	Recognizing Slant and Bias	0	0	0	0	0	0	0	1	4	0	2	5	9	1	4	4	2	32
19	Distinguishing Between Fact and Opinion	0	0	0	0	0	0	1	4	9	5	4	8	13	10	7	11	7	79
20	Judging Validity	1	9	8	2	12	7	12	45	15	19	23	14	28	25	22	21	20	283
21	Determining Relative Importance	0	2	5	3	5	4	9	43	14	22	32	29	21	24	21	20	25	279
22	Interpreting Character	0	1	1	2	3	8	4	24	19	16	18	20	16	20	12	15	22	201
23	Recognizing Emotion Reactions	5	6	16	10	9	5	7	27	19	25	10	11	14	17	11	9	10	211
24	Identifying Mood and Tone	0	0	0	0	1	0	1	12	3	4	4	5	4	3	5	9	7	58
25	Identifying Setting	1	0	11	2	4	5	4	14	13	16	4	8	11	4	6	11	4	118
		115	596	401	198	250	249	250	866	538	560	560	558	560	538	537	497	437	7710

Notes: A is first grade B is second etc. HI A is adult interest at first grade level. There are 7,710 total questions in the Guided Reading application. Eleven additional comprehension skills are also covered 1,741 times in Cloze Plus, one of the three vocabulary development programs.

Note. (Taylor Associates/Communications, 2012).

Figure 28. Reading Plus Guided: Reading Comprehension Skills Totals Chart (2012).

The survey results also implied that program did not impact the student's phonemic awareness or phonics weaknesses as expected. This may be due to the fact that phonemic awareness and phonics was not a direct step on the computer portion of the program and that teachers did not receive adequate training on this component. Unless a student was an extremely limited reader, most middle and high school students had an understanding of phonemes and phonics. A printed/digital handout provided the phonetic portion of the RP program for teachers to use with students. The teacher would need to monitor the student's progress and provide the support through a small group or individual session. Many teachers may have expected the computer program to provide all of the reading support for students.

Teachers ranked vocabulary and reading stamina as the highest ranked reading skill impacted by the RP program. Many teachers and administrators are very concerned with these specific reading strengths of students due to the requirements of mandated testing. The required state and federal tests last for approximately four hours and expect students to have a grade level vocabulary. Teachers and administrators notice that students without the stamina to read long passages combined with a weak vocabulary tend to score below proficiency. Students that do not enjoy reading or have not practiced reading for periods of time do not have the stamina to perform as required. Students that do not know how to read grade level passages do not have the vocabulary or ability to use phonetic reasoning to interpret an unknown word. In combination, these reading deficiencies affect proficiency and success.

Fluency is a skill that teachers are able to witness in their classrooms when students read passages aloud individually or during class. This is a visible indicator for teachers that students are progressing with reading. Teachers ranked fluency as the third highest reading skill increased by students participating in RP. As students experience increased fluency, their

confidence increases and they feel a sense of accomplishment and pride as described by their teachers.

Teachers witnessed many students exhibiting joy and excitement as they increased their reading skills. The RP program provided a graph for students and their teachers that tracked their progress. The students enjoyed making progress and took pride in their accomplishments. The teachers created a supportive environment for their students and became their cheerleaders by printing certificates and giving them small prizes or tokens of congratulations such as “free time.” This practice encouraged the students to persevere when the work was challenging. Many students were proud of the fact that they “graduated” out of RP and the administrators commended the students personally.

Three groups of the middle school students had RP during their Encore/elective time, so they saw their friends attend classes such as art, band or technology while they were required to participate in a reading program. This made motivation and support especially important for these students because they may have felt as though they were being punished for their reading deficiency. Teachers and administrators reassured the students that when they progressed to “grade level” status that they could join an Encore class at that point and did not have to wait until the end of the semester. As an extra motivational support, these students participated in an arts or physical education FLEX class instead of an intervention class while participating in RP.

There were also negative behaviors exhibited by students participating in RP. Students that exhibited behaviors associated with attention deficit syndrome were not able to sit still long enough to participate as expected with the program. They exhibited avoidance behaviors such as requesting excuses to get water or go to the bathroom.

Students that were very low readers (first through third grade levels) struggled significantly with the program. They were not able to keep up with the requirements even with adjustments of the program. Teachers were trained and encouraged to monitor students and make adjustments with speed of the eye movement practice or passage levels. Teachers may have relied too much on the program to support these students and did not implement the lower level strategies for these students. The teachers may not have known about the supplementary documents available to support the lower level students due to insufficient support and training.

Some students were not able to stare at the screen to complete the eye movement portions. They complained that it hurt their eyes and would look away if distracted. If the students were not interested in their reading progress then they were easily distracted by other programs on their computer and took advantage to choose something else to do (play games, watch movies) when the teachers were not monitoring.

Overall, teachers supported the RP program and were pleased with the results. They were happy to see that the administration secured an intervention reading program that would support students. The teachers at the middle school level did not feel adequately prepared to teach reading and did not feel as though they had time to support students that were not reading at grade level during their ELA class due to the rigorous curriculum requirements. The teachers and administrators expected their students to be able to read at grade level when they progressed to the next level and while not surprised that a few students were not always proficient, they did not have an effective program/supports to treat the deficiency of students of non-exceptional status.

The expected end results of this supplementary reading support program is not only proficient scores on EOG assessments for the current grade level, but that students have the

confidence in their reading skills so that they continue throughout their grade progression to enjoy reading and to demonstrate mastery of the curriculum and proficiency on EOG assessments. The hope of teachers and administrators is that as students progress with their reading ability and participate in grade level curriculum they will not need the support provided by RP, but can proceed on their own. It is recommended to continue monitoring students that are exited from the RP program through EOG test data and Lexile scores to determine if students are successful at maintaining the behaviors and skills of proficient readers or if other supports are needed.

Program Costs Description

In addition to extensive collection and analysis of academic data, information on the costs of the program and comparable reading intervention programs was reviewed to determine if the cost of the program was a significant factor in the program evaluation. The cost of the RP Program during the 2012-2013 school year was \$4,000.00 for 162 seats for an average cost of \$25.00 a seat. Due to the pilot process and negotiations of the program expense, the *Reading Plus* customer representative, Mr. Greg Taylor, lowered the actual cost. Typically, the company, Tarmac Educational Services, Inc., recommends a three-year commitment with the fourth year at lowered cost. There is a discount of 10% for the purchase of two years of access subscription and a 20% discount for the initial purchase of three years' access subscription. In 2012–2013, the district limited the principal to a one-year contract as follows in Figure 29. Interestingly, if the free seats provided by the company were not available, the basic cost would be \$58.97 per student for one year (G. Taylor, personal communication, August 1, 2012).

Reading Plus® Quote:

New Century Middle School

Reading Plus License 100 students

Duration	Student Seats	Description	Total
1 year	Access for 100 students	Individual student access to entire content for a period specified. Fee includes all updates and upgrades, access to web training videos and unlimited toll free support by publisher.	\$4,400.00
Software License Sub-Total:			\$ 4,400.00
NC Sales Tax 6.75%			\$ 297.00
<i>Professional Services</i>			
Qty	Item #	Description	Total
1	1980	Administrative, Teacher on site and remote training, support and individual teacher, class monitoring ongoing individual training and reporting. One session of on-site 4.x training included as well as remote webinars as needed. Onsite sessions are a maximum of 6 hours per session. On site sessions must be used within one year.	\$1,200.00
Professional Services Sub-Total:			\$ 1,200.00
Sub-Total			\$ 5,897.00
<i>Credit for previous Purchase</i> Less Credit			
Less Partnership Discount			\$ -
Total Cost			\$ 5,897.00

Figure 29. Reading Plus quote for services provided to New Century Middle School (2012).

Mr. Greg Taylor also provided Moore County Schools a proposal for pricing for 1-5 schools to commit to a four-year contract as follows in Figure 30. Within this proposal the fourth year would have been at a significantly lowered cost. Following the agreement with this contract the cost per student over the four-year period would have been \$204.00. However, the more concurrent seats purchased by the district would lower the cost over a four-year period. As described by Mr. Greg Taylor (personal communication, August 1, 2012) in Figure 30, if five students use concurrent seats over three years the cost would be \$23.00 per student. Furthermore, if a school purchased 30 seats with 90 students per semester or 180 per year utilizing the RP program, within a four-year contract, the cost per student would have been \$31.00.

Other popular reading intervention programs such as *Fast Forward® to Reading* and *Scholastic's Read 180* have higher costs per student. A 2013 proposal from the Scholastic company to a neighboring public school district outlined a reading intervention program using their products *System 44*, *Read 180* and the *Scholastic Reading Inventory* to support three middle schools with a total of 420 identified students. The proposed cost of the Scholastic program was \$247,783 or \$589.95 per student ("Read 180/System 44 proposal," 2013). This cost does not include the specialized teacher position that is required to teach within the Read 180 classroom. Following the 100-student comparison number, the estimated cost per year would be \$58,995.00, and does not include the cost of the teacher position. Moore County Schools also agreed to a contract with Scholastic for similar services in 2012, but the actual contract information was not available to the evaluator. The district did purchase the *Scholastic* programs for selected schools. The *Scholastic Reading Inventory* was the instrument used to determine Lexile improvement within this program evaluation.



Pricing for 1-5 schools

First Three Year Costs							Fourth Year Costs		
Number	Number Range	License unit	Total License Cost	Hosting unit	Total Hosting Cost	Total Cost per unit	Total Cost first three years	Year 4 Unit costs hosting	Year 4 costs
	10 to 24	\$750.00	\$0.00	\$180.00	\$0.00	\$930.00	\$0.00	\$90.00	\$0.00
30	25 to 49	\$520.00	\$15,600.00	\$160.00	\$4,800.00	\$680.00	\$20,400.00	\$80.00	\$2,400.00
	50 to 99	\$400.00	\$0.00	\$150.00	\$0.00	\$550.00	\$0.00	\$75.00	\$0.00
	100 plus	\$325.00	\$0.00	\$140.00	\$0.00	\$465.00	\$0.00	\$70.00	\$0.00

Total # Students	25	Total cost 3 years:	\$20,400.00	Subsequent:	\$2,400.00
Total # Schools	1	Cost per Year	\$ 6,800.00		
# CC Users per School	25	Cost per School/year	\$ 6,800.00		

Reading Plus® installations are built around Concurrent Use Seats (CCU; See below for details). The two components of CCU costs are license and web hosting. The license is a one-time, permanent purchase. Web hosting, which has an annual fee, provides 24/7 access to the CCU from anywhere with Internet access. In addition, web hosting provides unlimited technical support and seamless delivery of all Reading Plus® updates and upgrades.

Credits for schools

Cost per Student Based on CCUs

Typical Reading Plus® installations are built around one or more reading labs with sufficient CCUs to match the maximum number of computers in use. The number of CCUs determines the maximum number of students that can simultaneously access the system. The more students who use each CCU, the lower the per student cost. For example, based on a conservative estimate of five students using each CCU in each of two semesters, the cost in the first three years of ownership based on 25 CCU is approximately \$23 per student.

Figure 30. Reading Plus quote for services provided to Moore County Schools for four years (2012).

Fast Forward®, *to Reading* uses computer software to develop the cognitive processes for reading. According to the What Works Clearinghouse (2011), a single license for *Fast Forward*®, *to Reading* is \$500.00 with no quantity discount. Consequently, if this program were implemented for 100 students the total cost would be \$50,000.

Based on the overall results of the student's Lexile increases of students participating in the RP program during the 2012-2013 school year and the research-based intervention strategies provided by the RP program, the cost of the program is effective and reasonable. As mentioned previously, a similar program provided by a local optometrist, Dr. Nancy Mackowsky, OD, PA of Pinehurst and Raleigh, NC, offers therapeutic services at her Visual Learning and Rehabilitation Clinic at a cost over \$5,000 for one child. As outlined in this program evaluation, over one hundred students are able to receive comparable services at the school for one year with the added benefit that RP materials support the implementation of the school standard course of study.

Recommendations

As schools continue to search for solutions to support their students that struggle with reading, it is with confidence that the program evaluator recommends the *Reading Plus* program as a unique, reliable, and economical solution. As compared to other reading programs, the average cost (\$58.00 per student) is exceptional in regards to the development of the core reading skills. Also noted is the ongoing support of the company to ensure successful implementation.

Recommendations for the Superintendent of Moore County Schools are provided based upon the review of literature and data analysis results. According to the data analysis of student Lexile scores and teacher survey information, the impact of the *Reading Plus* program on student academic achievement in reading for those students enrolled in the program in Grades 6–8 was

significant. Based upon the description of the program cost of the RP program and comparable reading intervention programs, the cost of the *Reading Plus* program was exceptional in the consideration of the overall *Reading Plus* program benefits. Listed below are recommendations for consideration:

1. *Continue the use of Reading Plus as an intervention reading support program for students in grades 6-8.*

The program evaluation of the *Reading Plus* program demonstrates that ocular movement, stamina and comprehension when paired with intervention supports for vocabulary, phonemic awareness and phonics is an effective intervention and support to increase reading achievement. Eighty-six percent of participating students increased their Lexile scores within the predicted range of growth. Eighty percent of surveyed teachers agreed that 3 of the 5 core reading skills (comprehension, fluency, vocabulary) were developed with an additional improvement in reading stamina. With fidelity of implementation the program evaluator concludes that struggling readers develop the skills of reading to successfully demonstrate stamina, fluency and understanding of content so that reading achievement increases through the implementation of the *Reading Plus* program.

2. *Monitor the progress of students even as they exit the program; continue the use of Scholastic Reading Inventory, NCEOG scores and RP data for three years to analyze long-term benefits for the participating students.*

Student progress must be monitored at continued, specific times during the student's progression through Grades 6–8 to determine if the implementation of RP is a long or short-term impact strategy. It is recommended that the Scholastic Reading Inventory and End of Grade ELA assessments be used to monitor student progress through a cohort of students. This will

require the commitment of district and school implementation for at least a three year time period and access to state assessment data.

3. Program fidelity as designed by Reading Plus must be implemented by the school.

An implementation has the potential for a higher success rate if the recommended actions are followed including time, number of sessions, monitoring and motivation strategies.

Principals need to understand and accept this requirement. A potential risk for many schools is oftentimes a rushed or haphazard implementation of an intervention. Without strategic implementation processes in place the program may appear ineffective.

4. Provide ongoing support, information and training provision by company for administrators and facilitators.

The training must be consistent and time must be allotted before classes begin with students. Provide follow-up sessions with facilitators early into the implementation of the program to ensure that a good beginning occurs for the students. The company should provide this for the school. Adult learners appreciate training that is delivered in a variety of formats such as personal visits, webinars, newsletters and phone conferences. Facilitators must have support and someone to call if they have questions.

Newsletters from the RP web support and updates are helpful so that teachers receive ongoing support, motivation and commendations. As a component of the training, it is important for the school and individual facilitators to realize that this program is not a “sit and get” on the computer without teacher involvement. There must be an understanding that the teachers/facilitators are responsible for monitoring, encouraging and providing an alternate support in order for the students to meet their reading goals. The teacher/facilitator must not just sit in the lab and watch the students work. He/she must be involved in the process throughout

the class period either by monitoring the class, the student's individual data, reporting to parents, ELA teachers and administrators or by encouraging and providing supplementary materials and instruction. One-on-one conferencing is an excellent method to support students on a rotating basis. A personal message to the students through the program is another way to individualize encouragement. One ELA teacher stated that, "the RP facilitator must remember that student success is built into the program with 50% program work and 50% strong relationships."

5. Provide program monitors: internal and external.

An external monitor, a school administrator or a support person, must have the knowledge to problem solve on site and monitor the students in case the facilitator is not following protocols or adjusting the program to meet student needs. New facilitators need more support in the beginning with items such as computer set up, class management and monitoring. More experienced facilitators may understand the processes, but may not have the knowledge of student reading or motivational strategies.

Multiple levels of support must be provided for students as they progress through the program such as the facilitator monitoring the students and making individual adjustments, providing motivational incentives, and contacting the ELA teacher for support if necessary. A lead administrator (lead teacher or assistant principal) on site that monitors class use and progress review, usage and student progress will ensure accountability.

Fidelity of the program may be affected by interruptions in the typical school day- special programs, inclement weather. It is important for the RP lead monitor to make adjustments on the school-level settings page to reflect a disruption to the school calendar or schedule so that an accurate implementation overview is provided. If a disruption occurs at the school and it appears that the student just skipped a day of support, then the fidelity of the implementation is

inaccurate. Assessment judgments are provided to the school administrator and district level administrators on a regular basis, so it is important to reflect an accurate calendar of RP usage.

6. Provide support for secondary teachers with reading instruction pedagogy.

Teacher knowledge of reading instructional methods is an added benefit to supporting students using RP. Individual reports are available from RP that outline student's strengths and weaknesses in regards to the reading. Understanding and identifying the five domains of reading will help the teacher/facilitator pinpoint reading deficiencies both in the classroom and from the RP reports. Adjustments and supplemental materials can be provided for the student that needs extra support.

The data comparing the RP Encore to RP Flex classes suggests that the ELA teacher facilitators provided the strongest support for students even though the time implementation was not to fidelity standards. School districts and Higher Education administrators must consider implementing reading pedagogy into professional development and teacher preparation programs so that secondary teachers have the knowledge and skills to teach and support reading skills.

7. Student placement of at-risk students must be carefully considered.

For any student the selection to participate in RP must receive a thoughtful consideration but most importantly, all at-risk students should be considered as "necessity" seats. Selection of student participates is not about favorites, but a strategic placement to assist students to meet grade level reading requirements.

Selection of student participants is important for student success. It is possible that some students do not work well on a computer due to cognitive or behavioral issues. Students that are extremely deficient with reading skills at the first and second grade levels may not be able to manage the requirements of the program. Teacher facilitators may also notice that students with

attention span issues are distracted on some portions of the program. Opportunities to allow students to occasionally move in the classroom are helpful. Some students may need to take short breaks or follow a checklist of steps. These strategies may help students that struggle with staring at the computer screen during Guided Reading.

The at-risk students reading at a very low level, and students that do not show progress must be monitored for reading speed on the program. The teacher can adjust the program individually to allow smaller successes. Coaching the unmotivated reader is just as important. For those that read slowly or complain that it hurts their eyes to read, may need teacher counseling and an alternate instructional model.

8. Provide financial support for Non-Title I schools.

Based upon the cost-benefit analysis, RP is a cost-effective solution to provide reading intervention support for students in the district. RP proposed cost is \$23.00 (three-year contract) to \$58.00 (one-year contract) per seat. In comparison, *Scholastic's Read 180* cost is \$589.95 per seat and *Fast Forward® to Reading*, is \$500.00 per seat. The request for intervention financial support should not be subject to lengthy approval processes for Non-Title I schools. If the district does not provide intervention supports on a regularly funded basis, then the principal should be supported for the needs of the school upon request.

9. Consider the three-year contract as a method to reduce long-term costs and to allow the schools to understand the program.

The secondary schools do not teach the five domains of reading so supplementary reading support should be provided on a routine basis for at-risk students. In 2012-2013, the average cost of a *seat* in RP was \$56.00. Based upon the data analysis of student Lexile growth

and the analysis of program costs, the researcher recommends that the cost of the RP is reasonable and cost effective.

A successful implementation of the RP program requires time and commitment from district administrators, school administrators and teachers. It takes time and commitment to understand the program from the principal to the students. It is recommended that at least three to four years are guaranteed for implementation so that processes are in place and a deeper understanding of the program occurs.

10. Design materials and provide support for students that exit the program.

Follow-up support is needed when students exit the program. Home reading supports that include a structured home reading program should be available. It is also possible that if follow-up support is not provided to the exited students that they may regress back to their old levels. Just as most of us have to exercise every day to maintain good health, it is important for good readers to maintain strong reading habits. A recommendation is that exited RP students should have required monitoring by their ELA teacher with assessments for comprehension and stamina.

11. Expect and monitor the company's reliability of the program.

Factors that must be considered are: adaptability and continuous renewal of the product to meet the needs of students and to support technology updates, transparency and ease of use of the information/data provided by the tool, the service of the company to support the school and the ability of the product to make the school/classroom a more productive learning environment.

Conclusion

[Middle schools are faced with the problem of supporting students that are promoted to grades six through eight unprepared for the curriculum content that they are expected to master](#)

within 180 days. Due to many factors of grading discrepancies, social issues and promotion standards, some students are promoted to the next grade level despite a lack of mastery of foundational reading skills. Secondary schools are faced with closing these gaps of mastery in order to ensure students are prepared for the next level. A gap in the mastery of reading can affect a student for a lifetime. It is the conclusion of this researcher that a solution to this complex issue is the implementation of the Reading Plus program for students in grades six through eight.

The ability to read is a skill that will affect a child for a lifetime. Children progress in their ability to read at different rates that may be due to an early exposure to reading, a lack of exposure to reading, socio-economic status or a learning disability. Most often, a student's reading abilities tend to accumulate and are more pronounced with grade progression. Unfortunately, the struggling student/reader falls further and further behind his/her peers if nothing is done to stop the reading gap. This reading achievement gap surfaces within the classroom environment and on state-required assessments. State and Federal governments and parents expect school personnel to diagnose and correct these gaps as noted by the NCLB Act of 2001 and subsequent legislation concerning reading skills of students.

School personnel are not certified to diagnose the weakness of ocular movement of a student that struggles to read as an ophthalmologist might discover. James and Earl Taylor, the inventors of the RP program, diagnosed the relationship of the ocular movement and reading. As their passions grew to provide support for struggling readers, they had the foresight to include a strengthening exercise into their instructional process to improve reading.

Throughout the years of research, debate, instructional experimentation and implementation, educators have dedicated their lives to helping children read to the best of their

abilities. As a result of standards for both teachers and principals, North Carolina now includes a school accountability growth composite in yearly evaluations. Standard 6 for teachers and Standard 8 for principals populates automatically in the summative evaluation document to include scores (class scores for EOG teachers and school scores for principals). Therefore, teachers and principals are held accountable for data and student improvement. With this in mind, schools should be able to choose programs and materials that they believe match the needs of their students because they will be held accountable for the final results.

As principals, teachers, and communities embrace the responsibility that each student receives a comprehensive education it is imperative that all schools are supported to provide reading intervention services and program implementation support as they strive to meet their goals for each student to graduate as a literate citizen ready for opportunities for a successful life.

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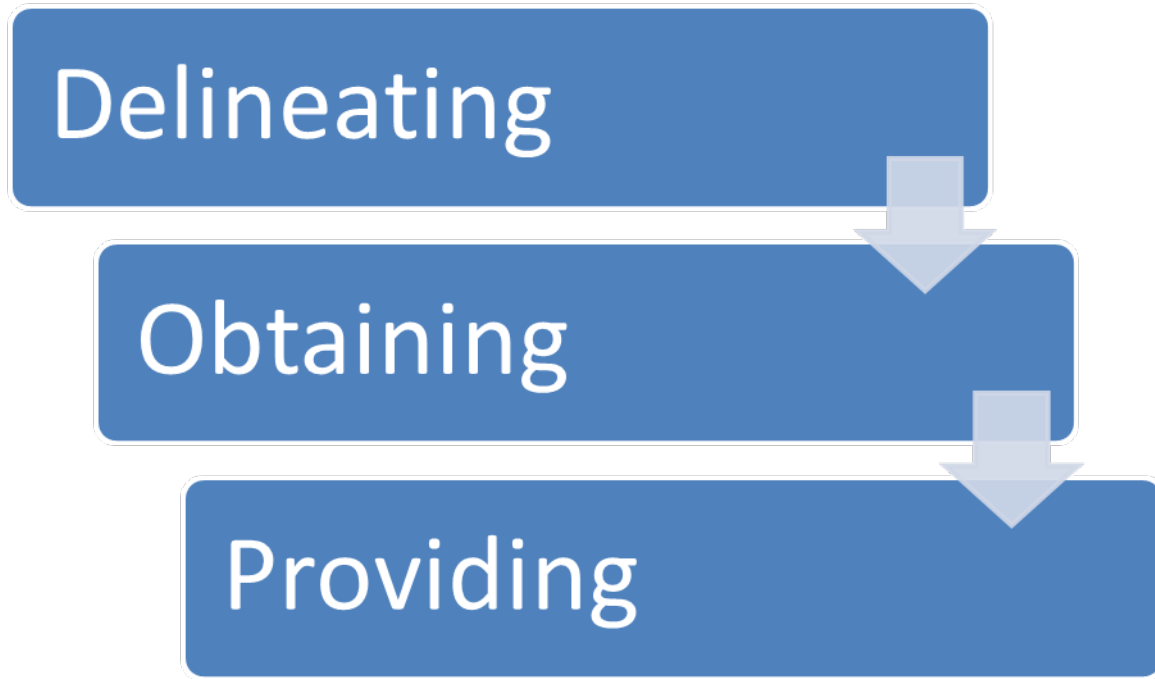
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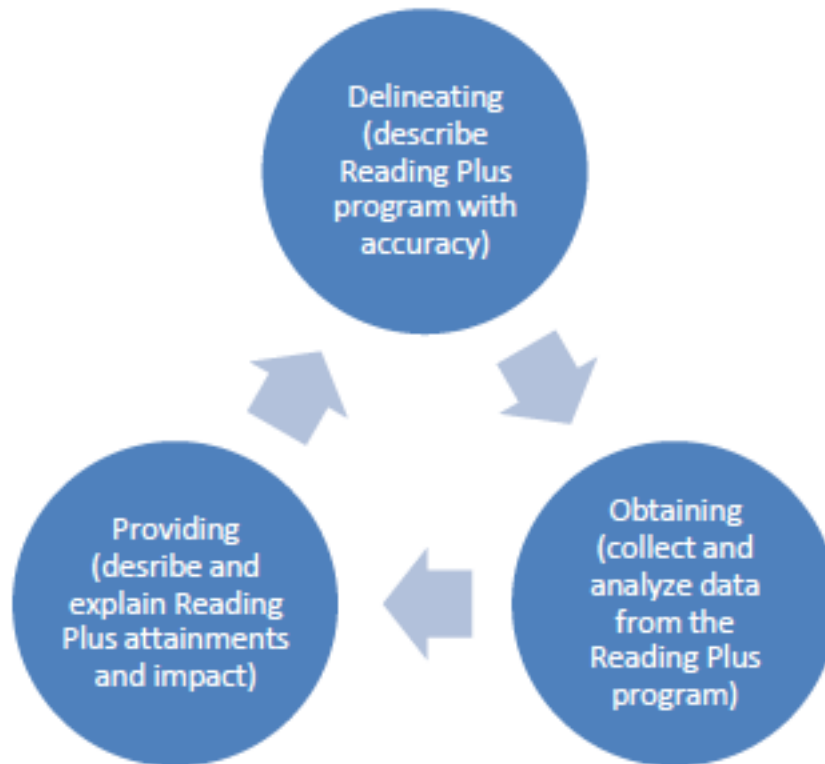
APPENDIX A: CONTEXT-INPUT-PROCESS-PRODUCT (CIPP) DECISION MODEL



APPENDIX B: PROGRAM EVALUATION CYCLE



APPENDIX C: CIPP RELATIONSHIP OF EVALUATION TO DECISION-MAKING



APPENDIX D: 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 E: 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 'AS', with a long horizontal flourish extending to the right.

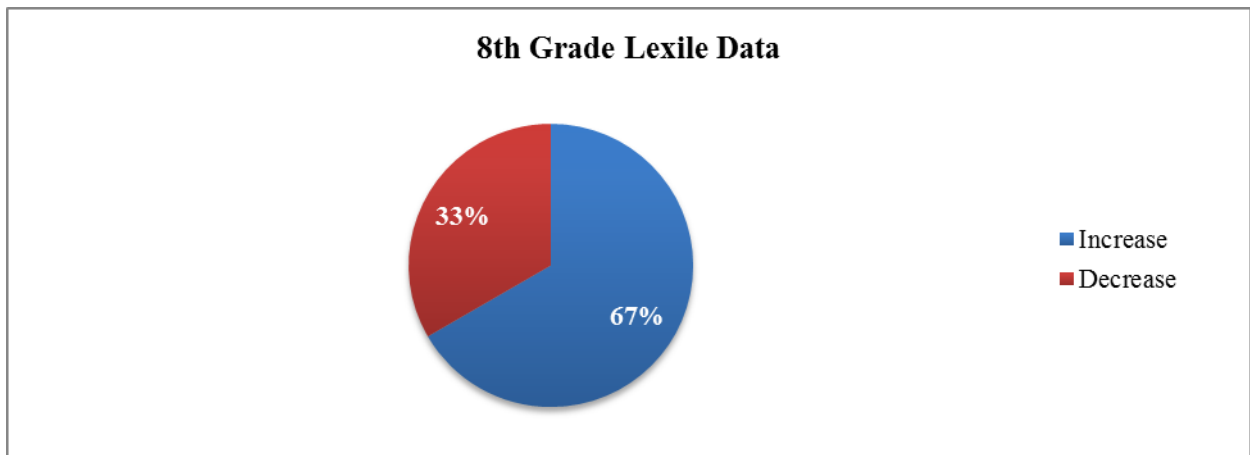
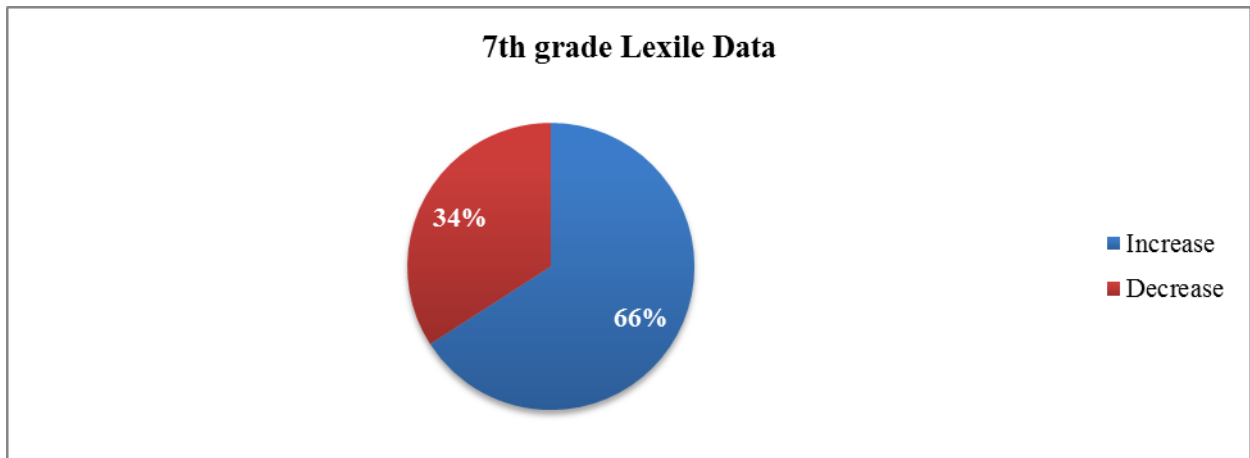
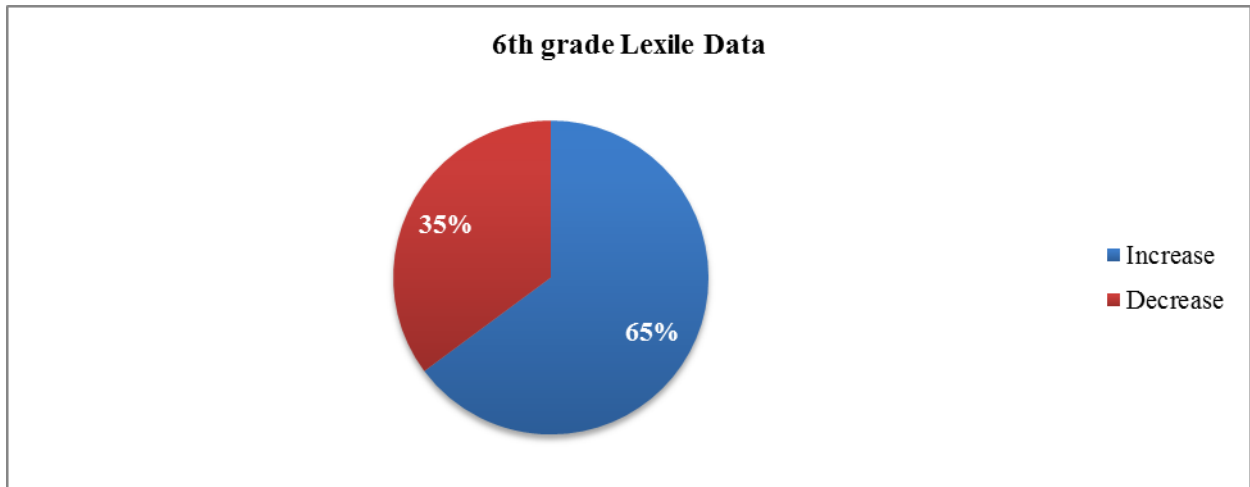
Aaron C. Spence, Ed.D.
Superintendent of Schools

ACS: cbm

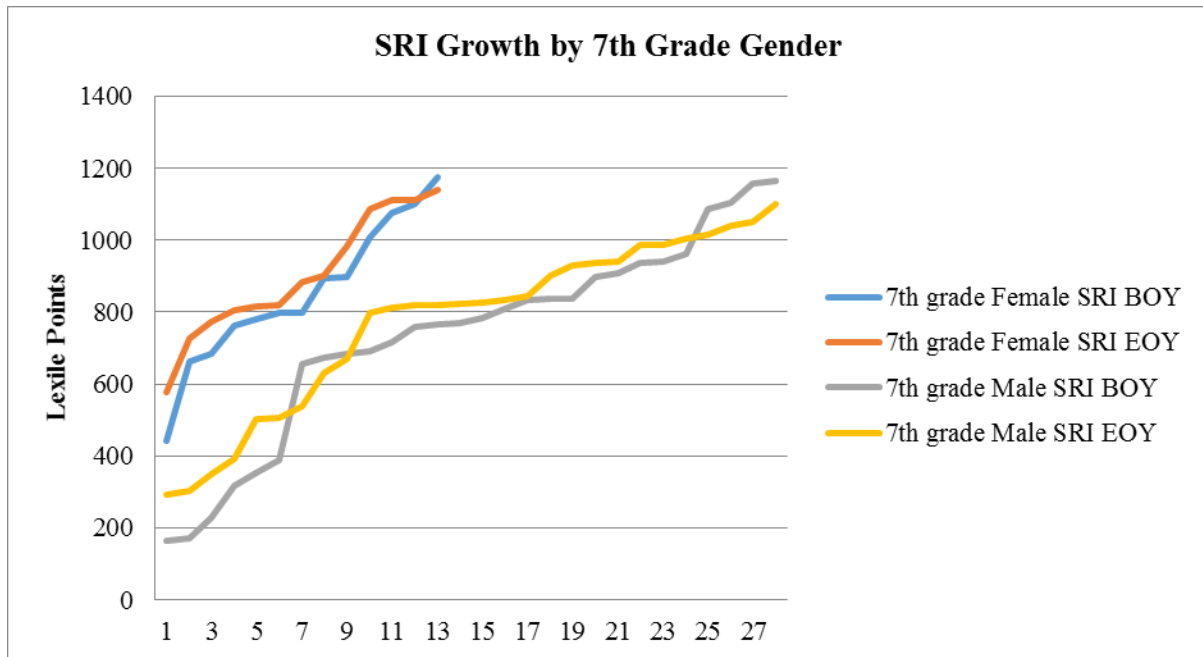
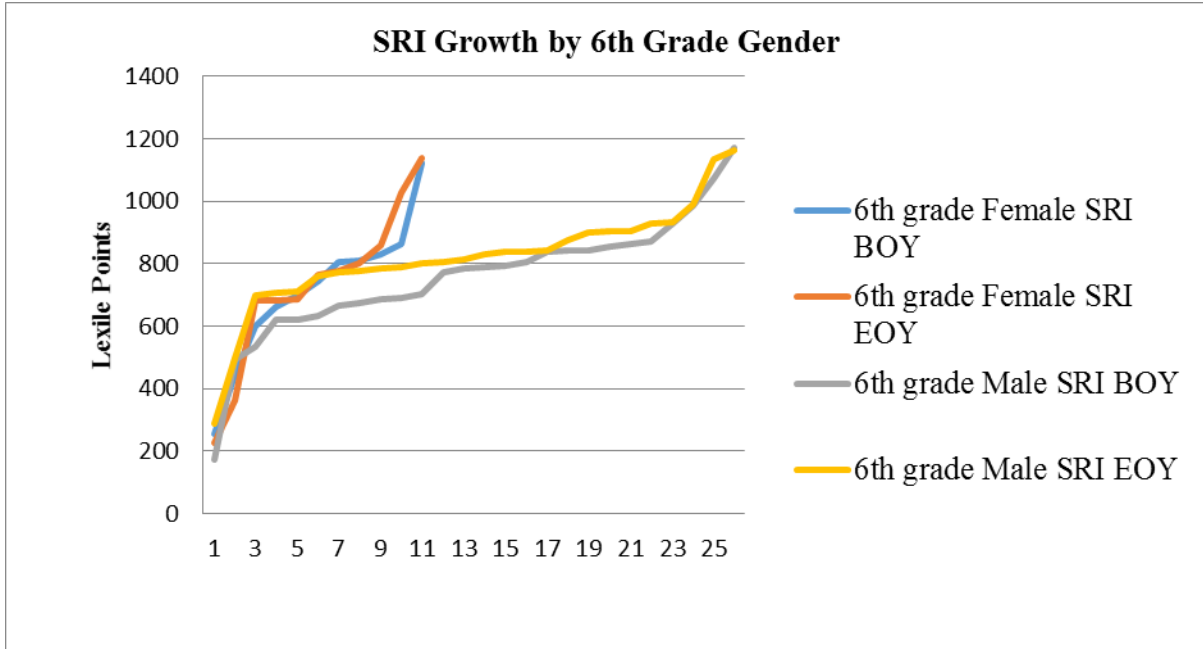
APPENDIX F: CORRELATIONS OF GUIDED READING AND OTHER MEASURES

Reading Recovery	Fountas & Pinnell	Dev. Reading Assess. (DRA)	Lexile	Reading Plus® Guided Reading
1	A	A-1	*	*
2	B	2	*	*
3	C	2	*	*
4	C	3-4	*	*
5-6	D	5-6	*	*
7-8	E	7-8	*	PreA
9-10	F	9-10	*	PreA
11-12	G	11-12	200-299	A
13-14	H	13-14	200-299	A
15-17	I	16	200-299	A
18	J	18	300-399	A
19	J	20	300-399	A
20	K	24	300-399	A
24-28	L-M	28	400-499	A
30	N	30	500-599	B
30	N	34	500-599	B
34-38	O	38	600-699	C
34-38	P	38	600-699	C
40	Q	40	700-799	D
40	R	40	700-799	D
44	S,T	*	800-899	E
*	*	*	900-999	Fr
*	*	*	1000-1100	G
			1101-1200	H
			1200-1300	I
			Above 1300	J

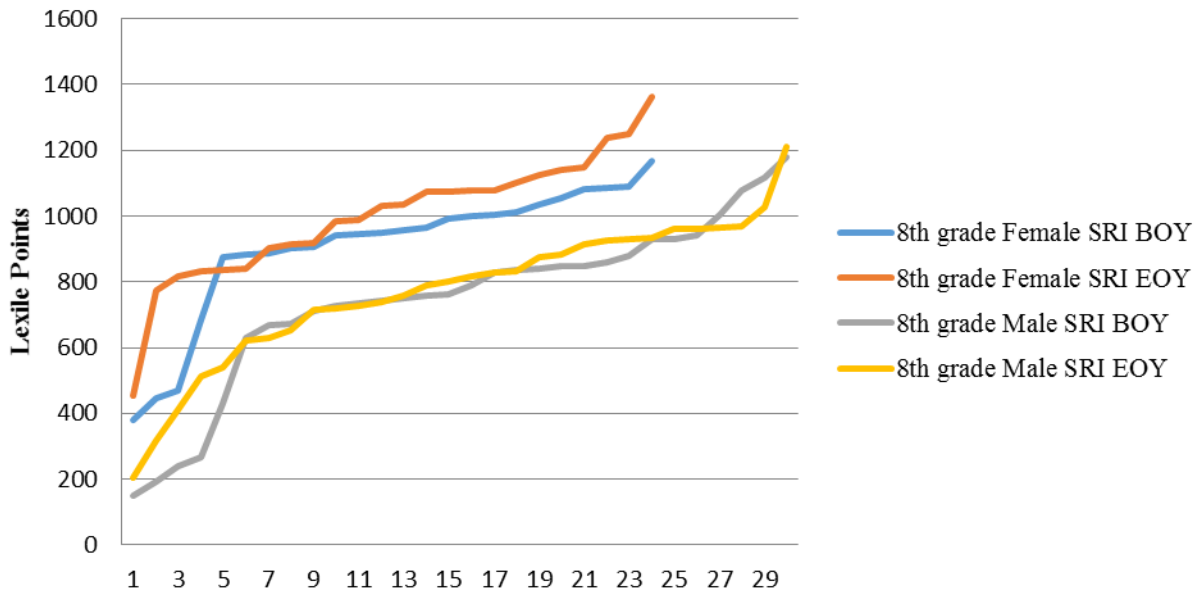
APPENDIX G: PERCENT OF LEXILE GROWTH BY GRADE LEVELS, 2012–2013



**APPENDIX H: PERCENT OF LEXILE GROWTH BY GRADE LEVELS
AND GENDER, 2012–2013**



SRI Growth by 8th Grade Gender



APPENDIX I: INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

10/30/2014

epirate.ecu.edu/app/Doc/0/H7014IL986FKV6USVH6MG77499/fromString.html



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: [Robin Calcutt](#)
CC:
[Jim McDowelle](#)
Date: 6/3/2014
Re: [UMCIRB 14-000486](#)
Program Evaluation Of Reading Plus: Study Of The Impact Of Reading Achievement For Middle School Students In Moore County Schools

I am pleased to inform you that your research submission has been certified as exempt on 6/3/2014 . 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