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The Effectiveness of Additional Guided Reading Instruction on Fourth Grade Reading Achievement in a NJ Urban School District Measured by Renaissance Star Reading and the PARCC

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THE EFFECTIVENESS OF ADDITIONAL GUIDED READING INSTRUCTION ON
FOURTH GRADE READING ACHIEVEMENT IN A NJ URBAN SCHOOL DISTRICT
MEASURED BY RENAISSANCE STAR READING AND THE PARCC

Wanda Kopic

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Submitted in partial fulfillment of the
requirements for the degree of
Doctor of Education

Seton Hall University

2018

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SETON HALL UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN SERVICES
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Wanda Kopic, has successfully defended and made the required modifications to the text of the doctoral dissertation for the Ed.D. during this Spring Semester 2018.

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Abstract

This study examined if additional Guided Reading instruction increased the oral reading fluency and comprehension of fourth-grade students as measured by the Renaissance Star Reading and PARCC state assessment in a low-socioeconomic school district located in northern New Jersey. Propensity score matching was utilized to select the sample to provide a balanced sampling technique. The final sample was comprised of 12 participating schools which consisted of 374 fourth-grade students during the 2016-2017 school year. Three out of the 12 schools provided additional Guided Reading instruction in addition to the mandatory Guided Reading instruction during the literacy block. The variables that were included in the study were gender, ethnicity, students with disabilities, English Language Learners, past reading performance on the Renaissance Star Reading, and PARCC state assessment. Analyses were conducted using a simultaneous multiple regression model. Results of this study indicated that additional Guided Reading instruction had a statistically significant negative influence on the performance of the PARCC 2017 English Language Arts/Literacy state assessment. Overall, additional Guided Reading instruction did not have a statistically significant influence on oral reading fluency and comprehension as measured by the Renaissance Star Reading assessment. Further research is needed in the area of additional Guided Reading instruction to determine why it had a negative influence on the reading achievement of fourth-grade students.

Acknowledgments and Dedication

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CHAPTER I INTRODUCTION

Background of the Study

Educators are concerned about the reading achievement gap, disputing reading instruction. Allington (2002) stated, “You can’t learn much from books you can’t read” (as cited in Calkins, Ehrenworth, & Lehman, 2012, p. 18). At an early stage in education, children are required to learn the necessary foundational literacy skills to become proficient readers. Fountas & Pinnell (2001) specify, “The first years of school establish the essential foundation of literacy that enables all future literacy,” (Guided Reading Toolkit, 2014, p. 10). Learning to read at an early stage in education is critical for academic achievement.

The National Assessment of Educational Progress (NAEP, 2015) indicated inadequate performance in reading nationwide. The NAEP reading assessment measures the comprehension and reading skills of students in Grades 4, 8, and 12. Since 1992, the reported average reading score for fourth grade, 217 points, has remained stagnant. In 2013, the nationwide average reading score for fourth grade was 222 points, and in 2015 the average reading score was 223 points. The reported average scores were not statistically significant. Specifically, in the state of New Jersey, the average reading score for fourth grade was not statistically significant. The fourth-grade average reading score of 229 points remained exactly the same from 2013 to 2015 (National Center for Education Statistics).

Papalewis (2004) noted, “Struggling readers are often products of their environment” (as cited in Bradley, 2016, p. 108). Reading proficiency is a widespread failure in inner-city school districts. Research by Teale, Paciga, and Hoffman (2007) revealed children from low-income homes display significantly lower reading and writing abilities than children from higher income homes (p. 344). Poverty has a major effect on a child’s development and academic performance.

Hock et al. (2009) argued students who are performing poorly on reading assessments are exhibiting fluency and comprehension deficiencies (p. 23). According to Huang, Moon, and Boren (2014), an often-cited phenomenon in reading research is referred to as the Matthew effect, where good readers get increasingly better over time compared to relatively lower-ability readers (p. 95). Aarnoutse and Leeuwe (2000) stated the Matthew effect was first introduced in the educational context by Walberg and Tsai (1983) and implied that students who begin on a higher level of skills and understanding are able to learn more quickly than their peers who begin at a lower level of skills, causing the achievement gap to widen. The difference in learning pace causes the gap between the two groups, resembling a fan-spread effect (as cited in Huang, Moon, & Boren, 2014, pp. 96-97). The presence of the Matthew effect in reading explains the widening achievement gap over time as students with initially higher levels of performance improve at a faster rate than their initially lower-performing peers (Huang, Moon, & Boren, 2014, p. 95). Similarly, Stanovich (1986) referred to the Matthew effect; the gap between good and poor readers will continue to widen. In other words, good readers get better, while poor readers become relatively worse. He explained that if students do not learn how to read on grade level prior to being promoted to the third grade, they will continue to struggle with reading (as cited in Kempe et al., 2011, p. 182). The federal and state initiatives were developed to establish proficient and competent readers, ensuring students develop grade-specific standards, fluency, and comprehension (NJDOE, 2016).

Reading is a pivotal skill to master. Betts (1946) remarked, “Reading experts have long claimed students could only make reading gains if they worked in texts at their ‘instructional levels’” (as cited in Shanahan, 2014, p. 11). Children can be exposed to grade level standards; but if they are not cognitively ready to retain the information, success will be limited. Tienken

and Orlich (2013) state that there is no satisfaction in making nine or ten-year-old children work harder if their cognitive development has not provided them with the needed cerebral connections. This notion is supported by the Vygotsky Theory (1978), signifying a child will learn only if they are instructed on their appropriate level, referred to as the zone of proximal development (Tienken & Orlich, 2013, p. 58). If teachers are expected to teach a child how to read, then students must be taught on their instructional level. Providing students with texts that are readable without frustration will lead to mastery of reading skills.

Fountas and Pinnell (2017) indicated the core of an effective literacy program is Guided Reading. Guided Reading originated from Marie Clay's success with low-achieving readers through the valuable instruction of Reading Recovery (Deford, Lyons, & Pinnell, 1991, p. 218). Both programs have been used in primary grades. However, with reading deficiencies continuously growing throughout the nation, Guided Reading has been adapted for the intermediate grades as well. Fountas and Pinnell (2017) cited Holdaway, "Guided reading is a form of small group instruction in which we introduce children to the techniques of reading new or unseen material for personal satisfaction and understanding" (p. 9). Students are being taught how to read on their instructional level within a homogenous small group. Teachers are observant of a reader's behaviors and techniques in order to guide their planning for instruction. Clay (1998) indicated, "Just as a listener tunes into a speaker, so a teacher must observe, listen to, and tune in to a learner" (as cited in Fountas & Pinnell, 2017, p. 10). Guided Reading is not a "one size fits all" approach but rather a customized program that will enhance struggling readers' opportunity to read on grade level.

Statement of the Problem

According to NAEP (2015), intermediate students (fourth grade) inadequately read on grade level. Nationwide, the average reading score for fourth grade is 36% at or above a proficient level (National Center for Education Statistics). Similarly, the Partnership for Assessment of Readiness for College and Careers (PARCC) for the state of New Jersey reported only 54% of fourth-grade students met/exceeded the reading expectations for the 2015-2016 academic school year (NJDOE, 2016). As the Matthew Effect projects, the reading achievement gap continues to be an ever-growing problem.

A low-performing school district located in northern New Jersey labeled as a District Factor Group A school system incorporated Guided Reading instruction districtwide as part of the mandated literacy block to promote the growth of reading achievement. The study sought to investigate whether additional Guided Reading instruction during an assigned intervention period would increase the oral reading fluency and comprehension of fourth-grade students in comparison to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment. Guided Reading makes it possible to teach at the cutting edge of a student's understanding (Fountas & Pinnell, 2001, p. 192). However, reliable and valid research must be conducted on the implementation of additional Guided Reading instruction to evaluate the effectiveness of oral reading fluency and comprehension within a low performing school district. Renaissance Star Reading is a district-wide assessment tool that was used as the instrument for this study.

Purpose of the Study

The purpose of the quantitative study was to determine if additional Guided Reading instruction would increase the oral reading fluency and comprehension of fourth-grade students

as measured by the Renaissance Star Reading formative assessment. Guided Reading is a district-wide approach to improving reading scores. Guided Reading instruction was implemented at the commencement of the 2013-2014 school year. According to Renaissance Star Reading (2016), only 40.3% of students read at/above their appropriate grade level. During the 2014-2015 academic school year, the Star Reading scores disclosed only 38.2% of students read at/above grade level, and during the 2013-2014 school year only 37.3% of students read at/above grade level. Since the implementation of Guided Reading instruction embedded within the mandated literacy block, the districtwide reading achievement scores slightly increased (Renaissance Learning, 2016). Furthermore, the district's Spring 2016 PARCC scores for English Language Arts/Literacy disclosed only 26.8% of students met/exceeded the reading expectations (NJDOE, 2016).

The study was conducted in an inner-city school district referred to as District Factor Group A. The District Factor Group (DFG) is labeled from A (lowest) to J (highest) to indicate the socioeconomic status of the residents living within the school district. For this particular study, 12 elementary schools were the participants. Three of the identified elementary schools provided additional Guided Reading instruction separate from the mandatory literacy block. The other nine participating schools followed the regular literacy block mandated by the school district and did not provide additional Guided Reading instruction. Guided Reading is part of the literacy block; however, selected schools are using Guided Reading as a tool to intervene with students who are low-achieving readers. The Star Reading assessment categorizes students who are at/above, on-watch, intervention, or urgent intervention based on students' individual reading performance. The formative assessment is given to students periodically throughout the academic school year to examine if reading gains have occurred.

Research Questions

This study proposed to answer the following questions:

Overarching Research Question

Do fourth-grade students who received additional Guided Reading instruction show significant difference in reading achievement on the Renaissance Star Reading assessment and PARCC English Language Arts/Literacy state assessment when compared to fourth-grade students who did not receive additional Guided Reading instruction?

Subsidiary Questions

1. Do fourth-grade students who received additional Guided Reading instruction show significant difference in oral reading fluency when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment?
2. Do fourth-grade students who received additional Guided Reading instruction show significant difference in comprehension (measured by scaled score) when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment?
3. Do fourth-grade students who received additional Guided Reading instruction show significant difference in reading achievement on the PARCC English Language Arts/Literacy state assessment when compared to fourth-grade students who did not receive additional Guided Reading instruction?

Null Hypotheses

Null Hypothesis 1: There is no statistically significant difference in oral reading fluency scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment.

Null Hypothesis 2: There is no statistically significant difference in comprehension scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment.

Null Hypothesis 3: There is no statistically significant difference in reading scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the English Language Arts/Literacy PARCC state assessment.

Research Design

The quasi-experimental (comparative group) study was designed to determine if fourth-grade students' oral reading fluency and reading comprehension increased due to the implementation of additional Guided Reading instruction as measured by the Renaissance Star Reading assessment.

The researcher was unable to develop an experimental design with randomized subjects for the treatment and control group; therefore, the study was conducted using a non-experimental design. Propensity score matching was utilized to ensure an unbiased selection and to implement a matched-pairs design. Stone and Tang (2013) stated, "Propensity score applications are often used to evaluate educational program impact" (p. 1). Furthermore, Rosenbaum and Rubin (1983)

indicated, “If treatment and control groups have the same distribution of propensity scores, they have the same distribution for all observed covariates, just like in a randomized experiment” (as cited in Stone & Tang, 2013, p. 1).

The data obtained for this study were from 12 participating schools that provided Guided Reading instruction during the 2016-2017 academic school year. Three out of the 12 schools provided students with additional Guided Reading instruction in addition to the mandatory literacy block to improve oral reading fluency and comprehension. Renaissance Star Reading was utilized as a formative assessment to examine a student’s reading achievement. Winstone and Millward (2012) assert, “The use of formative assessments is positively perceived to assist students in learning strategies to enhance consolidation of the material presented” (p. 39). The district assesses students three times a year to analyze reading growth. Students are assessed in the fall, winter, and spring sessions of the school year. For this particular study, the fall 2016 Star Reading scores (pretest) and the spring 2017 Star Reading scores (posttest) were used to determine if additional Guided Reading instruction impacted the oral reading fluency and the comprehension of fourth-grade students.

Independent/Predictor Variables

In this study, additional Guided Reading instruction was implemented at the fourth-grade level. Guided Reading is small group instruction provided to enable children to use and develop strategies “on the run” in order to fluently and independently read (Fountas & Pinnell, 1996, p. 2). The primary focus of the study is to determine if additional Guided Reading instruction impacted reading achievement as measured by the formative assessment, Renaissance Star Reading.

Dependent/Outcome Variables

Oral reading fluency is the measure of how well a student reads text quickly, accurately, and with proper expression (Pikulski & Chard, 2005). Oral reading fluency was the dependent variable estimating the words per minute read correctly on grade level as measured by the Renaissance Star Reading assessment. According to Harris and Sipay (1990) fourth-grade students' general range of adequate reading rates should be 140-170 words per minute (as cited in Allington, 2001, p. 72). Similarly, Fountas and Pinnell (2017) indicated students in fourth grade should read on an instructional level of Q, R, and S with a 120-160 oral reading fluency (p. 316). Renaissance Star Reading (2016) indicated fourth-grade students' oral reading fluency should range from 110-190 words per minute.

Comprehension is the measure of how well a student simultaneously extracts and constructs meaning through interaction and involvement with written language (Fisher, 2008). Clay (1998) explained, "Comprehending is not just a literacy task . . . it is the expectation that learners will understand what they are reading. Comprehension lies in what learners say, what is read to them, and what they read and write; learners should know that all literacy acts involve comprehension" (as cited in Williams, 2013, p. 18). Comprehension was the dependent variable displayed as a scaled score to indicate the number of correct responses as measured by the Renaissance Star Reading assessment. According to Allington (2001), faster rates of reading have been correlated to higher comprehension (as cited in Fountas & Pinnell, 2017, p. 436).

Significance of the Study

Researchers, practitioners, and educators have debated numerous ways to instruct students to work toward closing the reading achievement gap. The significance of additional

Guided Reading instruction and its impact will benefit literacy research and help practitioners to work toward closing the reading achievement gap known as the Matthew Effect.

Contribution to Literacy Research

The research study will provide educators with data to identify the effectiveness of additional Guided Reading instruction. A great deal of research has been done on the importance of a child learning how to read prior to entering intermediate grades. This study will contribute to the inquiry.

Contribution to Practice

Classroom teachers are infusing Guided Reading instruction to teach students reading skills and strategies in a small group setting. Guided Reading is an instructional approach to teaching reading. Guided Reading allows for instruction to be scaffolded and for students to demonstrate understanding of reading strategies and concepts on their instructional level (Fountas & Pinnell, 2009, pp. 12-13).

This study will extend the literature showing the impact additional Guided Reading instruction has on the growth of reading achievement. Findings from this study will provide practitioners with evidence that will be informative about the association between the impact of additional Guided Reading instruction and a student's reading performance as measured by Renaissance Star Reading assessment.

Based on the outcome of the quantitative study, practitioners may decide to alter the literacy block or implement additional time for Guided Reading instruction. School districts might decide to provide additional professional development for teachers to emphasize the importance of Guided Reading instruction. In addition, the district can decide to provide professional development to ensure that Guided Reading instruction is cohesive and unified

across all schools within the district. The result of the study may dictate changes affecting the primary grades, the retention criteria, the literacy block, and the demand for on-grade-level reading acquisition prior to promotion to the next grade level.

Conceptual Framework

Several factors can contribute to students not developing the appropriate literacy skills to become proficient readers. Research has shown that early literacy skills contribute to the future of both a child's reading ability and academic success. Dogan (2015) noted, "Both researchers and policy makers have placed strong emphasis on understanding the trajectory of reading development and the myriad of factors that impede typical growth" (p. 198). This study, however, leads itself to the intermediate grades to determine if additional Guided Reading instruction will positively improve a fourth-grader's reading performance. Chevalier, Del-Santo, Scheiner, Skok, and Tucci (2002) reported that reading comprehension of students in Grades 3-5 improved after receiving Guided Reading instruction (p. 43). Conclusively, the hypothesis of the study is contingent on the perception that additional Guided Reading instruction influences a student's reading ability at significant shifts from primary to intermediate grade levels.

Limitations of the Study

Limitations exist in this particular study. The findings of the study are limited by the participants. Guiding Reading instruction may differ among the teachers implementing it. The implementation of Guided Reading can depend on the professional development teachers received prior to the utilization of the program. In addition, the dependent variables such as gender, ethnicity, and students with disabilities and limited English proficiency may hinder the outcome of the study. According to Fraenkel and Wallen (2003), "Individuals or groups differ from one another in unintended ways that are related to the variables to be studied" (p. 179). The

researcher had no knowledge of the Guided Reading professional development teachers received. There is likelihood that the fourth-grade students are not alike and that the implementation of Guided Reading is not unified.

The second limitation to the study is the additional reading support through the use of guided instruction which can differ among participating schools. It is possible that different causes for reading achievement produce differentiated results.

Delimitations of the Study

The researcher delimited the study to 12 participating schools. Three out of the 12 participating elementary schools provided additional Guided Reading instruction separate from the mandated literacy block. In addition, fourth-grade student academic abilities were not addressed in the study. Teacher variances in ability to conduct Guided Reading were not addressed prior to the study.

Definition of Terms

Reading Achievement Gap - Achievement gaps occur when one group of students (such as students grouped by race/ethnicity, gender) outperforms another group and the difference in average scores for the two groups is statistically significant (that is, larger than the margin of error) (NAEP, 2015).

District Factor Group (DFG) - The state of New Jersey uses a categorized system to identify the socioeconomic status of schools and school districts. The factor groups range from A, which has the lowest socioeconomic status, to J, which is considered an affluent district (NJDOE, 2015).

No Child Left Behind - The No Child Left Behind Act of 2001 is a federal law that aimed to raise the standardized assessment scores of all students in English Language Arts Literacy and Mathematics (NJDOE, 2015).

Common Core State Standards (CCSS) - The state-led effort to develop the standards was launched in 2009 by state leaders. The standards provide clear and consistent goals to help prepare students for college, career, and life. The standards clearly demonstrate what students are expected to learn at each grade level (Calkins, Ehrenworth, & Lehman, 2012, p. 1).

Partnership for Assessment of Readiness for College and Careers (PARCC) - This is an end-of-the-year summative assessment aligned to the Common Core State Standards (CCSS) to measure a student's ability to apply his/her knowledge of concepts rather than memorizing facts in Grades 3-11. In English Language Arts Literacy, students are required to closely read multiple passages and to write essay responses in literary analysis, narrative, and research tasks (NJDOE, 2015).

National Assessment of Educational Progress (NAEP) - The National Assessment of Educational Progress (NAEP) is the largest nationally representative and continuing assessment of what America's students know and can do in various subject areas (NAEP, 2015).

Guided Reading - "Guided Reading is a teaching approach designed to help individual students learn how to process a variety of increasingly challenging texts with understanding and fluency" (Fountas & Pinnell, 2017, p. 12).

Running Records - This is a standardized process for coding, scoring, and analyzing a student's precise reading behaviors (Fountas & Pinnell, 2017, p. 257).

F & P Text Gradient - This is a 26-leveled collection of books in which processing demands have been categorized along a continuum from easiest to hardest. The books are organized along a gradient of difficulty from A-Z (Fountas & Pinnell, 2017, p. 294).

Formative Assessments - Shute (2008) described, "Formative assessments are a range of formal and informal diagnostic procedures conducted by teachers during the learning process in order to

modify teaching and learning activities to improve student achievement” (as cited in Winstone & Millward, 2012, p. 32).

Zone of Proximal Development- Vygotsky (1978) defines the zone of proximal development as the “distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers.” The ZPD defines those functions that have not yet been learned but are in the process of being learned (as cited in Lyons, 2003, p. 50).

Struggling Readers - Papalewis (2004) defines struggling readers as students who have difficulty comprehending texts or lack the ability to synthesize what the text consists of (as cited in Bradley, 2016, p. 108).

Comprehension - The transaction between a reader and the text. Comprehension is an active, meaning-making process (Fountas & Pinnell, 2017, pp. 471-473).

Fluency - Fountas and Pinnell (2017) define fluency as reading that moves along at a pace that resembles language (rather than slow, isolated word calling); the reader can constantly check whether the language processed is making sense (p. 428).

Oral Reading Fluency - Words per minute correctly read on grade-level appropriate text (Renaissance Learning, 2014).

Scaled Score - The difficulty of questions and the number of correct responses (Renaissance Learning, 2014).

Renaissance STAR Reading Assessment - STAR Reading assessment offers skills-based testing and reports that provide data for screening, instructional planning, progress monitoring, and standards benchmarks (Renaissance Learning, 2014).

Organization of the Study

The literature review relevant to this study is discussed in Chapter II. The research-based information provides a detailed account of Guided Reading and its impact on reading achievement measured by formative assessments. In Chapter III, the research methodology and procedures used to gather and analyze the data conducted for the study are discussed and clearly defined. Chapter IV presents the statistical findings of the study and the analysis of the data. Chapter V discusses the conclusions based on the gathered data and provides recommendations for future research, practice, and policy.

CHAPTER II

LITERATURE REVIEW

Introduction

The purpose of this literature review was to identify and evaluate empirical studies and landmark works that attempt to explain the significance, if any, of the relationship between the effect of additional Guided Reading instruction and a student's reading achievement as measured by the Renaissance Star Reading formative assessment. The significance of the study is to provide administrators, teachers, and researchers with evidence that might be informative about the association between the effect of additional Guided Reading instruction and a student's reading performance.

Literature Search Procedures

The framework and presentation of the chapter's scholarly literature review was guided by Boote and Beile's (2005) stated, "A thorough, sophisticated literature review is the foundation and inspiration for substantial, useful research" (p. 3). The literature was accessed through EBSCOhost, ProQuest, Academic Search Premier, Google Scholar, and ERIC, as well as online print, educational books, and print editions of peer-reviewed educational journals. Sections of this literature review may include, but are not limited to, quasi-experimental, qualitative, quantitative, hierarchical linear, meta-analytical, experimental, and nonexperimental group studies.

Key Terms

These key terms were used to search databases: Guided Reading, Renaissance Star Reading Assessment, formative assessments, reading achievement, No Child Left Behind (NCLB), zone of proximal development, struggling readers, the Matthew effect, comprehension, oral reading fluency, and running records

Bridging the Reading Achievement Gap

According to Dogan (2015), “Reading is arguably the single most important skill acquired during the early years of schooling” (p. 198). School systems are committed to educating students in preparation for the future. Children at an early stage in education are required to learn the necessary foundational skills in order to advance to becoming a proficient reader. Fountas and Pinnell (2001) specify, “The first years of school establish the essential foundation of literacy that enables all future literacy (Guided Reading Toolkit, 2014, p. 10), as learning how to read is critical to a child’s academic achievement.

Educational leaders are challenged with the reading achievement gap and the effect that reading deficiencies have on a student’s academic performance. The National Center for Education Statistics (NCES, 2010) conducted a study to determine if the mastery of reading skills in the primary grades had an impact on the performance of students assessed in Grades 4, 8, and 12. The focus of the study was to examine the relationship between reading skills in earlier grades and achieving proficiency on the NAEP reading assessment. The findings indicated students who acquired reading skills in earlier grades were more likely to later reach a proficient level on the NAEP’s reading assessment. However, those students who do not have reading skills are more likely to perform on a basic level of the NAEP reading assessment (Dogan, 2015, pp. 197-199). Similarly, the National Assessment of Educational Progress (NAEP) indicated inadequate performance in reading nationwide. The NAEP reading assessment measures the comprehension and reading skills of students in Grades 4, 8, and 12. Since 1992, the reported average reading score for fourth grade, 217 points, has remained stagnant. In 2013, the nationwide average reading score for fourth grade was 222 points, and in 2015 the average reading score was 223 points. The reported average scores were not statistically significant. Specifically, in the state of New Jersey, the average reading score for fourth grade was not

statistically significant. The fourth-grade average reading score of 229 points remained exactly the same from 2013 to 2015 (National Center for Education Statistics).

In contrast, the Progress in International Reading Literacy Study (PIRLS) done in 2011 stated that United States fourth-grade students are performing fairly well on literacy assessments when compared internationally. However, the 2015 NAEP results for fourth grade show only 36% scored at or above proficient. According to Snow and Matthews (2016), the NAEP (2015) results in comparison to the PIRLS (2011) results paint a less rosy picture for educators and policy makers in regard to closing the reading achievement gap (pp. 59-60).

Transforming Reading Pedagogy

The magnitude of the change represented by the Common Core State Standards and the new assessments should not be underestimated. Practitioners can change the trajectory of school improvement by ending the dispute in education about the complexity of becoming a proficient or on-grade-level reader (Doorey, 2014). Wall (2014) mentioned, “Current pressures on teachers to improve student achievement continue to rise, and teachers are searching for ways to support students as they learn to become proficient readers” (p. 140). The evolution of mandated reading methods and the standards under federal law have shifted, causing educators to be held accountable for their students’ academic performance. Since the No Child Left Behind Act (NCLB) of 2001, teachers are required to instruct on grade level and to provide lessons that are differentiated to meet the needs of all learners. On January 8, 2002, President George W. Bush signed into law the No Child Left Behind Act of 2001, which was derived from the reform of the Elementary and Secondary Education Act (ESEA) enacted in 1965. The NCLB Act required all states to establish a student adequate yearly progress target (AYP) toward 100% student proficiency in both Math and English Language Arts Literacy. Tienken and Orlich (2013) argued

that NCLB had an empirically unachievable goal for students to reach proficiency on standardized assessments by the 2014 academic school year (p. 55). The state mandated that every child in every state will meet the appropriate standards to be proficient.

Standards-based reform has taken center stage in education and dictates the instruction in classrooms. Since 2010, 43 states have adopted the Common Core State Standards (CCSS) as the basis of reading instruction in their schools, and 33 of these states are using new innovative tests to evaluate the accomplishment of the CCSS standards (Shanahan, 2014, p. 184). Teachers are authorized to teach the standards specific to the grade level, and students are required to master these skills by the end of the grade, showing their competence on a high-stakes assessment. According to Tienken and Orlich (2013), “Prior to being promoted to the next grade, students are required to master each standard” (p. 56). With the implementation of the CCSS, the goal was to confirm teachers are instructing, using a spiral curriculum across the K-12 spectrum, and will share the responsibility of a student’s progress along the trajectories of skill development (Calkins, Ehrenworth, & Lehman, 2012, p. 12). According to Murnane (2007), “No Child Left Behind is the latest federal effort to reach the goal of equal educational opportunity to improve outcomes for children who have historically been poorly served by American schools” (p. 178). Recently, the CCSS have been revised and adopted in May of 2016 to ensure a “thorough and efficient” education to prepare students for college and careers by emphasizing high-level skills needed to become active citizens of society (NJDOE, 2016). According to Calkins, Ehrenworth, and Lehman (2012), “The standards define what all students are expected to know and be able to do, not how teachers should teach” (p. 5). Learning is a process that strengthens throughout time with continued practice to internalize skills and concepts.

The Reading Achievement Gap

Belfiore and Lee (2005) stated, “If we are to close the academic gap between underachievement of students enrolled in poor urban schools and the potential of those students, we need to provide the opportunity for those students to experience academic success early and often” (p. 857). As educators continue to work expeditiously toward closing the reading achievement gap, the results continue to be devastating for children, especially children who are raised in low-socioeconomic homes. Papalewis (2004) noted, “Struggling readers are often products of their environment” (as cited in Bradley, 2016, p. 108). Crowley (2003) reported, “The nature and quality of education parents provide is influenced by the housing in which the family resides” (p. 23). The economic status of a household has a major influence on a student’s academic performance. Murnane (2007) indicated, “More than 60% of employers rate high school graduates’ skills in writing and reading as only “fair” or “poor” (p. 168). Even so, the National Center for Children in Poverty (2009) remarked, “The percent of children growing up poor in this country continues to rise, from 16% in 2000 up to 21% in 2009” (as cited in Calkins, Ehrenworth, & Lehman, 2013, p. 3). Poverty can have a major effect on a child’s development and academic performance.

With the emphasis on students academically performing on grade level mandated by the NCLB Act of 2001, the Reading First initiative was enforced to increase the reading ability of students in low-achieving school systems. The Reading First initiative was scientifically proven to work with struggling readers, mainly focusing on explicit phonics instruction. According to Papalewis (2004), struggling readers tend to struggle with comprehension of texts or the ability to summarize what the text consisted of (as cited in Bradley, 2016, p. 108). It is the belief of the Reading First initiative that gains in reading scores will increase particularly on the elementary

school level. Nevertheless, the National Reading Panel (NRP, 2000) conducted a study with low achieving Grade 2 students and provided explicit phonics instruction as mandated by the Reading First initiative to improve reading ability. Although the results indicated students were able to decode unfamiliar words, the students' performance in regard to reading comprehension and fluency did not improve (Cummins, 2007, p. 566).

In the same way, Santa and Høien (1999) conducted an experimental study with two controlled groups in first grade with students categorized as struggling readers. The group that was instructed solely with explicit phonics did not experience a major impact in reading improvement. However, the group that received a balanced literacy approach to learning how to read incorporating phonics and Guided Reading instruction produced much better results, improving reading skills (as cited in Cummins, 2007, p. 568). Cummins (2007) would argue that a balanced intervention for struggling readers would be a better approach to teaching reading than a linear intervention consisting simply of explicit phonics instruction (p. 568). Similarly, Reyes (2001) refutes the proposition of the Reading First initiative that intensive, sequential phonics instruction is required for low-income students to attain strong literacy skills in language. Reyes argued that reading instruction is the hallmark of a balanced literacy approach with both the emphasis on phonics and Guided Reading instruction combined (as cited in Cummins, 2007, p. 569).

Researchers have conducted many studies to determine the best approach to teaching children how to read. Haberman (1991) claimed, "Educators must critically examine the gap between the current level of underachievement and potential levels of excellence within the underachieving group." He referred to this as "pedagogy of poverty" (as cited in Belfiore & Lee, 2005, p. 861). Similarly, Clay (2001) stated, "Teachers must be able to meet individual learning

needs of all low-achieving children, no matter what their cultural background or literacy history” (as cited in Lyons, p.178). Children learn to read and write in many different ways and have different cognitive demands as they become literate. In accordance with the NAEP (2015) report, the reading achievement gap has yet to be closed, and nationwide students are reading below grade level. There are many factors that can contribute to the lack of achievement in reading: socioeconomic status, gender, ethnicity, limited English proficiency, and special education needs can influence reading achievement (Titus, 2007).

Reading is a pivotal skill to master. Bush (2001) indicated, “Almost two-thirds of African American children in fourth grade cannot read at basic grade level. The gap is wide and troubling, and it’s not getting better” (par.1). Even so, to address reading difficulties, the National Research Council (1998) stated, “Children from poor families, children of African American and Hispanic descent, and children attending urban schools are at a much greater risk of poor reading outcomes” (p. 27). Murnane (2007) mentioned only three-quarters of White youth earn a high school diploma. However, for the Black and Hispanic youth who are likely to be living in poverty—it is roughly half (p. 162). On the other hand, Cunningham (2006) remarked, “Reap what you sow” (p. 384). She emphasized that change can only occur if a school sticks to the formula long enough to see positive results. Cunningham (2006) conducted a qualitative study observing six low-performing schools in an urban setting with 68%-98% of the students receiving free and reduced lunch. The study strictly utilized explicit Guided Reading instruction to increase reading scores on a high-stakes assessment. As a result, the 2005 literacy assessment showed 68%-87% of third and fourth graders met or exceeded the state’s standard for proficiency (p. 382). Yet research shows low socioeconomic school districts have had an enormous rise of struggling readers. In fact, students who receive free or reduced lunch, as an

indicator of a low family income, had an average score of 213 points compared to students who are not eligible, with a score of 240 points (NAEP, 2015). It is important to improve the education of children living in poverty.

Reading proficiency is an epidemic failure in inner-city school districts. According to Huang, Moon, and Boren (2014), an often-cited phenomenon in reading research is referred to as the Matthew effect, where good readers get increasingly better over time compared to relatively lower-ability readers (p. 95). Aarnoutse and Leeuwe (2000) cited Walberg and Tsai (1983), who implied that students who begin on a higher level of skills and understanding are able to learn more quickly than their peers who begin at a lower level of skills, causing the achievement gap to widen. The difference in learning pace causes the gap between the two groups that resembles a fan-spread effect (as cited in Huang, Moon, & Boren, 2014, pp. 96-97). The presence of the Matthew effect in reading explains the widening achievement gap over time as students with initially higher levels of performance improve at a faster rate than their initially lower-performing peers (Huang, Moon, & Boren, 2014, p. 95). Similarly, Stanovich (1986) referred to the Matthew effect; the gap between good and poor readers will continue to widen. In other words, good readers get better, while poor readers become relatively worse. He explained, if students do not learn how to read on grade level prior to being promoted to the third grade, students will continue to struggle with reading (as cited in Kempe et al., 2011, p. 182). Children who experience difficulty in early grades fall further and further behind their peers. Juel (1988) stated, "Research shows that children who read below grade level at the end of Grade 1 are likely to continue to read below grade level" (as cited in Fountas & Pinnell, 2009, p. 497). In like manner, Kempe, Gustavsson, and Samuelsson (2011) conducted a longitudinal study examining the reading difference of students who were identified as struggling readers and those who were

considered normal (on-grade-level) readers. Students were examined throughout their primary schooling from preschool to Grade 3. The findings indicated substantial differences between the two groups, fortifying the Matthew effect. The children who were identified as struggling readers continued to lag in fluency and comprehension skills in comparison to the students identified as normal readers. The reading results reported 80% of the children with reading difficulties performed below grade level when assessed. The findings coincide with the Matthew effect metaphor to describe a widening gap between good and poor readers over time (p. 189).

Similarly, Wells (1986) examined how children learn to read and followed 32 students as a group through their elementary school and learned that the lowest students remained low and the highest remained high. Wells (1986) remarked, “Children who entered school in the lowest class rankings remained in the lowest ranking throughout their elementary education” (as cited in Deford, Lyons, & Pinnell, 1991, pp. 217-218). Snow and Matthews (2016) emphasized those children who do not develop age-appropriate literacy skills by the end of third grade are at high risk of school failure (p. 58). On the contrary, Huang, Moon, and Boren (2014) conducted a longitudinal study to investigate reading achievement of students from kindergarten through second grade in a low-performing school district. Students were identified as struggling readers and received specific daily Guided Reading instruction to improve fluency and comprehension skills. The results reported a statistically significant ($b=11.0$, $p<.001$) gain in reading performance from kindergarten through second grade (p. 106).

Children living in poverty display significantly lower reading and writing abilities than children from higher-income homes. Poverty is not the only factor that governs if a child is at risk for reading difficulties, but it has the strongest correlation with reading achievement (Teale, Paciga, & Hoffman, 2007, p. 344). According to Hock et al. (2009), students who are poorly

performing on reading assessments are exhibiting fluency and comprehension deficiencies (p. 23). Allington (2001) mentioned the slower rate of reading limits self-monitoring, and lack of fluency often reflects reading that has gone off track in terms of comprehension. Thus, even though the reader spends a longer time reading, lower comprehension is the end result (p. 71). Hernandez (2012) conveyed, “Students who do not read proficiently by third grade are four times more likely to leave school without a diploma than proficient readers” (p. 4). Hence, the “poor get poorer.” Young children who are continuously experiencing difficulty in acquiring reading skills are more likely to become struggling readers because the development rate of reading fluency and comprehension is delayed in comparison to their peers.

Theoretical Framework: Lev Vygotsky

The theoretical framework guiding this study is based on Lev Vygotsky’s social constructivist theory. Social constructivism implies that society provides children with the cultural history, language, and social context to acquire knowledge (Wang, Bruce, & Hughes, 2011). Lev Vygotsky believed children will only learn if they are instructed on their appropriate level. If the task is too easy, students will not learn more; if it is too hard, they are in such foreign territory that they cannot use their knowledge (Fountas & Pinnell, 2009, p. 463). Learning occurs when children make connections between their existing and new knowledge (Vygotsky, 1978). Vygotsky’s concept of the zone of proximal development is the distance between the actual developmental level as determined by the independent problem-solving and the level of potential development as determined through scaffolding under adult guidance” (as cited in Fountas & Pinnell, 2009, p. 463). Students must be taught within their zone of proximal development to break the cycle of reading failure. Lyons (2003) explained how Vygotsky viewed learning as a continuum for students through the use of a scaffold approach to reading instruction. According

to Clay and Cazden (1990), “The nature of the scaffold provided in the instructional setting must change, continuing the support offered, always at the cutting edge of the child’s competencies, in his or her continually changing zone of proximal development” (as cited in Sylva et al., p. 374). Scaffolding provides just enough support to help students learn and behave like a successful reader. The teacher gradually releases responsibility, giving independence to the student to complete a task. Students will grow and mature as they are instructed because they are learning a concept that is close to emergence. When the child learns the concept, the guidance from the teacher will lessen or will no longer be needed. The scaffolding approach in regard to reading allows the student to become an independent reader. Vygotsky (1978) believed children grow into the intellectual life around them. They are always learning; in fact, it is impossible to prevent them from learning (as cited in Lyons, 2003, p. 143).

The Vygotskian theory of teaching students on their instructional level (zone of proximal development) is grounded in Reading Recovery and Guided Reading instruction. All instruction during Reading Recovery and Guided Reading takes place at the student’s instructional reading level. Reading Recovery and Guided Reading are both found to be extremely powerful learning tools to help improve children’s reading over a broad spectrum within a short time while teaching students within their zone of proximal development. Psychologist and educator Marie M. Clay developed Reading Recovery and described it as a “prevention strategy designed to reduce dramatically the number of children with reading and writing difficulties in an education system” (as cited in Deford, Lyons, & Pinnell, 1991, p. 2). The reading instruction is tailored to suit each child’s base of knowledge and strengths, educating them on their instructional level. Clay is known for her in-depth research done on helping to educate teachers how to teach reading using the Reading Recovery program, which was first developed in New Zealand, later

adapted in the United States, and first introduced in Columbus, Ohio, in 1984-85 (Deford, Lyons, & Pinnell, 1991). The overall goal of Reading Recovery is for students to become independent and to “learn how to learn” (Deford, Lyons, & Pinnell, 1991, p. 218).

Cohen et al. (1989) conducted a study in six schools with a controlled Reading Recovery group for struggling readers and a non-controlled group for students who were reading on grade level. The reading results were dramatic. The findings indicated the controlled group receiving Reading Recovery instruction showed statistically significant reading improvements, $p < .014$ (as cited in Fullerton & Forbes, 2014, p. 45). Furthermore, Chapman, Tunmer, and Prochnow (2000) conducted a longitudinal study examining students’ reading performance and their self-concept after receiving Reading Recovery instruction. As a result of the study, students who received additional reading support increased their reading ability and in turn increased their level of persistence, which caused better reading abilities (as cited in Fullerton & Forbes, 2014, p. 44). According to Allington (1994), “No other remedial program has ever come close to achieving the results demonstrated by Reading Recovery” (as cited in Lyons, 2003, p. 2). Deford, Lyons, and Pinnell (1991) cited Dunkeld, “Reading Recovery is carefully implemented, it has the potential, not to eliminate, but to reduce reading failure dramatically by attacking the problem very intensively when children are first learning to read” (p. 37). Guided Reading emulated Reading Recovery pedagogical practices to assist struggling readers to learn effective reading strategies that enable them to read at or above their instructional level. According to Deford, Lyons, and Pinnell (1991), “Reading Recovery is not a quick fix or easy answer. It requires hard work, a long-term commitment, and a willingness to solve problems” (p. 26). The positive influence of Reading Recovery allowed for the implementation of Guided Reading in classrooms nationwide.

Guided Reading

With the roots still remaining in New Zealand, a reading program called Guided Reading was developed by Irene Fountas and Gay Su Pinnell. According to Tyner (2004), Guided Reading is an instructional approach which allows the teacher to use leveled texts to instruct students on their reading level in a small group setting. Students who are part of the reading group tend to share a similar reading behavior, which allows the teacher to instruct utilizing strategies to assist students to become effective readers (as cited in Guastello & Lenz, 2005, p. 144). Similarly, Fountas and Pinnell (1996) stated, “Guided Reading is a context in which a teacher supports each reader’s development of effective strategies for processing novel texts at increasingly challenging levels of difficulty” (p. 2). Harris and Hodges (1995) referred to Guided Reading instruction in which the teacher provides the structure and purpose for reading and for responding to the material read (as cited in Ford & Opitz, 2011, p. 226). Guided Reading allows the student to practice reading with fluency and comprehension within their zone of proximal development. Students are grouped homogenously in a small group setting, and exposed to leveled texts that increase the ability to read with speed, accuracy, and expression. Guided Reading instruction is grounded in the Vygotsky theory to teach students within their zone of proximal development (Fountas & Pinnell, 1996). Similarly, Anotonacci (2000) stated, “In order to reach students, teachers have to scaffold instruction and teach on a child’s instructional level (p. 1). The scaffold approach allows the teacher to help students transition from assisted to independent completion of instructional tasks.

Furthermore, schools are extremely diverse in a variety of areas that can have a major impact on reading achievement. Reading can have several meanings and can be defined according to the exposure to instruction students have received (Freppon, 1991). Reading is

multifaceted, leaving no room for a “cookie cutter” approach to teaching reading due to a diverse population of students. Clay (1991) remarked, “Learning to read and write in school will be easier for the child with rich literacy experiences than it is for the child with almost no literacy experience” (as cited in Doyle, 2014, p. 41). Children who are exposed to print at an early age are more likely to develop literacy skills faster than those who have not been exposed until they enter school. According to Syla et al. (1997), “Research shows socially disadvantaged children benefit particularly from intense reading instruction than those who are from affluent backgrounds” (p. 381). Gerstl-Pepin and Woodside-Jiron (2005) examined a low-socioeconomic school district with a high percentage of students receiving free and reduced lunch striving to improve reading scores with the implementation of Guided Reading instruction. In 2000, the school district was identified as one of the lowest performing school districts within the state. With the implementation of Guided Reading instruction daily, by 2002, 83% of the schools’ population met or exceeded reading standards (p. 236). According to Gerstl-Pepin and Woodside-Jiron (2005), “The passion to teach reading and foster a love of learning is central to the change process at the school” (p. 236). It is pivotal for children to learn within an environment that promotes a positive attitude toward reading.

According to Avalos et al. (2007), Guided Reading instruction for students learning English as a second language has been a success in a low-socioeconomic school district. Two classes were part of the study with modified Guided Reading instruction implemented daily for 30 minutes. In one class, there were ten students who made an average gain of 1.3 grade level within four months of implementation, and the other class had 13 students who made an average 1.8 grade level improvement within nine months of receiving Guided Reading instruction (p. 326).

Dorn and Henderson (2010) remarked, “40 percent of struggling readers in the United States end up in special education classes, despite the fact that ‘research suggests only 1.5-2 % of the student population has a cognitive reading disability’” (as cited in Southall, 2011, p. 10). Simpson et al. (2007) conducted a study to determine if Guided Reading will increase the reading skills of elementary students with autism. Students were administered a running record formative assessment to determine their instructional level of reading and received daily Guided Reading instruction for one academic school year. The findings indicated an increase of between 6 and 24 months of growth in the students’ reading level with the implementation of Guided Reading instruction daily. Similarly, Massengill (2003) directed a quantitative study on four adults who demonstrated low literacy ability with reading levels from first to sixth grade. With intense Guided Reading instruction, each participant increased one reading level. According to Chall (1994), adults, on average, make one year’s gain in 20 hours of instruction with variation among the readers in comparison to beginning readers due to the lack of literacy experiences to draw upon (as cited in Massengill, 2003, p. 183).

Although Vygotsky did not explicitly develop a model for teaching reading, the zone of proximal development is embedded in the Guided Reading instructional practices. A study conducted by Prior and Welling (2001) utilizing the Vygotsky theory to determine if students are able to comprehend what they have read was done with 24 Grade 2 students, 29 Grade 3 students, and 20 Grade 4 students. Students were given passages on their instruction level (ZPD) to determine their reading aptitude. Each student was tested individually for accuracy. Students were asked to read one passage orally and the other silently to determine which way of reading resulted in deeper comprehension. Results showed that students who read orally in Grades 3 and 4 were able to better understand the text. The results were statistically significant, $p < .001$. Based

on the results, it is evident that students in Grades 3 and 4 were able to comprehend orally better than silently. As for Grade 2, there was not a statistically significant difference between the two modes of reading (Prior & Welling, 2001). In like manner, Oostdam, Blok and Boendermaker (2015) conducted an experimental study in Grades 2-4 with students identified as struggling readers, providing Guided Reading intervention for students who lagged behind in reading fluency, vocabulary, and reading comprehension. The non-controlled group continued the typical reading program instruction while the controlled group received intense Guided Reading instruction. Overall, the results indicated a nearly significant improvement, $p=0.07$. The treatment group slightly improved fluency, which led to the comprehension of the text (p. 445). The National Reading Panel (2000) in the United States concluded that Guided Reading procedures have a consistent and positive impact on word recognition, fluency, and reading comprehension (as cited in Oostadm et al., 2015, p. 428).

Rasinski (2010) noted, “Fluency has often been called the bridge from phonics to comprehension” (as cited in Southall, 2011, p. 157). Fluency is defined as a student’s ability to quickly and accurately read text with expression (National Reading Panel, 2013). Fluency is not a simple matter of speed or regurgitation of words. It is an outcome of a reader’s integration of strategic actions used to maximize the meaning, knowledge of the visual features, or words being processed (Fountas & Pinnell, 2017, pp. 428-429). Fluency is an important factor impacting comprehension. According to Samuels (2006), “A fluent reader should be able to decode and comprehend at the same time” (p. 340). Snow et al. (1998) indicated, “Fluency should be promoted through practice, with a wide variety of well-written and engaging texts, at the child’s own comfortable reading level” (p. 14). Similarly, Minskoff (2005) stated students reading a text on their instructional level will allow for fluency to be practiced, avoiding frustration (as cited in

Southall, 2011, p. 163). Guided reading instruction allows for opportunities for students to practice reading fluency with an appropriately leveled text through the engagement of an interactive read-aloud, shared reading, and independent reading while emphasizing the five dimensions of fluency, which are pausing, phrasing, stress, intonation, rate, and integration (Fountas & Pinnell, 2017, p. 431). Allington (2001) stated, “Fluent reading is an important milestone in reading development” (p. 85). NAEP (1993) noted, “Students who read accurately, quickly, and in phrased units usually do better on all assessments of reading” (as cited in Guided Reading Toolkit, 2014, p. 56). In order for students to understand what they are reading, they must be able to read fluently.

Comprehension is the main purpose for reading; without understanding the text, readers fail to make meaning of the text. Comprehension is defined as one’s ability to think, understand, and construct meaning from texts while reading (National Reading Panel, 2013). Similarly, Fountas and Pinnell (2017) refer to comprehension as “the transaction between a reader and the text. Comprehension is an active, meaning-making process” (pp. 471-473). Students are required to learn a variety of comprehension strategies to use while reading a text on their instructional level. According to Donna Scanlon (2010), instruction in comprehension strategies should be taught with the context of conversations that revolve around read-alouds, shared reading experiences, and reading done in small groups (as cited in Southall, 2011, p. 192).

Comprehension strategies are in-the-head processes proficient readers use to make sense of text. Comprehension strategies must be taught in an explicit and concrete way to encourage students to use them during independent reading. The comprehension strategies supported by the state standards are making connections, generating and answering questions, making inferences, self-monitoring, retelling, summarizing, and integrating strategy use (Southall, 2011, p. 211).

Comprehension strategies must be taught to readers to ensure they gain purpose for reading a text and to avoid any possible limitations to understanding the material read (Pikulski & Chard, 2005). Anderson, O’Leary, Schuler, and Wright (2001) conducted a qualitative study to determine if Guided Reading instruction increased the reading comprehension scores of first, second, and third graders in four low-achieving elementary schools. After students received Guided Reading instruction for five months, the students’ reading comprehension improved. The researchers discovered that students in the lower reading groups made more significant gains when compared to students in the higher reading groups. Comprehension is addressed and comprehension strategies are instructed during a Guided Reading lesson through the use of appropriate leveled texts.

According to Fountas and Pinnell (2009), “The teacher poses questions that require the student to think ‘within the text’ about the text, and beyond the text” (p. 244). The most critical component of reading is comprehension. Fisher (2008) investigated a case study undertaken in an urban school analyzing the level of reading comprehension attained after a guided reading lesson. Students spent most of the time during guided reading, reading out loud. Deprived of comprehension, the reader failed to make meaning of the text. The results in this study were inconclusive because Guided Reading instruction was not instructed appropriately, leading to the teacher spending most of the time listening to the readers rather than teaching reading strategies to enhance reading comprehension. Hobsbaum et al. (2002) stated, “Hearing children read individually is necessary when recording their behaviors and analyzing their skills, but it is not a way of teaching” (as cited in Fisher, 2008, p. 25). Alexander (2005) remarked, “It is what the teacher does (or fails to do) with children’s responses that leads to cognitive growth” (as cited in Fisher, 2008, p. 22). The teacher as an instructional leader has the responsibility to lead students

to success. The main purpose of learning how to read is to originate comprehension and meaning of a text.

Vygotsky (1978) discussed the delay between receiving exposure to learning experiences and internalizing a skill which can only occur when the child is instructed within their zone of proximal development (Prior & Welling, 2001, p. 11). He makes an important distinction between learning and growth and argued that development lags behind learning. Guiding Reading makes it possible to teach at the cutting edge of a student's understanding (Fountas & Pinnell, 2001, p. 192). To ensure students' needs are being met instructionally, it is critical for the teacher to assess the students individually and to determine their reading ability prior to the implementation of Guided Reading instruction.

The Essentials of Guided Reading

Guided Reading instruction allows for students to become thinkers. The purpose of Guided Reading is to provide students with reading instruction that is at their instructional level. "All reading difficulties have explanations, but it is more productive to think about instruction that will help children overcome them" (Fountas & Pinnell, 2009, p. 31). The stages of Guided Reading begin with before, during, and after reading with the support of the teacher. The teacher's role is to observe the students as they read and to incorporate a leveled text for small group instruction. The teacher must select a book within the student's zone of proximal development (Vygotsky, 1978) to ensure students can read fluently to construct meaning from the text (Fountas & Pinnell, 2001). Furthermore, students engage in profound, meaningful discussions about the text while utilizing reading strategies to demonstrate comprehension. Bridges (1988) proposed discussion which can lead to the construction of new understandings through "the improvement of knowledge understanding, and/or judgment (as cited in Hulan,

2010, p. 43). In the same way, Fountas and Pinnell (2013) describe the guided reading lesson as students engaging in thinking about the text prior to reading it, attending to the text while reading it, and are invited to engage in conversation after reading the text (p. 268). This process allows students to socialize intelligence and deepen their understanding of the text during guided reading instruction.

Reading is more than just naming the words. Clay (1991) defined reading as “a message-getting, problem-solving activity which increases power and flexibility the more it is practiced” (p. 6). According to Rosenblatt (1994), “Reading is a transaction between the text and the reader; that is, the reader constructs unique meanings through integrating background knowledge, emotions, attitudes, and expectations with the meaning the writer expresses” (as cited in Fountas & Pinnell, 2013, p. 273). Pursuing this further, Denton (2014) conducted a quasi-experimental design study on 218 second-grade students who were identified as struggling readers. The study provided Guided Reading instruction as an intervention mainly focusing on comprehension in addition to the students’ general reading instruction that occurred daily. Guided Reading intervention was provided for 45 minutes and occurred four times a week. The results indicated Guided Reading instruction helped students do significantly better on decoding during the post-test. However, the increase in reading comprehension was not statistically significant, $p = .13$. Guided Reading instruction did not increase reading comprehension with students identified as struggling readers (p. 284).

Correspondingly, Kamps (2007) compared the outcome of English Language Learners in first grade who were identified as struggling readers taught using explicit phonics instruction combined with Guided Reading versus Guided Reading instruction as part of a balanced literacy program. The results showed students who received explicit phonics instruction combined with

Guided Reading outperformed those students who were exposed to only Guided Reading as part of the balanced literacy approach. Although the results showed a significant difference, it is imperative to stress that the Guided Reading instruction was not clearly defined (as cited in Denton et al., 2014, p. 269). On the contrary, a study conducted by Tobin and Calhoun (2009) mentioned Guided Reading produced a significant difference in reading achievement when compared to a highly explicit program for first graders who were labeled as students with reading difficulties (as cited in Denton et al., 2014, p. 270). By the same token, Schaffer and Schrimmer (2010) conducted a longitudinal study to determine the impact of Guided Reading instruction implemented with the use of American Sign Language (ASL) to instruct deaf students struggling to learn how to read. The Guided Reading instruction was modified, asking students to respond to questions and to read aloud using American Sign Language. The struggling students varied from Grades 1 through 5 and were reading at a kindergarten level, having difficulty catching up with their peers. Students were homogeneously grouped according to the results of the running record and were instructed 20 minutes daily, using Guided Reading instruction. Running records were done sporadically to examine individual students' progress throughout the school year. The results showed a half-year to two years of reading improvement (Schaffer & Schrimmer, 2010, p. 43).

Based on the studies mentioned, it is evident that Guided Reading can be instructed in multiple ways and used for a variety of purposes. Fountas and Pinnell (1996) suggested, "Guided Reading [is] a classroom-based practice that would provide good first teaching for all children" (as cited in Ford & Opitz, 2008, p. 230). Effective teachers must be well equipped in knowing how to teach Guided Reading and shifting in and out of roles for the purpose of students learning reading strategies and reaching for new meanings from the text during the lesson. Ruddell and

Unrau (1994) indicated, “Teachers engage the students in a collaborative process of inquiry and self-improvement in which both the teacher and student seek to refine respective skills and knowledge” (p. 1491). Research shows educational experiences that are collaborative lead to deeper learning.

Guided Reading is an instructional method that can be used with all levels of readers. Ford and Opitz (2008) stated, “Regardless of the decade or author, all agree that Guided Reading is planned, intentional, focused instruction where the teacher helps students, usually in a small group setting, learn about the reading process” (p. 229). Prior to grouping students homogeneously and implementing explicit reading instruction, teachers have to assess students periodically using a “running record” to determine their level of reading ability. As the Vygotsky theory mentioned, students have to be instructed in their zone of proximal development in order to internalize skills and concepts being taught during Guided Reading. Guided Reading is an instructional approach that involves a teacher working with a small group of children who are similar in reading behaviors and the text level on which they are able to read with support (Tyner, 2004). Similarly, Pressley (1998) advocated small-group instruction as providing a great opportunity for teachers to use instruction that scaffolds and engages the learners (as cited in Guastello & Lenz, 2005, p. 145). On the contrary, Durkin (1979) was opposed to small group instruction because he believed that the instruction was teacher-directed, leading to a round-robin oral reading followed by literal-leveled questions (as cited in Ford & Opitz, 2008, p. 229). During small group instruction, students explore instructional resources to interact and learn from one another. Ford and Opitz (2008) stated, “Guided reading has increased in classrooms due to the “realization by practitioners of the value of small group instruction” (p. 309). Southall (2011) remarked, “Our goal is to give every child full access to his or her potential to learn—the

advanced as well as the low-progress reader—we need to move toward small group instruction” (p. 50). Hoyt (2000) is a strong proponent of guided reading instruction and the opportunities small group instruction provides for struggling readers. He believed that small groups increase engagement and provide a critical role in supporting learning development (p. 127). Small group instruction leads to teachers transmitting information to students through a scaffolding method, providing students with opportunities to learn how to read independently.

Formative Assessments

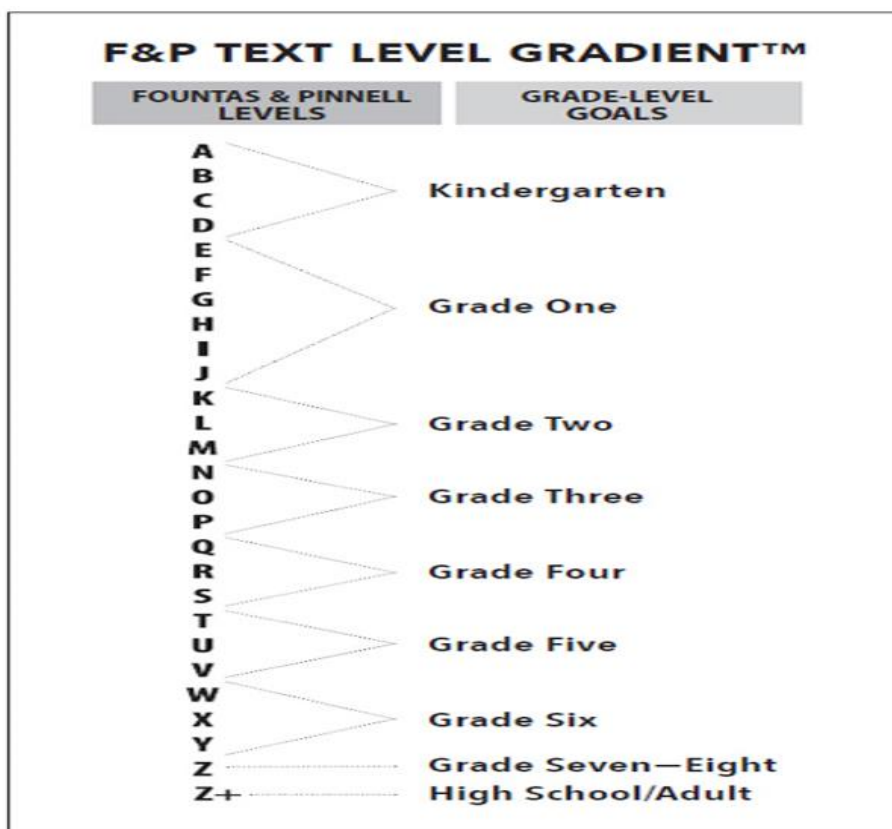
One of the key components of Guided Reading instruction is for the teacher to assess students using a formative reading instrument to determine their reading capabilities in order to provide reading instruction on their ZPD level. To determine the instructional level a student is reading on, an assessment is given to evaluate a student’s literacy development (Guided Reading Toolkit, 2014). The final phase of Guided Reading is to construct a “running record” to determine a student’s reading level. According to Fountas and Pinnell (1996), a running record is a tool for coding, scoring, and analyzing precise reading behaviors originally developed by Marie Clay. This task requires a teacher to observe a student’s reading behaviors and record the strategies the child uses while the student attempts to read an entire text (p. 89). Ross (2004) analyzed a study comparing schools that utilize running records with those that do not within the same school district. The findings indicated schools that implemented running records intermittently improved reading by statistically significant levels.

After the completion of the running record, the teacher assigns the appropriate text within the student’s zone of proximal development. The text can be easy, instructional, or difficult. These levels are determined by the running record assessment. According to Fountas and Pinnell (2014), for a student who receives below 90%, the text is difficult, for a student who receives

90%-94%, the text is on an instructional level, and for the student who receives 95%-100%, the text is easy (p. 29). When planning for instruction, a student's level of comprehension and fluency is the key element in selecting appropriate materials. Fountas and Pinnell (2014) remarked, "Flexible or dynamic grouping—and regrouping—of students is essential for any classroom" (p. 20). By grouping students based on the data gathered from the running record, the teacher can work directly with a small group while other students are working independently or are engaged in learning centers geared toward reinforcement of skills. Reading instruction groups are regrouped frequently as the student's instructional needs change and are reevaluated for instructional purposes. Small group instruction with the support of the teacher providing explicit coaching will help students read challenging texts on an organized gradient level of difficulty (A-Z) determined by the running record. The books used for Guided Reading instruction are organized along an incline of difficulty from A-Z, scaffolding students' development of essential literacy skills. Students working through each level are able to process increasingly challenging, conceptually rich, complex texts with the guidance of the teacher (Fountas & Pinnell, 2014, p. 16). Guided Reading instruction provides a mechanism for teachers to read with students in a way that cannot be accomplished by a "read aloud" or students independently reading. Becoming a literate reader requires practice and a toolbox of reading strategies. Allington (2001) remarked, "In learning to read it is true that reading practice—just reading—is a powerful contributor to the development of accurate, fluent, high-comprehension reading" (p. 24). Children can be motivated to learn how to read by just picking up a book and reading. The impact of Guided Reading instruction can be used and differentiated for all learners based on their reading needs.

Fountas and Pinnell (2017) developed a text-level gradient as a collection of books in which processing demands have been categorized along a continuum from easiest to hardest. The 26 levels encompass progress from kindergarten through high school. Within each level, fiction and nonfiction texts are grouped using a combination of characteristics. The gradient is used by teachers to instruct students on their guided reading level, determined after the completion of a running record (Fountas & Pinnell, 2017, pp. 294-295).

Snow et al. (1998) remarked, “Reading is a complex developmental challenge that we know to be intertwined with many other developmental accomplishments: attention, memory, language, and motivation. Reading is not only a cognitive psycholinguistic activity but also a social activity” (p. 15). Chall and Conrad (1991) assessed elementary students’ comprehension of their textbooks. They found that between 40% and 60% of the elementary students of average achievement levels were working with reading texts appropriate given their reading achievement on standardized tests. The remaining percentage of students were reading texts that were too difficult, causing them to be deficient in comprehension and later become labeled as struggling readers (as cited in Allington, 2001, p. 46). It is critical that students acquire the essential literacy skills to become proficient readers.



Fountas & Pinnell Text Level Gradient Scale. Adapted from *I.C. Fountas and G.S. Pinnell. 2017. Guided Reading Responsive Teaching Across the Grades, Portsmouth, NH: Heinemann.*

Figure 1. *Fountas & Pinnell Text Level Gradient Scale.*

Ford and Opitz (2008) analyzed the results of the National Survey of Guided Reading Practices. The outcome from 1,500 primary teachers nationwide disclosed that 53% of teachers change guided reading groups less than once a month and 12% stated groups usually do not change because they are heterogeneously grouped. In addition, the survey disclosed 60% of teachers grouped students homogeneously based on developmental level and 40% by needs. It is essential that guided reading groups shift as students' reading abilities and interests change. Smith and Elley (1994) stated, "Grouping allows children to support each other in reading and feel part of a community of readers. It also allows for efficient use of a teacher's time" (as cited in *Guided Reading Toolkit, 2014, p. 22*). In order for running records to be an effective

instructional tool, teachers must have frequent information about their students' reading ability to make decisions on how to instruct. Thessin (2015) claimed, "When data is used as part of an ongoing cycle of improvement . . . teachers can change their instructional practice to improve student achievement" (Renaissance Learning, 2014, p. 1). Correspondingly, Dylan Wiliam (2014) suggested, "Formative assessments are the bridge between teaching and learning." Formative assessments provide students with constructive feedback to help improve academic performance.

Furthermore, the National Survey of Guided Reading Practices questioned teachers about the purpose of Guided Reading. The results indicated that 18% of teachers identified scaffolding as the key component of Guided Reading, 12% thought facilitation of response to a shared text was major and 3% of teachers disclosed facilitation across multiple texts was the primary focus. Ford and Opitz (2008) noted that the primary focus of Guided Reading is providing scaffolded instruction that supports students as they attempt a new skill or strategy (p. 313). Last, the survey stated that teachers, on average, meet with students three times a week to instruct applying Guided Reading (Ford & Opitz 2008, p. 315). Educators must plan strategically for instruction in order for reading improvement to be evident.

With the expectation that all children will learn the standards (CCSS) for their appropriate grade level, teachers are being held accountable and pressured to innovatively teach students to internalize reading skills to become proficient readers. The standards outline skills and concepts students need to master in order to be literate. There is authentic research that supports the implementation of Guided Reading aligned to the standards. According to Fountas and Pinnell (2010), the role of Guided Reading in alignment to the Common Core State

Standards provides students with a grade-by-grade staircase of increasing text complexity and steady growth of comprehension (as cited in Guided Reading Toolkit, 2014, p. 32).

Fountas and Pinnell (2010, para. 3) state the Eight Components of Guided Reading aligned with the key tenets of the Common Core State Standards:

1. Complex, high level reading comprehension is the goal of guided reading instruction.
2. Guided reading centers on a sequence of high quality texts support individual progress on a scale of spiraling text difficulty.
3. Guided reading lessons increase the volume of independent reading that students do; the goal always is confident, capable independent readers.
4. Guided reading provides explicit instruction in accurate, fluent reading.
5. Guided reading lessons provide daily opportunities to expand academic vocabulary through reading, writing, conversation, and explicit instruction.
6. Guided reading lessons include teaching that expands students' ability to apply the concepts of print, phonological awareness, access to rich vocabulary, and accurate, fluent reading and processing of print.
7. Guided reading lessons invite students to write about reading.
8. Guided reading lessons create engagement in and motivation for reading.

Teachers matching texts to readers and increasing text complexity, a basic principle of the CCSS, lies at the core of Guided Reading. Guided Reading instruction is supported by the standards and is known to allow students to learn on their zone of proximal development level and systematically increase text complexity. According to Braunger and Lewis (2008):

Guided reading gives students the opportunity to read a wide variety of texts; to problem solve while reading for meaning; to use strategies on complete, extended text; and to

attend to words in text. Guided reading requires that at teacher's selection of text, guidance, demonstration, and explanation be made explicit to the reader. (as cited in Guided Reading Program, 2014, p. 30)

The Guided Reading Toolkit designed by Fountas & Pinnell (2014) outlines one of the key components of reading for students to read and comprehend a variety of texts to develop critical-reading skills, reasoning skills, and creative writing expression. The NAEP continues to increase complex texts with an emphasis on informational texts. According to Duke, "Informational literacy is central to success, and even survival, in schooling, the workplace and the community" (as cited in Guided Reading Toolkit, 2014, p. 59). Guided reading programs allow students to infuse the learned skills into various texts in order to unify reading.

Monitoring students' academic progress permits a more effective and efficient approach to teaching reading. Allington (2002) stated, "You can't learn much from books you can't read" (as cited in Calkins, Ehrenworth, & Lehman, 2012, p. 18). Allington believed that tracking students' progress up the ladder of text complexity is the only way to encounter the expectations of the state standards. The National Survey of Guided Reading Practices also discovered that 70% of teachers use at least four assessment techniques to make instructional decisions in addition to running records. Teachers mentioned that using multiple forms of measurement to assist with planning instruction allows teachers to maximize a child's reading potential (Ford & Opitz, 2008). Teachers can utilize the data to inform their instructional decisions.

Allington (2007) noted, "It is the teacher who holds the key to student learning and achievement" (as cited in Robb, 2013, p. 19). In a society where high-stakes assessments drive instruction, educators have to be able to disaggregate the data to inform their pedagogical practices that will ensure students are academically successful. Tienken and Orlich (2013) stated,

“The school accountability foundation is built on the assumption that one high-stakes test can determine a child’s, a school’s, and a school district’s future” (p. 85). Research shows that students’ reading achievement remained stagnant with the implementation of the high-stakes assessments. The Partnership for Assessment of Readiness for College and Careers (PARCC) for the state of New Jersey reported only 54% of fourth-grade students met/exceeded the reading expectations for the 2015-2016 academic school year (NJDOE, 2016). In like manner, Orlich’s study reported that in 17 out of 18 states, student learning remained at the same level and no increase occurred before or after the instituted demands for high-stakes assessments. In addition, Tienken (2008) found standardized assessments in New Jersey possessed sizable errors in the reported individual student scores. To counter this argument, Linda Darling-Hammond (2003) noted students in Texas showed gains on the state-mandated assessment; however, they did not meet the expectations on a national standardized test (as cited in Tienken & Orlich, 2013, p. 86). This is a major concern for educators if the scores are dictating the instruction in classrooms, causing the reading achievement gap to widen.

Furthermore, Braun (2004) undertook an extensive look at the recent research about school districts with mandates to perform better on high-stakes assessments and analyzed student performance on state assessments from 1992 to 2000 on NAEP scores at fourth and eighth grade. He discovered that high-stakes accountability regimes were associated with greater increases in NAEP scores in eighth grade but not in fourth (as cited in Wiliam, 2010, p. 117). Wiliam (2010) stated, “Accountability testing can raise student achievement on a broad range of measures” (p. 118). Resnick (1987) remarked, “If we are to have high-stakes testing, the search must be for tests worth teaching to” (as cited in Wiliam, 2010, p. 120). Research shows students’ receiving

ongoing formative assessments ensures that teachers are fixated on their students' reading success.

Fuchs and Fuchs (2006) stated, "Literacy skills are fundamental to successful academic performance and frequent assessments and monitoring of them is the foundation for response to intervention practices that inform teachers about their students' instructional needs (as cited in Algozzine, Wang, & Boukhtiarov, 2011, p. 3). Similarly, Ingle and Cramer (2012) noted, "The use of multiple reading diagnostic tools (state-mandated and district-selected) offered an opportunity for researchers to determine their relationship with student reading performance (p. 28). According to Algozzine et al. (2011), "Progress monitoring tools provide valid and reliable data. Practice must be personalized to each student's individual ability level and immediately followed by informed feedback to ensure a high rate of engagement and success" (p. 4).

Renaissance Learning offers a computer-adaptive test of general reading ability that has good reliability and validity as evidenced by its technical characteristics and correlation with other tests (Renaissance Learning, 2014). According to Renaissance Learning (2014), the Star Reading assessment provides teachers with reliable and valid data instantly so they can target instruction, monitor progress, provide students with the most appropriate instructional materials, and intervene with at-risk students. McBride (2014) stated, "STAR assessments are highly rated for reliability and validity by key federal groups, such as the National Center on Intensive Intervention, the National Center on Response to Intervention, and the National Center on Student Progress Monitoring," making them credible resources to use to guide instruction (p. 224). The test provides an estimated oral reading fluency, grade equivalent, scaled score, Lexile measure, percentile rank, and the student's instructional reading level (ZPD), which indicates the lowest and highest range on which a student can read (Renaissance Learning, 2006). STAR

Reading is a norm-referenced and criterion-referenced computer adaptive test that is available for students in Grades 1-12. The formative assessment can be used as a diagnostic tool to measure students' progress throughout the academic school year without the test items being repeated (Algozzine, Wang, & Boukhtiarov, 2011, p. 6). In order to build a bridge between assessment and instruction, Renaissance Learning created the Core Progress for Reading in accordance with the CCSS. Heritage (2008) remarked, "Learning progressions that clearly articulate a progression of learning in a domain can provide the big picture of what is to be learned, support instructional planning, and act as a touchstone for formative assessment" (p. 1).

<p>Foundational Skills</p> <p>Print Concepts</p> <ul style="list-style-type: none"> • Directionality • Letters and Words • Word Length • Word Borders • Visual Discrimination / Alphabetic Principle • Alphabetic Sequence • Print Features <p>Phonological Awareness</p> <ul style="list-style-type: none"> • Rhyming and Word Families • Blending, Counting, and Segmenting Syllables • Blending and Segmenting • Distinguishing between Long and Short Vowel Sounds • Isolating Initial, Final, and Medial Phonemes • Adding/Substituting Phonemes <p>Phonics and Word Recognition</p> <ul style="list-style-type: none"> • Spelling-Sound • Correspondences: Consonants • Spelling-Sound • Correspondences: Vowels • Regular and Irregular Spellings / High-Frequency words • Inflectional Endings / Affixes • Syllables <p>Fluency</p> <ul style="list-style-type: none"> • Purpose of Reading / Reading with Comprehension • Reading Rate WCPM • Prosody • Repair Strategies 	<p>Language</p> <p>Vocabulary Acquisition and Use</p> <ul style="list-style-type: none"> • Real-Life Word Connections and Applications • Word Reference Materials • Antonyms • Synonyms • Structural Analysis • Word Relationships • Context Clues • Vocabulary in Context • Multiple-Meaning Words • Figures of Speech • Connotation <p>Literature</p> <p>Key Ideas and Details</p> <ul style="list-style-type: none"> • Character • Setting • Plot • Theme • Summary • Inference and Evidence <p>Craft and Structure</p> <ul style="list-style-type: none"> • Point of View • Structure of Literary Text • Word Meaning • Author's Word Choice and Figurative Language • Connotation <p>Integration of Knowledge and Ideas</p> <ul style="list-style-type: none"> • Modes of Representation • Analysis and Comparison 	<p>Range of Reading and Level of Text Complexity</p> <ul style="list-style-type: none"> • Range of Reading • Development of Independence <p>Informational Text</p> <p>Key Ideas and Details</p> <ul style="list-style-type: none"> • Main Idea and Details • Inference and Evidence • Prediction • Sequence • Compare and Contrast • Cause and Effect • Summary • Connections and Relationships <p>Craft and Structure</p> <ul style="list-style-type: none"> • Text Features • Author's Purpose and Perspective • Word Meaning • Connotation • Organization • Author's Word Choice and Figurative Language <p>Integration of Knowledge and Ideas</p> <ul style="list-style-type: none"> • Modes of Representation • Argumentation • Analysis and Comparison <p>Range of Reading and Level of Text Complexity</p> <ul style="list-style-type: none"> • Range of Reading • Development of Independence
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Core Progress™ Learning Progression for Reading—Built for the Common Core State Standards: Domains and Skill Areas. Adapted from Renaissance Learning the Research Foundation Star Assessments: The Science of Star 2014.

Figure 2. *Core Progress Learning Progression for Reading.*

Star Reading assessment was designed to mirror the standardized test to provide students with comparable questions. Stanley and Stanley (2011) noted that due to the pressure in high-stakes testing, school districts are searching for innovative ways to increase reading scores on

high-stakes tests and to predict students' standardized test scores (as cited in Alley, 2012, p. 10). Algozzine et al. (2011) conducted a study to compare Star Reading to other standardized tests (Scholastic Reading Inventory and Florida Comprehensive Assessment Test) specifically analyzing sixth, seventh, and eighth grade students from a low-socioeconomic school district. A total of 54% of the students were eligible to receive free or reduced lunch. The outcome of the study indicated Star Reading and the SCI reading scores were accurate in predicting students' performance on the FCAT. The findings were statistically significant, $p < .01$ in predicting students' performance on the FCAT by 88% across the three grades (pp. 10-15). In similar fashion, Marchand and Furrer (2014) conducted a study in an urban, southwestern school district on 563 students in Grades 3-5 examining reading competence (fluency and comprehension) on formative assessments given during classroom instruction. The increase of formally assessing students during instruction in Grades 3-5 led to higher reading scores, displaying a correlation from .19 (fall) to .49 (spring) for the academic school year, statistically significant results, $p = .001$. The findings disclosed that formative assessments on a daily basis can make a difference in a student's reading ability when assessed in the "moment." However, Boucher (2005) compared the Star reading test to the CAT 6 standardized test and found that there was little correlation between the two tests. He argued that Star reading did not give accurate, reliable, norm-referenced scores (p. 22). According to Algozzine et al. (2011), "The implications for improving reading achievement are through continued use of progress monitoring measures such as Star reading, which is a powerful diagnostic tool in the effort to identify students needing assistance to persist and affect high stakes assessments" (p. 17). The spiral effect of standards allows students to learn every year with increasing increments of complexity.

Research shows that ongoing formative assessments intertwined with effective instruction can impact and raise standards of achievement in reading. Linder (2009) stated, “Effective teachers are constantly analyzing and evaluating their instructional practices based on the performance of their students to ensure learning is occurring” (p. 19). Chall (1983) stated, the ultimate goal is for students to “learn how to read” and not to “read to learn” (as cited in Kempe, Gustavsson, & Samuelsson, 2011, p. 182). Reading is a fundamental skill and it is important to acquire in today’s society.

CHAPTER III

METHODOLOGY

Introduction

Being able to read is essential in today's society. Educational leaders are challenged with the reading achievement gap and the effect that reading deficiencies have on a student's academic performance. "Reading is the process of understanding the written language. It is a "perceptual" and "cognitive" process (Rumelhart, 1994). Reading is a critical component for a student's academic achievement. A significant teaching pedagogy for students who are learning how to read is Guided Reading. "Guided Reading is a teaching approach designed to help individual students learn how to process a variety of increasingly challenging texts with understanding and fluency" (Fountas & Pinnell, 2001, p. 193). Guided Reading is not a "one size fits all" approach but rather a customized program that will enhance struggling readers' opportunity to read on grade level.

The purpose of the quantitative study was to examine if additional Guided Reading instruction will increase the oral reading fluency and comprehension of fourth-grade students as measured by the Renaissance Star Reading assessment. Additionally, the study examined the impact of other student fixed factor variables such as gender, ethnicity, attendance, students with disabilities, English Language Learners, and past academic (reading) performance. This study also provides empirical evidence that may be utilized to assist school administrators with decision making in regard to the best reading instructional practices and pedagogies to work toward closing the reading achievement gap as well as increasing academic achievement of all students.

Research Questions

This study proposes to answer the following questions:

Overarching Research Question

Do fourth-grade students who received additional Guided Reading instruction show significant difference in reading achievement on the Renaissance Star Reading assessment and PARCC English Language Arts/Literacy state assessment when compared to fourth-grade students who did not receive additional Guided Reading instruction?

Subsidiary Questions

1. Do fourth-grade students who received additional Guided Reading instruction show significant difference on oral reading fluency when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment?
2. Do fourth-grade students who received additional Guided Reading instruction show significant difference on comprehension (measured by scaled score) when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment?
3. Do fourth-grade students who received additional Guided Reading instruction show significant difference in reading achievement on the PARCC English Language Arts/Literacy state assessment when compared to fourth-grade students who did not receive additional Guided Reading instruction?

Research Design

The purpose of this quasi-experimental (comparative group) study was to determine if additional Guided Reading instruction will increase the oral reading fluency and comprehension of fourth-grade students as measured by the Renaissance Star Reading assessment. The examined 12 schools were comparable in related variables. All the participating schools provided Guided Reading instruction during the 2016-2017 school year.

In the current study, school and student variables were reviewed and their impact on student achievement was evaluated. The study provides empirical evidence that may be utilized to assist school administrators in forming decisions that will have a positive impact on the reading academic achievement of all students.

To ensure an unbiased sample, propensity score matching (PSM) was used for selecting the comparable control group based on fixed factor characteristics of the criterion group. In this type of design, a participant from the treatment group is matched with a participant of the non-treatment group, using relevant variables or characteristics (Stone & Tang, 2013, p. 1). Rudner and Peyton (2006) stated, "Each member of the first group is matched with a member of the second group on all the factors the researcher considers to be feasible and relevant" (p. 2). For this particular study, students are paired based on similarity of observable characteristics. Fixed factor variables such as gender, ethnicity, student attendance, students with disabilities, limited English proficiency, and past academic (reading) performance were used in the PSM sampling in order to identify a comparable control group. Through PSM, matching is adequate. The covariates are combined and individuals in the treatment group are matched to individuals in the controlled group based on their propensity score (Rudner & Peyton, 2006, p. 2). According to Adelson (2013), "Pretreatment differences may cause a difference in outcomes, rather than the

treatment itself causing the difference. This is particularly true in education, a field in which many covariates affect outcomes like achievement” (p. 2).

Furthermore, in conjunction with the propensity score matching for the selection of an unbiased sample, a multiple regression was utilized to determine levels of association between the independent (predictor) variables and the dependent (criterion) variable.

Sample Population

The participants from this study were selected from an inner-city school district in northern New Jersey. According to the State of New Jersey Department of Education District Narrative report (2015-2016) there are more than 40 languages spoken in its classrooms, and it is one of the most diverse school districts in the state of New Jersey. The district enrolls approximately 25,000 students in Grades K-12 and an additional 2,900 pre-kindergarten students with community providers. The district has 56 schools that are largely configured as pre-K, K-8, and 9-12, with a small number configured as Grades K-4, pre-K-5 or 6-8. In addition, with the Community Eligibility Provision (CEP) intact, all students receive free breakfast and lunch. Approximately 13%, or 3,200 students, receive special education services and 3,500 students are English Language Learners (ELL) who receive bilingual/ESL services. The student population in the district mirrors the trend of urban communities across the nation and in New Jersey. Sixty-seven percent of its students are of Hispanic origin, 24% are African American, and approximately 9% are of Caucasian, Middle Eastern, or Asian descent (NJDOE, 2016).

Twelve schools participated in the study. Three out of the 12 schools provided additional Guided Reading instruction, and the other nine only provided Guided Reading instruction within their mandated literacy block. The Renaissance Star Reading assessment fall 2016 (pretest) and spring 2017 (posttest) were examined to determine if additional Guided Reading instruction had

an impact on fourth-grade students' oral reading fluency and comprehension. To ensure that the samples were comparable and to minimize selection bias, propensity score matching (PSM) was utilized to provide an unbiased and balanced sampling technique. Participants were included in the PSM sampling analysis if they met the following criteria: (1) students in the sample were enrolled in the fourth grade during the 2016-2017 school year at one of the participating schools, (2) students received valid scores on the PARCC 2016 and 2017 English Language Arts/Literacy state assessment and are statistically similar in the mutable variables, gender, ethnicity, attendance, students with disabilities, and English Language Learners.

Propensity Score Matching

The sample used in the study was selected through PSM to prevent bias because of an inability to have randomized subjects. Adelson (2013) stated, "Propensity score analysis offers an alternative approach that can balance treatment and comparison groups on many covariates" (p. 2). When differences between the subject's characteristics are not accounted for, selection bias may increase, and researchers may be faced with treatment effects which may be influenced by differences due to non-randomization (Lane & Henson, 2010). According to Rosenbaum and Rubin (1983), non-randomized samples may contrast from one another based on covariates. With the application of PSM, researchers have the ability to control for group differences when estimating treatment effects (Lane & Henson, 2010).

Instrumentation

The Renaissance Star Reading assessment was given to each student individually as both the pretest and posttest. The Star Reading assessment assessed oral reading fluency and comprehension. Renaissance Star Reading was utilized as a formative assessment to examine a student's reading achievement. Winstone and Millward (2012) stated, "The use of formative

assessments is positively perceived to assist students in learning strategies to enhance consolidation of the material presented” (p. 39). The district assesses students three times a year to analyze reading growth. Students are assessed in the fall, winter, and during the spring term of the school year. For this particular study, the fall 2016 Star Reading scores (pretest) and the spring 2017 Star Reading scores (posttest) were used to determine if additional Guided Reading instruction impacted the oral reading fluency and the comprehension of fourth-grade students.

Renaissance Star Reading is a standards-based computer-adaptive assessment which provides a broad range of different reading skills, appropriate to student grade level and performance. It can be used for multiple purposes such as screening, placement, planning instruction, benchmarking, and outcomes measurement. The test is designed to adapt to the student’s readability. According to the Star Reading Technical Manual (2016), “Readability relates to the overall ease of reading a passage and items” (p. 27). The first administration of the assessment provides the student with items that have a difficulty level that is below what a typical student at a given grade level can handle—usually one or two grades below placement (Renaissance Learning, 2016b, p.10). The difficulty of the questions on the assessment adjust according to the student’s responses. The computer-adaptive test is designed to select items based on the student’s performance during the testing session. The Star Reading Technical Manual (2016) states, “A low-performing student’s reading skills may branch to easier items in order to better estimate his or her reading achievement level” and a “high-performing student may branch to more challenging reading items in order to determine the breadth of their reading achievement level” (p. 43). When an item on the assessment is answered correctly, the computer adaptive assessment automatically provides the student with a more difficult item. On the other

hand, when the item is answered incorrectly, the student is then given an easier item.

Renaissance Star Reading refers to this as “adaptive branching.”

The Renaissance Star Reading test provides a scaled score (comprehension), grade equivalency, percentile rank, student growth percentile, estimated oral reading fluency, Lexile measure, instructional reading level, and a normal curve equivalent score. For the purpose of this study, the only two variables that were examined were scaled scores and estimated oral reading fluency scores.

A scaled score is used to determine a student’s readability level. The Star Reading software is designed to virtually provide students with an unlimited number of test forms as the assessment interacts with the students taking the test. According to the Star Reading Technical Manual (2016), “Scaled scores are expressed on a common scale that spans all grade levels covered by the Star Reading test. Because of this common scale, scaled scores are directly comparable with each other, regardless of grade level” (p. 45). The Rasch ability score is used to determine the scaled score for each individual student. The Rasch ability scale, estimates the student’s location on the scale based on the difficulty of the items administered and the pattern of right or wrong answers. In addition, the Rasch ability scores are converted to Star Reading scaled scores and measured on a scaled score range from 0-1400 (Renaissance Learning, 2016b, p. 121). After a student is assessed on the computer-adaptive test, the scaled score determines his or her reading achievement level.

Estimated oral reading fluency is an estimate of a student’s ability to read words quickly and accurately in order to comprehend the text efficiently (Renaissance Learning, 2016b, p. 122). The student is presented with a range of passages with grade-level-appropriate difficulty during the administering of the computer-adaptive assessment. The estimated oral reading fluency is

reported based on the number of words a student can read correctly within a one-minute time span on grade-level-appropriate text. According to the Star Reading Technical Manual (2016), students in Grades 4-6 receive a maximum sentence length of 14 words (p. 24). The estimated oral reading fluency score is computed using the results of the student's Star reading scores, which derive from the scaled score.

The Renaissance Star Reading assessment provides teachers with reliable and valid data instantly so they can target instruction, monitor progress, provide students with the most appropriate instructional materials, and intervene with at-risk students. The assessment is a computer adaptive test. It is a challenging, interactive, and multiple-choice assessment consisting of 34 questions per test that evaluates a scope of reading skills appropriate for Grades K-12. Renaissance Learning examined, researched, discussed, and prototyped several item-response formats and ultimately chose to use multiple-choice test items. The multiple-choice format lends itself well to computerized scoring, which automates the testing process and saves teachers time in collecting and scoring results (Nicol, 2007). The assessment takes approximately 15 minutes and the results are instant. The assessment provides teachers with a scaled score result to locate the student's entry point onto the Core Progress learning progression, helping educators understand if students are performing on grade-level expectations. According to Heritage (2008), "Learning progressions that clearly articulate a progression of learning in a domain can provide the big picture of what is to be learned, support instructional planning, and act as a touchstone for formative assessment" (p. 1).

Star assessments are highly rated for reliability and validity by key federal groups such as the National Center on Intensive Intervention, the National Center on Response to Intervention, and the National Center on Student Progress Monitoring (Renaissance Learning, 2014, p. 19).

According to Creswell (2009), reliability refers to whether scores of items on an instrument are internally consistent and whether there was consistency in test administration and scoring (p. 233). Renaissance Learning (2014) described that the Star Reading assessment has been calculated using a method referred to as generic reliability and a retest reliability to show consistency of scores across multiple administrations of the assessment to the same students. The reliability coefficients are 0.85 for internal consistency and 0.79 for consistency on retest (Renaissance Learning, 2014). On the other hand, validity refers to whether one can draw meaningful and useful inferences from scores on particular instruments (Creswell, 2009, p. 235). Renaissance Learning (2014) indicated the content on the assessment is aligned to curriculum standards at the state and national levels—including Common Core State Standards (p. 22). The Star Reading assessment is a reliable and valid instrument to use to measure reading achievement.

Data Collection

The researcher sent a letter of request to conduct the study (see Appendix A), and permission was granted (see Appendix B) to use the requested sources of information by the district. The data were collected by the district's Assessment, Evaluation, and Planning Department, placed on an Excel spreadsheet, then provided to the researcher. School names were deleted from the data files and assigned alphabetical letters in order to maintain anonymity and confidentiality. Student names were deleted from the data files and assigned numbers in order to maintain anonymity and confidentiality. The report that was shared contained the following information: valid score on the PARCC 2016 and 2017 English Language Arts/Literacy state assessment, gender, ethnicity, attendance, students with disabilities, English Language Learners, Star Reading spring 2016, fall 2016 (pretest), and spring 2017 (posttest), indicating student oral

reading fluency and comprehension scores. Students missing any section of the report were excluded from the study.

Data Analysis

Propensity score matching provided the eventual sample. The study included 12 inner city schools located in northern New Jersey. All collected data were analyzed via IBM SPSS Statistics Student Version for Windows computers program. The fixed factor variables valid score on the PARCC 2016 and 2017 English Language Arts/Literacy state assessment, Star Reading spring and fall 2016 scores, gender, ethnicity, attendance, students with disabilities, and English Language Learners were entered as the fixed factor variables. The students' oral reading fluency and comprehension scores from Renaissance Star Reading spring 2017 were identified as the dependent variables in this study. The analysis was used to determine if students receiving additional Guided Reading instruction made significant reading gains as measured by the Renaissance Star Reading when compared to students who did not receive additional Guided Reading instruction.

Variables

The independent variables that were included in the study were gender, ethnicity, attendance, students with disabilities, English Language Learners, receiving additional Guided Reading or not, 2016 and 2017 English Language Arts/Literacy PARCC scores, and previous Renaissance Star Reading assessment scores spring and fall 2016 for oral reading fluency and comprehension. The dependent variables that were included in the study were Renaissance Star Reading spring 2017 (posttest) oral reading fluency, and comprehension scores. The dichotomous variables in this study were variables that were classified as "yes" or "no." For instance, "yes," the student received additional Guided Reading instruction, or "no," the student

did not receive additional Guided Reading instruction. The variables that were dummy-coded were schools alphabetically and students numerically.

Multiple Regression

A simultaneous multiple regression was performed to determine the amount of variance on the spring 2017 Renaissance Star reading posttest scores which could be explained by the additional Guided Reading instruction. According to Leech, Barrett, and Morgan (2011), a multiple regression is one type of complex associational statistical method (p. 106). In addition, an explanation of coefficients was determined if the variables had a positive or negative impact on a student's 2017 posttest measured by the Renaissance Star Reading scores (oral reading fluency and scaled score to measure comprehension). The independent variables considered in the regression equation were gender, ethnicity, attendance, students with disabilities, English Language Learners, receiving additional Guided Reading instruction or not, PARCC English Language Arts/Literacy 2016 and 2017, and Star Reading spring and fall 2016 scores. The dependent variable was student performance on the spring 2017 Renaissance Star Reading posttest.

Human Subjects Protection

The research study received clearance from the Seton Hall University Institutional Review Board (IRB) and the district's superintendent of schools to conduct the study from September 2016 until December 2017.

CHAPTER IV

ANALYSIS OF DATA

Introduction

The purpose of the quantitative study was to determine if additional Guided Reading instruction increases the oral reading fluency and comprehension of fourth-grade students as measured by the Renaissance Star Reading formative assessment. Guided Reading is a district-wide approach to improve reading scores in an inner-city school district located in northern New Jersey. The Community Eligibility Provision (CEP) program conducted by the State of New Jersey provides inner-city school districts to receive free breakfast and lunch based on the district's socioeconomic status. Additionally, the study examined the impact of student variables such as gender, ethnicity, attendance, students with disabilities, English Language Learners, and past academic performance in reading.

Research Questions

Specific, individual SPSS analyses were used to answer the following research questions:

Overarching Research Question

Do fourth-grade students who received additional Guided Reading instruction show significant difference in reading achievement on the Renaissance Star Reading assessment and PARCC English Language Arts/Literacy state assessment when compared to fourth-grade students who did not receive additional Guided Reading instruction?

Subsidiary Questions

1. Do fourth-grade students who received additional Guided Reading instruction show significant difference in oral reading fluency when compared to fourth-grade students

- who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment?
2. Do fourth-grade students who received additional Guided Reading instruction show significant difference in comprehension (measured by scaled score) when compared to fourth grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment?
 3. Do fourth-grade students who received additional Guided Reading instruction show significant difference in reading achievement on the PARCC English Language Arts/Literacy state assessment when compared to fourth-grade students who did not receive additional Guided Reading instruction?

Null Hypotheses

Null Hypothesis 1: There is no statistically significant difference in oral reading fluency scores for fourth-grade students who received additional Guided Reading instruction as compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment.

Null Hypothesis 2: There is no statistically significant difference in comprehension scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment.

Null Hypothesis 3: There is no statistically significant difference in reading scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the English Language Arts/Literacy PARCC state assessment.

Chapter IV re-states the research questions and null hypotheses and provides the results of the statistical analyses. This is followed by a brief summary of the results that were found during the analyses.

Sample

In the original sample, a total of 795 students in Grade 4 were included from 16 participating schools. Before conducting propensity score matching, four schools were eliminated for missing assessment scores or demographic data. After propensity score matching was conducted, a total of 374 students were remaining in the sample, representing 12 participating schools. Three out of the 12 schools provided additional Guided Reading, and the other nine provided Guided Reading instruction during the mandated literacy block. There were 187 students who received additional Guided Reading instruction and 187 students who did not receive additional Guided Reading instruction. The independent variables included were gender, ethnicity, attendance, students with disabilities, English Language Learners, past performance of 2016 PARCC English Language Arts/Literacy scores, and 2016 spring/fall Star Reading scores, indicating a student's oral reading fluency and comprehension represented as a scaled score. The dependent variables included were Star Reading spring (posttest) 2017 oral reading fluency and comprehension scores. Coding for these variables is provided in Table 1.

The original sample before propensity score matching consisted of 413 males and 382 females. All students received free or reduced lunch so there was no need to control for that student-level demographic variable in the analyses. Thirty-four students were White, 649 were Hispanic, and 112 students were Black. There were 115 students with disabilities and 680 students with no disabilities. There were 134 English Language Learners and 661 students who were not English Language Learners. Students who received additional Guided Reading were 364, and students

who did not receive additional Guided Reading were 431. The mean number of days absent was 168.5, with a standard deviation of 11.534. The mean scaled score on the Renaissance Star Reading assessment for spring 2016 was 341.85, with a standard deviation of 160.006, and the oral reading fluency spring 2016 mean was 81.62, with a standard deviation of 35.706. The PARCC spring 2016 state assessment mean was 715.20, with a standard deviation of 34.986. The mean scaled score on the Renaissance Star Reading assessment for fall 2016 was 336.06, with a standard deviation of 148.099, and the oral reading fluency fall 2016 mean was 78.26, with a standard deviation of 33.159. The mean scaled score on the Renaissance Star Reading assessment for spring 2017 was 6.045, with a standard deviation of 170.433, and the oral reading fluency spring 2017 mean was 96.56, with a standard deviation of 37.102.

Table 1

Coding for SPSS Analyses

Student ID	Scale	Numerically
School Name	Nominal	Alphabetically (A-P)
Gender	Nominal	0=Male 1=Female
Ethnicity	Nominal	1=White 2=Hispanic 3=Black
Students with Disabilities	Nominal	0=No 1=Yes
English Language Learners	Nominal	0=No 1=Yes
Additional Guided Reading	Nominal	0=No 1=Yes
SS16S	Scale	Scores Indicated
ORF16S	Scale	Scores Indicated
PARCC16	Scale	Scores Indicated
Attendance	Scale	Scores Indicated
SS16F	Scale	Scores Indicated
ORF16F	Scale	Scores Indicated
SS17S	Scale	Scores Indicated

ORF17S	Scale	Scores Indicated
PARCC17	Scale	Scores Indicated

Table 2

Descriptive Statistics of Whole Sample

Descriptive Statistics					
	<i>N</i>	Minimum	Maximum	Mean	Std. Deviation
Student ID	795	1	795	398.00	229.641
SS16S	795	65	1123	341.85	160.006
ORF16S	795	4	190	81.62	35.706
PARCC16	795	633	831	715.20	34.986
Attendance	795	19	180	168.51	11.534
SS16F	795	60	810	336.06	148.099
ORF16F	795	8	187	78.26	33.159
SS17S	795	59	1030	420.80	170.433
ORF17S	795	8	190	96.56	37.102
Valid N (listwise)	795				

Table 3

Descriptive Statistics

		Statistics					
		School Name	Additional Guided Reading	Gender	Ethnicity	Students with Disabilities	English Language Learners
<i>N</i>	Valid	795	795	795	795	795	795
	Missing	0	0	0	0	0	0
Mean		8.85	.46	.48	2.10	.14	.17
Median		10.00	.00	.00	2.00	.00	.00
Mode		10	0	0	2	0	0
Std. Deviation		4.566	.499	.500	.417	.352	.375
Minimum		1	0	0	1	0	0
Maximum		16	1	1	3	1	1

Table 4

School Name

		School Name			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	School A	54	6.8	6.8	6.8
	School B	29	3.6	3.6	10.4
	School C	49	6.2	6.2	16.6
	School D	75	9.4	9.4	26.0
	School E	8	1.0	1.0	27.0
	School F	47	5.9	5.9	33.0
	School G	48	6.0	6.0	39.0
	School H	45	5.7	5.7	44.7
	School I	28	3.5	3.5	48.2
	School J	100	12.6	12.6	60.8
	School K	48	6.0	6.0	66.8
	School L	61	7.7	7.7	74.5
	School M	56	7.0	7.0	81.5
	School N	54	6.8	6.8	88.3
	School O	29	3.6	3.6	91.9
	School P	64	8.1	8.1	100.0
		Total	795	100.0	100.0

Table 5

Additional Guided Reading

		Additional Guided Reading			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Additional GR	431	54.2	54.2	54.2
	Additional GR	364	45.8	45.8	100.0
	Total	795	100.0	100.0	

Table 6

Gender

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	413	51.9	51.9	51.9
	Female	382	48.1	48.1	100.0
	Total	795	100.0	100.0	

Table 7

Ethnicity

		Ethnicity			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White	34	4.3	4.3	4.3
	Hispanic	649	81.6	81.6	85.9
	Black	112	14.1	14.1	100.0
	Total	795	100.0	100.0	

Table 8

Students with Disabilities

		Students with Disabilities			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	680	85.5	85.5	85.5
	Yes	115	14.5	14.5	100.0
	Total	795	100.0	100.0	

Table 9

English Language Learners

		English Language Learners			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	661	83.1	83.1	83.1
	Yes	134	16.9	16.9	100.0
	Total	795	100.0	100.0	

Table 10

Descriptive Statistics of Whole Sample

		Statistics					
		School Name	Additional Guided Reading	Gender	Ethnicity	Students with Disabilities	English Language Learners
N	Valid	795	795	795	795	795	795
	Missing	0	0	0	0	0	0
Mean		8.85	.46	.48	2.10	.14	.17
Median		10.00	.00	.00	2.00	.00	.00
Mode		10	0	0	2	0	0
Std. Deviation		4.566	.499	.500	.417	.352	.375
Minimum		1	0	0	1	0	0
Maximum		16	1	1	3	1	1

The final sample for statistical analysis was obtained through the use of propensity score matching (PSM) in an effort to reduce selection bias because of the inability to use a randomized design methodology. The use of propensity score matching (PSM) is a method that is relatively new to the field of education but has been widely used in many fields of study other than education (Lane & Henson, 2010). Adelson (2013) stated, “Propensity score analysis offers an alternative approach that can balance treatment and comparison groups on many covariates” (p.

2). When differences between the subject's characteristics are not accounted for, selection bias may increase and researchers may be faced with treatment effects, which may be influenced by differences due to non-randomization (Lane & Henson, 2010). According to Rosenbaum and Rubin (1983), non-randomized samples may contrast from one another based on covariates. With the application of PSM, researchers have the ability to control for group differences when estimating treatment effects (Lane & Henson, 2010). Students are paired based on similarity of observable characteristics (Dehejia & Wahba, 2002). According to Rudner & Peyton (2006), "Each member of the first group is matched with a member of the second group on all the factors the researcher considers to be feasible and relevant" (p. 2). In the case of this study, the fixed factor variables are gender, ethnicity, attendance, students with disabilities, English Language Learners, and past academic reading performance on both the PARCC and the Renaissance Star Reading assessments. Propensity score matching allows for the creation of a single summary score from a number of covariates, which leads to more stable results (Adelson, 2013).

Propensity score matching (PSM) allows for statistically equivalent groups to be created through a matched sampling that is unbiased. To determine an unbiased sample, random assignment into the treatment and control groups should be used. PSM reduces selection bias and allows for the comparisons of groups as if the sample were randomized. With the utilization of matched sampling, group differences due to the variables used in the study such as demographic characteristics rather than treatment effects are eliminated (Hahs-Vaughn & Onwuegbuzie, 2006). In order to study the predictor variables for student academic achievement in reading of fourth-grade students at 12 participating schools, a quasi-experiment (comparative group) was designed where students were matched based on relevant characteristics.

Propensity score matching for this sample was done using the statistical software language “R,” which is “a language for statistical computing and graphics” (R Development Core Team, 2011). Student data were collected, entered into Excel, and properly dummy-coded. The Excel file was then uploaded into “MatchIt” via R, where a PSM was computed in “optmatch,” matching students one-to-one (Ho, Imai, King, & Stuart, 2011). The results of the PSM analyses construction appear in Appendix C.

After PSM, a total of 374 students were included in the sample from 12 participating schools. The schools were alphabetically labeled. School A (8 students), School B (48 students), School C (75 students), School D (2 students), School E (5 students), School F (10 students), School G (46 students), School H (15 students), School I (26 students), School J (36 students), School K (39 students) and School L (64 students) were part of the sample after PSM was conducted. Ten independent variables, gender, ethnicity, students with disabilities, English Language Learners, attendance, Renaissance Star Reading scores for spring 2016 and fall 2016 for both comprehension and oral reading fluency, and PARCC 2016 assessment scores were included in the PSM analysis. The sample consisted of 187 males and 187 females. All students received free or reduced lunch. Twenty-two students were White, 283 were Hispanic, and 69 students were Black. There were 45 students with disabilities and 329 students with no disabilities. There were 55 English Language Learners and 319 students who were not English Language Learners. Students who received additional Guided Reading were 187, and students who did not receive additional Guided Reading were 187. The mean number of days absent was 168.23, with a standard deviation of 10.194. The mean scaled score on the Renaissance Star Reading assessment for spring 2016 was 307.98, with a standard deviation of 114.797, and the oral reading fluency spring 2016 mean was 73.47, with a standard deviation of 26.250. The

PARCC spring 2016 state assessment scores mean was 712.94, with a standard deviation of 27.099. The mean scaled score on the Renaissance Star Reading assessment for fall 2016 was 363.63, with a standard deviation of 110.057, and the oral reading fluency fall 2016 mean was 85.46, with a standard deviation of 24.576. The mean scaled score on the Renaissance Star Reading assessment for spring 2017 was 448.53, with a standard deviation of 113.308, and the oral reading fluency spring 2017 mean was 104.87, with a standard deviation of 26.132. The PARCC spring 2017 state assessment mean was 736.19, with a standard deviation of 23.835.

Table 11

Descriptive Statistics of PSM Sample

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Student ID	374	1	374	187.50	108.109
SS16S	374	65	656	307.98	114.797
ORF16S	374	10	158	73.47	26.250
PARCC16	374	650	790	712.94	27.099
Attendance	374	107	180	168.23	10.194
SS16F	374	33	728	363.63	110.057
ORF16F	374	21	160	85.46	24.576
SS17S	374	84	835	448.53	113.308
ORF17S	374	23	190	104.87	26.132
PARCC17	374	650	793	736.19	23.835
Valid N (listwise)	374				

Table 12

Descriptive Statistics of PSM Sample

		Statistics					
		School Name	Additional Guided Reading	Gender	Ethnicity	Students with Disabilities	English Language Learners
N	Valid	374	374	374	374	374	374
	Missing	0	0	0	0	0	0
Mean		7.10	.50	.50	2.13	.12	.15
Median		7.00	.50	.50	2.00	.00	.00
Mode		3	0 ^a	0 ^a	2	0	0
Std. Deviation		3.805	.501	.501	.478	.326	.355
Minimum		1	0	0	1	0	0
Maximum		12	1	1	3	1	1

a. Multiple modes exist. The smallest value is shown

Table 13

School Name

		School Name			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A	8	2.1	2.1	2.1
	B	48	12.8	12.8	15.0
	C	75	20.1	20.1	35.0
	D	2	.5	.5	35.6
	E	5	1.3	1.3	36.9
	F	10	2.7	2.7	39.6
	G	46	12.3	12.3	51.9
	H	15	4.0	4.0	55.9
	I	26	7.0	7.0	62.8
	J	36	9.6	9.6	72.5
	K	39	10.4	10.4	82.9
	L	64	17.1	17.1	100.0
	Total		374	100.0	100.0

Table 14

Additional Guided Reading

		Additional Guided Reading			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Additional GR	187	50.0	50.0	50.0
	Additional GR	187	50.0	50.0	100.0
	Total	374	100.0	100.0	

Table 15

Gender

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	187	50.0	50.0	50.0
	Female	187	50.0	50.0	100.0
	Total	374	100.0	100.0	

Table 16

Ethnicity

		Ethnicity			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White	22	5.9	5.9	5.9
	Hispanic	283	75.7	75.7	81.6
	Black	69	18.4	18.4	100.0
	Total	374	100.0	100.0	

Table17

Students with Disabilities

		Students with Disabilities			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	329	88.0	88.0	88.0
	Yes	45	12.0	12.0	100.0
	Total	374	100.0	100.0	

Table18

English Language Learners

		English Language Learners			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	319	85.3	85.3	85.3
	Yes	55	14.7	14.7	100.0
	Total	374	100.0	100.0	

Overarching Research Question

Overarching Research Question: Do fourth-grade students who received additional Guided Reading instruction show significant difference in reading achievement on the Renaissance Star Reading assessment and PARCC English Language Arts/Literacy state assessment when compared to fourth-grade students who did not receive additional Guided Reading instruction?

A series of simultaneous multiple regressions were carried out on the subsidiary research questions in order to provide an overall answer to the overarching research question that drove this study. The results showed that fourth-grade students who received additional Guided Reading instruction, when compared to fourth-grade students who did not receive additional Guided Reading instruction, had no statistically significant difference in reading achievement on

the Renaissance Star Reading assessment and PARCC English Language Arts/Literacy state assessment.

Subsidiary Research Question 1: Analysis and Results

Subsidiary Research Question 1: Do fourth-grade students who received additional Guided Reading instruction show significant difference on oral reading fluency as compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment?

Null Hypothesis 1: There is no statistically significant difference in oral reading fluency scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment.

A simultaneous multiple regression was run to answer Subsidiary Research Question 1. The purpose was to determine the amount of influence the independent variable additional Guided Reading had on the oral reading fluency performance of fourth-grade students as measured by the Star Reading assessment. The mean scores for students who did not receive additional Guided Reading instruction was 105.08, with a standard deviation of 26.037. For students who received additional Guided Reading instruction, the mean score was 104.66, with a standard deviation of 26.294.

The model involved 374 students in Grade 4 from 12 participating schools. All 12 schools provided Guided Reading instruction during the district's mandatory literacy block, but three schools provided additional Guided Reading instruction during intervention periods. The dependent variable was the spring 2017 Renaissance Star Reading assessment oral reading fluency for students in Grade 4 (ORF17S). In the model, the value of *R* squared is .685, which

indicates 68.5% of the variance in performance on the spring 2017 Star Reading assessment (ORF17S) can be attributed to the independent variables in the model. The adjusted R square is .680, which indicates the independent variables contributed 68.0% of the variability in this regression model with respect to the population from which the sample was drawn. The Durbin-Watson score was 1.959, which indicates that the residuals of the variables are not related and the assumption for regression was met.

Table 19

Model Summary Renaissance Star Reading-Oral Reading Fluency, Spring 2017

Model Summary ^b										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change	Durbin-Watson
						F Change	$df1$	$df2$		
1	.827 ^a	.685	.680	14.776	.685	159.724	5	368	.000	1.959

a. Predictors: (Constant), English Language Learners, Gender, Additional Guided Reading, ORF16F, Students with Disabilities

b. Dependent Variable: ORF17S

Regression Model 1 is statistically significant ($F(5, 368) = 159.724; p < .001$).

Table 20

ANOVA for Renaissance Star Reading-Oral Reading Fluency, Spring 2017

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	174365.182	5	34873.036	159.724	.000 ^b
	Residual	80346.658	368	218.333		
	Total	254711.840	373			

a. Dependent Variable: ORF17S

b. Predictors: (Constant), English Language Learners, Gender, Additional Guided Reading, ORF16F, Students with Disabilities

Examination of the standardized beta coefficients table (see Table 21) indicates that there is only one statistically significant predictor of performance on the oral reading fluency section of the 2017 spring Renaissance Star Reading assessment (ORF17S). The statistically significant variable is the oral reading fluency section of the 2016 fall assessment (ORF16F), $t = 27.886$; $p < .001$, or what would be considered the pretest, which contributed approximately 68% ($\beta = .824$) of the variance to the overall regression model. The positive beta indicates that as student performance on the oral reading fluency section of the 2016 fall assessment (ORF16F) increases, performance on the oral reading fluency section of the 2017 spring Star Reading assessment (ORF17S) increases as well.

Multicollinearity is not of concern because all predictor variables included in this regression model were well within the accepted limits of the variance inflation factor (VIF) value of 2.5 (Field, 2013).

Of the five predictors of performance on the oral reading fluency section of the Star Reading spring 2017 assessment, the strongest predictor and only significant predictor variable is the oral reading fluency fall 2016 assessment (ORF16F). The variables gender, students with disabilities, English Language Learners, and additional Guided Reading instruction, the variable of interest, all were not.

Table 21

Coefficients Table for Renaissance Star Reading-Oral Reading Fluency, Spring 2017

Model	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
	1 (Constant)	30.959	3.069				10.086	.000		

ORF16F	.876	.031	.824	27.886	.000	.826	.824	.816	.982	1.019
Gender	-2.249	1.544	-.043	-1.457	.146	-.052	-.076	-	.980	1.021
								.043		
Additional Guided Reading	.868	1.534	.017	.566	.572	-.008	.029	.017	.992	1.008
Students with Disabilities	-1.737	2.516	-.022	-.690	.490	-.052	-.036	-	.871	1.148
								.020		
English Language Learners	-.449	2.318	-.006	-.194	.846	-.123	-.010	-	.866	1.155
								.006		

a. Dependent Variable: ORF17S

Based on the analysis, the null hypothesis for Subsidiary Research Question 1 was retained. Additional Guided Reading does not have a statistically significant influence on fourth-grade students' oral reading fluency as measured by the Renaissance Star Reading assessment when controlling for gender, students with disabilities, English Language Learners, academic past performance on the section of oral reading fluency fall 2016 Star Reading assessment and receiving additional Guided Reading or not.

Subsidiary Research Question 2: Analysis and Results

Subsidiary Research Question 2: Do fourth-grade students who received additional Guided Reading instruction show significant difference in comprehension (measured by scaled score) when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment?

Null Hypothesis 2: There is no statistically significant difference in comprehension scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment.

A simultaneous multiple regression was run to answer the research question. The purpose was to determine the amount of influence the independent variable additional Guided Reading had on the comprehension performance of a fourth-grade student as measured by the Star Reading assessment. The mean scores for students who did not receive additional Guided Reading instruction was 448.73, with a standard deviation of 113.309. For students who received additional Guided Reading instruction, the mean score was 448.33, with a standard deviation of 113.611.

The model involved 374 students in Grade 4 from 12 participating schools. All 12 schools provided Guided Reading instruction during the district's mandatory literacy block, but three schools provided additional Guided Reading instruction during intervention periods. The dependent variable was the spring 2017 Renaissance Star Reading assessment scaled score for comprehension for students in Grade 4 (SS17S). In the model, the value of R squared is .665, which indicates 66.5% of the variance in performance on the spring 2017 Star Reading assessment (SS17S) can be attributed to the independent variables in the model. The adjusted R square is .660, which indicates the independent variables would contribute 66.0% of the variability in this regression model, with respect to the population from which the sample was drawn. The Durbin-Watson score was 1.897, which indicates that the residuals of the variables are not related and the assumption for regression was met.

Table 22

Model Summary Renaissance Star Reading-Comprehension, Spring 2017

Model Summary ^b										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change	Durbin-Watson
						F Change	df1	df2		
1	.815 ^a	.665	.660	66.060	.665	145.873	5	368	.000	1.897

a. Predictors: (Constant), Students with Disabilities, SS16F, Additional Guided Reading, Gender, English Language Learners

b. Dependent Variable: SS17S

Regression Model 1 is statistically significant ($F(5, 368) = 145.873; p < .001$).

Table 23

ANOVA for Renaissance Star Reading-Comprehension, Spring 2017

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3182910.123	5	636582.025	145.873	.000 ^b
	Residual	1605935.110	368	4363.954		
	Total	4788845.233	373			

a. Dependent Variable: SS17S

b. Predictors: (Constant), Students with Disabilities, SS16F, Additional Guided Reading, Gender, English Language Learners

Examination of the standardized beta coefficients table (see Table 24) indicates that there is only one statistically significant predictor of performance on the comprehension section of the 2017 spring Renaissance Star Reading assessment (SS17S). The statistically significant variable is comprehension on the fall 2016 assessment (SS16F), $t = 26.672; p < .001$, or what would be considered the pretest, which contributed approximately 66% ($\beta = .812$) of the variance to the overall regression model. The positive beta indicates that as student performance on the comprehension section of the fall 2016 assessment (SS16F) increases, performance on the comprehension section of the 2017 spring Star Reading assessment (SS17S) increases as well.

Multicollinearity is not of concern because all predictor variables included in this regression model were well within the accepted limits of the variance inflation factor (VIF) value of 2.5 (Field, 2013).

Of the five predictors of performance on the comprehension section of the Star Reading spring 2017 assessment, the strongest predictor and only significant predictor variable is the comprehension section on the fall 2016 assessment (SS16F). The variables gender, students with disabilities, English Language Learners, and additional Guided Reading instruction, the variable of interest, all were not.

Table 24

Coefficients Table for Renaissance Star Reading-Comprehension, Spring 2017

Model	Coefficients ^a									
	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	148.143	13.172		11.247	.000					
English Language Learners	-.866	10.363	-.003	-.084	.933	-.116	-.004	-	.866	1.154
Gender	-8.801	6.902	-.039	-1.275	.203	-.052	-.066	-	.980	1.021
Additional Guided Reading	3.061	6.857	.014	.446	.656	-.002	.023	.013	.993	1.007
SS16F	.836	.031	.812	26.672	.000	.814	.812	.805	.982	1.018
Students with Disabilities	-6.515	11.249	-.019	-.579	.563	-.047	-.030	-	.871	1.148

a. Dependent Variable: SS17S

Based on the analysis, the null hypothesis for Subsidiary Research Question 2 was retained. Additional Guided Reading does not have a statistically significant influence on fourth-

grade students' comprehension as measured by the Renaissance Star Reading assessment when controlling for gender, students with disabilities, English Language Learners, academic past performance on the section of comprehension fall 2016 Star Reading assessment, and receiving additional Guided Reading or not.

Subsidiary Research Question 3: Analysis and Results

Subsidiary Research Question 3: Do fourth-grade students who received additional Guided Reading instruction show significant difference in reading achievement on the PARCC English Language Arts/Literacy state assessment when compared to fourth-grade students who did not receive additional Guided Reading instruction?

Null Hypothesis 3: There is no statistically significant difference in reading scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the English Language Arts/Literacy PARCC state assessment.

A simultaneous multiple regression was run to answer the research question. The purpose was to determine the amount of influence the independent variable additional Guided Reading had on the reading achievement performance of a fourth-grade student as measured by the PARCC English Language Arts/Literacy state assessment. The mean scores for students who did not receive additional Guided Reading instruction was 737.97, with a standard deviation of 23.727. For students who received additional Guided Reading instruction, the mean score was 734.41, with a standard deviation of 23.873.

The model involved 374 students in Grade 4 from 12 participating schools. All 12 schools provided Guided Reading instruction during the district's mandatory literacy block, but three schools provided additional Guided Reading instruction during intervention periods. The

dependent variable was the spring PARCC English Language Arts/Literacy reading achievement score for students in Grade 4 (PARCC17). In the model, the value of R squared is .561, which indicates 56.1% of the variance in performance on the PARCC English Language Arts/Literacy (PARCC17) can be attributed to the independent variables in the model. The adjusted R square is .555, which indicates the independent variables contributed 55.0% of the variability in this regression model with respect to the population from which the sample was drawn. The Durbin-Watson score was 1.724, which indicates that the residuals of the variables are not related and the assumption for regression was met.

Table 25

Model Summary 2017 PARCC English Language Arts/Literacy -Reading Achievement

Model Summary ^b										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change	Durbin-Watson
						F Change	$df1$	$df2$		
1	.749 ^a	.561	.555	15.902	.561	93.992	5	368	.000	1.724

a. Predictors: (Constant), English Language Learners, Gender, Additional Guided Reading, PARCC16, Students with Disabilities

b. Dependent Variable: PARCC17

Regression Model 1 is statistically significant ($F(5, 368) = 93.992; p < .001$).

Table 26

ANOVA for 2017 PARCC English Language Arts/Literacy -Reading Achievement

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	118846.684	5	23769.337	93.992	.000 ^b
	Residual	93062.837	368	252.888		
	Total	211909.521	373			

a. Dependent Variable: PARCC17

b. Predictors: (Constant), English Language Learners, Gender, Additional Guided Reading, PARCC16, Students with Disabilities

Examination of the standardized beta coefficients table (see Table 27) indicates that there are two statistically significant predictors of performance on the reading achievement section of the PARCC English Language Arts/Literacy (PARCC17). The statistically significant variables are PARCC English Language Arts/Literacy (PARCC16) and additional Guided Reading instruction. Past performance was a statistically significant variable, PARCC English Language Arts/Literacy (PARCC16), $t = 20.921$; $p < .001$, which contributed approximately 55% ($\beta = .740$) of the variance to the overall regression model. The positive beta indicates that as student performance on the reading achievement section of the PARCC English Language Arts/Literacy (PARCC16) increases, performance on the reading achievement section of the PARCC English Language Arts/Literacy (PARCC17) increases as well. The statistically significant variable additional Guided Reading instruction, $t = -3.095$; $p < .001$ contributed approximately 1.2% ($\beta = -.108$) of the variance to the overall regression model. The negative beta indicates that as student performance on the reading achievement section of the PARCC English Language Arts/Literacy (PARCC16) increases, performance on the reading achievement section of the PARCC English Language Arts/Literacy (PARCC17) decreases. The negative beta indicates that students who did not receive additional Guided Reading perform better than students who did receive additional Guided Reading. As a matter of fact, students who did not receive additional Guided Reading performed, on average, 5.121 points better on the PARCC English Language Arts/Literacy (PARCC17) assessment.

Multicollinearity is not of concern because all predictor variables included in this regression model were well within the accepted limits of the variance inflation factor (VIF) value of 2.5 (Field, 2013).

Of the five predictors of performance on the reading achievement section of the PARCC English Language Arts/Literacy (PARCC17) state assessment, the only two significant predictor variables are the PARCC English Language Arts/Literacy (PARCC16) and additional Guided Reading instruction. The variables gender, students with disabilities, and English Language Learners were not.

Table 27

Coefficients Table for 2017 PARCC English Language Arts/Literacy-Reading Achievement

Model	Coefficients ^a									
	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	274.290	22.297		12.301	.000					
PARCC16	.651	.031	.740	20.921	.000	.738	.737	.723	.955	1.048
Additional Guided Reading	-5.121	1.654	-.108	-3.095	.002	-.075	-.159	-	.988	1.012
Gender	2.157	1.666	.045	1.295	.196	-.009	.067	.045	.975	1.026
Students with Disabilities	-1.681	2.708	-.023	-.621	.535	-.092	-.032	-	.871	1.148
English Language Learners	-1.859	2.516	-.028	-.739	.460	-.184	-.038	-	.852	1.174

a. Dependent Variable: PARCC17

Based on the analysis, the null hypothesis for subsidiary Research Question 3 was rejected. Additional Guided Reading had a statistically significant influence on fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the PARCC English Language Arts/Literacy 2017 state assessment.

Conclusion

In conclusion, the null hypotheses for Research Questions 1 and 2 were retained. The results indicate fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction did not demonstrate a statistically significant difference in oral reading fluency and comprehension as measured by the Renaissance Star Reading assessment.

The null hypothesis for Research Question 3 was rejected. The results indicate fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction demonstrate a statistically significant difference in reading achievement as measured by the PARCC English Language Arts/Literacy 2017 state assessment. The analysis indicates that, on average, students who receive additional Guided Reading did not do as well on the PARCC English Language Arts/Literacy 2017 state assessment as students who did not receive additional Guided Reading. A more in-depth discussion of these analyses is articulated in Chapter V.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction

Reading instruction has been disputed for decades. Reading proficiency is an epidemic failure in inner-city school districts. Papalewis (2004) remarked, “Struggling readers are often products of their environment” (as cited in Bradley, 2016, p. 108). Poverty can have a major impact on a child’s development and academic performance. The Matthew effect phenomenon in reference to reading implies students who begin on a higher level of skills and understanding are able to learn more quickly than their peers who begin at a lower level of skills, causing the achievement gap to widen (as cited in Huang, Moon, & Boren, 2014, pp. 96-97). Being able to read at an early phase in education is critical for academic achievement. Fountas and Pinnell (2001) specify, “The first years of school establish the essential foundation of literacy that enables all future literacy” (Guided Reading Toolkit, 2014, p. 10). Reading is a fundamental skill, and it is important to acquire. Children are required to learn the necessary foundational literacy skills to become proficient readers.

Reading is an essential skill to master. The National Assessment of Educational Progress (NAEP, 2015) indicated inadequate performance in reading nationwide. The mandated federal and state initiatives require that students become proficient and competent readers, ensuring the development of grade-specific standards fluency and comprehension (NJDOE, 2016). With the high expectations and the rigorous standards, students are required to reach a level of academic mastery. With the reading achievement gap continuing to widen and the reading deficiencies continuously growing throughout the nation, Guided Reading has been adapted to instruct students on their instructional level. Fountas and Pinnell (2017) indicated that the core of an

effective literacy program is Guided Reading. Guided Reading is a personalized program intended for students to learn how to read on their instructional level. The application of Guided Reading is intended to enhance struggling readers' opportunity to read on grade level.

Purpose

The purpose of this research study was to examine if additional Guided Reading instruction increased the oral reading fluency and comprehension of fourth-grade students as measured by the Renaissance Star Reading formative assessment and the PARCC English Language Arts/Literacy state assessment. As more emphasis is being placed on closing the reading achievement gap and students performing on a proficient level on high-stakes tests, it is necessary to teach students how to read on their instructional level to warrant the most academic reading success. This study will add to the body of research-based evidence on the impact additional Guided Reading instruction has in relationship to the growth of reading achievement. This will allow researchers, practitioners, and educators to assess reading instruction and to look more closely into the phenomenon of the Matthew effect, working toward closing the reading achievement gap.

Summary of Findings

Overarching Research Question:

Do fourth-grade students who received additional Guided Reading instruction show significant difference in reading achievement on the Renaissance Star Reading assessment and PARCC English Language Arts/Literacy state assessment when compared to fourth-grade students who did not receive additional Guided Reading instruction?

Subsidiary Research Question 1: Do fourth-grade students who received additional Guided Reading instruction show significant difference in oral reading fluency when compared

to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment?

Null Hypothesis 1: There is no statistically significant difference in oral reading fluency scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment.

Findings: The null hypothesis for Research Question 1 was retained. It was determined there is no statistically significant difference in oral reading fluency scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment when controlling for English Language Learners, gender, students with disabilities, additional Guided Reading instruction, and previous reading performance (oral reading fluency).

A simultaneous multiple regression was used to answer the first research question. The purpose of this analysis was to determine the amount of influence the independent variables English Language Learners, gender, students with disabilities, additional Guided Reading, and previous reading performance (oral reading fluency fall 2016) had on fourth-grade students' performance on the dependent variable, performance on the oral reading fluency section of the Star Reading spring 2017 assessment. It was determined that the independent variables contributed 68.5% of the variance in performance on the oral reading fluency section of the Star Reading spring 2017 assessment.

After further examination, it was determined that only one of the variables included in this model was a statistically significant predictor of performance on the Star Reading spring

2017 assessment examining oral reading fluency. The oral reading fluency section of the fall 2016 (ORF16F) Star Reading assessment contributed approximately 68% of the variance to the overall regression model. Academic past performance on the Star Reading assessment of the oral reading fluency section (ORF16F) was the strongest predictor on the oral reading fluency (ORF17S) section of the Star Reading spring 2017 assessment.

According to the analysis, there was a positive relationship between past academic performance of the oral reading fluency section of the Star Reading fall 2016 assessment and performance on the oral reading fluency section of the Star Reading spring 2017 assessment. The Renaissance Star Reading assessment (2016) indicated fourth-grade students' oral reading fluency ranged from 110-190 words per minute. The positive relationship indicates that as students' performance on the oral reading fluency section of the fall 2016 assessment (ORF16F) increases, performance on the oral reading fluency section of the Star Reading spring 2017 assessment (ORF17S) increases as well.

The variable of past academic performance on the oral reading fluency fall 2016 section of the Star Reading test (ORF16F) was a statistically significant variable that influenced student performance on the oral reading fluency section of the Star Reading spring 2017 (ORF17S) assessment.

Subsidiary Research Question 2: Do fourth-grade students who received additional Guided Reading instruction show significant difference in comprehension (measured by scaled score) when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment?

Null Hypothesis 2: There is no statistically significant difference in comprehension scores for fourth-grade students who received additional Guided Reading instruction when

compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment.

Findings: The null hypothesis for Research Question 2 was retained. It was determined there is no statistically significant difference in comprehension scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment when controlling for English Language Learners, gender, students with disabilities, additional Guided Reading, and previous reading performance (comprehension).

A simultaneous multiple regression was used to answer the second research question. The purpose of this analysis was to determine the amount of influence the independent variables English Language Learners, gender, students with disabilities, additional Guided Reading, and previous reading performance (comprehension fall 2016) had on fourth-grade students' performance on the dependent variable, performance on the comprehension section of the Star Reading spring 2017 assessment. It was determined that the independent variables contributed 66.5% of the variance in performance on the comprehension section of the Star Reading spring 2017 assessment.

After further examination, it was determined that only one of the variables included in this model was a statistically significant predictor of performance on the Star Reading spring 2017 assessment examining comprehension. Comprehension measured using a scaled score fall 2016 (SS16F) section of the Star Reading assessment contributed approximately 66% of the variance to the overall regression model. Academic past performance on the Star Reading assessment section of comprehension (SS16F) was the strongest predictor on the comprehension (SS17S) section of the Star Reading spring 2017 assessment.

According to the analysis, there was a positive relationship between past academic performance on the comprehension section of the Star Reading fall 2016 assessment and performance on the comprehension section of the Star Reading spring 2017 assessment. A study done by Chevalier, Del-Santo, Scheiner, Skok, and Tucci (2002) reported reading comprehension of students in Grades 3-5 improved after receiving Guided Reading instruction (p. 43). The positive relationship indicates that as students' performance on the comprehension section of the fall 2016 (SS16F) increases, performance on the comprehension section of the Star Reading spring 2017 assessment (SS17S) increases as well.

The variable of past academic performance on the comprehension section of the fall 2016 Star Reading test (SS16F) was a statistically significant variable that influenced student performance on the comprehension section of the Star Reading spring 2017 (SS17S) assessment.

Subsidiary Research Question 3: Do fourth-grade students who received additional Guided Reading instruction show significant difference in reading achievement on the PARCC English Language Arts/Literacy state assessment when compared to fourth-grade students who did not receive additional Guided Reading instruction?

Null Hypothesis 3: There is no statistically significant difference in reading scores for fourth-grade students who received additional Guided Reading instruction as compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the English Language Arts/Literacy PARCC state assessment.

Findings: The null hypothesis for Research Question 3 was rejected. Based on the analysis, there is a statistically significant difference in reading scores for fourth-grade students who received additional Guided Reading instruction when compared to fourth-grade students who did not receive additional Guided Reading instruction as measured by the English Language

Arts/Literacy PARCC state assessment when controlling for English Language Learners, gender, students with disabilities, additional Guided Reading, and previous reading performance on the English Language Arts/Literacy PARCC state assessment.

A simultaneous multiple regression was used to answer the third research question. The purpose of this analysis was to determine the amount of influence the independent variables English Language Learners, gender, students with disabilities, additional Guided Reading and previous reading performance on the English Language Arts/Literacy PARCC (PARCC16) had on fourth-grade students' performance on the dependent variable, performance on the reading achievement of the English Language Arts/Literacy PARCC (PARCC17) state assessment. It was determined that the independent variables contributed 56.1% of the variance in performance on the reading achievement section of the English Language Arts/Literacy PARCC (PARCC17) state assessment.

After further examination, it was determined that only two of the variables included in this model were statistically significant predictors of performance on the English Language Arts/Literacy PARCC (PARCC17) state assessment. The statistically significant variables included additional Guided Reading instruction and past reading performance on the English Language Arts/Literacy PARCC (PARCC16) state assessment. Additional Guided Reading instruction accounted for approximately 1.2% of the variance and reading past performance accounted for approximately 55% of the variance in reading performance on the English Language Arts/Literacy PARCC (PARCC17) state assessment.

According to the analysis, there was a positive relationship between past academic reading performance on the English Language Arts/Literacy PARCC (PARCC16) and reading performance on the English Language Arts/Literacy PARCC (PARCC17) state assessment. The

positive relationship indicates that as students' reading performance on the English Language Arts/Literacy PARCC (PARCC16) increases, reading performance on the English Language Arts/Literacy PARCC (PARCC17) increases as well.

However, additional Guided Reading instruction had a negative effect on the reading performance on the English Language Arts/Literacy PARCC (PARCC17) state assessment. The negative relationship indicates as student performance on the reading achievement English Language Arts/Literacy PARCC (PARCC16) increases, performance on the reading achievement section of the English Language Arts/Literacy PARCC (PARCC17) state assessment decreases. The negative relationship indicates that students who did not receive additional Guided Reading perform better than students who received additional Guided Reading instruction. Furthermore, the results showed students who did not receive additional Guided Reading instruction performed, on average, 5.121 points better on the English Language Arts/Literacy PARCC (PARCC17) state assessment. On the contrary, Cunningham (2006) conducted a study observing six low-performing schools who strictly utilized Guided Reading instruction to increase reading scores on a high-stakes assessment. As a result, after the implementation of Guided Reading instruction, the third and fourth grade students met or exceeded the state's standard for proficiency by 68-87% (p. 382). Regardless of the schools being low-performing, the instructional practices infused assisted students in increasing their assessment scores.

The variable of past academic performance on reading on the English Language Arts/Literacy PARCC (PARCC16) was a statistically significant variable that influenced student performance on the English Language Arts/Literacy PARCC (PARCC17) state assessment. On the contrary, the variable of receiving additional Guided Reading instruction in comparison to students who did not receive additional Guided Reading instruction was a statistically significant

variable that had a negative impact on student's reading performance on the English Language Arts/Literacy PARCC (PARCC17) state assessment.

Research Summary

The results of this study indicate additional Guided Reading instruction does not have a positive impact on the reading academic achievement of students in the fourth grade as measured by the Renaissance Star Reading and PARCC assessments. Students that were receiving additional Guided Reading instruction performed lower on the PARCC 2017 assessment than students who only received Guided Reading instruction as part of their mandated literacy block. This study did not identify the school factors that might have contributed to the effectiveness of instructional practices used during Guided Reading instruction. Further research will need to occur to identify such school factors.

Finally, findings of the study suggest that past academic reading performance on both the oral reading fluency and the comprehension sections of the Renaissance Star Reading assessment positively influenced the fourth-grade students' performance on the Star Reading 2017 assessment. Students' oral reading fluency (ORF16F) performance on the Star Reading 2016 assessment contributed approximately 68% of the change, signifying that as students' performance on the oral reading fluency section of the fall 2016 assessment (ORF16F) increases, the performance on the 2017 assessment (ORF17S) increases as well. Huang, Moon, and Boren (2014) conducted a longitudinal study to investigate reading achievement of students in a low-performing school district from kindergarten through second grade. Students who received specific daily Guided Reading instruction improved their fluency and comprehension skills over time (p. 106). According to Allington (2001), research shows even though the reader spends a longer time reading, lower comprehension is the end result (p. 71). The findings for the study

show that additional Guided Reading did not have a statistically significant impact on oral reading fluency as measured by the Star Reading assessment.

In addition, students' comprehension (SS16F) performance on the Star Reading 2016 assessment contributed approximately 66% of the change, signifying that as students' performance on the scaled score fall 2016 assessment (SS16F) measuring for comprehension increases, the performance on the spring 2017 assessment (SS17S) increases as well. The findings show that additional Guided Reading did not have a statistically significant impact on comprehension as measured by the Star Reading assessment. Although past reading academic performance impacted students' performance on the Star Reading 2017 assessment, students' performance on the PARCC 2017 state assessment showed otherwise. It is important to note, however, that although the findings are statistically significant, the effects of additional Guided Reading instruction in this study had a negative impact on a student's performance ($\beta = -.108$, which indicates that 1.2% of the variance in academic performance can be explained by students receiving additional Guided Reading instruction). Kempe, Gustavsson, and Samuelsson (2011) conducted a study examining the reading difference of students who were identified as struggling and those who were reading on grade level. When compared, the findings indicated children who were struggling readers continued to lag in fluency and comprehension skills in comparison to the students identified as normal readers. The findings fortify the Matthew effect, describing the gap between good and poor readers over time (p. 189). In reference to the study, students who were in need of additional Guided Reading did not outperform those who received only Guided Reading instruction during the mandatory literacy block. In fact, the students who did not receive additional Guided Reading instruction performed 5.121 points better on the state assessment. Therefore, more research should be conducted on the topic of students receiving additional

Guided Reading instruction in conjunction with Guided Reading instruction during the mandated literacy block.

Due to the mixed results of the study, it is difficult to draw clear findings from the literature about the effects of instructing fourth-grade students using additional Guided Reading. Papalewis (2004) stated struggling readers tend to struggle with comprehension (as cited in Bradley, 2016, p. 108). Students who have a difficult time understanding what they are reading most likely will struggle to comprehend the text. According to Allington (2001), faster rates of reading have been correlated to higher comprehension (as cited in Fountas & Pinnell, 2017, p. 436). With that being said, it is evident that oral reading fluency and comprehension go hand in hand.

The practice of Guided Reading instruction is becoming more widespread. Massengill (2003) conducted a study on four adults who demonstrated low literacy ability; and with intense Guided Reading instruction, each participant increased one reading level. The National Reading Panel (2000) in the United States concluded Guided Reading procedures have a consistent and positive impact on word recognition, fluency, and reading comprehension (as cited in Oostdam et al., 2015, p. 428). Research shows with the application of Guided Reading instruction and the scaffold approach to teaching, students transition from assisted to independently completing instructional tasks.

The question that often arises from studies on the impact of reading achievement is the avenues educators must take to work toward closing the reading achievement gap. Belfiore and Lee (2005) stated, “If we are to close the academic gap between underachievement of students enrolled in poor urban schools and the potential of those students, we need to provide the opportunity for those students to experience academic success early and often” (p. 857). With the

emphasis on students performing on grade level, Guided Reading instruction is infused to teach struggling students on their instructional level in order to increase their reading levels.

Researchers have conducted many studies to determine the best approach to teaching children how to read. According to Vygotsky (zone of proximal development), children who are struggling might perform better academically in a homogenous setting because they are instructed on their instructional level. In addition, they may be more motivated to achieve, as there may be more of a scaffolded approach to teaching and focus on learning rather than students being academically frustrated.

According to the literature, Guided Reading instruction has a positive impact on students' reading achievement. For this particular study, the emphasis was on additional Guided Reading instruction in addition to students receiving their daily Guided Reading instruction to assist with the increase of fluency and comprehension. The findings for additional Guided Reading are inconsistent with the literature on Guided Reading instruction. Although the same demographic variables were explored at all 12 participating schools, students performed differently on the Renaissance Star Reading and PARCC assessments at each school. In some cases, the effect size was small, but this may indicate that factors, most likely school-based factors, other than the ones explored in this study are influencing the reading academic performance of fourth-grade students who either received additional Guided Reading or did not.

Implications for Practice

The continued lower levels of reading performance by students from low-socioeconomic backgrounds has led to intense research to determine the root causes of the reading achievement gap. Guided Reading is known to be an essential component of any core reading program. Guided Reading instruction was implemented at the commencement of the 2013-2014 school

year. Guided Reading was implemented district-wide for the purpose of enhancing students' reading skills. The district mandate is for teachers to provide Guided Reading instruction on a daily basis within the literacy block. Although that sounds perfect in theory, constraints of time may not allow all students to receive Guided Reading instruction consecutively. The study conducted focused specifically on intermediate grades (fourth-grade students). In the study, all 12 participating schools embedded Guided Reading instruction daily, and three out of the 12 schools implemented additional Guided Reading instruction during instructional periods designated for intervention. However, the results from the study disclosed additional Guided Reading instruction did not have a positive influence on students' reading achievement.

Based on the findings, it is imperative for the district to consider the implementation and resources used for Guided Reading instruction and to analyze if appropriate time is allocated for instruction. The implementation of Guided Reading can be a concern across the elementary schools within the district if teachers are not appropriately trained. Guided Reading is a flexible and differentiated approach to providing reading instruction; nevertheless, the components of the Guided Reading lesson and the resources used must be taught with accuracy. Teachers must receive high quality professional development that is ongoing to employ the research-based practices/strategies of an effective Guided Reading lesson. Guskey (2002) stated, "Professional development programs are systematic efforts to bring about change in the classroom practices of teachers, in their attitude and beliefs, and in the learning outcomes of students" (p. 381). Professional development must be ongoing to insure instructional practices are being delivered with fidelity.

The instruction students receive can be altered according to their progress throughout the academic year. Teachers should conduct ongoing formative assessments of their students to

dictate the differentiated and tailored instruction needed for each student to become academically successful. Thessin (2015) claimed, “When data is used as part of an ongoing cycle of improvement . . . teachers can change their instructional practice to improve student achievement” (Renaissance Learning, 2014, p. 1). Monitoring students’ academic progress permits a more effective and efficient approach to teaching reading.

Furthermore, reading instruction must not only occur in English Language Arts Literacy classes but become intertwined across the curriculum. Tomlinson and McTighe (2006) remarked, “Teachers should employ reading strategies across the curriculum, in every subject area, not just reading” (p. 18). Reading is a pivotal skill to master; therefore, it should be infused within all disciplines to offer students with various academic opportunities to become proficient readers. If Guided Reading is going to contribute to a student’s reading success, it has to be taught with fidelity.

It is imperative for the district to be committed to finding and utilizing current research-based pedagogy and instructional practices for teaching reading.

Recommendations for Researchers

The findings from this study may be shared with researchers, practitioners, and educators to appropriately address the reading achievement gap. The continued lower levels of reading achievement by students from low-socioeconomic backgrounds has led researchers and educators to work toward determining the root causes of underachievement. Although additional Guided Reading instruction may be appropriate for struggling students, Guided Reading instruction solely as part of the mandated literacy block might be adequate for all students to increase their reading capabilities. Students who are able to accurately and automatically identify the words in a text are able to focus on the meaning of the text (Fountas & Pinnell, 2003). In

order to accomplish this in the most effective manner, educators must receive training on how to improve fluency and comprehension with the use of Guided Reading. Guided Reading allows for the student to practice reading with fluency and comprehension within their zone of proximal development. With the implementation of Guided Reading instruction, students may still read below grade level, yet show individual reading growth.

The study recommends that teachers receive adequate training in order to apply Guided Reading as part of their daily instruction and teach it with accuracy. Fountas and Pinnell (2014) encourage schools to follow the Guided Reading procedures to support the enhancement of reading skills. These guiding principles focus on implementing the Guided Reading instructional model by providing in-depth professional development on the different reading strategies, formative assessments to determine students reading level, and differentiating the instruction to meet the needs of all learners. Not only should the professional development describe the Guided Reading approaches but also help teachers understand that Guided Reading is not a one-size-fits-all approach. Antonacci (2000) stated, “In order to reach students, teachers have to scaffold instruction and teach on a child’s instructional level (p. 1). The scaffold approach will allow the teacher to help students transition from assisted to independently completing instructional tasks. It is a reading program that is tailored to the individual needs of a student.

Recommendations for Future Research

Limited empirical research studies exist on the impact of additional Guided Reading instruction on intermediate grades. The minimal studies that do exist focus mainly on the impact of Guided Reading instruction for students in the primary grades. It would be beneficial for educators of intermediate students if more studies were conducted on the influence of Guided Reading instruction as well as additional Guided Reading instruction to assist with fluency and

comprehension. The findings of such studies would provide valuable information about how to most appropriately prepare students to make academic gains on district and state assessments as well as become college and career ready. In order to enhance the literature, it is imperative that future research in this area could include, but not be limited to, the following:

1. Design a qualitative study in which teacher attitudes and perceptions toward Guided Reading instruction are analyzed and compare the relationship between their attitudes and perception and student achievement.
2. Conduct a longitudinal study in which the interaction between the number of years receiving Guided Reading instruction and academic achievement is analyzed from Grades 3-5 (intermediate).
3. Conduct a study concentrating on low-socioeconomic and high-socioeconomic schools' methods for reading intervention.
4. Recreate this study using running records.
5. Design a study that looks at the implementation of leveled readers during Guided Reading instruction and the influence on fluency and comprehension.
6. Design a study in which professional development is monitored and analyzed in reference to Guided Reading instruction and compare the relationship between professional development and student achievement.
7. Design a study to investigate and compare the relationship between various programs and Guided Reading instruction used during intervention to determine the effect the programs have on students' reading achievement.

Conclusion

Educational leaders are challenged with the underachievement of reading and the consequence that it has on a student's academic performance. The magnitude of change authorized by the state to ensure all students are college and career ready demands that educators be held accountable for their students' academic achievement. It is the belief that every child in every state will meet the appropriate standards to be academically proficient. With the reading achievement gap continuing to widen, educators are searching for the best instructional approaches to develop a solution. The results of this study will provide researchers, practitioners, and educators with a broader view of how to improve the academic performance of all students, but especially struggling learners. Guided Reading instruction implemented with fidelity can promote student achievement and lead educators in the direction of finding a solution. As a society, it is imperative for students to acquire the essential literacy skills to become productive and proficient readers.

The truly literate are not those who know how to read, but those who read: independently, responsively, critically, and because they want to.

— Glenna Sloan

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APPENDICES

Appendix A: Request to Conduct Research

July 10, 2017

[REDACTED],

I am writing to request permission to conduct a research study in [REDACTED]. I am currently enrolled in the Seton Hall University Doctoral program in K-12 administration in South Orange, NJ and am in the process of writing my dissertation. The study is entitled *The Effectiveness of Additional Guided Reading Instruction Measured by Renaissance Star Reading to Determine Fourth Grade Reading Achievement*.

As you are aware, Guided Reading was implemented at the commencement of the 2013-2014 school year district wide. As a result, Guided Reading instruction was mandated within the literacy block in all elementary schools. In addition to the implementation of Guided Reading instruction during the mandated literacy block, specific schools have implemented additional Guided Reading instruction during the assigned intervention period to provide students with added support to increase reading achievement. My research study will determine if additional Guided Reading instruction will increase the oral reading fluency and comprehension of fourth grade students as compared to fourth grade students who did not receive additional Guided Reading instruction as measured by the Renaissance Star Reading assessment. I am requested data from the schools listed to use for the research study. The schools are as follows: [REDACTED]. To ensure the study is successful, I am requesting Fourth Grade individual student reports categorized by school. School names will be deleted and coded alphabetically in order to maintain anonymity and confidentiality. Student names will be deleted from the data files and coded only with student identification numbers in order to maintain anonymity and confidentiality. Students missing any section of the report will be excluded from the study. No staff members will be involved in the research project.

1. Student demographics (gender, ethnicity, race, classification, etc.)
2. PARCC 2016/2017 English Language Arts/Literacy state assessment scores
3. Access Scores for ELLs
4. Star Reading scores for spring 2016
5. Star Reading scores for fall 2016 and spring 2017
6. Attendance for the 2016-2017 academic school year

In order to conduct this research, I need to be granted access to fourth grade student data coded only with student identification numbers and categorized by school. I will not have any direct contact with staff or students during the study and the project will not interrupt or displace the regular instructional program. If approval is granted, the data utilized in the study will remain confidential and anonymous. No costs will be incurred by the school district to conduct this research. The completed dissertation will be reviewed and evaluated by the Seton Hall University mentor, Dr. Michael Kuchar. Upon completion of the project, I will provide a written report to you, the [REDACTED].

The research study will provide the district with data showing the impact of Guided Reading instruction in relation to the growth of reading achievement. Your approval to conduct this study will be greatly appreciated. I would be happy to meet with you to answer any

questions or concerns that you may have regarding this study. If you agree, kindly submit a letter of permission on your letterhead acknowledging your consent for me to conduct this study in the district.

I would like to thank you in advance for your cooperation and support.

Respectfully,

Wanda Kopic
Doctoral Candidate
Seton Hall University

Appendix B: Permission Letter

July 27, 2017

[Redacted]
[Redacted]
[Redacted]
[Redacted]

Ms. Kopic,

Thank you for your interest in conducting research in the [Redacted]. I have reviewed your research proposal and it meets my acceptance criteria. My office will provide the data that you requested for 4th grade students in 2016-17. Your data request proposal is therefore approved.

The data that will be provided for your research is subject to FERPA exemption. The District will use exemption a, if the researcher is a school official with legitimate educational interest [34 CFR 99.3(a)(1)] in this case.

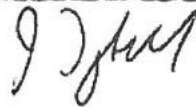
Additionally, the data that you will be provided will not contain student names.

I wish you the best in your effort to conduct research on the effectiveness of additional guided reading instruction in [Redacted].

Should you have any questions, feel free to contact the Office of Data and Accountability at [Redacted].

Cordially,

[Redacted]
[Redacted]
[Redacted]



Appendix C: “MatchIt” Matched Cases

R Console

```
R version 3.4.0 (2017-04-21) -- "You Stupid Darkness"
Copyright (C) 2017 The R Foundation for Statistical Computing
Platform: i386-w64-mingw32/i386 (32-bit)
```

```
R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.
```

```
Natural language support but running in an English locale
```

```
R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.
```

```
Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
```

```
> install.packages("MatchIt")
Installing package into 'C:/Users/babogera/Documents/R/win-library/3.4'
(as 'lib' is unspecified)
--- Please select a CRAN mirror for use in this session ---
trying URL 'https://mirrors.nics.utk.edu/cran/bin/windows/contrib/3.4/MatchIt_3.0.1.zip'
Content type 'application/zip' length 367076 bytes (358 KB)
downloaded 358 KB
```

```
package 'MatchIt' successfully unpacked and MD5 sums checked
```

```
The downloaded binary packages are in
  C:\Users\babogera\AppData\Local\Temp\RtmpQFYSNd\downloaded_packages
> install.packages("optmatch")
Installing package into 'C:/Users/babogera/Documents/R/win-library/3.4'
(as 'lib' is unspecified)
trying URL 'https://mirrors.nics.utk.edu/cran/bin/windows/contrib/3.4/optmatch_0.9-7.zip'
Content type 'application/zip' length 1600137 bytes (1.5 MB)
downloaded 1.5 MB
```

```
package 'optmatch' successfully unpacked and MD5 sums checked
```

```
The downloaded binary packages are in
  C:\Users\babogera\AppData\Local\Temp\RtmpQFYSNd\downloaded_packages
> library(MASS)
> library(MatchIt)
Warning message:
package 'MatchIt' was built under R version 3.4.1
> library(optmatch)
Loading required package: survival
The optmatch package has an academic license. Enter relaxinfo() for more information.
Warning message:
package 'optmatch' was built under R version 3.4.1
> dataw1<-read.csv("C:/WK_Data-V1.csv")
> w1.out<-matchit(treat ~ g + e + sped + ell + SS16S + ORF16S + PARCC16 + a, data = dataw1, metho
d = "optimal", distance = "logit", ratio = 1)
Error in matchit(treat ~ g + e + sped + ell + SS16S + ORF16S + PARCC16 + :
  Missing values exist in the data
> dataw2<-read.csv("C:/WK_Data-V2.csv")
> w2.out<-matchit(treat ~ g + e + sped + ell + SS16S + ORF16S + PARCC16 + a, data = dataw2, metho
d = "optimal", distance = "logit", ratio = 1)
Warning message:
In optmatch::fullmatch(d, min.controls = ratio, max.controls = ratio, :
  Without 'data' argument the order of the match is not guaranteed
  to be the same as your original data.
> summary(w2.out)
```

```
Call:
matchit(formula = treat ~ g + e + sped + ell + SS16S + ORF16S +
  PARCC16 + a, data = dataw2, method = "optimal", distance = "logit",
  ratio = 1)
```

Summary of balance for all data:

	Means Treated	Means Control	SD Control	Mean Diff	eQQ Med	eQQ Mean
distance	0.4876	0.4316	0.1047	0.0560	0.0499	0.0567
g	0.4904	0.4756	0.5000	0.0147	0.0000	0.0165
e	2.1405	2.0626	0.3651	0.0779	0.0000	0.1019
sped	0.1295	0.1578	0.3650	-0.0283	0.0000	0.0275
ell	0.1625	0.1717	0.3776	-0.0092	0.0000	0.0083
SS16S	351.9366	333.2970	154.0477	18.6397	18.0000	19.6970
ORF16S	83.2011	80.2828	35.1039	2.9183	3.0000	3.3006
PARCC16	720.7548	710.5870	36.0188	10.1678	11.0000	10.5592
a	167.7961	169.1044	9.3491	-1.3083	1.0000	1.5978
	eQQ Max					
distance	0.1452					
g	1.0000					
e	1.0000					
sped	1.0000					
ell	1.0000					
SS16S	217.0000					
ORF16S	20.0000					
PARCC16	20.0000					
a	88.0000					

Summary of balance for matched data:

	Means Treated	Means Control	SD Control	Mean Diff	eQQ Med	eQQ Mean
distance	0.4876	0.4554	0.0934	0.0322	0.0244	0.0324
g	0.4904	0.4656	0.4995	0.0248	0.0000	0.0248
e	2.1405	2.0854	0.3655	0.0551	0.0000	0.0992
sped	0.1295	0.1212	0.3268	0.0083	0.0000	0.0083
ell	0.1625	0.1653	0.3720	-0.0028	0.0000	0.0028
SS16S	351.9366	348.1956	144.2342	3.7410	11.0000	18.2479
ORF16S	83.2011	83.2862	33.1348	-0.0851	3.0000	3.7220
PARCC16	720.7548	716.7934	34.7145	3.9614	4.0000	4.6226
a	167.7961	168.6777	9.7487	-0.8815	1.0000	1.5207
	eQQ Max					
distance	0.1299					
g	1.0000					
e	1.0000					
sped	1.0000					
ell	1.0000					
SS16S	217.0000					
ORF16S	20.0000					
PARCC16	16.0000					
a	88.0000					

Percent Balance Improvement:

	Mean Diff.	eQQ Med	eQQ Mean	eQQ Max
distance	42.4741	51.1539	42.8463	10.55
g	-68.4325	0.0000	-50.0000	0.00
e	29.2282	0.0000	2.7027	0.00
sped	70.7929	0.0000	70.0000	0.00
ell	69.9232	0.0000	66.6667	0.00
SS16S	79.9296	38.8889	7.3566	0.00
ORF16S	97.0831	0.0000	-12.7702	0.00
PARCC16	61.0395	63.6364	56.2223	20.00
a	32.6174	0.0000	4.8276	0.00

Sample sizes:

	Control	Treated
All	431	363
Matched	363	363
Unmatched	68	0
Discarded	0	0

```
> dataw3<-read.csv("C:/WK_Data-V2_R.csv")
```

```
> w3.out<-matchit(treat ~ g + e + sped + ell + SS16S + ORF16S + PARCC16 + a, data = dataw3, method = "optimal", distance = "logit", ratio = 1)
```

```
Warning message:
```

```
In optmatch::fullmatch(d, min.controls = ratio, max.controls = ratio, :
  Without 'data' argument the order of the match is not guaranteed
```

Summary of balance for matched data:

	Means Treated	Means Control	SD	Control	Mean Diff	eQQ Med	eQQ Mean
distance	0.3545	0.3388	0.1221	0.1221	0.0157	0.0008	0.0161
g	0.5080	0.4866	0.5012	0.5012	0.0214	0.0000	0.0214
e	2.1497	2.1016	0.4087	0.4087	0.0481	0.0000	0.1337
sped	0.1337	0.1070	0.3099	0.3099	0.0267	0.0000	0.0267
ell	0.1765	0.1176	0.3231	0.3231	0.0588	0.0000	0.0588
SS16S	362.0535	373.0481	156.2128	156.2128	-10.9947	17.0000	19.7754
ORF16S	85.2727	88.8979	35.2429	35.2429	-3.6251	6.0000	5.2198
PARCC16	725.3957	728.0321	37.6730	37.6730	-2.6364	2.0000	4.5936
a	168.3262	168.1283	10.2109	10.2109	0.1979	1.0000	1.0535

	eQQ Max
distance	0.1246
g	1.0000
e	1.0000
sped	1.0000
ell	1.0000
SS16S	217.0000
ORF16S	12.0000
PARCC16	28.0000
a	17.0000

Percent Balance Improvement:

	Mean Diff.	eQQ Med	eQQ Mean	eQQ Max
distance	78.9307	98.6311	78.3899	31.5817
g	33.9464	0.0000	33.3333	0.0000
e	44.7357	0.0000	21.8750	0.0000
sped	-11.0252	0.0000	-25.0000	0.0000
ell	-1131.4286	0.0000	-1000.0000	0.0000
SS16S	61.7664	32.0000	33.3574	0.0000
ORF16S	27.3505	-50.0000	0.6109	20.0000
PARCC16	82.1972	86.6667	69.9650	-3.7037
a	74.5747	0.0000	-1.0256	-112.5000

Sample sizes:

	Control	Treated
All	431	187
Matched	187	187
Unmatched	244	0

```
Discarded      0      0
```

```
> match.data=match.data(w3.out)
> write.table(match.data, file="C:/WK/wanda3.csv", sep="," , col.names=NA)
>
```


Appendix D: ELA PSM Results

PSM ID	Student ID	School	Guided Reading	Gender	Ethnicity	SPED	ELL	SS16S	ORF16S	PARCC16	Attendance	SS16F	ORF16F	SS17S	ORF17S
9	63	3	0	0	2	0	0	486	116	698	155	265	61	524	121
10	64	3	0	0	2	1	0	656	158	698	171	300	69	240	55
11	65	3	0	1	2	0	0	584	143	790	174	456	105	213	50
14	68	3	0	0	2	1	1	359	84	768	177	373	87	434	100
22	76	3	0	1	2	0	0	419	101	732	171	627	142	668	148
27	81	3	0	0	2	0	0	311	73	773	176	379	88	543	125
28	82	3	0	0	2	0	1	227	56	831	178	358	83	607	139
29	83	3	0	1	2	0	1	151	3.9	695	174	424	98	508	117
30	84	4	1	0	2	1	0	228	52	664	163	232	57	622	141
31	85	4	1	1	1	0	0	232	53	707	167	401	97	378	88
32	86	4	1	1	2	0	0	297	68	701	160	307	72	296	68
33	88	4	1	0	2	1	1	440	102	747	174	278	66	443	102
34	89	4	1	0	3	0	0	367	85	710	171	362	85	435	101
35	90	4	1	0	2	0	0	200	47	695	158	273	65	327	75
36	91	4	1	0	2	0	0	200	47	728	170	324	76	399	93
37	92	4	1	0	2	0	0	466	107	673	146	219	54	327	75
38	93	4	1	0	3	0	0	318	73	690	159	229	56	317	73
39	94	4	1	0	2	0	0	283	65	741	165	332	78	443	102
40	95	4	1	0	2	0	0	313	72	762	171	457	110	558	128
41	96	4	1	1	2	0	0	160	42	708	168	242	58	265	61
42	97	4	1	1	2	0	0	370	86	704	173	121	37	307	70
43	98	4	1	1	3	0	0	342	78	743	178	489	117	582	134
44	99	4	1	1	2	0	0	276	64	696	177	230	56	178	44
45	100	4	1	0	2	1	1	321	73	678	168	184	49	89	27
46	101	4	1	0	2	0	0	289	67	703	171	434	105	312	71
47	102	4	1	1	2	1	1	375	87	683	161	171	47	373	87
48	103	4	1	1	2	0	0	502	116	741	169	389	94	507	117
49	104	4	1	1	3	0	0	364	84	713	176	339	79	433	100
50	105	4	1	0	2	0	0	366	85	715	154	522	125	593	136
51	106	4	1	1	2	0	0	202	48	701	169	297	70	221	51
52	107	4	1	0	3	0	0	250	57	686	165	339	79	430	100
53	108	4	1	1	2	1	1	100	31	674	159	144	42	82	21
54	109	4	1	1	2	0	0	353	81	739	161	393	95	437	101
55	110	4	1	0	3	0	0	451	104	749	170	438	105	611	139
56	111	4	1	1	3	0	0	251	58	740	160	443	107	452	104
57	112	4	1	1	2	0	0	331	76	698	177	268	64	259	60
58	113	4	1	1	2	0	0	162	42	693	159	290	69	277	64
59	114	4	1	0	2	0	0	490	117	736	165	508	122	474	109
60	115	4	1	1	2	0	0	73	10	760	178	321	75	413	96
61	116	4	1	1	3	0	0	106	33	728	176	318	75	337	77
62	117	4	1	1	3	0	0	503	116	708	154	243	59	342	78

63	118	4	1	0	2	0	0	351	81	698	178	233	57	258	59
64	119	4	1	1	3	0	0	363	84	695	177	220	55	312	71
65	120	4	1	1	3	0	0	321	73	758	174	370	88	500	115
66	121	4	1	0	3	0	0	297	68	719	167	512	123	397	93
67	122	4	1	1	3	0	0	248	57	683	177	158	45	329	75
68	123	4	1	1	3	0	0	287	66	698	159	316	74	331	76
69	124	4	1	0	3	0	0	384	90	678	145	276	66	311	71
70	125	4	1	1	2	1	1	176	44	686	161	238	58	276	64
71	126	4	1	1	2	0	0	321	73	689	174	234	57	383	89
72	127	4	1	0	2	0	0	380	89	708	134	201	52	330	76
73	128	4	1	1	2	0	0	224	52	703	173	288	68	281	65
74	129	4	1	1	2	0	0	182	45	678	176	130	39	216	50
75	130	4	1	0	2	0	0	226	52	749	180	571	139	566	130
76	131	4	1	1	2	0	0	386	90	734	167	313	74	348	80
77	132	4	1	1	1	0	0	290	67	752	170	555	134	608	139
78	133	5	1	0	2	0	0	340	79	704	155	436	101	518	119
79	134	5	1	0	2	0	0	423	102	743	174	208	49	343	79
80	135	5	1	1	2	0	0	574	140	762	176	558	128	468	108
81	136	5	1	1	2	1	1	246	59	669	164	654	146	241	55
82	137	5	1	1	2	0	0	405	98	740	166	545	125	784	179
83	138	5	1	0	3	0	0	463	111	698	157	592	136	559	129
84	139	5	1	0	2	0	0	353	83	714	164	343	79	305	70
85	140	5	1	0	1	0	0	385	93	730	173	280	65	549	126
86	141	5	1	1	1	0	0	574	140	750	167	317	73	450	104
87	142	5	1	1	1	0	0	603	147	797	175	552	127	571	131
88	143	5	1	0	2	1	1	413	100	771	177	369	86	332	76
89	144	5	1	1	1	0	0	558	135	776	166	411	96	536	123
90	145	5	1	0	1	0	0	461	111	746	129	512	118	511	118
91	146	5	1	1	1	0	0	383	92	734	177	340	78	350	80
92	147	5	1	0	2	1	1	310	73	703	176	244	56	600	137
93	148	5	1	0	2	0	0	620	152	734	161	667	148	573	132
94	149	5	1	1	2	1	1	271	65	727	173	556	128	441	102
95	150	5	1	0	1	0	0	880	170	752	168	326	75	459	106
96	151	5	1	0	2	1	0	1123	170	756	173	466	107	714	157
97	152	5	1	1	2	1	1	195	51	698	169	612	139	784	179
98	153	5	1	0	2	1	1	249	60	693	176	343	79	660	147
99	154	5	1	1	2	0	0	416	101	734	173	419	97	468	108
100	155	5	1	1	2	1	1	368	87	734	163	476	110	576	133
101	156	5	1	0	2	0	0	457	110	779	178	810	187	728	160
102	157	5	1	0	2	1	1	299	71	695	179	420	98	903	190
103	158	5	1	1	2	1	1	358	84	735	176	487	112	330	76
104	159	5	1	0	2	1	1	320	75	739	174	578	133	519	120
105	160	5	1	1	2	0	0	500	120	751	177	156	42	302	69
106	161	5	1	0	2	0	0	289	69	704	155	85	24	536	123

107	162	5	1	0	3	1	0	979	170	690	175	103	32	567	131
108	163	5	1	0	2	0	0	360	85	743	174	82	21	424	98
109	164	5	1	1	2	0	0	593	145	750	149	490	113	459	106
110	165	5	1	1	2	0	0	554	134	762	176	159	42	549	126
111	166	5	1	1	3	0	0	511	123	698	173	362	84	666	148
112	167	5	1	0	2	0	0	526	126	776	172	439	101	529	122
113	168	5	1	1	2	0	0	370	88	718	171	109	34	442	102
114	169	5	1	1	3	0	0	466	112	766	173	342	78	540	124
115	170	5	1	0	2	0	0	594	145	776	180	280	65	441	102
116	171	5	1	0	2	0	0	514	123	741	172	461	106	186	45
117	172	5	1	1	1	0	0	277	66	728	171	348	80	288	66
118	173	5	1	1	3	0	0	501	120	769	167	244	56	235	54
119	174	5	1	1	2	0	0	557	135	740	166	677	150	122	36
120	175	5	1	1	2	0	0	416	101	729	177	506	117	189	46
121	176	5	1	1	2	0	0	500	120	740	167	90	27	78	18
122	177	5	1	0	2	0	0	395	96	714	164	595	137	684	151
123	178	5	1	0	2	0	0	284	68	693	180	489	113	441	102
124	179	5	1	0	2	0	0	684	164	793	173	477	110	446	103
125	180	5	1	0	2	0	0	190	50	706	180	605	138	584	134
126	181	5	1	0	2	0	0	569	139	735	174	340	78	266	61
127	182	5	1	0	1	0	0	616	151	744	162	287	66	562	129
128	183	5	1	0	1	0	0	593	145	764	169	417	97	185	45
129	184	5	1	1	1	0	0	438	105	766	172	457	105	523	121
130	185	5	1	0	1	0	0	376	90	737	169	93	29	627	142
131	186	5	1	1	2	0	0	404	98	747	177	320	73	80	19
132	187	5	1	1	2	0	0	455	109	721	177	252	58	694	153
133	188	5	1	1	2	0	0	489	117	776	166	270	62	504	116
134	189	5	1	0	2	0	0	476	114	722	174	324	74	256	59
135	190	5	1	0	1	0	0	496	119	703	173	551	127	770	175
136	191	5	1	0	2	0	0	490	117	735	176	424	98	714	157
137	192	5	1	1	2	0	0	331	77	723	180	395	92	623	141
138	193	5	1	1	2	0	0	345	81	693	174	78	18	622	141
139	194	5	1	1	2	0	0	475	114	734	177	400	93	274	63
140	195	5	1	0	2	1	1	259	62	703	176	425	99	471	109
141	196	5	1	1	2	0	0	396	96	740	160	79	19	346	79
142	197	5	1	0	2	0	0	592	145	734	161	223	51	496	115
143	198	5	1	1	2	0	0	606	148	790	161	288	66	463	107
144	199	5	1	1	2	1	1	285	68	727	173	247	57	412	96
145	200	5	1	1	3	0	0	513	123	674	169	607	139	59	8
146	201	5	1	0	2	1	1	286	68	693	176	581	134	532	123
147	202	5	1	1	2	0	0	455	109	734	173	266	61	506	117
148	203	5	1	1	2	1	1	415	100	734	163	535	123	709	156
149	204	5	1	0	2	0	0	621	152	779	178	398	93	167	43
150	205	5	1	1	2	0	0	428	103	663	159	438	101	456	105

151	206	5	1	0	2	0	0	516	124	703	160	400	93	497	115
152	207	5	1	0	3	0	0	262	63	710	152	454	105	823	190
158	213	6	0	1	3	0	0	285	68	693	152	212	49	784	179
160	215	6	0	0	2	1	1	88	27	674	173	97	31	305	70
178	233	8	0	0	2	0	0	485	116	787	179	465	107	413	96
184	239	8	0	1	2	0	1	78	20	686	179	505	117	727	160
186	241	8	0	0	2	0	1	77	19	678	170	272	63	290	67
189	244	8	0	1	2	0	0	444	107	730	171	233	53	473	109
190	245	8	0	1	2	0	1	200	52	718	174	367	85	459	106
208	356	13	0	0	3	0	0	250	60	698	175	109	34	436	101
212	360	13	0	0	3	1	0	267	64	709	161	75	13	363	84
214	362	13	0	0	2	1	0	328	77	669	174	102	32	414	96
215	363	13	0	1	2	0	1	192	51	702	166	221	51	916	190
220	368	13	0	1	3	0	0	464	111	756	157	253	58	321	73
224	372	13	0	0	2	0	0	225	55	689	166	777	177	495	114
226	374	13	0	0	2	0	1	337	79	715	175	435	101	590	136
231	379	13	0	0	2	0	1	321	75	734	174	252	58	288	66
232	380	13	0	0	2	0	0	400	97	720	142	337	77	373	87
234	382	13	0	1	2	1	0	80	21	650	153	388	91	493	114
239	387	15	0	1	2	0	0	434	105	752	161	454	105	568	131
248	396	15	0	0	2	1	0	203	52	695	147	387	90	721	159
251	399	15	0	1	2	1	0	90	28	686	169	447	103	414	96
252	400	15	0	1	2	1	0	89	28	686	169	501	116	456	105
253	401	15	0	0	3	1	0	388	94	724	176	319	73	365	85
254	402	15	0	1	2	0	0	306	72	706	170	238	55	377	88
256	404	15	0	0	2	0	0	453	109	733	167	477	110	334	76
260	408	15	0	1	2	1	0	434	105	768	156	360	83	460	106
264	412	15	0	0	2	0	0	393	95	756	165	257	59	467	108
265	413	15	0	0	3	0	0	380	91	734	168	239	55	296	68
266	414	15	0	0	3	0	0	102	33	734	168	468	108	546	126
268	416	15	0	0	2	0	0	500	120	774	174	424	98	373	87
269	417	15	0	1	2	0	0	310	73	730	174	481	111	357	82
271	419	15	0	0	2	0	0	324	76	752	174	355	82	679	150
272	420	15	0	0	2	0	0	309	73	752	174	85	24	421	98
273	421	15	0	1	2	0	0	286	68	718	169	374	87	648	145
276	424	15	0	1	2	0	0	494	118	760	169	461	106	404	94
277	425	15	0	1	2	0	0	637	155	768	171	275	63	376	88
278	426	15	0	1	2	0	0	124	38	692	170	432	100	788	181
282	430	15	0	1	2	0	0	477	114	760	170	329	75	184	45
284	432	15	0	0	2	0	0	637	155	741	170	387	90	533	123
285	433	15	0	0	2	0	0	357	84	737	173	76	15	548	126
289	437	15	0	0	2	0	0	392	95	733	165	339	78	534	123
292	440	15	0	0	2	0	0	573	140	766	176	286	66	611	139
293	441	15	0	1	2	0	0	440	106	786	171	401	94	419	97

294	442	15	0	0	2	0	0	565	138	792	168	237	54	485	112
297	445	15	0	1	2	0	0	342	80	715	168	412	96	493	114
301	449	15	0	0	2	0	0	342	80	732	174	362	84	467	108
302	450	15	0	0	2	0	0	352	82	724	168	233	53	372	87
304	452	15	0	0	2	0	0	412	100	765	179	325	74	378	88
308	456	15	0	1	2	0	0	448	108	766	175	628	142	198	47
312	460	15	0	1	2	0	0	352	82	732	162	370	86	577	133
313	461	15	0	0	2	0	0	550	133	828	176	377	88	420	98
314	462	15	0	1	2	0	0	351	82	729	180	368	85	595	137
315	463	15	0	0	2	0	0	394	95	756	161	463	107	507	117
316	464	15	0	1	2	0	0	511	123	783	107	310	71	638	143
318	466	15	0	0	2	0	0	543	131	777	172	479	111	372	87
323	471	15	0	1	2	0	0	472	113	734	152	120	36	496	115
325	473	15	0	1	2	0	0	306	72	706	177	586	135	426	99
326	474	15	0	0	2	0	0	446	107	727	108	525	121	436	101
327	475	15	0	1	2	0	0	335	78	725	176	423	98	294	68
329	477	15	0	0	3	0	0	353	83	723	151	363	84	704	155
331	479	15	0	1	2	0	0	579	141	773	163	432	100	460	106
332	480	15	0	0	2	0	0	577	141	793	175	78	18	367	85
333	481	15	0	0	2	0	0	454	109	793	175	330	76	411	96
334	482	15	0	1	2	0	0	255	61	673	167	392	91	317	73
341	489	18	0	0	2	0	1	222	55	700	176	87	25	586	135
344	492	18	0	1	2	0	1	68	12	650	168	718	158	211	49
348	496	18	0	1	2	0	1	353	83	748	171	245	56	335	77
349	497	18	0	0	2	0	1	136	40	710	169	320	73	78	18
353	501	18	0	1	2	0	1	68	12	658	172	145	40	552	127
356	504	18	0	0	2	0	1	65	10	651	174	274	63	498	115
358	506	18	0	1	2	0	1	92	29	689	168	508	117	375	87
362	510	18	0	1	2	0	1	81	22	678	174	389	91	298	68
367	515	18	0	0	2	0	0	590	144	756	166	536	123	838	190
370	518	18	0	0	2	0	0	321	75	693	164	505	117	617	140
371	519	18	0	1	2	0	0	405	98	741	178	277	64	906	190
378	526	18	0	0	2	0	0	556	135	736	171	462	107	376	88
380	528	18	0	0	2	0	0	374	89	706	167	391	91	593	136
381	529	18	0	1	2	0	0	282	67	678	161	297	68	105	33
383	531	18	0	1	3	0	1	279	67	689	178	427	99	478	110
385	533	20	0	1	3	0	0	444	107	742	158	76	15	580	134
386	534	20	0	1	2	0	0	276	66	695	171	71	8	171	43
389	537	20	0	0	2	0	0	557	135	727	151	312	71	389	91
393	541	20	0	0	2	1	0	287	68	686	177	183	45	325	74
396	544	20	0	0	2	0	0	582	142	776	171	623	141	326	75
399	547	20	0	0	3	0	0	275	66	663	170	267	62	194	47
407	555	20	0	1	2	0	0	547	132	741	174	340	78	292	67
410	558	20	0	1	3	0	0	386	93	707	172	332	76	327	75

411	559	20	0	1	2	0	0	335	78	711	166	441	102	361	83
413	561	20	0	1	3	0	0	219	54	690	168	234	54	333	76
415	563	20	0	0	3	1	0	877	170	704	176	213	50	343	79
416	564	20	0	0	2	1	0	103	33	650	160	274	63	833	190
420	568	20	0	1	2	0	0	214	54	673	168	165	43	289	67
424	572	20	0	1	2	0	0	304	72	747	173	361	83	320	73
425	573	20	0	0	3	0	0	493	118	721	171	323	74	202	48
426	574	20	0	1	3	0	0	346	81	701	159	510	118	679	150
428	576	20	0	1	3	0	0	527	127	758	175	82	21	404	94
429	577	20	0	0	2	0	0	255	61	703	172	257	59	377	88
432	580	20	0	0	3	0	0	418	101	737	167	600	137	175	44
433	581	20	0	1	2	0	0	366	86	717	179	252	58	122	36
435	583	20	0	0	2	0	0	319	75	730	161	109	34	242	55
437	585	20	0	1	2	0	0	518	124	777	167	93	29	236	54
438	586	20	0	0	2	1	0	508	122	695	164	551	127	344	79
440	588	20	0	1	2	0	0	134	40	673	169	333	76	345	79
441	589	20	0	0	2	1	0	906	170	673	156	559	129	409	95
443	591	20	0	0	3	1	0	487	117	743	171	470	108	477	110
445	593	24	0	0	1	0	0	377	90	748	174	225	52	487	112
447	595	24	0	1	2	0	0	457	110	747	174	73	10	681	150
448	596	24	0	0	2	1	0	450	108	795	173	89	27	237	54
449	597	24	0	0	2	0	0	462	111	750	161	277	64	650	145
451	599	24	0	0	2	0	0	385	93	737	174	113	35	561	129
452	600	24	0	1	2	0	0	298	71	685	166	362	84	702	154
455	603	24	0	0	2	0	0	444	107	726	153	273	63	365	85
456	604	24	0	1	2	0	0	487	117	764	165	289	67	379	88
457	605	24	0	0	2	0	0	472	113	744	157	392	91	701	154
458	606	24	0	1	2	0	0	311	73	726	146	572	132	644	144
459	607	24	0	1	2	0	0	111	35	669	158	522	120	359	83
461	609	24	0	1	2	0	0	303	72	744	166	135	39	504	116
462	610	24	0	0	2	0	0	251	60	706	147	108	34	592	136
464	612	24	0	1	2	0	0	536	129	816	168	483	112	539	124
466	614	24	0	1	2	0	0	733	170	783	175	281	65	182	45
467	615	24	0	1	2	1	0	189	50	708	174	407	95	830	190
469	617	24	0	0	2	0	0	335	78	726	179	400	93	304	70
473	621	24	0	1	2	0	0	279	67	708	142	488	113	255	59
474	622	24	0	0	2	0	0	254	61	693	168	296	68	678	150
475	623	24	0	1	2	0	0	280	67	657	153	508	117	472	109
478	626	24	0	0	2	0	0	687	164	767	175	190	46	478	110
479	627	24	0	1	2	0	0	408	99	744	163	136	39	571	131
481	629	24	0	1	2	0	0	517	124	739	154	183	45	517	119
482	630	24	0	0	2	0	0	612	150	793	170	378	88	462	107
483	631	24	0	1	2	0	0	290	69	721	167	464	107	512	118
485	633	24	0	0	2	0	0	225	55	692	163	379	88	881	190

488	636	24	0	0	2	0	0	345	81	721	180	442	102	275	63
489	637	24	0	0	1	0	0	320	75	748	175	531	122	350	80
490	638	24	0	0	2	0	0	405	98	738	171	622	141	495	114
492	640	24	0	1	2	0	0	333	78	734	172	452	104	403	94
495	643	24	0	1	2	0	0	333	78	701	167	435	101	547	126
496	644	24	0	1	2	0	0	473	113	771	180	263	61	587	135
497	645	24	0	1	2	0	0	544	131	771	179	375	87	594	136
498	646	24	0	0	2	0	0	363	85	701	179	376	88	88	26
499	647	24	0	1	2	0	0	492	118	745	170	587	135	355	82
500	648	24	0	1	3	0	0	349	82	682	170	386	90	348	80
501	649	25	0	1	3	0	0	356	83	703	172	208	49	485	112
502	650	25	0	1	2	0	0	114	36	683	174	74	12	476	110
503	651	25	0	0	1	0	0	297	70	741	179	77	17	200	47
505	653	25	0	0	2	0	0	317	75	729	173	132	38	516	119
506	654	25	0	0	2	0	0	366	86	715	176	219	51	433	100
508	656	25	0	0	3	0	0	513	123	793	165	445	103	861	190
509	657	25	0	1	2	0	0	905	170	760	151	285	66	566	130
510	658	25	0	1	1	0	0	338	79	736	173	558	128	705	155
511	659	25	0	1	2	0	0	365	86	704	145	661	147	723	159
512	660	25	0	0	2	0	0	456	110	720	165	368	85	640	144
513	661	25	0	0	2	0	0	494	118	790	173	407	95	745	166
514	662	25	0	0	3	0	0	81	22	692	177	444	102	454	105
515	663	25	0	1	2	0	0	510	122	764	169	671	149	642	144
518	666	25	0	0	2	0	0	442	106	824	175	529	122	431	100
519	667	25	0	0	2	0	0	410	99	750	179	278	64	531	122
521	669	25	0	1	2	0	0	464	111	716	172	391	91	455	105
522	670	25	0	1	2	0	1	282	67	726	172	326	75	289	67
523	671	25	0	0	3	0	0	334	78	714	168	310	71	84	23
524	672	25	0	1	2	0	0	647	157	788	172	332	76	430	100
525	673	25	0	0	2	0	0	344	80	734	174	211	49	386	90
531	679	25	0	0	2	0	0	301	71	706	171	420	98	507	117
532	680	25	0	0	2	0	1	293	70	689	170	477	110	355	82
534	682	25	0	0	2	1	0	464	111	696	167	449	104	299	69
535	683	25	0	1	2	0	0	457	110	749	157	69	8	433	100
536	684	25	0	0	2	0	0	348	81	714	176	327	75	443	102
538	686	25	0	1	2	0	0	467	112	730	173	294	68	386	90
539	687	25	0	1	1	0	0	375	89	771	175	505	117	480	111
540	688	25	0	0	2	0	0	318	75	696	171	466	107	403	94
541	689	25	0	1	2	0	1	462	111	707	162	176	44	574	132
543	691	25	0	0	2	0	0	468	112	752	171	156	42	424	98
544	692	25	0	0	1	0	0	525	126	773	162	273	63	559	129
545	693	25	0	1	2	0	0	362	85	703	162	261	60	371	86
546	694	25	0	1	2	0	0	329	77	698	178	263	61	492	114
547	695	25	0	1	3	0	0	215	54	673	175	411	96	498	115

548	696	25	0	0	2	0	0	456	110	771	175	391	91	227	52
550	698	25	0	0	3	0	0	377	90	738	175	364	84	570	131
552	700	25	0	0	1	0	0	358	84	748	171	89	27	491	113
553	701	25	0	1	2	0	0	214	54	689	172	433	100	442	102
554	702	25	0	1	2	0	0	466	112	752	175	303	70	238	55
555	732	30	1	1	2	0	1	228	52	744	166	82	21	985	190
556	733	30	1	1	2	0	0	336	77	678	174	129	38	87	25
557	734	30	1	0	2	0	0	232	53	664	174	215	50	279	64
558	735	30	1	1	2	0	0	141	40	728	164	141	40	293	67
559	736	30	1	0	2	0	0	137	39	717	162	137	39	83	22
560	737	30	1	0	2	0	0	107	33	726	175	107	33	256	59
561	738	30	1	1	2	0	0	274	63	683	167	274	63	81	20
562	739	30	1	0	2	0	0	229	53	679	179	229	53	149	41
563	740	30	1	0	3	0	1	451	104	726	144	451	104	307	70
564	741	30	1	0	2	1	0	514	119	695	176	514	119	216	50
565	742	30	1	1	2	0	0	272	63	689	175	272	63	297	68
566	743	30	1	0	3	0	0	222	51	698	161	222	51	419	97
567	744	30	1	0	3	0	0	251	58	756	175	251	58	342	78
568	745	30	1	0	2	1	1	440	102	668	171	440	102	557	128
569	746	30	1	0	2	0	1	612	139	738	173	612	139	363	84
570	747	30	1	0	3	0	0	442	102	785	174	442	102	450	104
571	748	30	1	1	2	0	0	664	147	717	167	664	147	303	70
572	749	30	1	0	2	1	0	475	110	698	177	475	110	572	132
573	750	30	1	0	2	0	0	320	73	693	155	320	73	503	116
574	751	30	1	1	2	0	0	390	91	737	180	390	91	981	190
575	752	30	1	1	2	0	1	427	99	752	165	427	99	396	92
576	753	30	1	1	3	0	0	315	72	779	164	315	72	560	129
577	754	30	1	1	2	0	0	556	128	682	154	556	128	418	97
578	755	30	1	0	2	0	1	353	81	707	180	353	81	505	117
579	756	30	1	0	3	0	0	268	62	682	168	268	62	400	93
580	757	30	1	1	3	0	0	392	91	678	143	392	91	365	85
581	758	30	1	0	2	0	1	253	58	668	169	253	58	552	127
582	759	30	1	1	2	0	1	196	47	751	172	196	47	287	66
583	760	30	1	0	2	0	1	229	56	737	172	367	85	86	24
584	761	30	1	1	2	0	0	289	69	741	169	533	123	465	107
585	762	30	1	0	2	0	0	324	76	758	170	380	89	239	55
586	763	30	1	0	2	0	0	264	63	708	175	312	71	460	106
587	764	30	1	0	3	0	0	408	99	713	173	429	99	498	115
588	765	30	1	1	2	0	0	88	27	724	155	515	119	743	165
589	766	30	1	1	2	0	0	144	42	730	166	456	105	424	98
590	767	30	1	0	2	0	0	299	71	698	178	93	29	623	141
591	768	30	1	0	3	0	0	435	105	716	173	184	45	540	124
592	769	30	1	1	3	0	0	299	71	751	178	340	78	318	73
593	770	30	1	1	2	0	0	77	19	762	172	228	52	490	113

594	771	30	1	1	2	0	0	74	17	756	167	213	50	165	43
595	772	30	1	0	2	0	0	76	18	762	175	364	84	206	48
596	773	30	1	1	2	0	0	116	36	678	177	234	54	215	50
597	774	30	1	0	2	0	0	282	67	721	170	465	107	261	60
598	775	30	1	0	2	0	1	476	114	746	174	404	94	423	98
599	776	30	1	0	3	0	1	77	19	743	174	203	48	519	120
600	777	30	1	1	2	0	0	100	32	742	177	300	69	207	49
601	778	30	1	1	2	0	0	512	123	742	161	417	97	410	95
602	779	30	1	1	3	0	0	279	67	730	173	460	106	440	102
603	780	30	1	0	3	0	0	156	45	738	165	617	140	550	127
604	781	30	1	0	3	0	0	349	82	800	171	402	94	512	118
605	782	30	1	0	3	0	0	407	99	734	171	289	67	701	154
606	783	30	1	1	2	0	1	78	20	776	167	425	99	533	123
607	784	30	1	1	2	0	0	137	40	752	161	416	97	820	190
608	785	30	1	0	3	0	0	378	90	754	125	389	91	242	55
609	786	30	1	0	3	0	0	200	52	752	174	465	107	238	55
610	787	30	1	0	3	0	0	217	54	730	166	472	109	267	62
611	788	30	1	1	2	0	1	244	59	746	179	234	54	297	68
612	789	30	1	1	3	0	0	266	64	740	165	349	80	398	93
613	790	30	1	1	2	0	0	578	141	727	172	611	139	415	96
614	791	30	1	0	3	0	0	471	113	709	179	510	118	519	120
615	792	30	1	1	3	0	1	444	107	764	173	365	85	632	142
616	793	30	1	1	2	0	0	290	67	828	172	290	67	439	101
617	794	30	1	1	2	0	0	187	46	650	159	187	46	631	142
618	795	30	1	0	2	0	0	246	56	747	109	246	56	356	82