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The Impact of a Teacher's Implementation of the Readworks Digital Reading Program on Second Graders' Reading Fluency and Comprehension Test Scores

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THE IMPACT OF A TEACHER'S IMPLEMENTATION OF THE READWORKS DIGITAL READING PROGRAM ON SECOND GRADERS' READING FLUENCY AND COMPREHENSION TEST SCORES

by

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ABSTRACT

THE IMPACT OF A TEACHER'S IMPLEMENTATION OF THE READWORKS DIGITAL READING PROGRAM ON SECOND GRADERS' READING FLUENCY AND COMPREHENSION TEST SCORES

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Old Dominion University, 2019
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Since elementary school student performance on the end-of-year summative Virginia Department of Education (VDOE) Standards of Learning (SOL) reading test is vital in impacting school accreditation, computer-assisted instruction has become popular. Online reading programs have existed in many elementary schools in Norfolk Public School district since 1996, such as Breakthrough to Literacy (McGraw-Hill Companies, 2002), Istation in 2014 (Mathes, Torgesen, & Herron, 2015), and the i-Ready program from 2015 to 2017 (Curriculum Associates, 2014). The problem is that there is insufficient empirical research supporting the use of the ReadWorks program at several Norfolk, Virginia's elementary schools.

The purpose of this sequential, explanatory mixed methods study is to investigate the effects of teacher's implementation of the ReadWorks online reading program on second-graders' reading fluency and comprehension test scores in one Norfolk elementary school. The teacher's choices of ReadWorks tests and the teacher's design of reading lessons can impact students' reading test scores on the STAR reading test (Renaissance Learning, Inc., 2018).

Keywords: fluency, comprehension, ReadWorks, computer-assisted reading program

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TABLE OF CONTENTS

Page

Page

Page

Page

Page

Page

APPENDICES:

Page

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

Chapter I

INTRODUCTION

Many students lack fluency and comprehension skills to read proficiently. According to the National Assessment of Educational Progress (NAEP), only 42% of fourth-grade students were proficient readers, with only 19% of African-American students, 21% of Hispanics, and only 3% of English learners being proficient readers (National Assessment of Educational Progress, 2011). Being a poor reader can badly affect a student's success in other academic subjects, resulting in the student most likely dropping out of school (Lesnick, George, Smithgall, & Gwynne, 2010). Struggling readers in elementary schools can become proficient in literacy by benefitting from technology that incorporates effective strategies to read fluently and with comprehension (Curriculum Associates, 2015a; Drummond, Chinen, Duncan, Miller, Fryer, & Zmach, 2011; Gibson, Cartledge, & Keyes, 2011). Reading computer-based programs can introduce new vocabulary words within the context of reading, simultaneously narrate and highlight text, and give the reader immediate feedback on how to return to the text to discover answers to comprehension questions (Curriculum Associates, 2015a).

Research suggests that computer-assisted reading instruction can accelerate the rate of students' reading fluency growth as an intervention for struggling readers (Gibson, Cartledge, & Keyes, 2011; Keyes, Cartledge, Gibson, & Robinson-Ervin, 2016; Lyytinen, Ronimus, Alanko, Poikkeus, & Taanila, 2007). Computer-assisted instruction has also improved students' reading comprehension skills, as shown for at-risk first graders who improved their reading when learning from the Alphie's Alley computer program (Chambers, Abrami, Tucker, Slavin, Madden, Cheung, & Gifford, 2008). The Istation (Mathes, Torgesen, & Herron, 2015) reading computer program's reading test performance data had a high correlation with passing State of Texas Assessments of Academic Readiness (STAAR) reading test scores of first to eighth grade Texas students. In Florida, fourth and fifth grade struggling readers read more

fluently and with improved comprehension according to Istation Diagnostic assessment growth in one school year (Robinson, Campbell, Lambie, Hahs-Vaughn, & Bai, 2015). In research conducted on another program, Achieve3000 (Achieve3000, Inc., 2015) over 1,000 students in grades three, six, and nine who used the program showed statistically significant growth on the Gates-MacGinitie Vocabulary, Reading Comprehension, and Total Reading Tests (Achieve3000, Inc., 2015).

I investigated my implementation of the ReadWorks program (ReadWorks, Inc., 2017) to improve my second graders' reading fluency and comprehension scores as shown on their STAR reading test (Renaissance Learning, Inc., 2018). As a teacher-researcher, I designed my small and whole group reading lessons based on these data reports to improve students' reading fluency and comprehension skills. Only one research study analyzed the effects of students using the ReadWorks program, and the focus was on its use as a source of non-fiction reading material. I believe that it is valuable to understand Readworks' impact on real fluency and comprehension reading skill growth as shown in the DRA 2 and STAR reading tests.

Computer Assisted Instruction

In 1996, three elementary schools in Norfolk Public Schools (NPS) in Virginia engaged in a longitudinal research study to test the effectiveness of the Breakthrough to Literacy (BTL; McGraw-Hill Companies, 2002) computer-assisted reading software program on increasing Standards of Learning (SOL) reading test scores. Third graders who participated in the BTL program in kindergarten during the 1996-1997 school year had higher average scores in the SOL reading test in 2000 compared to third graders who had never used the BTL program in kindergarten (McGraw-Hill Companies, 2002). The BTL program was instrumental in teaching NPS students in kindergarten through second grade the concepts of alphabet knowledge, phonemic awareness, vocabulary, oral and written comprehension, and word recognition skills using features such as colorful animation, talking characters, immediate feedback,

and rewards. The Take-Me-Home storybooks allowed students to read the text that the computer read to them on the BTL program.

The benefits of the BTL program on improving third graders' SOL reading test scores meant that this computer-assisted reading instruction became a Tier 2 and Tier 3 supplemental reading intervention for students in all NPS elementary schools in 2000 (McGraw-Hill Companies, 2002). These students needed more one-on-one instruction than their teachers' Tier 1, whole group reading lessons could provide. A determining factor of which students needed such intervention were students' failing below-benchmark scores on the Phonological Awareness Literacy Screening (PALS). PALS assesses the student's ability to spell, read aloud letters, sounds, words and passages, and answer comprehension questions (Invernizzi, Meier, Swank, & Juel, 2001). Using formative reading tests such as the DRA 2 (Beaver & Carter, 2006), the STAR (Renaissance Learning, Inc., 2018), and PALS (Invernizzi, Meier, Swank, & Juel, 2001), teachers could determine which students needed more intensive Tier 2 and Tier 3 interventions such as small, guided reading group sessions, tutoring, and the BTL program.

New computer-assisted programs served many elementary students in some NPS elementary schools. In 2014, a new computer-assisted program, Istation, taught online math and reading lessons using colorful, animated talking characters (Mathes, Torgesen, & Herron, 2015). From 2015 to 2017, various NPS elementary schools utilized the i-Ready online reading and math program. Curriculum Associates, i-Ready's creators, contracted the Educational Research Institute of America (ERIA) to conduct a study about the high correlation of i-Ready Diagnostic results with the New York State Assessment scores. In a 2014-2015 study, ERIA showed that there was a close correlation of 11,000 third through eighth grade students' predicted and observed proficiency rates of the i-Ready Diagnostic assessment and the 2015 New York State assessment scores (EIRA, 2016). The students' overall i-Ready Diagnostic performance had a significant 0.85 correlation in predicting student achievement on the New

York State Assessment. The Diagnostic content aligned well with the Common Core State Standards, which is the same content as the New York State Assessment (National Governors Association, 2010). It appeared that the i-Ready computer-assisted program proved beneficial to improve reading test scores.

Background

The Virginia School Board and government officials created the English SOL exam for Virginia Public Schools in the early 1990s to assess students' learning on annual, end-of-year SOL tests (VDOE, 2013b). These 2017 revised standards describe the reading skills students in kindergarten through twelfth grade should attain by the end of each grade level. The ultimate goals are for students to be able to "read, write, research, and communicate" (Virginia Department of Education, 2017). Beginning in kindergarten, students learn to decode printed words and share their ideas with others. By twelfth grade, they can collaborate with others to do research and present their ideas coherently.

In second grade, the Reading Strand requires that students be able to read phonemes, use phonics to read and spell, use semantic clues and syntax when reading, enlarge their vocabulary and word meaning knowledge, use simple reference materials, and read and comprehend fiction and nonfiction texts (Virginia Department of Education, 2017e).

A strong relationship exists between second grade students' passing or failing STAR scaled scores to their probable future success in passing the third grade Reading Standards of Learning high-stakes test. (Renaissance Learning, Inc., 2018). The SOL reading test scores of fail, proficient, and advanced indicate the student's level of proficiency in knowing his or her English standards of learning. A total of 83 schools with students in grades 3 to 8 participated in the assessment correlation study comparing the students' STAR test scaled scores to their future SOL reading test scores. A group of 2,748 third graders took the STAR reading test and 2,604 of these third graders took the SOL reading test. Of this student

participant sample, 22% had failing scores, 60% had proficient scores, and 18% had advanced scores in both the STAR reading test and the SOL reading test (Renaissance Learning, Inc., 2018).

Based on current data of the low percentage of third graders passing the Virginia SOL reading test in third grade, I believed that some intervention should be in place to improve the students' SOL reading test scores to achieve a minimum of a 75% student pass rate. In 2015, 63% of third graders passed the SOL reading test (VDOE, 2011b). In 2016, the pass rate was 64% (VDOE, 2011b). Due to the limits of the one-day period for the students to take the SOL reading test, third graders should be fluent readers to comprehend the digital text and related questions found in the SOL reading test (Virginia Department of Education, 2017e). When a student spends more time and energy attempting to decode words within a text that are too difficult to read, then the student has less time and energy to comprehend the text. Consequently, the student cannot successfully answer similar SOL reading test comprehension questions.

Using a computer-based instructional program such as the ReadWorks program has been a part of NPS's instructional improvement goal to "ensure that digital literacy is woven throughout curriculum and instruction for all programs of study" (Virginia Department of Education, 2011a, p. 14). The use of the students' scores from the formative DRA 2 (Beaver & Carter, 2006) and the STAR (Renaissance Learning, Inc., 2018) reading tests and the summative end-of-year SOL reading test show the possible effects of the ReadWorks program on students' reading growth. The DRA 2 is a paper-based assessment, which a teacher administers to determine a student's independent reading fluency and comprehension as either Advanced, Independent, Instructional, Instructional, or Intervention (Pearson Education Inc., 2011). The computer-based STAR reading test compiles a student's estimated oral reading fluency, grade level reading SOL proficiency, and independent reading comprehension scores (Renaissance Learning, Inc., 2018). The SOL reading test assesses student knowledge of Virginia's English SOLs to determine a

student's reading comprehension achievement as Pass/Advanced, Pass/Proficient, Fail/Basic, and Fail/Below Basic (Virginia Department of Education, 2015b).

Education reform movement. The demands of testing to gauge students' reading performance grew out of a 2001 National Education Summit led by Achieve, a legal corporation that included six governors and six business leaders (Owens, 2015). Their chief goal was to raise states' academic standards and graduation requirements. These educational reformers created national curriculum standards and challenging assessments. The primary concern of the business leaders was that high school graduates were ill prepared to work in the corporate sector. Twenty-one companies offered educational computer-based program prototypes at the summit to display their solutions to the education crisis. Computer-assisted instruction's relevance in the educational reform movement would become more prominent over time.

As part of the reform effort, Virginia Superintendent of Public Instruction William Bosher Jr., Governor George Allen's Commission on Champion Schools, and the Virginia Board of Education helped to establish the Virginia SOLs in the early 1990s (VDOE, 2013b). The ultimate goal was to improve fourth graders' performance on the National Assessment of Educational Progress (NAEP) and high school seniors' performance on the SAT college preparatory exam (VDOE, 2013a). In 1995, the reformers revised the English, mathematics, science, and social studies SOLs to become more demanding. This revision process has now become the norm and occurs approximately every seven years.

Partially as a result of the more rigorous English SOLs, Virginia's fourth-graders' average NAEP reading test scaled score increased from 221 points in 1992 to 229 points in 2015 (National Center for Education Statistics [NCES], 2015). This increase of 8 points was a testament to the growth in the rigor of Virginia's English SOLs. The NAEP assesses the academic progress of representative samples of American fourth, eighth, and twelfth graders in the subjects of mathematics, reading, writing, science,

civics, economics, geography, U.S. history, and the arts (NCES, 2015). Passing the Virginia SOL reading test could mean that the student had a high likelihood of passing the NAEP reading test.

By 1998, the Commission and the Virginia Board of Education established that the annual end-of-year SOL assessments would measure student knowledge of the Virginia SOLs as well as evaluate public school accreditation (VDOE, 2013a). Based on 1997 Board *Regulations Establishing Standards for Accredited Public Schools in Virginia*, public schools must meet accreditation standards requiring at least 70% of their students to pass the SOL tests in all four content areas by the year 2006 (VDOE, 2013). In 2001, the Board of Education's Office of School Improvement's academic review teams visited low-performing schools to monitor their creation and implementation of reading and mathematics instructional program improvement plans (VDOE, 2013).

As the English SOLs became more rigorous to create a stronger pool of future college students and employees, between 1998 and 2005, the third-grade SOL reading test pass rates increased 22%, from 55% to 77% (VDOE, 2005). Furthermore, the passing test rates showed a 5% increase from 80.24% in 2006 to 85.49% in 2011 (VDOE, 2011b). The VDOE, the College Board, ACT, Achieve, college professors, and business people revamped the English and Science SOLs to ensure that students were college- and career-ready (VDOE, 2013a). In 2012, The VDOE raised the accreditation requirement from 70% to 75% for only the SOL reading test pass rates (VDOE, 2013a) so that schools and their teachers would be more accountable to teach the VDOE SOLs to students. Third graders' test pass rates dropped down to 72% in 2012, which meant that some elementary schools were accredited with a warning (VDOE, 2014). In the years 2013 to 2016, the third grade SOL reading test pass rates increased from 69% to 76% (VDOE, 2017b).

Third grade SOL reading test pass rates in NPS have declined from 75% in 2005 to 64% in 2016 during which time the VDOE altered the SOL reading test content due to the 2010 English standards

revision (Virginia Department of Education, 2011b; see Table 1). The 71% average pass rate shows that, overall, third graders are struggling to meet the 75% VDOE SOL reading testing pass rate requirement to comprehend passages.

For low-performing schools not meeting NCLB test requirements, the threat loomed of charter schools replacing them. An economic recession prompted the VDOE to receive $4.35 billion from the American Recovery and Reinvestment Act (ARRA) in 2009. Joanne Weiss used these funds to implement the Race to the Top (RTTT) program (Owens, 2015). Weiss permitted private industry to create charter schools and sell educational technology programs for schools that were not meeting the NCLB annual testing requirements. President Obama offered more RTTT funding to states that welcomed as many charter schools as possible. Obama proclaimed that, "Businesses can follow the examples of Intel and Microsoft by developing the software tools and cutting-edge technologies that prepare today's students to be tomorrow's teachers" (Owens, 2015, p. 174).

Table 1.

Third Grade Standards of Learning Reading Test Pass Rate for 2005-2016

Academic School Year	**Percentage of Students Passing**
2004-2005	75
2005-2006	78
2006-2007	75
2007-2008	78
2008-2009	82
2009-2010	73
2010-2011	76
2011-2012	78
2012-2013	63
2013-2014	55
2014-2015	63
2015-2016	64

Note. The data is for third grader Standards of Learning reading test pass rate (Virginia Department of Education, 2011b).

The impetus for students in grades three, four, and five to be proficient readers is that their passing Virginia SOL reading test scores are integral for a school to maintain its accredited status. Since 2012, the VDOE established elementary public school accreditation benchmarks: a 75% pass rate in SOL tests for English Reading; 75% for English Writing; 70% for Mathematics; 70% for Science; and 70% for History (VDOE, 2015b). Without full accreditation by the VDOE, a school would have constant oversight from the Norfolk School Board and the VDOE to ensure that the school followed through corrective action proposals to improve its SOL test scores (VDOE, 2015b). If a school does not maintain full accreditation for four consecutive years, the VDOE can deny the school's accreditation. In addition, that school may join with a high-performing school or that school's staff, students, administration, or program may be restructured (VDOE, 2015b). In the following paragraphs, I elaborate on the theories that relate to the importance of implementing a research-based reading instructional program to support the Virginia Department of Education's Standards of Learning test score expectations of students.

Theories

Automatic Information Processing Theory Supporting Fluency

The Repeated Readings Method (Samuels, 1979) effectively helps to create fluent readers because of rereading the text to improve their word decoding and comprehension abilities, according to the Automatic Information Processing Theory (LaBerge & Samuels, 1974). The premise is that a reader who can decode text effortlessly now has more reserved attention to comprehend the text. The weak decoder thus cannot comprehend the text when all of his or her energy is spent attempting to read the words (LaBerge & Samuels, 1974). Upon reading a text several times, the reading speed increases and the word recognition errors decrease (Samuels, 1979). Some errors are acceptable as the reader reads quickly because reading accuracy should not impede speed. Reading comprehension and fluency grow for the reader who reads the text several times (Samuels, 1979).

The ReadWorks program (ReadWorks Inc., 2017) offers the reader the opportunity to reread the text as often as is necessary with the ReadWorks narration to improve his or her fluency and ultimately his or her reading comprehension. The student can choose to have the ReadWorks narrator read aloud the text by simply pressing the play button. The reader can also choose not to use the ReadWorks narration feature if he or she feels confident in being able to read the text independently and accurately. The Automatic Information Processing Theory implies that a student can use metacognition to determine whether he or she has fully understood the text based on his or her feeling of confidence in reading the text fluently independently or with the help of the ReadWorks narration.

Schema Theory Supporting Reading Comprehension

According to the schema theory support of reading comprehension (Kant, 1963), the reader should be able to use his or her background knowledge to understand the meaning of the words, and relay understanding in different verbal or written responses (Clarke, Truelove, Hulme, & Snowling, 2013). It can mean that the reader answers questions about the text. These questions could be knowledge level questions concerning information found directly within the text. These questions could also be at a higher cognitive level that expects the reader to infer, compare, sequence, and process the information. Comprehension can also relate to knowing where information belongs in a graphic organizer. Ultimately, there are a variety of ways to show reading comprehension in the reader's response.

Schema theory. For reading comprehension to occur, the reader connects the text's meaning to the reader's own experiences and knowledge, otherwise known as schema (Kant, 1963). Schema Theory describes schema as the abstract knowledge that is personal and distinct to the individual reader (Anderson & Pearson, 1988). The schemas are the reader's experiences and knowledge that aid the reader to understand the text more readily (De Beaugrande & Dressler, 1981). Enough background knowledge should exist in the reader's mind to allow him or her to grasp textual concepts.

An empirical study with 110 college sophomore participants in China found that providing the experimental group with pertinent background knowledge about the American Halloween custom and tradition greatly benefited their textual reading comprehension regarding the story of Halloween (Liu, 2015). The extra background information helped the experimental group recall the key chunks of information in the story, despite the limits of their working memory. It's important to link new knowledge in seven bits of information to the learner's schema (Marks & Miller, 1964).

The ReadWorks program has passages that relate to the learning content that students learn at school or in their home environments. It pertains to subjects that the student has some connection to so that the student can comprehend the vocabulary and contextual meanings of the article with greater ease. The content relates to subjects in social studies, science, and technology.

Assimilation learning theory. Ausubel's Assimilation Learning Theory (1977) is akin to Schema Theory (Kant, 1963), deeming established ideas as schemas that are related to new textual information for the reader to comprehend the new information. When the reader comprehends the text, the reader has melded new information, "a," with "A," the schema, to create the comprehension product of "A" and "a" (Ausubel, 1977). When readers can link their current knowledge of the text's topic with the new information the readers read about that topic, they more fully comprehend the textual information and can consequently more accurately answer comprehension questions. In regards to the students' use of ReadWorks, the students' schema activated when the ReadWorks passages presented information that reminded students of information that they should possess and the ReadWorks passages expand on the topic with additional new information to enlighten the students and engage their interest in the topic and reading.

Reader Response Theory. Rosenblatt's (2005) Reader Response Theory posits that when a reader reads, the reader should attach a personal meaning to the text to have full comprehension and

actual enjoyment, too. The reader recalls the information found in the text when it reminds the reader of his or her own past personal experiences (Rosenblatt, 2005). The reader can be a critical thinker when he or she can personally respond to the text as well as form an educated thoughtful opinion of the topic. The reader's aesthetic response means that the reader draws on his or her emotions to relate or connect to the text content, while the reader's efferent response requires concluding a new idea after reading the whole text. Some students can take stances that show that they are now passionate about a topic as it relates to their own personal lives, such as recycling and pollution's effects on people. The ReadWorks passages can provoke students to think about how the topic can affect them and their community, and that the students learn to be more engaged in learning more about the topics, and thus become critical readers.

Piaget's cognitive constructivist theory. The requisite engagement that a reader should have when reading the text relates to Piaget's (1964) Cognitive Constructivist Theory of using past experiences to gain knowledge. The active learner interacts with the text to understand its meaning. Thus the reader makes new meaning through processing the text information by filtering that information using personal background knowledge and experiences, also known as schemata (Gunning, 2012). The learner learns to organize information into schemes. Then the learner can assimilate new information into schemes. Finally, the learner can accommodate that information when the learner changes those schemes or creates new schemes of new information (Piaget, 1964). Reading the text that contains new information requires the process of forming schemes, assimilating, and accommodating. If the ReadWorks passages present new information to the student, the student can add that information to the already known information that relates to the new information, which is assimilation. Accommodating the information entails that the student may have to rethink his or her own background knowledge as being paltry or lacking, and realize that the new information can greatly educate and thus benefit the student overall.

Vygotsky's Social Constructivist Theory. According to Vygotsky (1978), reading comprehension is a sociocultural activity. The child learns by interacting with the text by relating what he or she knows already and applying that knowledge to the information found in the text. Children are empty vessels who absorb knowledge from their experiences with objects in their world. Thus, the construct of the zone of proximal development (ZPD) is important in teaching a learner to learn from a teacher, or more knowledgeable person, who will guide the learner to solve a problem. This guidance lends itself to teaching a learner reading comprehension strategies using various tools in research as well as engaging in computer-based learning programs.

Learners construct knowledge by engaging with their world (Vygotsky, 1978). The hands-on experiences are valuable in creating schemas upon which further learning can occur. The text's contents are more understandable to the learner when the learner has had prior knowledge of the text's contents by experiencing that knowledge through hands-on experiences, especially when that reading content is non-fiction. Overall, a computer-assisted instructional program operates on the premise that the reader is learning to read within his or her particular ZPD (Vygotsky, 1978). The reader can read a text that is slightly above his or her current reading ability level with the teacher or a computer program's feedback.

Theory of Contingent Scaffolding. Teachers must engage the learner in a series of learning activities to allow them to flourish from dependent to independent learners (Wood, 1998). The teacher must first model how to do an activity, such as reading, by reading the text aloud and thinking aloud the thoughts that a good reader should be asking and answering to oneself before, during, and after reading a text. Then the teacher engages the learner by allowing the learner to practice these modeled behaviors through guided practice with the teacher assisting the learner in each step of the activity. After the teacher has given the learner a sufficient number of prompts on how to do the activity independently, then the learner can independently do a similar activity.

While the ReadWorks program (ReadWorks Inc., 2017) does not encourage the reader to ask questions before and during reading the article, it does pose up to ten questions that require the student to answer in a multiple-choice format and in a short written response format. The students reflect on what information from the article that they have comprehended and show their knowledge and retention of the material by responding to the questions. Based on the teacher's modeling of how to use the ReadWorks program to read the text, review the vocabulary, and answer the article's comprehension questions, the students can mimic the teacher's modeled behavior and reread the text and refer to the text to answer the multiple-choice questions and the short written response questions.

Theoretical Support for Computer-Assisted Instruction

An understanding of Piaget's Cognitive Constructivist Theory is essential to understand the benefits of children actively learning independently when they learn the computer program's content (Simatwa, 2010). The student discovers new text meaning by answering comprehension questions.

Cognitive learning theory. Cognitive Learning Theory (Piaget, 1964) suggests that learners learn more information quickly in their lessons when they are actively involved in the learning process. When students receive immediate suggestions on strategies to use to answer a question, they are learning from their errors at an optimal rate by trying again to answer a comprehension question. The learner is in control of the learning pace, answering practice questions and test questions from the computer program to further their best understanding of the information taught (Mayer, 2009). The computer program will adjust its lessons to learners' individual learning needs based on their learning performances.

Paivio's dual coding theory. Lessons full of verbal and visual information will likely be best remembered (Baddeley, 2003). Paivio's Dual Coding Theory (Clark & Paivio, 1991) is a central determining factor behind the design of computer-assisted instruction. A multimedia presentation, consisting of verbal and visual information, should teach the learner the most important information in

logical chunks for the learner to retain the information adequately (Mayer, 2001). Engaging different memory systems to entertain and teach the learner information so that the learner's working memory is full but not overloaded can improve learning (Mayer & Moreno, 2003). The ReadWorks tests are very succinct with black and white text and a plain white background with a little color for the borders (ReadWorks Inc., 2017). There is often a photograph included to accompany each article to relate their knowledge gained from viewing the photograph to learning the new information found within the article. There is little distraction from the focal lesson content, and the student is in control of the kinds of media that relates to answering the comprehension questions. The student can choose which part of the article to read, when to review the vocabulary terms and definitions, and when and how to answer the questions, as well as to choose to use the narration feature.

Statement of the Problem

The problem is multi-layered. First, the problem is that no empirical study has examined the effectiveness of the ReadWorks reading program (ReadWorks Inc., 2017) to improve students' reading fluency and comprehension skills as reflected in their DRA 2 (Beaver & Carter, 2006) and STAR (Renaissance Learning, Inc., 2018) reading test scores. Secondly, the problem is to understand how a teacher can make the best instructional decisions to select appropriate tests based on the student's academic school year grade or reading grade level, based on teacher's interpretation of the STAR and ReadWorks data reports. Although the ReadWorks program has student tests ranging from kindergarten through the twelfth grade, the teacher ultimately can choose the grade level text that each of their students read (ReadWorks Inc., 2017). Teachers can also tailor their reading instruction based on student performance on the ReadWorks reading tests. No research has explored the impact of teachers' implementation of data reports such as the ReadWorks data reports on teachers' lesson plan designs.

Purpose of the Study

The purpose of this mixed methods research study was to investigate the effects of this teacher-researcher's interpretation of the STAR (Renaissance Learning, Inc., 2018) and ReadWorks data reports and how this affects her lesson plans to teach second graders reading fluency and comprehension skills in one Norfolk elementary school (ReadWorks Inc., 2017). I investigated my implementation of the ReadWorks program and the effects of the ReadWorks program on how the second grade students' use could influence the students' scores on the DRA 2 (Beaver & Carter, 2006) and the STAR (Renaissance Learning Inc., 2018) reading tests.

Since I am an educator, I am interested in improving teacher instructional methods as part of improving reading instruction using technology. The research study occurred in my workplace and the participants were my students. I was motivated to do this study to improve these students' reading comprehension skills and use best practices in instructional technology as a method. My school has had an instructional focus to improve reading comprehension using traditional book and paper methods as well as using technological digital reading and response methods. I believe that my research can provide our school and others like our school with valuable information to ensure that we are teaching deep comprehension strategies with all available resources.

Research Questions

Based on this research study's main purpose to understand how I implemented the ReadWorks program (ReadWorks Inc., 2017) and designed my reading lesson plans to incorporate data from the STAR reading test (Renaissance Learning, Inc., 2018) and ReadWorks data reports, I explored the following research questions:

1) How did Title I students' STAR oral reading fluency rates change, if at all, after participation in the ReadWorks program?

2) How did Title I students' Lexile measures change, if at all, after participation in the ReadWorks program?
3) How did Title I students' STAR scaled scores change, if at all, after participation in the ReadWorks program?
4) How did Title I students' STAR grade equivalent scores change, if at all, after participation in the ReadWorks program?
5) How did Title I students' DRA 2 independent reading levels change, if at all, after participation in the ReadWorks program?
6) How did a teacher's whole and small group reading lesson plans incorporate data from the STAR and ReadWorks data reports?

Significance of the Study

In 2005, presenters at the National Education Summit on High Schools were intent on encouraging all schools to adopt technology-based education programs to improve their standardized test scores (Owens, 2015). The National Governor's Association (NGA), Achieve, the James B. Hunt Institute, the Business Roundtable (BRT), and the Education Commission of the States (ECS) sponsored a summit focusing on improving underperforming school systems. Bill Gates, a founder of Microsoft, the world's large personal computer software company, was the opening speaker who argued that wealthier school districts had the technological resources to educate their students as compared to the poor school districts whose students underperformed in tests (Owens, 2015).

I chose to engage in practitioner research to understand the dynamics of how the STAR (Renaissance Learning, Inc., 2018) and ReadWorks (ReadWorks Inc., 2017) data reports will impact the design of reading lessons for second graders at an elementary Title 1 school where I operate as a full-time second grade teacher. I possess professional teaching knowledge, having obtained a Master's in

Elementary Education and a Virginia Department of Education Postgraduate Professional Teaching License to teach in the Prekindergarten through the sixth grade. After thirteen years of teaching and experiencing the arrival and departure of several computer-assisted reading programs in NPS, I have chosen to determine the efficacy of the latest intervention, the ReadWorks reading program, on a teacher's design of lesson plans and the influence on various aspects of student reading growth.

I sought to improve educational practice by fully understanding how a teacher's interpretation of the STAR (Renaissance Learning, Inc., 2018) and ReadWorks (ReadWorks Inc., 2017) data reports can enhance my second grade students' reading test scores. To date, no research studies have evaluated how teachers have improved their students' oral reading fluency and reading comprehension skills as reflected in the STAR reading test scores and how they have used the STAR and ReadWorks data reports to create and deliver reading lessons. While the ReadWorks program does not measure fluency, the program does read aloud the text to the student participant so that the student can read along with the text. This study could enhance teachers' educational judgment to understand the true impact that the teachers' interpretation of data reports has on their creation of reading lessons.

Only one empirical study has investigated the effects of the ReadWorks (ReadWorks Inc., 2017) program on reading. Ezaki (2016) conducted a case study and found that the five second grade participants improved their vocabulary and reading comprehension skills when they read in small guided reading groups to learn about the vocabulary words and non-fiction text from Reading A-Z (LAZEL Inc., 2018) and ReadWorks. They did not perform well when they were required to learn to read the vocabulary words and text independently without any guidance. Ezaki collected data in the form of interviews, field notes, and student work analysis. This ReadWorks program study yielded some evidence of improving students' reading fluency and comprehension abilities.

The true implementation of the online ReadWorks program can only occur with teacher buy-in (ReadWorks Inc., 2017). Teachers are primarily in charge of ensuring that their students experience positive feelings about learning to read using the ReadWorks program. They are the ones who manage the rotation of students on the classroom computers so that all students participate in reading a certain number of minutes per week. Teachers consistently monitor student progress in their lessons by checking the students' data reports. If the student is not progressing adequately in completing the assigned ReadWorks tests, then the teacher may intervene by teaching small and whole group lessons and changing the particular ReadWorks tests for students.

According to Alexander (1992), a professional teacher exercises good practice in teaching by following certain tenets that pertain to adopting new interventions such as the ReadWorks program (ReadWorks Inc., 2017). First, good practice should coincide with the teacher's aims and values of improving reading fluently with comprehension. Second, the teacher should feel comfortable with the practice of allowing students to learn to read using the ReadWorks program. Third, the teacher should have the authority to implement the practice as the teacher feels it will benefit the students most. Fourth, the practice has evidence to support it being effective to achieve purported aims. If those four tenets exist, then teachers will likely have fidelity when implementing the ReadWorks program intervention.

Doyle and Ponder (1977) believe that instrumentality, congruence, and cost affect teacher buy-in of a program such as the ReadWorks program (ReadWorks Inc., 2017) in the classroom. The instrumentality pertains to how the ReadWorks program trainer explains to teachers how to use the program in the classroom to improve students' reading fluency and comprehension skills. The teachers will likely implement the program when the program reading tests are congruent with the teachers' teaching philosophy and practices. Lastly, a huge factor is the cost or the further work and time that teachers must devote to ensuring that their students are performing well on their ReadWorks tests and that

the teachers are teaching information that the STAR (Renaissance Learning, Inc., 2018) and ReadWorks data reports indicate that the students need further remediation.

ReadWorks Program

In 2017, the ReadWorks program (ReadWorks Inc., 2017) was one intervention program used in this NPS elementary school to improve students' SOL reading test scores (Virginia Department of Education, 2017a). The value of this program is to foster students' motivation with both independent reading practice and immediate feedback to improve their independent learning in reading. Schools that had received low SOL reading test scores (i.e., below the 75% VDOE mandate) between 2013 and 2015 were encouraged to use computer-assisted instruction to increase test scores.

When students use the ReadWorks program, they have a variety of choices of passages to read (ReadWorks Inc., 2017). Approximately 83% of the ReadWorks passages are nonfiction, and 16% are fiction, with less than 1% being poems. The passages have a great array of topics, such as geography and societies, the arts, culture, U.S. history, civics and government, physical science, life science, family and home, sports, technology and engineering, informational fiction, narrative fiction, and poetry. Once the student opens the article, he or she reads with or without the aid of the narration feature, that reads the text aloud. Then the student may review key vocabulary words along with their definitions and sample sentences by clicking on a tab at the top of the screen. Next, the student will answer comprehension questions about the text, being able to review the text as needed by clicking on the appropriate tab.

The ReadWorks program (ReadWorks Inc., 2017) incorporates the Common Core State Standards content to create reading passages that are about topics such as science, social studies, and technology (National Governors Association, 2010). Teachers can track individual student progress, which informs the reading lessons teachers design. Teachers can view individual student and class results by product

type, question sets, vocabulary activities, and Article-A-Day. Teachers can add audio to permit readers to listen to the text.

Teachers can learn by reading passages and watching videos about assigning passages to their students based on grade level, Lexile measures, topics, and subtopics (ReadWorks Inc., 2017). StepReads passages are less complex versions of the original passages. A StepRead1 article is more complex than StepRead2 article. The StepReads article has the same content knowledge, academic vocabulary words, text structures, and the author's craft as the original article. Students may read either or both of the StepReads articles at any time.

Students can choose to read from a variety of tests that the teacher has permitted the student to read based on the student's grade level or current reading grade level, which the STAR (Renaissance Learning, Inc., 2018) reading test can determine. The tests contain Nonfiction and Literary Articles, Paired Texts, ReadWorks Article-A-Day, ELL & Extra Support Features for Article-A-Day, and StepReads (ReadWorks Inc., 2017). The ReadWorks program teaches the users new vocabulary with a definition, advanced definition, images, and examples.

Paired Texts are two passages that have a common topic, theme, or literary element (ReadWorks, Inc., 2017). The question set encourages students to draw connections between the two texts. The questions are explicit and inferential. The six questions have three sections. Questions 1 and 2 relate to the first article. Questions 3 and 4 pertain to the second article. The last questions are about both passages' content. Students can spend 10-15 minutes a day reading the nonfiction ReadWorks Article-A-Day.

When the teacher chooses to assign a ReadWorks article (ReadWorks Inc., 2017), the teacher views its Lexile measure. It is helpful to know the DRA 2 level that correlates with each Lexile measure.

By knowing the correlation, the teacher can ensure that the student is reading at his or her independent reading level. Thus, the text readability level will not be too challenging or too simple for each student. Viewing a text level correlation chart may assist the teacher to choose the appropriate level text for the students to read on the ReadWorks program.

The students learn to reflect on their reading by answering multiple-choice questions and short written response questions (ReadWorks Inc., 2017). Once the student has submitted the test, ReadWorks provides the score and percentage of correctly answered multiple-choice questions. The teacher must grade the written response short answers with a 0%, 25%, 50%, 75%, or 100% score using the suggested answer guides. The teacher may give the student corrective feedback by typing a detailed response to the student's answers. The goal is for the student to master a test with at least an 80% score to show comprehension proficiency.

Definition of Terms

Accountability—Under the No Child Left Behind (NCLB) law, students' performance on Virginia's SOL tests must show adequate yearly progress (AYP), and Virginia Department of Education can impose sanctions on those schools that fail to meet AYP goals (Virginia Department of Education, 2015b).

Annual Measurable Objectives—The No Child Left Behind Act (United States Department of Education, 2002) established annual measurable objectives (AMOs) to reduce the proficiency gaps between low- and high-performing schools. They represent the percentage of students within a subgroup that must pass the reading and mathematics tests to show satisfactory progress (Virginia Department of Education, 2013a).

Assessment—Testing is used to measure student academic performance.

Comprehension—An active process requiring the reader to make meaning of the written text by formulating questions while reading, drawing conclusions, making personal connections and inferring (Frey & Fisher, 2006).

Computer-assisted instruction—A computer-based program that offers lessons and assignments using visuals, animation, characters, rewards, and feedback; the goal is for the programs to engage the participant to read (Edmunds & Tancock, 2003).

Diagnostic Reading Assessment 2 (DRA 2)—A reading assessment for grades kindergarten through third. It assesses student reading ability in the areas of sustained reading, previewing and predicting oral reading fluency, and reading comprehension (Beaver & Carter, 2006).

Every Student Succeeds Act (ESSA)—This law replaced No Child Left Behind law on December 10, 2015. ESSA requires schools to assess student learning on multiple measures rather than on only one single end-of-year benchmark summative test such as the Virginia SOL reading test (United States Department of Education, 2015).

Fluency—Fluency pertains to the reader's accuracy in reading a text, or the number of words correct per minute (WCPM; Kuhn, Rasinski, & Zimmerman, 2014). Fluent reading also means that the reader reads the text smoothly and expressively (Kuhn & Stahl, 2003).

Guided reading—Differentiated reading instruction given by teachers who teach students effective reading strategies in small groups of up to six students according to their instructional reading level proficiency (Fountas & Pinnell, 1999). Students receive teacher-guided support in applying those strategies while reading the increasingly challenging text and doing an extension activity after reading the text (Fountas & Pinnell, 1999).

NCLB—No Child Left Behind Act of 2001; it was made a law in 2001 by President George W. Bush to ensure that students were meeting annual academic expectations in public schools (United States Department of Education, 2015).

Reading proficiency—The reader's ability to read the text independently with a fluency rate of 95% or higher and with comprehension or understanding (Rasinski, 1999).

ReadWorks program- This computer-based, online, multiple genre reading program has multiple genre reading passages for users to read with or without audio assistance, vocabulary review, and multiple choice and short written response reading comprehension questions. It provides data reports to teachers to monitor their student reading progress (ReadWorks Inc., 2017).

Research-based instruction—Successfully proven research-based methods provide the rationale for the instructional lesson plans that teachers design to teach subject matter.

Standardized Test for the Assessment of Reading—The STAR test measures the test-taker's reading level using national norm-referenced scores and scaled scores to determine the test-taker's mastery in reading standards per each grade level (Renaissance Learning Inc., 2018).

Standards of Learning Reading test—The VDOE's statewide, annual, end-of-year summative assessment of student knowledge of the English SOLs (VDOE, 2017a).

Title I School—A school with over 35% of students who qualify for free or reduced lunch. The school receives federal funds to provide a high-quality curriculum that is used to raise the amount and quality of students' learning (VDOE, 2017c).

Organization of the Study

Chapter Two provides a review of educational policies, reading proficiency, reader interest, reading motivation, possible causes of low reading proficiency, reading fluency and comprehension

instruction, guided reading group instruction, and computer program feedback. Chapter Three describes the mixed-methods research approach and procedures to collect data.

Summary

The effectiveness of a computer-assisted reading program reflects how students use it. Such a program is a supplemental instructional intervention to aid students who need more individualized learning support. The goal is for the program's tests to encourage students to practice their reading comprehension strategies that they have learned in whole and small group lessons to answer short written response and multiple choice comprehension questions. The teacher likewise tailors shared whole and small group guided reading lessons to meet students' literacy needs. The ultimate goal is for the ReadWorks program's tests to provide the teacher data to design reading lessons to improve students' reading fluency and comprehension abilities based on second grade Virginia SOLs (ReadWorks Inc., 2017).

Based on the policy changes to Virginia's schools, 75% of third, fourth and fifth grade elementary students must pass the Virginia SOL reading test in 2018 to maintain school accreditation. The use of the computer-assisted programs is an intervention to help students pass the test at this rate. Based on student reading test performance on the DRA 2 (Beaver & Carter, 2006), STAR (Renaissance Learning, Inc., 2018), ReadWorks (ReadWorks Inc., 2017) tests, and other reading formative and summative assessments, teachers design their reading lessons to raise their students' scores. The teacher's in-class activities and online activities, including the ReadWorks program (ReadWorks Inc., 2017), are supposed to combine to be effective in promoting students' reading growth.

Chapter II: Review of the Literature

Introduction

In this chapter, I will describe various elements of the basis of my study. My main purpose for this study was to understand the degree to which the ReadWorks program (ReadWorks Inc., 2017) promoted second- graders' reading fluency and comprehension as evinced on the STAR reading test (Renaissance Learning, Inc., 2018) scaled score and estimated oral reading fluency results. In this chapter, I will explain educational policy changes, as well as the state requirements for reading proficiency improvement as shown on annual end-of-year assessments. Next, I will define reading proficiency and possible causes of low reading performance. Then I will describe low reading proficiency and several possible causes of low reading test performance, and learners' reading development stages. I will explain research-based small group guided reading instruction, along with the effects of fluency on students' reading comprehension. I will also delve into the pragmatics surrounding digital literacy tools, digital text reading comprehension strategies, digital text-based assessments, computer-assisted instruction programs to aid fluency and comprehension, and computer program feedback.

A basic understanding of the meaning of reading proficiency will facilitate the ability to distinguish different components of reading proficiency as reflected on the STAR reading test (Renaissance Learning, Inc., 2018) and a formative test, the Developmental Reading Assessment 2 (DRA 2; Beaver & Carter, 2006). It is possible to be proficient according to one assessment and to be non-proficient according to another assessment. The use of these assessments along with other classroom reading tests to determine reading proficiency is important since more data points provide a fuller picture of student reading proficiency as it relates to fulfilling the requirements of the (NCLB) Left Behind Act of 2002 (United States Department of Education, 2002).

Educational Policies

Educational policies have changed over time to address the needs of the universities and colleges as well as those needs of businesses who hire high school graduates. The ultimate focus is for high school graduates to be ready to excel in a post-secondary education or to thrive in the workforce. By amending content standards to become more rigorous and by ensuring that teachers are teaching students the required standards of learning to pass standards-based tests, then the students will be better equipped to engage in successful future careers.

No Child Left Behind Act of 2001

Under NCLB, the 2002 reauthorization of the Elementary and Secondary Education Act (ESEA), elementary schools were expected to ensure that their students meet or surpass the Annual Measurable Objectives (AMOs) for testing and attendance (US Department of Education, 2015). The students also must make adequate yearly progress (AYP) in various academic subjects (US Department of Education, 2002). The primary foci in making AYP in Virginia are that 95% of the school's students take the Standards of Learning (SOL) tests and that at least 70% pass the SOL Mathematics test and 75% pass the English SOL Reading and SOL Writing tests (Virginia Department of Education [VDOE], 2015b). If a Title I school receiving ESEA federal funding does not meet AYP two years in a row, then they are in a Title I School Improvement status. This priority school must work to meet state and federal mandates. Likewise, it can become a focus school governed by a VDOE-approved coach to aid in creating and implementing sound intervention strategies to increase testing passing rate performance (VDOE, 2015b). Tiered instruction is a solution to help at-risk students.

Teachers must now teach at-risk readers specific reading fluency and comprehension strategies in their design of Tier 2 and Tier 3 reading lessons using students' reading test performance (Stormont, Reinke, Herman, & Lembke, 2012). The ultimate goal is that they pass the summative SOL reading test.

Data from the DRA 2 (Beaver & Carter, 2006), the STAR (Renaissance Learning Inc., 2018), and Phonological Awareness Literacy Screening (PALS; Invernizzi, Meier, Swank, & Juel, 2001) test reports show student literacy skills, which is information that teachers use to guide their reading instruction in the small group setting of up to eight students maximum. In guided reading small groups, teachers teach SOL-based lessons on word recognition, word study, fluency, vocabulary, comprehension, and strategies at the students' instructional 94% reading accuracy rate (Norfolk Public Schools [NPS] English Office, 2011). Students receiving Tier 2 and Tier 3 interventions must spend more time learning to read effectively by meeting in daily small guided reading group sessions with the teacher and a well-trained reading interventionist teacher (Fuchs, Fuchs, & Vaughn, 2014). They also spend extensive time learning to read on computer-assisted reading programs such as i-Ready or Achieve3000 (Achieve3000, Inc., 2015).

School focus on remediating students in need of Tier 2 and Tier 3 reading intervention has its roots in the Response to Intervention (RTI) model and the NCLB Act of 2002 (United States Department of Education, 2002).. The RTI model arose due to the advent of the reauthorization of the Individuals with Disabilities Education Improvement Act (IDEA) in 2004. The model relies on testing to identify and properly educate students with learning disabilities (LD) and those who are struggling learners so that they, along with all students, can successfully pass the annual state standards assessments that NCLB required of schools (VDOE, 2015b). If students' reading progress has still not improved after Tier 2 and Tier 3 instructional interventions, then the student may have a learning disability (Fuchs, Fuchs, & Vaughn, 2008). Under NCLB, all students should pass the Virginia SOL reading test.

Every Student Succeeds Act

On December 10, 2015, the Every Student Succeeds Act (ESSA; United States Department of Education, 2015) replaced the NCLB law of 2002 (United States Department of Education, 2002). ESSA

mandates that schools assess student learning on multiple measures rather than on only one single end-of-year benchmark summative test such as the Virginia SOL reading test (United States Department of Education, 2015). States must comply with the ESSA requirements for the 2017-2018 school year. School-wide reform strategies must strengthen the academic program using activities, programs, and other strategies to improve student test performance (VDOE, 2015a). The ReadWorks (ReadWorks Inc., 2017) computer-assisted program is a Tier 2 and Tier 3 intervention for students who did not comprehend Tier 1 shared, whole group, teacher-led instruction.

Schools assess students using multiple valid formative measures including State-driven ones for various reasons. One reason is to identify and teach Tier 2 and Tier 3 instruction to ensure that students pass the NCLB-required summative tests. A majority of students must pass the Standards of Learning (SOL) tests in various subjects such as math, science, reading, and social studies to meet Annual Measurable Objectives (Virginia Department of Education, 2017c). DRA 2 (Beaver & Carter, 2006), STAR (Renaissance Learning, Inc., 2018), ReadWorks (ReadWorks Inc., 2017) student performance data reports, formative assessments and summative test data are some measures that teachers use to determine the instruction that students need to pass their SOL tests.

The Accountability Plan for Virginia

The annual Virginia school accreditation ratings inform the stakeholders, who are the parents and the public, of the degree of student learning achievement. A partially accredited school can have an "Approaching Benchmark-Pass Rate," "Improving School-Pass Rate," "Warned School-Pass Rate," or be "Reconstituted" (VDOE, 2015a). The requirements for a school to be fully accredited continue to be 70% minimum passing rates on SOL tests for mathematics, science, and history, while it is a 75% minimum passing rate for English (VDOE, 2015a). A school can have its accreditation denied if scores are not meeting Virginia Department of Education accreditation standards for four consecutive years (VDOE,

2015a). The onus is on elementary schools to ensure that a minimum of 75% of their third, fourth, and fifth grade students are reading proficiently to pass the SOL reading test with 2017 English content standards (VDOE, 2017a).

Reading Proficiency

The proficient reader actively engages with the text to understand its meaning. Part of being a proficient reader entails being able to use one's schematic knowledge, or experiences, to understand the text meaning (Latham, 2014). Proficient readers set a reading purpose, ask questions, predict, visualize, and connect the text's ideas to oneself and the world around them (Latham, 2014).

Part of being a proficient reader also includes being able to summarize the most important events in a text, and that is called being sensitive to structural centrality (Van den Broek, Helder, & van Leijenhorst, 2013). The reader's background experience in the content of the text's events cements the events more powerfully to enable the reader to retell key events with sufficient details that can describe the characters' motivations, too.

A proficient reader uses strategies to decode, accurately read, and understand the text (Afflerbach, Pearson, & Paris, 2008). A proficient reader utilizes metacognition, conscious of knowing when to apply a reading strategy to understand difficult or unknown words and conceptual meaning in a passage or story. Some strategies used by proficient readers include applying context clues, summarizing, and asking questions to infer and to determine the text meaning (Bryant, Ugel, Thompson, & Hamff, 1999). Normally that reader has the skill set to understand the meaning of at least 95% of the text meaning for passages and stories that are on that student's grade level (Rasinski, 1999). Being able to answer text-based questions by answering multiple choice questions, filling out graphic organizers, and responding in written form are excellent ways for the reader to show reading comprehension.

Reading Development Stages

The level of reading growth that a student can experience depends on the student's progression in stage development. According to Jeanne S. Chall's stages of reading development (1983), a first grade student's reading ability in Stage 1 grows more slowly than the student's oral language comprehension. The Stage 1 reader is learning phonics or relationship of letters to sounds. Stages 1 and 2 indicate when the students are learning to read. By Grades 2 and 3, students begin to become fluent readers building their comprehension abilities. By the third grade or the end of Stage 2, students can read one-third of what they have orally comprehended. In Grades 4-8, students are in the stage that requires them to read to learn. Students' reading growth varies due to various factors, but the stages are a general overview of their reading comprehension growth.

Students learn to read at various growth rates, especially in the younger elementary grades. It can be counterproductive to expect second and third grade students to meet current NPS reading proficiency benchmarks because many of them are only beginning to become fluent readers who can comprehend text (Chall, 1983).

Reader Interest and Motivation

Students will want to read when they are adequately motivated to read independently for reasons of interest or enjoyment or both (Guthrie, 2011). Some factors that influence students' attitudes towards reading are their reading goals, interests, and ability to choose text genres, as well as reading with their friends. The readers need to read text that relates to their interests. They should receive enough feedback to be able to read the challenging text (Kuhn, et al., 2006; Rasinski, 1999). Thus, teachers should have students complete a reading inventory to know how the students' knowledge, goals, and interests can match possible reading activities to encourage students to collaborate (Guthrie & Humenick, 2004).

When students are comfortable reading a text, they will read more consistently, and consequently, their opportunities to improve their reading fluency and comprehension will increase. Torgeson (2004) advocates a vastly larger intensity of reading instruction to foster improved reading skills. Teaching students how to find a "just right" book will give them the freedom to choose books of interest to them that they will then read at their independent or instructional level, with the explicit guidance of a more proficient reader (Keene & Zimmerman, 2007).

A "just right" book means that the reader can read the text at an Independent reading level by oneself or that the reader can read the text at an Instructional level with the aid of another more proficient reader (Rasinski, 1999). The reader's Independent reading level denotes that the reader can read the text without any aid with a fluency rate of 95% or better (Rasinski, 1999). The reader's Instructional level means the reader can read 90-95% of the text accurately. The reader should never read a text at a frustration level, but rather read on his or her instructional level with some guidance from a proficient reader (Fountas & Pinnell, 1999). Frustration level arises when the reader finds the text too challenging to read although the reader receives greater reading assistance, and consequently reads with a fluency below 90% and with a poor understanding of its meaning (Rasinski, 1999).

Beyond engaging in classroom reading activities, students should be encouraged to read outside of the classroom to increase their sense of self-efficacy and motivation to continue to read (Auckerman, 1987). A reader who reads often will read with more fluency and with a greater understanding and appreciation of the text.

Low Reading Proficiency

While most students tend to benefit from reading instruction within and outside the classroom, many students still struggle to read proficiently. Virginia's data for the 2015 National Assessment of Educational Progress (NAEP) in reading showed that 28% of fourth graders scored below basic

proficiency, while 72% scored at or above basic proficiency (National Center for Educational Statistics, 2015). A study of fourth graders who scored below basic reading proficiency in the NAEP showed that they faced a 23% chance of not graduating on time (NAEP, 2015). Black and Hispanic students who did not read proficiently in third grade were twice as likely not to graduate from high school compared to white students (Hernandez, 2011). Over 70% of U.S. high school students dropped out of school because of reading problems (Joshi et al., 2009).

Not only do students' low reading abilities adversely affect their likelihood of graduating high school, but it also increases their chances of receiving special education services. School officials often misdiagnose low readers as having a learning disability, which permits them to have extra learning accommodations, which permit them to read below grade level (National Center for Education Statistics, 2015). They read below their grade level and still move onto successive grade levels because of the reading disability designation. It is vital that trained teachers educate students to read using all research-based strategies and tools such as computer-assisted instruction to enable students to become effective readers.

Possible causes of low reading performance. The problem of low student reading test performance in high-poverty schools can be challenging to solve. Although students living in homes with low income are eligible for specially funded food, health, and housing programs, they face difficulties in survival at home that affect their success in school (Parrett & Budge, 2012). When such students feel hopeless at home regarding being able to eat a healthy meal and wear clean, suitable clothes to school, they may feel inadequate compared to other students at school. These sobering realities may distract students enough so that they cannot focus on doing well academically. Teachers have a responsibility to be respectful in responding to these students' social, physical, cultural, and academic needs.

Title I schools are home to many students whose families are eligible for free or reduced-price lunch meals. Data from the 2010 Census indicated that approximately a quarter of Norfolk's population living below the poverty level consisted of families with children under 18 years old. In addition, 58% of Norfolk's population living below the poverty level are Black and tend to continue to live in high-poverty areas (Communitas Consulting, 2014). Teachers have the power to give tests that students can do without the use of technology and Internet-based resources; provide enough school supplies, extra clothes, and snacks; as well as reach out to parents concerning their student's academic progress (Gorski, 2007).

Although poverty can impede a reader from succeeding in reading, another chief factor is the lack of qualified paraprofessional teachers. Without expert reading teachers in their elementary schools, more students will continue to be struggling readers in middle and high school, and thus they will have an elevated risk of dropping out of high school (Lesnick, George, Smithgall, & Gwynne, 2010). The ESEA requires all classroom teachers to be highly qualified, competent in all core subjects and possessing a bachelor's degree and a state teacher's license (United States Department of Education, 2015). However, paraprofessionals are only required to complete two years of college study and possibly complete an associate's degree that may or may not relate to the education field. They must pass a Virginia Board of Education Parapro assessment, and obtain a certificate showing that they are highly qualified (Virginia Department of Education, 2017d). The net result is that when paraprofessionals teach students how to read, these students do not often make any significant reading proficiency gains as compared to students taught by certified teachers (Croninger & Valli, 2009; Slavin, Lake, Davis, & Madden, 2011).

Reading specialists' qualifications can affect the kind of expertise they have to teach students to read in small guided reading group lessons and to train teachers to teach reading as effectively as possible (Marvel et al., 2007). According to survey data obtained from the National Center for Educational Statistics in 2004, only one-third of reading specialists possessed a graduate degree in reading (Marvel et

al., 2007). The best quality reading instruction comes from those who are highly qualified. When unqualified reading specialists instruct teachers on how to instruct students to read, then the teachers are ill equipped to produce good readers. Teachers must know how to teach reading, administer reading tests, evaluate test results, and teach appropriate lessons to meet students' learning needs.

Knowing and applying effective reading strategies can lessen the reader's difficulties in reading fluency and comprehension (Seignuric, Ehrlich, Oakhill, & Yuill, 2000). Lack of metacognition means that the weak reader does not comprehend the text by consistently asking himself or herself questions, does not actively apply phonetic strategies, and has poor vocabulary development (Seignuric, Ehrlich, Oakhill, & Yuill, 2000; Warren & Fitzgerald, 1997). Another deficiency is the low working memory to decode and store information and to complete cognitive tasks like reading for understanding (Baddeley, 2003). If the reader uses too much effort to decode unknown words, then the reader cannot comprehend the text well. According to Greer (2004), poor readers overly preoccupy themselves with simply being able to pronounce the words, and thus are not able to attend to word meaning, since they have not yet developed word automaticity and fluency.

Little to no family support in guiding a child to read is also a contributing factor that affects the child's ability to read effectively on grade level (Zill, Moore, Smith, Stief, & Coiro, 1995). A lack of family support may be due to such factors as the parents' educational background, the parents' lack of English-speaking abilities, the little amount of time available to teach reading, and low socioeconomic status (Zill, Moore, Smith, Stief, & Coiro, 1995). The student's home environment may not be literacy-rich, meaning that there are not enough books available to read at home. The less education that a parent has, the fewer vocabulary words that the child actively hears and understands, which hampers the child's vocabulary development. The child's reading comprehension will be at a standstill considering that the child's schema will be inadequate when trying to understand story words and the concepts. The quality of

vocabulary, fluency, and comprehension reading instruction that he or she receives at school has a large impact on reading skills growth.

Reading Fluency

Fluency implies that the reader accurately pronounces words at a proficient speed with adequate expression (Walker, Mokhtari, & Sargent, 2006). The rate of words correct per minute (WCPM) is the reader's oral reading fluency rate. When a reader reads text expressively, then the reader knows the proper volume and rhythm. The reader understands the text's morphology, syntax, and semantics (Walker, Mokhtari, & Sargent, 2006). The more practice that the reader experiences in rereading the same text, then the reader becomes more fluent and increases the oral reading fluency or words per minute read correctly.

For reading fluency to occur, word-reading fluency must first occur (Ehri, 2002; Hudson, Torgesen, Lane, & Turner, 2012). Automatic word recognition requires the reader to immediately recognize the letter-sound relationship and thus to pronounce the word almost instantly. Automatic word recognition has the four features of speed, autonomy, effortlessness, and lack of conscious awareness (Moors & De Houwer, 2006). The reader's effortless ability to read with prosody or appropriate expression, tone, and phrasing tends to coincide with higher reading comprehension abilities (Miller & Schwanenflugel, 2006, 2008). It is essential to build vocabulary knowledge to improve one's fluency skills.

Unitization develops with extensive practice in reading. A reader's knowledge base widens to include a greater quantity of words when the reader reads various texts often (Logan, 1997). Each time that the reader decodes a word, that word is now a trace, or representation, encoded in the reader's memory (Logan, 1997). Lack of conscious awareness indicates that the reader decodes words readily. When the reader views the word again in the text, the reader can now readily retrieve that word from his

or her knowledge base. The memories of having read words become stronger over time when the student reads these words repeatedly. The need for the reader to decode words using slow, algorithmic processes now becomes unnecessary, as the reader's memory has retained these words for quick retrieval to read them automatically (Rawson & Middleton, 2009).

Reading a wide variety of texts will promote the reader's retention of words to read fluently. Wide reading will ensure that the reader becomes well versed in quickly decoding the words seen in various instances (Schwanenflugel & Ruston, 2008). Wider reading means that the reader has greater memory to read a greater quantity of words more quickly, accurately, and expressively. Thus, as the reader's memory focuses less on decoding words, the reader can use working memory to focus on understanding the text's meaning. Wider reading experiences enable the reader to develop an extensive vocabulary and a greater understanding of basic concepts.

Effects of fluency on reading comprehension. When a reader reads fluently, the reader can concentrate on understanding the text meaning, rather than on decoding individual words (LaBerge & Samuels, 1974; Tan & Nicholson, 1997). Fluent readers can easily detect if they have misread any words since they have a basic cognition of the general meaning of the sentence or paragraph. More of the reader's working memory is devoted to comprehending the main ideas of the text when the reader reads the text fluently (Breznitz, 1997). The less fluent reader devotes an insufficient amount of memory to be able to focus on comprehending the text (Snow, Burns, & Griffin, 1998). The importance of being able to recognize words readily and to understand their meaning in the context of the text is crucial to comprehending the text as a whole.

Limited processing capacity affects the reader's ability to decode and comprehend text with equally great amounts of cognitive capacity (LaBerge & Samuels, 1974). If the reader must devote a lot of cognitive capacity to decoding words, then the reader will not have sufficient cognitive capacity to

comprehend the textual meaning. A cognitive overload in trying to decipher how to read each difficult word within the text can cause the reader to comprehend the text. The reader struggling to decode words must use the bottom-up process to read, which is taxing on the reader's cognitive capacity. Fluent readers who comprehend the text more easily use the top-down process, meaning that readers use more cognitive capacity to apply their background knowledge or schema toward understanding the text (LaBerge & Samuels, 1974).

Efficient automatic word and text reading skill development leads to improving fluency and comprehension. In a study conducted on second and third graders, reading prosody, or expressive fluency, predicted reading comprehension score outcomes (Schwanenflugel, Hamilton, Kuhn, Wisenbaker, & Stahl 2004). Changes in ratings of syntactic prosody reciprocally can affect reading comprehension abilities (Klauda & Guthrie, 2008). In another study, below-average fourth grade readers had difficulty in fluently reading aloud and silently, due to not being able to accurately mark phrase boundaries in sentences (Kleiman, Winograd, & Humphrey, 1979). When there is sufficient modeling on how to have appropriate expression when reading the text, as well as student practice in being expressive while reading the text aloud, then students will more likely understand the text that they read.

Reading Instruction

Reading instruction includes lesson plans. Teachers design these lesson plans based on data received from student performance on a variety of periodic reading assessments. These assessments are in paper format or online. NPS teachers use the DRA 2 (Beaver & Carter, 2006), STAR (Renaissance Learning, Inc., 2018), and district-wide, mandated assessments as part of the reading instruction guidelines. In NPS, teachers teach reading using a guide called *Guide to Reading and Writing Instruction and Assessment in Grade 3-5*, which details the school district's reading instruction tenets along with assessments and benchmarks of student reading proficiency throughout the school year (NPS English

Office, 2011). This guide directly instructs teachers how they should instruct students to read as well as how they should assess their reading skills.

Fluency Instruction

Fluently reading the text means reading the text nearly flawlessly, quickly, and with some expression (Kuhn & Stahl, 2003). For fluency to occur, the reader must first have a strong ability to decode words in the text as automatically as possible (Vellutino, Tunmer, Jaccard, & Chen, 2007). Readers need to decode a great variety of multisyllabic words by the end of second grade to comprehend text. If the reader struggles to decode and stumbles word for word in attempting to read a majority of words, then the reader has expended most of his or her energy on this effort and has little to no energy to comprehend the text. Automatic word recognition allows the reader to function as a fluent reader who can comprehend text quickly (Perfetti, 1998). Improving the reader's automatic word recognition skills will enable the reader to become a fluent reader.

In NPS, teachers teach reading fluency through direct repeated oral reading instruction during shared and guided reading (NPS English Office, 2011). They model to students how to read and reread a text several times to read a certain number of words correct per minute. Students can practice their reading fluency using tape-assisted reading, choral reading, partner reading, readers' theatre, and student-adult reading (NPS English Office, 2011). Receiving corrective feedback about fluently reading will help the students improve their reading fluency during their guided reading practice.

Greater opportunity to read the entire passage fluently exists when the reader can readily pronounce and understand individual vocabulary words (Latham, 2014). Word study activities that focus on identifying common visual and sound feature patterns help the reader easily decode words. Latham (2014) suggests that *The Word Spy* (Dubosarsky, 2008) is a book that invites the reader to become a word detective, searching for patterns and irregularities in words commonly read. When teachers provide

explicit instruction in word study and word meaning, students will most likely increase their reading fluency and comprehension levels (Wanzek, Wexler, Vaughn, & Ciullo, 2010).

Word attack skills help students become fluent readers who comprehend text well. Phonemic awareness is the ability to say individual sounds and patterns to form words (Adams, 1990). Readers should identify patterns found in recurring letter sequences, syllables, roots, prefixes, suffixes, and onset-rime word family combinations (Lane & Pullen, 2015). Students can benefit from sorting word sorts based on patterns by sound, alphabetical order, or meaning. These activities help students to read word groups in various rising stages, such as Emergent, Letter Name-Alphabetic, Within Word, Syllables, and Affixes, and Derivational Relations (Ganske, 2006). The aim is that, by the end of third grade, the student has mastered these word attack skills, to focus on reading comprehension and fluency.

Assisted reading strategies are crucial to enhancing reading fluency. Assisted reading strategies require a more fluent reader to read with a less fluent reader or readers (Rasinski, 2010). The accuracy, speed and rate, phrasing and smoothness, expression, and volume are facets of fluency that the teacher models. Then the students practice their fluency skills while engaged in paired reading, whole class choral reading (WCCR), and readers' theater activities (Rasinski, 2010). Sixth graders' reading fluency improved when they had the intervention of 16 additional minutes of WCCR per day of reading the text together as a group led by a more fluent reader as compared to the control group (Paige, 2011). Constant practice will enable readers' fluency skills to flourish.

The NPS English Office (2011) advocates research-based reading fluency strategies such as partner reading, tape-assisted reading, choral reading, and readers' theater. These strategies coincide with the recommendations for repeated readings of the basic text, and then the reader can read a new text with greater fluency when the new text contains many of the newly learned words (Faulkner & Levy, 1994).

The foundation for all of the fluency strategies is the opportunity for repeated oral reading practice. One strategy is partner reading whereby an adult or fluent reader reads a text with a less fluent reader. The adult or fluent child reader models how to read fluently and gives the less fluent reader specific feedback on how to read difficult words. Tape-assisted reading can benefit the less fluent reader, as well, by allowing the reader to read the text along with the tape's reader. Choral reading enables the reader to read the text with others in a group. Lastly, readers' theater encourages readers to take turns reading plays orally. Reading practice in pairs and groups can increase reading proficiency, especially when one reader can help the other in decoding and comprehension.

Reading Comprehension Instruction

Reading instruction must be direct, explicit, and focused on teaching reading strategies that students will be able to use effectively by following steps that relate to particular reading goals (Duffy, 2009; Torgeson, 2004; Wharton-McDonald, 2011). Instruction should be quick-paced and succinct in teaching appropriate strategies so that the students will have more time to actively read and write at levels that sufficiently challenge the readers to continue to give their best effort to do well (Clay, 2005; Torgeson, 2004). The teacher should model consistently to students how to think aloud while answering a comprehension question. Teachers should show the thinking that is involved when highlighting or identifying important evidence in a text and then transferring that information to a graphic organizer to retell information, find the main idea and details, or identify cause and effect. Likewise, teachers should assess students' strategy use by hearing and watching them apply the strategies taught to them (Afflerbach, Pearson, & Paris, 2008). The reader will thus make meaning of the written text by inferring, making personal connections, drawing conclusions, and formulating questions while reading (Frey & Fisher, 2006).

In NPS, teachers should teach reading with explicit instruction, meaning that they explain to students why a reading comprehension strategy helps and when to apply it during reading. Teachers should also model the strategy by thinking aloud. Students apply the strategy in guided and independent reading practice. Some reading comprehension strategies are: 1) use schema; 2) visualize; 3) wonder or question about the text's content; 4) draw conclusions; 5) determine important ideas; 6) understand text structure; 7) summarize to identify the main ideas; and 8) synthesize the text's content for understanding (NPS English Office, 2011). Whole and small group reading instruction lessons require teaching these strategies.

Concept-Oriented Reading Instruction (CORI) combines instruction in comprehension reading strategy with motivational assistance (Guthrie et al., 2004). Student participants can read texts that interest them as well as choose and participate in hands-on activities. Each inquiry unit centers on a science or social studies topic that lasts from a few weeks to several months (Guthrie & Cox, 2001). The strategies used are observing, activating background knowledge, asking questions, searching for the information, summarizing, filling out a graphic organizer, and presenting the information to their peers (Guthrie et al., 2001). The presentation can be in a multi-media format that shows student engagement with technology. In the Guthrie study (2004), CORI participants became more strategic readers who answered comprehension questions better when compared to non-CORI participants.

Students can practice various reading comprehension strategies. During reading, readers can fill information from the text onto graphic organizers and semantic organizers. Readers can also generate questions, answer questions, and fill in the blanks of cloze sentences as they read. When the the reader can summarize key information about the text's features and problem and solution, cause and effect, and changes in events and characters, then that reader comprehends the text.

Tests for reading comprehension are helpful to diagnose weaknesses and to aid in teaching reading comprehension. The Group Reading Test II (Macmillan Unit, 2000) assesses sentence and reading comprehension. The test-taker should have a good command of vocabulary to perform well on the comprehension test. The Listening Comprehension Test Series (Hagues, Siddiqui, & Merwood, 1999) is a standardized test that assesses reading comprehension of passages for children ages six years old and above. It includes a true-false response section about the passage just read. The Sentence Verification Task (SVT) consists of the reader's reading a passage and answering True-False statements about the passage (Royer, Green, & Sinatra, 1987). For the SVT to have a high reliability of .90, the reader must read at least 6 passages and 96 test sentences.

Lexile measures affect the student's ability to comprehend the text fully and match the text difficulty with the reader's ability (Metametrics, 2006). Lexile measures are determined by the level of complex vocabulary and by the number of words in a sentence (Metametrics, 2006). In second grade, typical Lexile measures range from 170L to 545L (Metametrics, 2006). When a reader's reading ability in Lexile measures minus the text readability in Lexile measure equals zero, then the reader's forecasted comprehension ability is 75% (Metametrics, 2006). This forecasted comprehension ability provides the reader a fair degree of challenge.

Small Group Guided Reading Instruction

Small group guided reading instruction can assist a reader to read text fluently with the support of other peers and with the teacher's guidance in teaching the reader effective reading strategies (NPS English Office, 2011). The text will be at the reader's instructional level, which necessitates assistance principally from the teacher who teaches appropriate vocabulary found in the text as well as comprehension strategies to understand such concepts as the story plot, text features, problem and solution, cause and effect, and main idea and details. With scaffolding from the teacher, the students can

learn new vocabulary words and their meaning within the context of the text that they read. This guidance is essential for them to understand the text as well as to read fluently.

One form of guided reading instruction, Guided Repeated Oral Reading (GROR) with feedback (Reutzel, Fawson, & Smith (2008), requires teachers to assess students constantly using formative assessments to determine students' reading abilities. The assessment results affect how the teachers group their students in three different tiered small guided reading groups (NPS English Office, 2011). In NPS, students in grades kindergarten through three take the DRA 2 (Beaver & Carter, 2006) and the STAR (Renaissance Learning, Inc., 2018) reading tests in the beginning, middle, and the end of the year (NPS English Office, 2011). Teachers use the DRA 2 and STAR reading test score data to instruct their students in small groups of up to seven students. The student's instructional DRA 2 level is the level at which that student functions in a small guided reading group, reading at a 94% accuracy rate, to receive teacher guidance and scaffolding to read strategically (NPS English Office, 2011). By the end of third grade, the student's independent DRA level can rise to DRA 2 40 with "solid comprehension" ability (NPS English Office, 2011, p. 39). They may also use other reading test data to guide their instruction.

Guided Repeated Oral Reading with Feedback. In Guided Repeated Oral Reading (GROR) with feedback (Reutzel, Fawson, & Smith, 2008), the student reads and then retells the text to a more fluent reader. In a study of 72 third graders by Reutzel, Fawson, and Smith (2008), third grader reading comprehension and fluency was examined as one term, *fluent reading.* One treatment group learned to read with GROR with feedback. After the class of students chorally read a teacher-selected text aloud along with the teacher, each student would reread the same text with a partner twice. Subsequently, the reader would retell the story to a teacher or fluent reader, who would comment on the reader's retelling proficiency. The other treatment group read with scaffolded silent reading, meaning that each reader read an Independent Level book independently and then briefly met with the teacher to read a portion of the

text and discuss its contents. In the study, both GROR with feedback and scaffolded silent reading were equally effective in increasing reading accuracy, rate, expression, and oral retelling comprehension scores. However, the use of GROR can improve reading fluency significantly according to 77 studies (National Reading Panel, 2000). Fluency Oriented Reading Instruction (FORI; Kuhn, Rasinski, & Zimmerman, 2014) is guided reading instruction that also trains readers to read fluently.

Fluency oriented reading instruction. FORI depends on the teacher's commitment to following a five-day lesson plan for guided reading (Kuhn, Rasinski, & Zimmerman, 2014). On the first day, the teacher teaches students vocabulary words and their meaning and introduces graphic organizers that will set a purpose for reading. On the second day, echo reading occurs, whereby the teacher reads two to three sentences aloud for the students to read, follow, and repeat. The teacher asks the students questions as the students and teacher read the text together. Other post-reading activities follow to encourage students to retain some of the important text features, which include vocabulary words and their meanings. Students have a take-home copy of the text to read with family at home for extra fluency practice to achieve reading fluency mastery. Day 3 involves the students reading the text chorally. On the fourth day, students read the text with a partner. On the fifth day, students do extension reading activities related to the text that they read throughout the week. This FORI practice has shown positive results in a study of eighteen student readers who increased their word fluency from 78 words correct per minute (WCPM) to 120 WCPM (Kuhn, Rasinski, & Zimmerman, 2014). A different form of this small group guided reading instruction, Wide Fluency Oriented Reading Instruction (Kuhn et al., 2006), can also assist in accelerating the reader's reading pace.

Wide fluency oriented reading instruction. Integrating Wide Fluency Oriented Reading Instruction (Wide FORI; Kuhn et al., 2006) is beneficial to increasing the students' fluency and occurs in four-day periods. On the first day, the students learn the vocabulary words and graphic organizers. The

second day, they echo and partner read. On the third day, they do extension-reading activities related to text comprehension. Finally, on the fourth day, they echo read and discuss a second and third text passage. A large-scale study of FORI and Wide FORI showed substantial increases in reading fluency and text comprehension (Kuhn et al., 2006). Seeing the same words in different reading passages and rereading those passages consistently within a week can improve student reading fluency (Kuhn & Stahl, 2003; Mostow & Beck, 2005; Rasinski & Hoffman, 2003; Rasinski, Reutzel, Chard, & Linan-Thompson, 2010).

Independent Reading

For reading comprehension to occur, readers must engage in independent reading activities that promote deep comprehension (Dorn & Soffos, 2005). They construct meaning of the text by engaging their schema, or past knowledge and experience, with the text, to understand the author's thinking. This requires readers to reread, preview or survey the text, and ask questions before, during, and after reading the text. The reader must also know when to use appropriate reading comprehension strategies such as to infer, predict, visualize, analyze, connect, summarize, synthesize, critique, and reflect (Dorn & Soffos, 2005). When a part of the text confuses the reader, the reader can highlight, underline, or add a note on paper to ask further questions about its meaning by researching the topic or asking others. This form of inquiry engenders the reader's desire to continue reading for understanding.

Students should be able to choose their own book that will motivate the student to read for enjoyment and learning, because then they are more likely to read a greater volume of books and become more fluent readers who comprehend the text (McBride-Chang et. al, 1993). Ultimately, when the student is motivated to read a book after listening to the teacher deliver an exciting book talk or summary of books of different genres, then that student will want to delve into reading a variety of genres, too. The teacher's modeling of how to read a story aloud in shared or whole group reading and the guided reading

activities that encourage students to mimic the teacher's reading behaviors are catalysts that will likely prompt the student to exhibit these behaviors when independently reading a self-selected text.

When students independently read passages of various genres on the ReadWorks program (ReadWorks Inc., 2017), they choose the article most appealing to their interests. Some ReadWorks article genres are Life Science and Informational Fiction, Geography and Societies, Sports, Health and Safety, and Informational Fiction, Physical Science, Earth and Space Science, U.S. History, Civics and Government, Arts and Culture, Narrative Fiction, and Technology and Engineering (ReadWorks Inc., 2017). They can click the button for the ReadWorks narrator to read aloud the article to them, or not depending on their level of comfort in reading the text independently. The student may choose to read the simplest version of the original article, or a StepRead2 article, or a slightly more complex version of the StepRead2 article, which is a StepRead1 article. Both of these modified versions contain the important content information and vocabulary words, but are at lower Lexile measures than the original article (ReadWorks Inc., 2017). They may also read paired texts, which are about the same topic. They may read the text as many times as needed, which is essential to understanding the text meaning. If there are any important ideas, they may highlight the text in a choice of orange, green, purple, or blue colors, as well as annotate the text by adding their own personal reflections of the text by clicking on the small talk bubble.

Some ways a reader shows deep comprehension of the text are by asking and answering questions. Deep comprehension incorporates generic, text, strategic, and reflective knowledge (Graesser & Clark, 1985). The generic knowledge is the reader's schema, or current knowledge bank and experiences, which aid the reader to comprehend the text. The reader generates new ideas when connecting the author's message to their own schema, and may ask questions that pertain to this schema. The text knowledge is the precise content found within the text, and the reader tends to become more engaged in reading a text that has somewhat familiar content to which the reader relates. The reader may

gain additional knowledge by reading to understand questions that the reader has concerning the content. The strategic knowledge is the reader's reading comprehension strategies used to read for understanding that entail using context clues to understand confusing terms or content. Lastly, the reflective knowledge is the reader's ability to synthesize and analyze information that the author has presented.

During and after reading a text, readers can reflect on their understanding of the text by underlining or highlighting ideas, answering comprehension questions in a written response, and writing down information and vocabulary words in their reading response logs. In the ReadWorks program (ReadWorks Inc., 2017), students answer a few multiple-choice questions and type a couple of written responses to exemplify their reflection and deep comprehension of the text.

Digital Literacy

Use of digital tools in the classroom setting can be advantageous in developing effective readers who desire to read. Digital devices such as iPads and laptops are prevalent in school classrooms, libraries, and computer labs. According to the International Reading Association (2009), "Literacy educators have a responsibility to integrate these new literacies into the curriculum to prepare students for successful civic participation in a global environment." The advantage also extends to students becoming more engaged in learning when their teachers allow them to use digital tools both to learn to read and to read to learn (Prensky, 2010; Richardson, 2010). Digital literacy can entail using iPad apps and laptop websites to learn to read, write, and learn various subjects.

Digital reading tools. Being digitally literate requires utilizing digital tools to understand the text. Digitally literate students can "identify, access, manage, integrate, evaluate, analyze, synthesize digital resources and contents, and construct new knowledge" (Beetham & Sharpe, 2007, p. 15). Computers should have appropriate updated software for the installation of reading improvement programs. Electronic learning aids such as smart toys, activity laptops, VTech Nitro Notebooks, and Leapfrog

reading programs can improve young readers' reading vocabulary, fluency, and comprehension (Hisrich & Blanchard, 2009). Students are attracted to the visual and auditory appeal of digital reading tools' lessons.

Electronic books (eBooks) are integral to meeting various multi sensory and literacy needs for struggling readers (Pearman, 2008). Not only do eBooks have text, but they also have multimedia facets such as audio narration, and visual and textual support that aid the reader to become an independent reader (Pearman, 2008). Electronic books' multi sensory functions actively engage readers in continuing to read more without further external motivation like prizes (Clyde, 2005). The eBooks with full Text-to-Speech (TTS) narration have supported readers' abilities to retell the Reading A-Z (LAZEL, Inc., 2018) stories orally, as well as to comprehend the text better (Gonzalez & Johnson, 2015).

Utilizing iPad applications and websites to learn to read and respond to comprehension questions can entertain as well as educate students. The online games and iPad reading applications have sound, movement, and interactive characters that entertain and educate the students (Hutchison, Beschorner, & Schmidt-Crawford, 2012). Students work independently to use the application. A student participating in an online game can interact with multiple modes such as videos, visuals, and sound, as well as text. Students can push buttons to manipulate the nonlinear text (Owston, Wideman, Ronda, & Brown, 2009). When students are engaged in the reading process, they will more likely want to continue reading independently and thus become better readers.

Digital literacy relates to students' performance on reading, writing, mathematics, science, and social studies assessments that have now become computer-based. Computers, laptops, and iPads share digital text online and offline so that readers can understand information. Students can become proficient readers not by flipping a page and reading only top to bottom, but by being able to scroll up, down, left, and right using the mouse keys. They may have to click on links to explore more digital text found on any

part of the computer screen. This nonlinear reading of the text is a different method than the traditional linear method of reading text printed on paper. Teachers must teach students how to navigate through digital text, as it requires teaching various skills to young learners. For some students, this new skill is easy to master while, for others, it requires some extra training.

Digital text reading comprehension instruction. For teachers to teach digital text reading instruction, they need to have the proper classroom environment filled with requisite multimedia tools such as iPads, desktop computers, and sufficient Internet capability. Once these tools are available, the teacher can begin to teach students how to read critically by asking and answering questions to find answers from the text and solve problems (Taffe & Gwinn, 2007). Students can do web quest activities to find answers to authentic problems using the internet to gather information and to judge if that information is from a trustworthy reliable source, which will encourage students to become critical thinkers who will form opinions and decisions based on sound information. Critical reading means understanding the author's viewpoint, the difference between fact and opinion, and neutrality versus bias.

Technology standards demand that students be able to use digital technology to gain knowledge collaboratively with others to develop new knowledge to share with an audience (International Society for Technology in Education, 2000). First, the teacher must explicitly teach a lesson on how to use a technological tool in the classroom, modeling how to do it while talking aloud the thought process. Next, the students can then begin to use that tool individually or in small groups. Eventually, the students will be able to use a technology tool for a variety of learning purposes (Taffe & Gwinn, 2007). Some technology tools found on TestNav 8, the online test program that supports the Virginia SOL test, could be a digital highlighter, a pen, a notepad (Virginia Department of Education, 2017e). These digital tools help students to answer comprehension questions.

In the realm of digital literacy comprehension, teachers must still instruct students how to strategically read as they would do when teaching regular literacy comprehension skills. Some comprehension skills are how to set a reading purpose, ask and answer questions, examine text structure, predict, infer, visualize, determine what is important, skim, scan, summarize, deal with graphics, monitor and fix comprehension, understand, evaluate, and navigate text information (Taffe & Gwinn, 2007). A five-step method can guide teachers how to teach a variety of reading comprehension strategies. First, the teacher should explicitly teach the strategy and describe when to use the strategy. Second, the teacher or the student models the strategy. Third, the class uses the strategy. Fourth, the teacher allows students to practice using the strategy with guidance as needed for those struggling students. Finally, the students independently use the strategy (Duke & Pearson, 2009). Important differences when teaching digital reading strategies still require scanning through the text, reviewing the headings, captions, and highlighting important information. The requisite component is that the teacher gradually releases responsibility to the student to practice the skill independently and successfully.

Four digital literacy comprehension practices known as coding, semantic, pragmatic, and critical practices actively engage readers in understanding the digital text found on a computer screen (Shariman, Razak, Mohd, 2012). When a student reads a text to answer a comprehension question, it is essential for the student to identify the pertinent information within the text. When a reader codes, the reader scrolls through the text to skim and search for information. The reader also uses menu bars, buttons, and commands. The reader actively applies semantic practice means using keywords to comprehend main ideas, details, content, links, and facts. Pragmatic practice means that the student can access online information to answer the question correctly. Critical practice demands that the reader determines the veracity of the content within the text as credible fact or as unreliable, biased author opinion.

Skilled readers search for the answer within the digital text by scrolling up and down, highlighting the text, as well as reviewing the question again to ensure that the found answer was correct. These strategies require critically evaluating the information that is most important to the question as well as determining the most important information within the text. The reader thus constructs meaning as well as does not overwhelm his or her cognitive load (Alexander, Kulikowich, & Jetton, 1994). The reader then deciphers between trivial and essential knowledge to comprehend the most important content found in the digital text.

Digital text-based assessments. Digital text-based assessments vary in the kinds of interaction that the student has with the text. For NPS third graders, the text found in the assessment is either static or more interactive. The student can only interact with static text by scrolling up or down to view it. The more interactive text allows the student to highlight a part of the text to answer a question or to help answer a question.

Common formative assessment. When the reader interacts with simple digital text on the computer-based NPS Common Formative Assessment (CFA), the reader interacts with certain digital features. The reader reads the text linearly, scrolling up or down as well as left or right using mouse clicks. Second graders take a quarterly CFA in reading comprehension to determine the amount of learning that has taken place (NPS Division of Teaching & Learning, 2014).

The CFAs contain multiple-choice items and technologically enhanced items (TEI) that relate to filling in the blank with typewritten answers, and selecting all of the correct answers, and dragging and dropping responses (Denson & Lawrence, 2017). The second grade CFA reading test items contain SOL content knowledge on reading comprehension of fiction and nonfiction text, main idea, details, cause and effect, problem and solution, vocabulary, and reference resources. While the CFA can measure students'

digital reading comprehension, it does not allow students to access online information to answer questions. It simply has a new testing format that uses computer technology.

Computer-Assisted Instruction Programs

Some computer-assisted programs that were popular in elementary school classrooms allowed students to be independent learners while teachers taught other students in small guided reading groups and worked in different learning stations in the classroom. Certain programs' features benefitted students to improve their reading fluency as well as their comprehension skills.

Fluency Skills Programs

The Read Naturally program (Read Naturally, 2014) is a computer-assisted program that purports to improve elementary student readers' oral reading fluency and comprehension growth rates. The program presents a reading passage and highlights and reads the text aloud. The reader builds fluency by hearing and reading the same passage with the program's assistance at least three consecutive times. To enhance reading comprehension, the Read Naturally passages have challenging vocabulary highlighted in blue and enable the participant to click and learn the vocabulary word's definition. If the reader clicks on an unknown vocabulary word, the program notes the reader's error. After one minute of reading, the Read Naturally Program computes the reader's oral fluency. If the reader's fluency is not adequate, then the participant would attempt to read the passage again, to improve oral reading fluency.

Two studies showed that participants in the Read Naturally (Read Naturally, 2014) computer-assisted program improved their oral reading fluency even in the absence of direct teaching of oral reading fluency by a teacher or tutor. In one study, all eight African American first grade participants improved their oral reading fluency, and seven of the eight participants improved their reading growth rate (Gibson et al., 2011). These struggling readers learned to read on the computer program three to four times per week for 14-16 weeks, and all participants markedly improved their Dynamic Indicators of

Basic Early Literacy Skills (DIBELS) oral reading fluency (ORF) scores. The software was on a CD-ROM disk filled with 24 stories. Participants learned key words, read a new text for one minute, read a new text on the program, and answered comprehension questions. Another study showed great improvement in five out of six second-grade struggling readers' oral reading fluency rates on the DIBELS ORF when they practiced three to four times a week for seven to twelve weeks (Keyes et al., 2016). The Read Naturally program is useful in enhancing learners' reading fluency.

Another program is the GraphoGame Rime program (Lyytinen et al., 2007) which aims to improve oral reading fluency. A study of 88 seven-year-old Finnish students showed that their oral reading fluency increased after using the GraphoGame Rime program for 10-15 minutes daily for five meetings per week over 12 weeks (Lyytinen et al., 2007). This program also incorporates the program's narrator reading text aloud to the participant, who reads along and gains vocabulary knowledge in the process. They improved their phonemic and rhyming awareness as shown in the pre-test and post-test scores.

Comprehension Skills Programs

Computer-assisted reading instruction aims to tailor lessons to the individual learner, giving the learner feedback, engaging the learner with interactive information processing, and administering continuous formative assessments to tailor lessons further to improve the learner's reading skills (Curriculum Associates, 2015a). The purpose is for the lessons to teach the learner at a level that is challenging but not overwhelming.

The Thinking Reader computerized program was part of a randomized study including 2,407 sixth grade student participants whose vocabulary and comprehension was found to increase slightly (Drummond, Chinen, Duncan, Miller, Fryer, & Zmach, 2011). The program would read aloud digital novels to the student users. The software program gave hints and other text comprehension assistance as

well as encouraged them to respond to what they read every few pages so that they could connect with the text to gain more understanding. While the effect size was only 0.14 on the Gates-MacGinitie vocabulary test (MacGinitie, MacGinitie, Maria & Dreyer, 2002) and only 0.13 on the comprehension subtests, it is worthwhile to study its effects on a younger group of elementary students to examine its possibly powerful effects on increasing vocabulary and comprehension.

Achieve3000 is a computer-assisted reading program that targets improving students' vocabulary and reading comprehension in kindergarten through grade three by presenting Associated Press passages along with comprehension questions (Achieve3000, Inc., 2015). Magnolia Consulting did an independent, randomized study of 1,012 third, sixth, and ninth grade students in 2014-15 and found that the students who had used the Achieve3000 program showed statistically significant growth on the Gates MacGinitie Reading Test fourth edition's (GMRT-4) Vocabulary, Reading Comprehension, and Total Reading Tests (MacGinitie, MacGinitie, Maria & Dreyer, 2002). The effect sizes were 0.43, 0.47, and 0.48 for the third, sixth, and ninth grade students' scores (Achieve3000, Inc., 2015).

In 2015, i-Ready became the main intervention program used in many NPS elementary schools to improve their students' SOL reading test scores (Curriculum Associates, 2015a). Schools that had received low SOL reading test scores (i.e., below the 75% Virginia Department of Education mandate) between 2013 and 2015 were encouraged to use the i-Ready program (VDOE, 2015a). The i-Ready program is a potential computer-assisted program that can instruct students how to read digital text effectively by being able to highlight text, drag it to different locations, and annotate by typing ideas beside the text. The i-Ready program's lessons teach kindergarteners through fifth graders the five reading domains of phonological awareness, phonics, high-frequency words, vocabulary, and reading comprehension, after these students take the i-Ready Diagnostic Assessment (Curriculum Associates,

2015a). The i-Ready Diagnostic assessment determines the reader's scale score, norm score, and Lexile measures.

The i-Ready informational text comprehension lessons teach several different reading goals: author's purpose, categorize and classify, cause and effect, fact and opinion, drawing conclusions, main idea and details, summarizing, text structure, close text reading, and citing textual evidence (Curriculum Associates, 2015b). The i-Ready literary text comprehension lessons teach students about author's purpose, point of view, cause and effect, drawing conclusions, figurative language, story elements, summarizing, theme, character analysis, determining word meaning, compare and contrast, and citing textual evidence.

The i-Ready program's lessons teach kindergarteners through fifth graders the five reading domains of phonological awareness, phonics, high-frequency words, vocabulary, and reading comprehension after these students take an i-Ready Diagnostic Assessment (Curriculum Associates, 2015a). The i-Ready informational text comprehension lessons teach several different reading goals: author's purpose, categorize and classify, cause and effect, fact and opinion, drawing conclusions, main idea and details, summarizing, text structure, close text reading, and citing textual evidence (Curriculum Associates, 2015b). The i-Ready literary text comprehension lessons teach students author's purpose, point of view, cause and effect, drawing conclusions, figurative language, story elements, summarizing, theme, character analysis, determining word meaning, compare and contrast, and citing textual evidence (Curriculum Associates, 2015b).

The i-Ready Diagnostic Assessment diagnoses a student's reading strengths and weaknesses and is the basis for the creation of individualized lessons to improve weak reading skills (Curriculum Associates, 2015b). The untimed multiple-choice diagnostic takes 35-60 minutes to complete. When the student answers a question correctly, i-Ready will pose a more challenging question to follow it. If the

student's answer is incorrect, then the following question's difficulty will be easier (Curriculum Associates, 2015b). The diagnostic report will provide each student's scaled score and grade level commensurate score, ranging from kindergarten through third grade, for each of the five domains.

The validity of the i-Ready program was strong, promoting students' high New York reading test scores (Educational Research Institute of America, 2014). In a study, regression analyses proved that 6,540 third, fourth, fifth, sixth, seventh, and eighth grade New York students' i-Ready Diagnostic assessment scores had a statistically significant R squared value of 0.58 in correlation with predicting their New York English Language Arts test scores (Educational Research Institute of America, 2014).

Curriculum Associates conducted case studies demonstrating how students in several schools have shown improvement in overall reading comprehension skills because of using the i-Ready assessment (Curriculum Associates, 2013). In Sacramento, California, Edwards Kemble Elementary, a Title 1 school with 56% English language learners and 14% students in special education, 93 second and third graders used i-Ready for five months and 87% of these students improved their state reading test scores. Many improved their Lexile measures by as many as 145 points as well (Curriculum Associates, 2013). Randolph New York School District's 977 fourth, fifth, and sixth grade students, including 138 special education students and 48% of students receiving free or reduced lunch, saw vast improvement in their state assessments as a result of using i-Ready for 90 minutes per week (Curriculum Associates, 2013). In Culpeper, Virginia, Farmington Elementary School's 370 fourth and fifth grade students successfully passed their reading SOL test overwhelmingly at approximately 75% to 88% upon using the i-Ready program for at least 30 minutes per day four days per week (Curriculum Associates, 2013).

Programs to Aid Fluency and Comprehension

Alphie's Alley (Danis, Rainville, Therrien, Tucker, Abrami, & Chambers, 2005), a computer-assisted software reading program, used animated characters, graphics, interactive lessons, and diagnostic

assessments to improve 224 first grade participants' reading fluency and comprehension abilities. Students improved in their fluency and comprehension as shown in their Woodcock Word Attack (Woodcock, 1987) and GORT Fluency and GORT Comprehension tests (Chambers et al., 2008; Wiederholt & Bryant, 2001). Alphie's Alley's interactive feedback and individualized lessons met participants' learning needs. Alphie's Alley's embedded technology consisted of the multimedia presentations and constant reading diagnostic assessments (Chambers, Cheung, Madden, Slavin, & Gifford, 2006). Twelve types of activities taught phonemic awareness, sound blending, and reading comprehension. Teachers use the program's videos and lessons to teach reading.

One study researched the effects of a computer-assisted reading software program, Quick Reads, on 63 third grade participants' fluency, comprehension, and vocabulary (Fenty, Mulcahy, & Washburn, 2015). Two computer-assisted programs were each analyzed to understand which features of the programs improved fluency, vocabulary, and comprehension. One program pre-taught vocabulary and allowed participants to read as many passages as they wished. The other program required the participants to read a certain number of passages per day and gave less vocabulary feedback than the first computer-assisted program. The former program that offered participants more time to read passages and receive a vast amount of vocabulary feedback produced significant improvements in participants' reading fluency and comprehension. The latter time-restrictive program did not produce the same degree of fluency improvement. It is important to provide the reader with as much vocabulary support as possible before allowing the reader to embark on reading the text so that the reader will comprehend the text.

The Quick Reads program's (Hiebert, 2003) comprehension questions enabled the reader to read a narrative story and to answer computer-based quizzes replete with multiple-choice items and story maps. The student clicks on a drop-down menu to choose the answers about each third grade level story's elements which belong in the story map such as character description, setting, conflict, climax, events,

theme, and story resolution (Stetter & Hughes, 2010). In their study of high school students with a learning disability in reading comprehension, Stetter and Hughes (2010) discovered that the majority of students improved their scores on the Gates-MacGinitie comprehension test. Being an active reader means including one's perspective on the text in the form of written or verbal responses, and computer-assisted programs allow readers to be active participants.

The Istation computer-assisted reading program (Mathes, Torgesen, & Herron, 2015) supports participants' oral reading fluency and comprehension. The characteristics of the program are that its colorful characters interact with the participants, teaching first through eighth graders fluency, vocabulary, and comprehension. The Istation diagnostic test assigns the participant appropriately leveled test items to gauge his or her real reading abilities and designs appropriate lessons based on the participant's diagnostic test results (Mathes, Torgesen, & Herron, 2015). In Florida, poor readers in grades four and five improved their Istation Diagnostic assessment scores upon using the Istation program in the 2014 school year and thus increased their reading fluency and comprehension skills (Robinson et al., 2015). Entertaining graphics and immediate feedback engaged participants to want to learn to read with improved fluency and comprehension.

READ 180 is a computer-assisted reading program that elementary and high school students use to develop their reading, language, fluency, and writing abilities (Houghton Mifflin Harcourt, 1999). Ninety minutes of instruction are divided into 20 minutes of teacher-guided shared whole group reading, writing, and vocabulary instruction. There is a 20-minute small guided reading group rotation of students who read with the teacher, with the READ 180 computer program, or on their own. There is also 10 minutes of a whole group discussion (Houghton Mifflin Harcourt, 1999). In a study by White, Williams, and Haslem (2005), students in grades 4 through 8 who participated in READ 180 did improve their

Reading Comprehension subtest scores on the New York reading achievement test compared to non-participants of the READ 180 program. The READ 180 program appears to be a beneficial intervention.

Computer Program Feedback

While computer-assisted reading programs differ in the sorts of lessons, animation, characters, rewards, and feedback that they offer, the goal is for the programs to engage the reader in desiring to learn to read adequately (Edmunds & Tancock, 2003). The program can stimulate reader motivation so that reading improvement can occur. A study by Edmunds and Tancock (2003) showed that fourth graders were motivated to read if they received extrinsic rewards from a computerized reading program. Tokens and other fun games can be sources of extrinsic rewards that will likely entice the reader to want to read more of that digital text. For some students, the character's feedback is sufficient to keep the reader's interest in learning how to read. Computer program users tend to learn more information and retain it better when they receive immediate, specific feedback on their learning progress (Craik & Lockhart, 1972). Consequently, the learners' engagement and information retention will increase.

The computer program's feedback is an important determinant of the emotional and motivational effects on the program's participant (Lever-Duffy & McDonald, 2008). The computer program narrator's or the program's characters' feedback can affect the participant's desire to use the program. Some programs mimic expert human tutor behavior, are quickly able to diagnose the deficiency through pre-tests, and offer immediate feedback that will remediate and give more practice opportunities before retesting the student (Lever-Duffy & McDonald, 2008). The effect of this feedback is that the learner benefits by progressing in his or her reading abilities.

Computer program feedback can enhance participants' interest in learning, when compared to participants' lack of interest in a computer program that does not give feedback (Denton, Madden, Roberts, & Rowe, 2008). The kind of feedback that most benefits participants is immediate, accurate, and

constructive (Mason & Bruning, 2005). The purpose of feedback is to reinforce the participant's correct responses so that the participant will continue to want to answer more items correctly and improve his or her learning.

Feedback is an essential component of the Cognitive Learning Theory that asserts that students can learn when they hear or see positive statements and receive helpful information (Craik & Lockhart, 1972). Students will retain more information when the feedback is direct and particular to the student's learning needs (Craik & Lockhart, 1972; Williams & Brown, 1990). Whether the teacher or the computer-assisted program provides the direct student feedback, the reality is that the student learns at a faster rate with such constructive feedback.

In the ReadWorks program (ReadWorks Inc., 2017), the multiple-choice questions allow the student to choose one or more correct answers. When the student is correct, the student receives immediate feedback on the percentage of answers that were correct when the student reviews the submitted test. The student receives further written feedback from the teacher who individually grades the short written responses using the ReadWorks suggested answer guidelines (ReadWorks Inc., 2017).

The reviewed literature shows that computer-assisted instructional programs can increase students' reading fluency and comprehension abilities, but these studies have not actively explored teachers' viewpoints about the precise details concerning the ReadWorks program's efficacy. Other existing contributing factors beyond simply the computer program could affect students' reading abilities positively or negatively. Some factors are the teacher's small guided reading group lessons, shared whole group reading lessons, as well as each student's extra reading study time at home. The teacher self-reflection data helped to explain the increase or decrease in their students' reading fluency and comprehension test scores.

Summary of Literature

The various computer-assisted programs have produced positive results in improving students' reading fluency and comprehension on different measures. The common factors that helped contribute to students' reading improvement were specific feedback from the program's narrators or characters, various learning activities, and multimedia presentations that included sound, text, and visuals. The ReadWorks program (ReadWorks Inc., 2017) serves as a possibly effective intervention to promote students to read proficiently on the valid and reliable DRA 2 (Beaver & Carter, 2006), STAR (Renaissance Learning, Inc., 2018), and SOL (Virginia Department of Education, 2017e) reading tests. To date, there has been only one study on the possible effectiveness of the ReadWorks program to improve student performance in oral reading fluency and reading comprehension skills. This research study aimed to fill that gap.

Chapter III: Methodology

Introduction

This chapter identifies the research questions, design, population, sample, sampling procedures, instrumentation, data collection procedures, data analysis, and the limitations of the study. The purpose of the study is to examine my implementation of the ReadWorks program (ReadWorks Inc., 2017) and my students' reading fluency and comprehension performance on the Developmental Reading Assessment 2, or DRA 2 (Beaver & Carter, 2006), and the Standardized Test for the Assessment of Reading, or STAR (Renaissance Learning, Inc., 2018) tests.

Review of Research Questions

The following research questions guided the study:

1) How did Title I students' STAR oral reading fluency rates change, if at all, after participation in the ReadWorks program?
2) How did Title I students' Lexile measures change, if at all, after participation in the ReadWorks program?
3) How did Title I students' STAR scaled scores change, if at all, after participation in the ReadWorks program?
4) How did Title I students' STAR grade equivalent scores change, if at all, after participation in the ReadWorks program?
5) How did Title I students' DRA 2 independent reading levels change, if at all, after participation in the ReadWorks program?
6) How did a teacher's whole and small group reading lesson plans incorporate the STAR and ReadWorks data reports?

Research Methodology

Researcher Positionality

I have taught in Norfolk Public Schools (NPS) for over ten years as a classroom teacher. My first school was where I taught first grade and then the subject of science to all grade levels. The second school that I have taught at and continue to teach is a Title I school where I have taught first, third, and second grades in that order. While at the second school, I felt the pressure of motivating my third graders to perform well on the Standards of Learning (SOL) reading test (VDOE, 2017e). The constant visits by the personnel from the Virginia Department of Education (VDOE) Office of School Improvement made me more consciously aware of every action and word that I said in a reading lesson. When my third grade students began to use the i-Ready program (Curriculum Associates, 2015b), I was apprehensive about its effectiveness in increasing SOL reading test scores.

Eventually, after seeing the excitement on my third graders' faces when they understood a reading concept from practicing it on the i-Ready program (Curriculum Associates, 2015b) I grew to embrace the program. I added i-Ready Extra Lessons based on skills that our whole class was learning on a weekly basis. These lessons were tiered from grades one to eight and focused on the reading skill labeled for each lesson. I felt that my reading lessons were not as thrilling as those of i-Ready because my students could not interact with their paper text as they could when reading i-Ready's digital text. They enjoyed highlighting, dragging, and dropping parts of the i-Ready digital text to show their comprehension. These reading activities were similar to those found on the SOL reading test (Virginia Department of Education, 2017a). Thus, the possibility of increasing their SOL reading test performance seemed very real. That year, approximately 70% of my third graders passed their SOL reading test. I was exceptionally proud.

However, I became a little disillusioned at being fully engaged in teaching students to enjoy learning from a computer-assisted program when I discovered the program may or may not be available

the next school year. I had taught first graders using the Breakthrough to Literacy program (McGraw-Hill Companies, 2002), and they thoroughly enjoyed the elephant character and the various creatures who spoke to them as they read the stories aloud with the students. Then the district discontinued the program after a few years. Our school then adopted the Istation program (Mathes, Torgesen, & Herron, 2015) for one year, and the following three years adopted the i-Ready program (Curriculum Associates, 2015b). After I inquired about what several second, third, fourth, and fifth grade teachers were going to use as an alternative intervention for a computer-based reading program now that our school was not going to implement the i-Ready program this year, I discovered that they were now utilizing the ReadWorks program (ReadWorks Inc., 2017). I decided to investigate the ReadWorks program, and found no studies concerning this program's efficacy in improving reading skills.

My study investigated my implementation of the ReadWorks program's (ReadWorks Inc., 2017) features to improve my students' reading fluency and comprehension. This study also examined how the ReadWorks program affected how I designed my reading lessons to remediate their reading skill weaknesses. The students' use of the ReadWorks program are also important factors in determining their desire to perform better on reading assessments such as the DRA 2 (Beaver & Carter, 2006), and the STAR (Renaissance Learning, Inc., 2018) reading tests.

Research Design

In this mixed methods research study, students participated in reading using the ReadWorks (ReadWorks Inc., 2017) program, and I explored how I used the ReadWorks program to improve their skills as reflected in their reading test scores. This mixed methods research shed light on my implementation of the program and my second graders' reading fluency and comprehension skills before and after implementation as demonstrated in their DRA 2 (Beaver & Carter, 2006) and STAR (Renaissance Learning, Inc., 2018) test results.

Using a sequential explanatory mixed methods approach, I collected quantitative data in the first phase and qualitative data in the second phase (Creswell & Plano Clark, 2011). The first quantitative phase answered the research study questions regarding the students' growth or lack thereof of their DRA 2 (Beaver & Carter, 2006) oral reading fluency rates, STAR scaled and grade-equivalent scores (Renaissance Learning, Inc., 2018), and Lexile measures as a result of using the ReadWorks program. The second qualitative phase's data helped to further explain the details found in the first phase's results (Creswell & Plano Clark, 2011). I collected data on students' performance on the DRA 2 and STAR measures and collected qualitative data concerning my perceptions of the ReadWorks program's efficacy in promoting improved reading fluency and comprehension skills and test scores.

Before the study, the second-grade participants used to read Readinga-z.com books (LAZEL Inc., 2018) and answer accompanying reading quizzes and open-ended Jacob's Ladder questions. I worked with students by having them log onto their student accounts twice to explain to them how to use the ReadWorks program (ReadWorks Inc., 2017) before the study so that they had some exposure before the study began. Second graders took pre-tests of the DRA 2 (Beaver & Carter, 2006) and the STAR (Renaissance Learning, Inc., 2018) tests beginning on April 17, 2018. Afterwards, the students began reading using the ReadWorks program intervention for at least 20 minutes per school day. Once the study terminated on June 15, 2018, I analyzed their ReadWorks performance results, their post-test STAR reading test scaled scores, and DRA 2 fluency and independent reading level scores. I reflected on the observations I made during my study as described below.

Access to the Site

I had immediate and continuous access to this school site since I am a full-time second grade teacher at this school. It is my place of work. The gatekeeper for my study was the principal who agreed to allow me to conduct the study.

School Background

The study's site, a fully accredited urban Title 1 school, had 70% of its students in grades 3-5 pass the SOL tests in the subjects of science, mathematics, and social studies, and 75% pass their reading SOL test in the 2016-2017 academic year. This school has continually been striving to improve the reading curriculum by adopting various programs that have helped other schools improve their standardized reading test scores. One possible cause for the improved reading scores was the principal's implementation of Tanny McGregor's reading comprehension strategies as outlined in her books *Comprehension Connections* (2007) and *Genre Connections* (2013) and her subsequent professional development session at the school.

The principal's invitation to Tanny McGregor to instruct the teachers how to effectively teach students reading comprehension strategies during the 2017 pre-service week all began after a fifth grade teacher perused the internet and discovered how McGregor improved several schools' reading test scores after teaching teachers how to teach students to read with comprehension. The lessons focus on building schema, determining importance, conducting a think-aloud, metacognition, asking questions, visualizing, synthesizing, inferencing, evaluating, and summarizing. The school principal instituted the school-wide requirement to use Tanny McGregor lessons to teach these strategies as of the 2017-2018 school year.

Participants

ABC Elementary School[1] serves 659 students in Pre-Kindergarten through grade 5; this school has a 16:1 student to teacher ratio, with 87% of the student population being a minority and the majority being Black (Public School Review, 2017). Approximately 57% of its students are eligible for free lunch, and 8% are eligible for reduced-price lunch, which is an indication that the majority of the student population may come from low socioeconomic backgrounds (Public School Review, 2017). The school

[1] All names of people and places are pseudonyms.

population is 1% American Indian, 5% Asian, 7.7% Two or more races, 15.4% Hispanic, 6.6% White, and 64.8% Black (Virginia Department of Education, 2018).

This mixed methods study included a purposive sample of fifteen NPS elementary school second grade students and one NPS teacher, who is the teacher-researcher, a 43-year old Hispanic teacher with 13 years of teaching experience in NPS. These fifteen student participants, 7 males and 8 females, used the ReadWorks (ReadWorks Inc., 2017) program. The ethnic composition of this study's student participants included four Black males, four Black females, one female of Two or More Races, one Asian female, one White male, two Hispanic males, and two Hispanic females. One female Hispanic and one male Hispanic student are English Language Learners (ELLs), although the male functions as an average English reader and speaker, while the female is a below-average English reader and speaker. The racial composition of the fifteen student participants was 53% Black, 6% Two or More Races, 6% Asian, 6 % White, and 27% Hispanic. The student participants were second graders in my class at the aforementioned school. Their ages ranged from 7 to 10. The oldest student had repeated a grade in school and had entered school later than other students. I gave each of my students a parent permission slip for their parents or guardians to sign. Only those students who returned signed permission slips were included in my study.

I taught reading in whole and small group by writing the lesson plans as they related to common questions that the ReadWorks program asked the students (ReadWorks Inc., 2017). My sole ReadWorks training was two hours of the online ReadWorks tutorials that explained how to assign lessons based on the students' reading levels. The students' STAR reading test (Renaissance Learning, Inc., 2018) grade-equivalent scores were the same grade reading levels that I designated for each student's ReadWorks account. I set up a list of student accounts for each grade level ranging from kindergarten to third grade.

Although I had at least two students whose STAR tests (Renaissance Learning, Inc., 2018) were at fourth or fifth grade level, these students' reading comprehension levels were functioning more appropriately at a third grade level, based on my observations of their Jacob's Ladder work, Reading A-Z (LAZEL Inc., 2018) reading comprehension quizzes, and small group meetings. I wrote my guided reading lesson plans to teach certain specified reading SOLs (Virginia Department of Education, 2017a) that particular students needed further remediation. I used the data from the ReadWorks (ReadWorks Inc., 2017) comprehension test results and other teacher-created classroom formative and summative assessments to determine which second grade Reading SOL content that I needed to reteach to them in whole and small group reading lessons.

Small Group Reading Instruction

Before and during the study, I would simply utilize the Reading A-Z website (LAZEL Inc., 2018) to print out guided reading books and activities. I would create lesson plans to teach my small group how to read with fluency and comprehension during guided reading time. When designing my guided reading group lessons, I used some of the question stems in the ReadWorks (ReadWorks Inc., 2014) tests to guide the questions that I would ask of my students in their guided reading lessons. I monitored the students' reading behavior, watching them track the words as they read the text aloud. I also listened to them answer the questions with their partner, and got immediate information about their reading proficiency, and thus could tailor my subsequent instruction based on the students' reading successes and failures.

In my guided reading group lessons, I would introduce the book, as well as let the students infer the topic based on the cover. Then we would talk about our schema, our prior knowledge of what we knew already about the topic. From there, we would answer a KWL (What I know, what I want to know, and what I learned) chart to give us a sense of purpose in reading the text. As they read, I stopped them at

certain stopping points every few pages and asked them comprehension questions related to the Standard of Learning ([SOL], Virginia Department of Education, 2017a) for second grade reading. I then continued this practice and, at the end of the lesson, the students would answer a graphic organizer related to that SOL, applying any strategies that I taught them while they were reading.

Each student's independent DRA 2 (Beaver & Carter, 2006) reading level was the first determinant of the group membership in either a below level, on level (or benchmark), and above-level group. Then each student's STAR (Renaissance Learning Inc., 2018) grade-equivalent reading test score was the second determinant of group membership. The STAR test results also explained each student's reading SOL (Virginia Department of Education, 2017a) strengths and weaknesses. Finally, the student's ReadWorks (ReadWorks Inc., 2017) performance helped me to address any deficiencies in student ability to answer reading comprehension questions.

I managed daily small group reading instruction for Tier 1, 2, and 3 groups. I would first group my students based on their DRA 2 (Beaver & Carter, 2006) levels. After I formed each group, I looked at the STAR (Renaissance Learning, Inc., 2018) data reports that detailed the students' SOL weaknesses and would teach lessons about these particular SOLs. I would also review the students' ReadWorks (ReadWorks Inc., 2017) question stems to design my reading comprehension questions. The Reading A-Z black and white guided reading books were approximately 10 pages long. I would have students preview the story by observing any illustrations located on the cover and any headings within the book. They could then use these clues to discern the story's genre, topic, and plot. They would use their schema to reflect on what they already knew about the topic, and then ask relevant questions about the topic that they would want to know. A KWL (what I know, want to know, and what I learned) chart was a common pre-reading strategy that I used in the small group reading routine.

To assess the students' reading comprehension, I would stop them at certain pages and ask them comprehension questions. Students would place a see-through sheet on top of the book's page and justify their answers by using a thin dry-erase pen to underline the text that helped them answer each comprehension question. This practice continued until they read to the end of the book. I would ask students to read to me in a whisper so that I could evaluate their oral reading fluency. At the end of reading the text, the students would fill out a graphic organizer. I would glean ideas about vocabulary and comprehension questions to ask from Reading A-Z (LAZEL Inc., 2018) lesson plans to write my own plans.

The Reading A-Z lesson plans (LAZEL Inc., 2018) had a similar format to the small group reading lesson plan format that teachers at my school are required use. I glanced over the Reading A-Z (LAZEL Inc., 2018) lesson plans' sections about what students should do before, during, and after reading. Before reading, I asked students to fill out a KWL chart to document what they knew, wanted to know, and what they learned about the text's topic. They were to underline any important information in the text that would answer any of the questions that the teacher should pose to the students at particular stopping points or pages. The teacher using the Reading A-Z lesson plan would receive explicit Think-Aloud comments to say to the students to guide their thinking while reading the text. The teacher comments aided the students to read fluently, for if I noticed that a student was reading in a choppy or monotone manner, I would interject and model a more fluent expression-filled manner of reading aloud. My constant feedback and assistance with students on how to answer my reading comprehension questions by referring back to the text was necessary scaffolding to assist the students to read more fluently and subsequently improve their comprehension (Vygotsky, 1978).

When I met with my students who were reading below grade level, I always frontloaded vocabulary words that they would encounter when reading the story so that they could possess a larger

schema to comprehend the text (Kant, 1963). I would present these words by writing them in marker onto a spiral notebook. I would add a simple definition beside each word. When we reviewed all of the vocabulary words that I felt they would need to know to comprehend the text's meaning, I then stopped regularly at particular pages to ask them what certain text parts meant, including any new vocabulary words within the context of the question I posed. The rationale for asking students the text meaning was to ensure that they used their schema to process new yet similar information within the text, which is akin to Ausubel's Assimilation Learning Theory (1977). Students worked in pairs to retell the story, which is an important component to comprehending the text. The DRA 2 assessment requires students to retell the story to demonstrate text comprehension (Beaver & Carter, 2006). In addition, students must answer some requisite reading comprehension questions. An example of a small group reading lesson plan for my Tier 3 student group is in Figure 1.

In regards to the guided reading instruction small group reading lessons that I created, I tried to follow the Fluency oriented reading instruction (FORI) guidelines (Kuhn, Rasinski, & Zimmerman, 2014). On the first day, I would introduce new vocabulary words and a graphic organizer, the Jacob's Ladder. On the second day, I would model how to read by reading the text aloud, and the students would follow. I would constantly ask questions of the students as they read. I would have them answer their Jacob's Ladder questions independently during and after the group meeting, and review their answers the next day. The only activity that I did not do was to send the text home for practice. On the third day, we read the text aloud chorally. On the fourth day, the students could read the text with a partner too, which is a part of FORI. They would finish their Jacob's Ladder worksheet of graphic organizers by the fifth day.

Monday 2.4 c Segment words into phonemes (sounds) 2.6 d- Reread, self- 2.9b predict main idea 2.9d set purpose	***Tuesday correct 2.8 a Make, confirm predictions* 2.8 h Summarize, retell w/ beg, mid,end *2.9a. preview,***
SW sort their own words from bags. Rally Coach. ABC order	SW sort their own words from bags. Rally Coach. ABC order.
Locate info. to answer questions. Retell story. The Treasure Hunt	Locate info. to answer questions. ID main idea. The Dilemma
Review vocabulary. **Purpose:** We are going to ask and answer questions about **a fiction** text we read. Then we will retell the story to show understanding. We will use **rally coach Kagan strategy. Fix-up strategy is to sound out, use context clues. Read all of the text, and then I will ask you some questions for you to answer using Rally Coach.**	Review vocabulary. **Purpose:** We are going to ask and answer questions about **a fiction** text we read. Then we will retell the story to show understanding. We will use **rally coach Kagan strategy. Fix-up strategy is to sound out, use context clues. Read all of the text, and then I will ask you some questions for you to answer using Rally Coach.**
Questions to answer using Rally Coach: Par. 1 What mode of transportation is used? Par. 2 What earned the Ming family 50 points? Par. 3 Who discovered the stray shoe? Par. 4 What do you infer discarded means? Clues? Par. 5 What was the final item found?	Questions to answer using Rally Coach: Par. 1 What is Sophia's problem? What do you predict she'll do to solve it? Par. 2 What clues show Sophia is nervous? Par. 2 What is solution to nervousness? Par. 3 What is the invitation about? Par. 4 What is Sophia's dilemma?
SW retell story using Rally Robin from beginning to end remembering all details.	SW retell story using Rally Robin from beginning to end remembering all details.

Figure 1. Tier 3 sample small group reading lesson plans.

The Tier 2 small reading group consisted of students reading on grade level, which was a DRA 28 (Beaver & Carter, 2006) at the last quarter of second grade. They required less frontloading of unknown vocabulary words from me, and instead inferred the meaning of any new vocabulary words by reading the rest of the text that surrounded the new vocabulary word. I would encourage them to use the context to discover new vocabulary word meanings by reading the simplified definition, example, synonyms, antonyms, and other visual clues. If they were confused, I would assist them by giving them further verbal clues by prompting them with understanding the vocabulary word meanings by comprehending the text's context.

We would read the text and I would continuously stop at certain pages and ask the students comprehension questions with ReadWorks program (ReadWorks Inc., 2017) question stems. The students in both Tiers 2 and 3 often needed prompting from me. I would have them first attempt to show proof from within the text that their answer was correct by underlining the piece of text with a thin dry-erase marker that they wrote with on top of a transparent plastic sheet. I would give them verbal cues if they did not answer correctly. A sample Tier 2 small group reading lesson plan is shown in Figure 2.

The Tier 1 students in my small reading group read independently at a DRA 2 (Beaver & Carter, 2006) level of 30 or above. Their STAR reading test performance was at a third grade level or above (Renaissance Learning, Inc., 2018). They were high performers in virtually all classroom reading activities, and formative and summative assessments. They often needed little assistance from me to comprehend vocabulary words. They already had sufficient background knowledge of the vocabulary word meanings. They also underlined any evidence found in the text using their thin dry-erase markers that they wrote with on top of transparent plastic sheets placed on top of their story's page. They responded very eagerly to questions with little prompting from me. A sample Tier 1 small group reading lesson plan is in Figure 3.

All of my students were generally well behaved, intelligent, and compliant during small group reading time. They answered any questions that I posed to them about the text very willingly. Once the students began using the ReadWorks program (ReadWorks Inc., 2017), I incorporated similar questions that were on the ReadWorks program in my small guided reading lessons. They answered the questions aloud individually or in pairs. They did not write down their answers. Guided reading time was about reading comprehension, not necessarily writing exploration.

During small group reading time, the other students would learn to read using the ReadWorks program using their Chrome computer notebooks (ReadWorks Inc., 2017). The students would read the

same text every day in increments, reading approximately for 15 minutes each day, as repeated reading improves reading fluency (Samuels, 1979).

Monday2.4 c Segment words into phonemes (sounds) 2.6 d- Reread, self-correct The Litterbusters Pg. 40 Locate info. to answer questions. ID main idea Review vocabulary: **Purpose:** We are going to ask and answer questions about **a fiction** text we read. Then we will retell the story to show understanding. We will use **rally coach Kagan strategy. You will coach each other. Partner must explain why answer is correct. If you agree, explain why you agree.**	***Tuesday 2.8 a Make, confirm predictions* 2.8 h Summarize, retell w/ beg, mid,end *2.9a. preview, 2.9b predict main idea 2.9d set purpose*** Maria Rosita and the Mukluk Song Pg. 41 Locate info. to answer questions. ID main idea Review vocabulary: **Purpose:** We are going to ask and answer questions about **a fiction** text we read. Then we will retell the story to show understanding. We will use **rally coach Kagan strategy. You will coach each other. Partner must explain why answer is correct. If you agree, explain why you agree.**

Figure 2. Tier 2 sample small group reading lesson plans.

Monday 2.4 c Segment words into phonemes (sounds) 2.6 d- Reread, self-correct 2.8 a Make, confirm predictions The Litterbusters Pg. 40 Locate info. to answer questions. ID main idea.	***Tuesday* 2.8 h Summarize, retell w/ beg, mid,end *2.9a. preview, 2.9b predict main idea 2.9d set purpose 2.9e ask, answer questions*** Maria Rosita and the Mukluk Song Pg. 41 Locate info. to answer questions. ID main idea.
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Questions to answer using Rally Coach Par 1-What caused the pair to leave the bus? Par 2-What do you infer about the car's occupant? Par 3-What do you infer **deliberately** means? Par 4-What do you predict the letter was about? Par 5-What support did the main characters have? Par 6-What was the big surprise? Par 7- What lesson does the author want to teach?	**Questions to answer using Rally Coach** Par. 1- What is the consequence of Maria singing loudly? Par. 2-What evidence shows that Maria is brave? Par. 4- What happened after the clanging stopped? Par 5- What solves the problem of a gloomy Giant? Par. 6- What's happy ending? Par. 7 What details tell you what genre is this story?
SW retell story using Rally Robin from beginning to end remembering all details.	SW retell story using Rally Robin from beginning to end remembering all details.
SW sort words. Rally Coach. ABC order.	SW sort words. Rally Coach. ABC order.

Figure 3. Tier 1 sample small group reading lesson plans.

Whole Group Reading Instruction

In whole group reading instruction, I used the SMART Board to project second-grade level Reading A-Z (LAZEL Inc., 2018) books. I purchased this website annual subscription because of the plethora of reading books, fluency passages, phonics and reading comprehension worksheets, and quizzes that were readily available in reading levels ranging from kindergarten to fifth grade for my students. Based on Samuel's Repeated Reading Method (1979), we would constantly reread the texts throughout the week, answering reading comprehension questions from a Jacob's Ladder worksheet.

Almost every other day when I read one story aloud with the students following the text as I pointed with my long pointer stick, the students would then each receive a small sheet of scrap paper to write down the numbers 1 to 10. I would then project each quiz question one by one and read it aloud. Each of the quizzes had a multitude of common types of cause and effect, main idea, story map, and other multiple-choice comprehension questions. They wrote down their letter choice answers on their sheets. After I collected the sheets, I would explain the correct responses. I would discuss the students' common errors in their answer choices and allow students to justify their rationale for choosing the incorrect answers. I would listen and justify my reasoning for choosing the correct answer by reviewing the text that supported the correct answer.

I believe that my whole group reading lessons mainly complemented the ReadWorks (ReadWorks Inc., 2017) tests, as the lessons I wrote dealt with the SOL that was required for teachers to teach based on the district's mandated weekly curriculum guide. I do believe that the ds program only offered one form of fluency practice, which was the narrator reading the text aloud for the student and the student rereading the text with or without the narrator's assistance. In my lessons, I taught the students to use their synonyms, other words within each sentence, and their schema to figure out the words' meanings, and to reread the text along with the teacher as the narrator.

In my whole group reading lessons, I would encourage the students to read the text along with me as I read the text aloud and stopped at certain stopping points to think aloud about how to answer any questions that piqued my curiosity as I read the text. Then I would have read the whole book, and the students would then read the text aloud with a partner, and finally one more time by themselves, before they each had a double-sided Jacob's Ladder worksheet to fill out.

Every week when I taught students whole group reading instruction, I used one of two Journeys (Houghton Mifflin Harcourt, 2012) basal readers that had many second grade level stories with several genres such as realistic fiction, non-fiction, biography, and fantasy. When we read each story, we read for a purpose, which was to fill out a double-sided Jacob's Ladder worksheet (see Figure 4) that I designed for them that was due by the end of every week. The worksheet had many graphic organizers that asked the students to identify causes and effects, the main idea, and supporting details. I would guide them how to use it by asking certain relevant questions as it related to the text we read together. The students would chime in, correct or incorrect, at every opportunity. For the low readers, it helped them to hear the other students' responses, because now they knew what to write in their own Jacob's Ladder sheets. Every week we would fill out two of these forms. I would post the student work outside of the classroom under the heading "Reading Comprehension with Jacob's Ladder."

Students would answer the Jacob's Ladder questions independently and then the class as a whole would share their answers. If I noticed that the students had difficulty answering the questions, I would talk to each student individually after receiving the student's completed and submitted Jacob's Ladder worksheet. Overall, every student except for my two kindergarten level readers could properly answer the Jacob's Ladder questions satisfactorily. For these two students, I had to guide them to answer each question. Often, I spelled out the words, too.

Jacob's Ladder

A1. Sequence of Events

First, _____
Next, _____
Then, _____
Last, _____

A2. CAUSES EFFECTS

1. _____ 1. _____
2. _____ 2. _____
3. _____ 3. _____

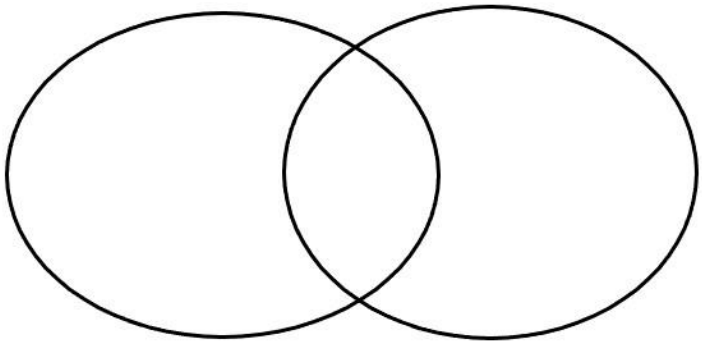
A3. THEME _____(one word)

A4. Main Idea: _____

Detail 1: _____
Detail 2: _____
Detail 3: _____
Detail 4: _____

(REVERSE SIDE)

B1. VENN DIAGRAM (COMPARE & CONTRAST 2 MAIN CHARACTERS)



C1. ILLUSTRATION. DRAW A SUMMARY OF THE STORY.

Figure 4. Jacob's Ladder reading comprehension worksheet.

Text Readability Levels

I wanted to examine the readability levels of the 453 total second grade level ReadWorks passages (ReadWorks, Inc., 2017), 25 Reading A-Z (LAZEL Inc., 2018) guided reading books, each of the 8 DRA 2 (Beaver & Carter, 2006) books, and the STAR (Renaissance Learning, Inc., 2018) tests for a variety of reasons. One significant reason was the number of complaints from students about having to continue to practice reading using the ReadWorks program. This level of dissatisfaction indicated to me that the students were not content with the text. The content did not seem to be the issue, since the students would often cite information from the ReadWorks passages in classroom reading discussions. Therefore, the only other reason for many of my second graders' discontent was the passages' text readability level was too high. A second reason was that the students performed very low in answering the ReadWorks reading comprehension questions. The low performance did not coincide with rising STAR (Renaissance Learning Inc., 2018) and DRA 2 (Beaver & Carter, 2006) test scores. The incongruity lead me to investigate the readability levels of the ReadWorks passages that were purportedly at a second grade level, or commensurate with a DRA 2 level range of 20-28.

When I investigated the ReadWorks passages' (ReadWorks Inc., 2017) readability levels, I was shocked to discover that the average ReadWorks article had a fourth grade fifth month readability level and a 617 Lexile measure, although the ReadWorks program described these passages as having a second grade readability level. According to the Flesch Kincaid Readability Score obtained when I copied and pasted the text to a Word Document, the ReadWorks article "Pictures of the Year" had a Flesch Kincaid measure of seventh grade, but ReadWorks labeled it as a second grade readability level. Two sentences from the text were, "People today take lots of photos. Many people use cell phones to photograph their daily lives with friends and family" (ReadWorks Inc., 2017). Fortunately, for my second graders, the ReadWorks program narrator read aloud each article once the user clicked the play button. Thus, the text

difficulty did not impede their reading comprehension as much as it would have if they were required to read the text in order to comprehend it. All of my students were able to click on the narration button to hear the text read aloud to them, and even my low-level reader was able to earn high comprehension test scores reading the ReadWorks program passages.

Overall, the average readability level of the second grade Reading A-Z (LAZEL Inc., 2018) books was a fourth grade Flesch Kincaid readability level. When I analyzed a sample text from a guided reading Reading A-Z book "Cinderella" that was labeled as a DRA 2 reading level 28 by the website's writers, it was not, in fact, appropriate for the end of the second grade. I had copied and pasted the text into a Word document and found that its Flesch Kincaid readability level was a 4.2, or fourth grade, second month. Two sentences from this text were: "Spring turned into summer, which, in turn, brought falling leaves and the chill of autumn air. As winter drew near, the young maiden's mother grew ill with fever" (LAZEL Inc., 2018). I assumed that this book was only slightly challenging, within the students' zone of proximal development (ZPD). Considering I used Reading A-Z books to guide students in how to read with my assistance, I believe that the fourth grade level text was not acceptable. I would have preferred for the text to be one DRA 2 level above the students' independent reading level, which is their instructional level. The appropriate Flesch Kincaid level should have been a 3.0 or a DRA 2 30.

Overall, the average readability level of eight total second grade level DRA 2 (Beaver & Carter, 2006) books was a 2.25 or second grade Flesch Kincaid readability level. The DRA 2 level 20 books had Flesch Kincaid readability levels of 1.8 and 1.6. The DRA 2 level 24 books had 2.3 and 1.7 Flesch Kincaid levels. The DRA 2 level 28 books had Flesch Kincaid levels of 2.3, 2.6, 2.8, and 2.9. A sample DRA 2 (Beaver & Carter, 2006) text from a story, "From Peanuts to Peanut Butter," had a DRA 2 level of 28 that was appropriate for the end of the second grade and a 2.8 Flesch Kincaid readability level. The

DRA 2 assessment had more accurate second grade level books as compared to the ReadWorks (ReadWorks Inc., 2017) passages and to the Reading A-Z (LAZEL Inc., 2018) passages.

A sample text from the STAR (Renaissance Learning, Inc., 2018) test had varying grade levels that ranged from kindergarten to sixth grade Flesch Kincaid readability levels. The students' responses to each question raised and lowered the students' independent reading levels to average to one scaled score or grade-level equivalent reading score. Regarding my collection of student data to determine their reading proficiency gains and losses throughout the study, I will now describe the data collection process in detail.

Quantitative Data Collection: Phase I

At the beginning of the study on April 17, 2018, the students took a STAR pre-test (Renaissance Learning, Inc., 2018) so that I could obtain each student participant's scaled score, fluency, and reading comprehension score. From April 18, 2018 until June 15, 2018, the student participants used the ReadWorks program for a minimum of 20 minutes per school day during the study (ReadWorks Inc., 2017). The students then took the STAR post-test for a second time on June 15, 2018. I gauged the difference between the students' scaled scores, grade-equivalent scores, Lexile measures, and estimated oral reading fluency rates. My goal was to note any reading fluency and comprehension skills progress made over the course of the study.

Measures. I used several measures to gather the study results. I used the DRA 2 (Beaver & Carter, 2006), the STAR reading test (Renaissance Learning, Inc., 2018), and the ReadWorks program comprehension tests (ReadWorks Inc., 2017) to obtain information about the students' independent reading levels, Lexile measures, independent reading comprehension scores, and estimated oral reading fluency rates.

Standardized Test for the Assessment of Reading. The STAR reading test (Renaissance Learning, Inc., 2018) is an online test to assess reading fluency, vocabulary knowledge, and reading comprehension. This computer-adaptive test contains 34 items that measure the test-taker's reading skills, and its items' difficulty levels alter to conform to the test-taker's success or failure in answering previous test items. More than 5,000 test bank items conform to the 2010 Common Core State Standards (National Governors Association, 2010). STAR results are useful in diagnosing reading difficulties and current reading levels. The key is for the user of the STAR data to understand how it relates to other reading test measures used.

The STAR (Renaissance Learning, Inc., 2018) reading test measures the student's estimated oral fluency, the national norm-referenced grade level-equivalent independent comprehension reading score, Lexile measures, and the scaled score. This computer-adaptive test has a pool of possible test questions about vocabulary, literary text, nonfiction text, and phonics that are of varying levels of difficulty. The accuracy of the student's answer to the previous question affects the subsequent multiple-choice question that the student will answer. If the student makes an incorrect choice on a test item, then the next item will be simpler by being a lower Lexile level text than the incorrectly answered item. Thus, the student's scaled, grade-equivalent, Lexile measure, and estimated oral reading fluency rate scores will lower if the student is answering less challenging questions adapted to the student's reading performance level. Likewise, the student's scores will rise if the student is performing at a higher reading performance level.

According to the STAR reading test (Renaissance Learning, Inc., 2018), a proficient reader's scaled scores and grade equivalent scores will vary according to the time of the school year regardless of the type of reading instruction they receive. The reading proficiency scores for above-, benchmark-, and below-grade levels change in September, January, and May. The STAR test-taker must be able to read and comprehend the text in each multiple-choice test question within a certain time limit per question. Figure 5 shows a sample second grade test item. Some of the STAR test items have cloze sentences that the test-

taker fills in with correct missing words that require the test-taker to infer word meaning within the context of each sentence that is highly indicative of reading fluency and reading comprehension (Fuchs, Fuchs, Hosp, & Jenkins, 2001).

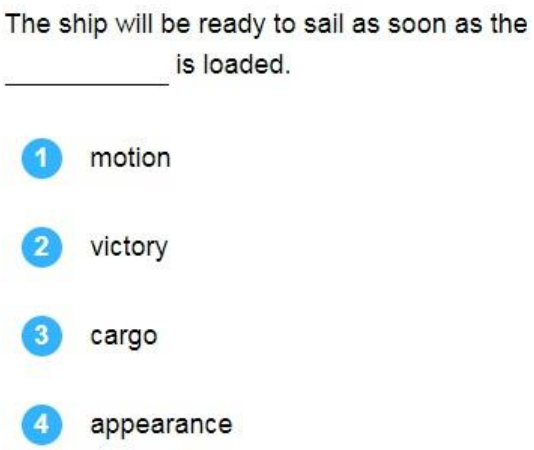


Figure 5. STAR (Renaissance Learning, Inc., 2018) sample test item. Retrieved June 24, 2018 from https://hosted31.renlearn.com/32324.

Developmental Reading Assessment 2. I used the DRA2 (Beaver & Carter, 2006) to determine each student participant's oral reading fluency rates and the independent comprehension level. I collected the DRA 2 data at the beginning and the end of the study to serve as both a pretest and posttest. I functioned as the DRA2 test administrator and followed a scripted text from the DRA 2 Teacher Observation Guide. The DRA 2 testing ends if the student reader participant does not read at the prescribed Independent or Advanced oral fluency rate, as sufficient fluency is required for comprehension of the text to occur (Pearson Education Inc., 2011).

The DRA 2 (Beaver & Carter, 2006) assesses the test-taker's oral reading fluency. Based on the specific criteria for each fluency feature as shown in the DRA 2 Teacher Observation Guide, the teacher

scores the reader's fluency features with a very low score of 1, 2, or with a higher 3 or 4 score (Pearson Education, Inc., 2011). The first feature is the reader's expression, which is how the reader emphasizes certain words and phrases, using inflection and various tones. The second feature is phrasing, or the smooth flow of reading phrases and sentences without many unnecessary pauses. The third feature is the rate of words read per minute (Pearson Education, Inc., 2011).

Oral reading fluency depends greatly on the reader's accuracy and self-monitoring behavior. Accuracy is the feature that is the number of correct words read in the passage. Monitoring involves self-correcting any miscues made during reading aloud and being able to use cues independently without excess teacher guidance to decode unknown words. The sum of all the feature 1-4 scores yields an Independent oral reading fluency level ranging from 11 to 14, while a summed score of 15 or 16 indicates an advanced oral reading fluency rate (Pearson Education, Inc., 2011).

If a student did not read the text in a proficient oral reading fluency rate, then I had to choose a DRA2 level text that was one DRA 2 level below the previous text just read aloud (Beaver & Carter, 2006). The purpose is to determine the reader's independent reading level. The reader's oral reading fluency rate depends on the DRA 2 level, and the scores are the lowest at Intervention and Instructional and highest at Independent and Advanced (see Table 2). I noted the reader's expression, tone, miscues, and pauses. As the DRA 2 instructor guide indicates to teachers to do, I continued to assess the reader if the reader succeeded in orally reading some of the text at an Instructional, Independent or Advanced accuracy rate, using the DRA 2 fluency criteria (Pearson Education, Inc., 2011)

Table 2.

DRA2 K-8 Oral Reading Rates by Fiction/ Nonfiction and Level

DRA Level	Intervention	Instructional	Independent	Advanced
Fiction				
Level 14	29 or less	30-30	40-70	71 or more
Level 16	34 or less	35-44	45-75	76 or more
Level 18	44 or less	45-54	55-85	86 or more
Level 20	54 or less	55-64	65-95	96 or more
Level 24	59 or less	60-69	70-100	101 or more
Level 28	64 or less	65-74	75-105	106 or more
Level 30	64 or less	65-79	80-110	111 or more
Level 34	64 or less	65-79	80-115	116 or more
Level 38	69 or less	70-89	90-125	126 or more
Level 40	74 or less	75-104	105-140	141 or more
Level 50	84 or less	85-114	115-150	151 or more
Level 60	89 or less	90-124	125-160	161 or more
Level 70	99 or less	100-129	130-165	166 or more
Level 80	99 or less	100-129	130-165	166 or more
Nonfiction				
Level 16	29 or less	30-39	40-70	71 or more
Level 28	64 or less	54-74	75-105	106 or more
Level 38	69 or less	70-89	90-125	126 or more
Level 40	69 or less	70-99	100-135	136 or more
Level 50	79 or less	80-109	111-140	141 or more
Level 60	84 or less	85-119	120-150	151 or more
Level 70	99 or less	100-129	130-165	166 or more
Level 80	99 or less	100-129	130-165	166 or more

Note: The DRA 2 K-8 Oral Reading Rates are from Pearson Education (2011), p. 30.

Part of the DRA 2 pertains to calculating the test-taker's text comprehension (Pearson Education, Inc., 2011). First, the test-taker reads the text aloud as the teacher marks any miscues and times the speed and accuracy of the read-aloud. The teacher determines the student's oral reading fluency rate. Then the student dictates three predictions about the text that he or she just read. For DRA 2 text levels 18 through 24, the test-taker will first read and then retell the story from beginning to end. For DRA 2 text levels 28 through 40, the student will write a summary after reading the story and answer a few text-dependent comprehension questions about the reader's reflection, interpretation, and literal comprehension. Only

DRA2 level 40 has a metacognitive awareness question. The teacher then reviews the student's responses and grades the responses as Advanced, Independent, Instructional, or Intervention, according to the DRA 2 Teacher Observation Guide (Norfolk Public Schools English Office, 2011; Pearson Education, Inc., 2011).

Validity and reliability of measures. The STAR reading test (Renaissance Learning, Inc., 2018) and the DRA 2 (Beaver & Carter, 2006) are both measures that have certain degrees of validity and reliability. The only issue is that the ReadWorks program (ReadWorks, Inc., 2017) has not had its validity and reliability tested in any studies.

***Validity and reliability of the Standardized Test for the Assessment of Reading*.** The reliability of the STAR assessment (Renaissance Learning, Inc., 2018) is calculated using generic reliability. Generic reliability finds the conditional measurement error of each student's test to find the estimate of the percentage of variation in STAR test scores that measure particular reading skills. For 100,000 third grade test-takers who took the STAR test between June 2012 and June 2013, internal consistency was determined to have a reliability coefficient of 0.94. The retest reliability coefficient was 0.75 for the 5,000 third grade test-takers (Renaissance Learning, Inc., 2018).

The validity of the STAR assessment (Renaissance Learning, Inc., 2018) has much to do with the content that the STAR test creators have claimed to assess. STAR test creators received third grade teacher input about the STAR reading assessment content. The STAR test items align to Virginia state standards (Virginia Department of Education, 2017e) as well as to the Common Core State Standards (Renaissance Learning, Inc., 2018). The predictive validity mean was 0.80, based on 30 studies involving 200,929 third grade test-taker participants who took the STAR test. Concurrent and external validity is an average 0.75, based on 44 studies involving 4,051 third grade test-taker participants.

Validity and reliability of the Developmental Reading Assessment 2. Concerning test-retest reliability, the DRA 2 is a reliable and stable measure, due to high test-retest reliability, since individual test-taker results remained constant over time (Beaver & Carter, 2006). In a 2008 study with a sample of 112 students in grades 1 to 6, participants took the DRA 2 as a pretest and then retook the DRA 2 test with a different passage but at the same independent DRA 2 reading level from the pretest 14 days later. Paired t-tests analyzed the difference in fluency and comprehension scores for the first and second DRA 2 tests. Since there were no statistically significant differences at the 0.05 confidence level, the student performance was constant or comparable over the time between test administrations. High correlation coefficients ranged from 0.93 to 0.97 for fluency and 0.97 to 0.99 for comprehension between the first and second DRA 2 tests (Pearson Education Inc., 2011).

The DRA 2's (Beaver & Carter, 2006) reliability has internal consistency reliability, test-retest reliability, and inter-rater and expert rater reliabilities (Pearson Education Inc., 2011). While different DRA 2 grade level reliabilities can be determined, the DRA 2's reliability information for third grade is most pertinent to this study. To determine the internal consistency reliability, the test items that aim to measure oral fluency and reading comprehension should equally measure that kind of knowledge. In 2006, Cronbach's alpha determined the inter-item correlation for 1,678 K-8 students who took the DRA 2. DRA 2 scores showed high internal consistency reliabilities ranging from 0.611 to 0.788 for oral fluency and ranging from 0.583 to 0.816 for reading comprehension for DRA 2 levels 4 to 40 (Pearson Education Inc., 2011; see Table 3).

Table 3

DRA 2 Cronbach's Alpha

Level	Oral Fluency	Comprehension
4	0.784	0.818
6	0.849	0.805
8	0.680	0.778
10	0.736	0.825
12	0.758	0.853
14	0.542	0.779
16	0.731	0.583
18	0.614	0.816
20	0.725	0.739
24	0.725	0.710
28	0.788	0.693
30	0.778	0.717
34	0.745	0.636
38	0.611	0.655
40	0.762	0.722
50	0.785	0.759
60	0.717	0.818
70	0.621	0.728
80	0.622	0.730

Note: The DRA2 Cronbach's Alpha is from Pearson Education (2011), p. 40.

The inter-rater and rater-expert reliabilities showed that the DRA 2 (Beaver & Carter, 2006) is a reliable test measure. If the teacher or rater of the DRA 2 test-taker's performance highly agrees with the results of another rater, then the test has a high inter-rater reliability. Twenty-six independent and experienced raters tested 30 student participants in grades 2-5. The reading levels that were tested ranged from levels 18 to 60. The second rater heard audiotape recordings of the first rater's DRA 2 administration and reviewed the student's written DRA 2 work. The inter-rater reliability was 0.66 to show exact raters' agreement on DRA 2 fluency results. There was a 0.72 inter-rater reliability to show raters' agreement on DRA 2 comprehension results. The rater-expert reliability estimates had a much higher agreement of 0.79 for DRA 2 fluency results and 0.89 for reading comprehension results (Pearson Education Inc., 2011).

The DRA2's (Beaver & Carter, 2006) concurrent validity results highly correlate with the fluency and comprehension results of other valid measures that measure fluency and comprehension, such as the Gray's Oral Reading Test-4th Edition (GORT-4; Weiderholt & Bryant, 2001), the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency Test-6th Edition (Good, et al., 2003), and the Gates-MacGinitie Reading Comprehension subtest-4th Edition (MacGinitie, MacGinitie, Maria, & Dreyer, 2002). The Gates-MacGinitie test (MacGinitie et. al., 2002) and GORT-4 (Weiderholt & Bryant, 2001) evaluate the student's listening and reading comprehension skills. The correlation coefficient was 0.60 for the DRA 2 and GORT-4 for comprehension results for grades 1-3. The correlation coefficient was 0.62 for the DRA 2 and GORT-4 for fluency results for grades 1-3. The correlation coefficient for DRA 2 and Gates-MacGinitie tests was 0.77 for comprehension results. The DRA 2 and DORF tests' (Good, et al., 2003) correlation coefficient was 0.70 for grades 1-3 fluency results. The DORF test requires the teacher to document any miscues that the student makes when reading a passage for one minute to compute the student's oral reading fluency. In regards to fluency results, the DRA 2 and GORT-

4 coefficient was 0.62, the DRA 2 and Gates MacGinitie coefficient was 0.73, the DRA2 and GORT-4 coefficient was 0.69, and the DRA 2 and DORF coefficient was 0.74.

DRA 2's (Beaver & Carter, 2006) predictive validity was high in predicting the test-taker performance results for Group Reading Assessment and Diagnostic Evaluation or GRADE (Williams, 2001) and DIBELS Oral Reading Fluency Test-6th Edition or DORF (Good, Kaminski, & Dill, 2002). GRADE is a validated, norm-referenced test that measures vocabulary, reading comprehension, and listening comprehension skills for grades 1 to 6 (Williams, 2001). DORF measures oral reading for students in grades 1 to 6. In a 2010 study, 123 student participants were tested first by the DRA 2 in the fall and then by the GRADE and DORF tests five months later in the spring (Hopkins, 2002). The correlation coefficient was 0.74 for all fluency results and 0.89 for comprehension results.

In a 2008 study, 188 teacher ratings of their students' fluency and comprehension abilities were made on a scale of 1 (two or more grade levels below) to 5 (two or more grade levels above). The correlation was 0.63 for DRA 2 fluency results and teacher ratings (Beaver & Carter, 2006). The correlation was 0.60 for DRA 2 comprehension results and teacher ratings (Pearson Education Inc., 2011). The high degree of correlation helps to ensure that students' scores are as accurate as possible.

Validity and reliability of the ReadWorks program. Currently, there is no research to explain ReadWorks' validity and reliability (ReadWorks Inc., 2017). No empirical studies have determined the ReadWorks program's validity and reliability.

Qualitative Data Collection: Phase II

I designed and delivered my small group and whole group reading lesson plans and took field notes of any relevant observations of student behavior that occurred during these reading lessons. I chose my small group of students based on their independent reading ability according to the DRA 2 (Beaver &

Carter, 2006), STAR (Renaissance Learning, Inc., 2018), and ReadWorks (ReadWorks, Inc., 2017) results.

Field notes. I took field notes on a Notes application located on my iPhone 7 password-protected cellular phone. I wrote down any profound or interesting student statements and actions. I ensured that I described and possibly explained or clarified any commonalities and patterns as noted from my field notes. I consistently uploaded the field notes to an e-mailed set of field notes that I copied and pasted into a Word document. From there, I noticed any common features that repeated themselves to formulate themes that I observed in the classroom. Figure 6 shows a sample of the field notes for my observation of the first week of the study for the small group reading lessons. The students had taken the STAR test (Renaissance Learning, Inc., 2018) and participated with each other and the teacher to discuss the answers to questions that I posed to them about the text.

Week 1: 4/17: Students took STAR test before participating in small group. Some students took up to 20 minutes. RW article "Pictures of the Year" (FK 6.8) question stems used in small group Ra-z text "Ancient Egypt" (DRA 24)- 1) What is a pyramid; 2) Based on this evidence of how it was constructed, what can you conclude about how long it took to construct the pyramid; 3) What is the text's main idea; 4) Reading these sentences from the text, what does the word "construct" mean in these sentences; 5) According to the text, why might forced labor have been used? 4/18: Students do JL. Review. 4/19: RW article "Political Parties" (FK 8.1) question stems used in small group Ra-z text "Jack and the Beanstalk" (DRA 24) – 1) What is a beanstalk; 2) What is one example of fairy tale elements; 3) Why does the giant get angry; 4) What is text's main idea; 5) Based on these sentences from the text, what does the word "avenge" mean; 6) Why might Jack be in trouble? Support your answer with text evidence. 4/20: Students do JL. Review.	Week 1: 4/17: Students tried their best. In small group, they seemed a little more tired than usual. Tier 1 G- All students were able to correctly answer many questions by underlining text. Tier 2 G- Ziyonna needed my prompts to answer. Tier 3 G- Rashawn and Cindy needed me to use my copy of book to point to words and read it aloud. They then reread text, page by page. Other students (non-participants) were able to read by pointing at each word as I read the text aloud. 4/18: When working on JL, Tier 1 understood how to answer questions. They needed more guidance on cause and effect section and main idea and details sections. 4/19: All students in 3 groups enjoyed the story. They laughed and they were focused on the text. For Tier 3 G members, they needed me to point at text from my book because the DRA level was much higher. But they understood the main idea and details sections like Tiers 1 and 2 Groups. 4/20: Students did well working on JL. Issues working on theme. So I guided them in identifying the most important details and grouping the details by their similarities. That helped to develop the theme- respect other's property.

Figure 6. Sample field notes from small group observation.

Figure 7 shows a sample of the field notes from my observation of the first week of the study for the whole group reading lessons. They worked together well in pairs to retell the story. With some clues that I gave them by stopping at certain pages to ask where the cause and effect and other main idea and details components were located, the students were able to answer the Jacob's Ladder reading comprehension worksheet.

Whole Group Observation Field Notes	
Descriptive Information	Reflective Information
Week 1: 4/17: We read Harcourt Story "Diary of a Spider" by Doreen Cronin. Each student had a copy. They followed along. I pointed for each student 8 and 15, being in between them. I constantly stopped to check for understanding, asking cause and effect questions. I also translated the text to Spanish for student 8. 4/18: Students worked in pairs to retell the story. 4/19: We read the second half of the "Diary of a Spider" story together. I made sure students pointed as they read. Students worked on the JL. 4/20: Students continued to finish their JL.	Week 1: 4/17: The students thought that the story was funny. A spider acting like a student in a huge school was unsuccessful in doing every tasks. It was standing on the basket rim in gym and sitting on a huge pencil. 4/18: They used the Kagan strategy of working in pairs. I listened to students retell. I already had arranged students by medium and high readers and low and medium readers to sit next to each other, which is another Kagan strategy. 4/19: We noticed an idiom is not literal- "Give him a piece of my mind" (to speak one's mind), but as a joke, the author made the idiom literal, by saying that the spider instead gave him a piece of his lunch (to get along). 4/20: I reviewed each section of JL with the students, asking a random student to say an answer. We discussed each answer's truth, and when it was incorrect, I suggested that students review the text and revise their answers.

Figure 7. Sample field notes from whole group observation.

Figure 8 shows a sample of the field notes from my observation of the first week of the study for the ReadWorks (ReadWorks, Inc., 2017) program student experiences. I was not pleased to see that only a few of the Tier 1 small group students correctly answered most of the ReadWorks program article reading comprehension questions. Only one Tier 1 student constantly earned 100% correct answers. The other students wrote no written responses or nonsense responses to the few questions posed for each article that the students read.

ReadWorks Program Observation Field Notes	
Descriptive Information	Reflective Information
Week 1: 4/17: RW article "Pictures of the Year" (FK 6.8) What is a winter count; 2) The Lakota leaders would only choose one event to draw each year. All together, these pictures told the history of the Lakota tribe. **Based on this evidence, what can you conclude;** 3) Which kind of photograph from today is most like the Lakota's winter counts; 4) What is the main idea of this article; 5) Read these sentences from the text. **"Some people told stories about old times. Others wrote down what they remembered. Some people made special drawings to help them recall important moments." What does the word "recall" mean in these sentences?** Choose the answer that best completes this sentence. **The Lakota people did not have cameras or photographs, _____ they still recorded their most important events.** **4/18: Students do JL. Review.** 4/19: RW article "Political Parties" (FK 8.1) – 1) What is a political party; 2) The article describes some examples of political parties in the United States. What is one example from the text of a political party in the United States; 3) The people	Week 1: 4/17: RW article "Pictures of the Year" (FK 6.8) Only Tier 1 students answered the questions well. Student 9 had earned at least 100% and student 1 earned 71% when answering the reading comprehension multiple choice and short written response questions. Student 6 earned only 57%. Other students did not pass the reading comprehension questions. They also did not try to correctly answer the written response questions, writing "n zv zjsn" and "j zhzgavsuj." **4/18: Students do JL. Review.** 4/19: RW article "Political Parties" (FK 8.1) – Most of the students did not answer the comprehension questions very well. Only student answered 71% of the questions correctly and student 9 again earned 100%. 4/20: Students do JL. Review.

Figure 8. Sample field notes from ReadWorks program student participation.

Self-reflection. On June 18, 2018, I filled out a survey that I designed myself in an objective manner to determine my thoughts about a computer-based reading program's usefulness in improving students' reading fluency and comprehension skills, as noted in Figure 9. My self-reflection concerned my perceptions of the ability of the ReadWorks (ReadWorks Inc., 2017) program to improve my students' reading fluency and comprehension skills over time. I reflected upon the effects of the ReadWorks program on my students' reading test performance and my own reading lesson planning.

In my self-reflection responses, I shared my experience implementing other computer reading programs in the classroom such as Istation (Mathes, Torgesen, & Herron, 2015) and i-Ready (Curriculum

Associates, 2015b). I felt that the Istation and i-Ready programs were much more interactive in terms of giving the students immediate and specific feedback on how to answer each comprehension question if the students made any errors answering questions. The characters looked like teenager friends for the program users and used child-friendly language to explain how to answer questions, even highlighting parts of the text. Likewise, I think that the ReadWorks program's most prominent features were the narration button that read the text aloud, the short-answer response portion for questions, the variety of non-fiction germane topics, and two other versions of the text, StepReads 1 and 2, that were less challenging than the original passage (ReadWorks, Inc., 2017). ReadWorks could improve upon more immediate specific feedback given to the students as they answer each question, rather than simply having the student review, but not correct, their answers after the ReadWorks program has already graded each test.

I had some confidence in utilizing some of the information in the students' ReadWorks (ReadWorks Inc., 2017) tests to create lesson plans to remediate weak reading skills. I interpreted the STAR (Renaissance Learning, Inc., 2018) reading test results and ReadWorks assessment data reports to design my own small and whole group lessons. I used ReadWorks program question stems in my small group reading plans when reading other non-fiction text. Although I felt that the ReadWorks program helped to improve my students' reading fluency and comprehension, the students' overall sentiment was that the constant use of the ReadWorks program was a chore, and not a source of enjoyment. While their STAR and DRA 2 test scores did improve over time, ReadWorks may or may not have been the cause of this improvement. The students did not perform well on average in their ReadWorks reading comprehension tests. They also did not appear to have a greater desire to read their ReadWorks passages as compared to reading their Journeys text, Reading A-Z books, or small group reading text. They did not often read their own self-selected books, as I had not developed a manner to assess such reading.

Teacher ReadWorks Self-Reflection

Part I. Directions: Please circle the number that most accurately reflects your beliefs and opinions of the i-Ready Program and reading instruction.

	Strongly Disagree	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Strongly Agree**
1. The ReadWorks program has appealing graphics.	1	2	3	4 **X**	5
2. ReadWorks tests give students immediate corrective feedback when they are incorrect.	1	2 **X**	3	4	5
3. I observed that most of my students wanted to practice on the ReadWorks program.	1	2 **X**	3	4	5
4. The ReadWorks program can improve most of my students' reading fluency.	1	2	3	4 **X**	5
5. ReadWorks can improve most of my students' reading comprehension skills.	1	2	3	4 **X**	5
6. Students make positive comments about how ReadWorks helped them read better.	1	2 **X**	3	4	5
7. The ReadWorks reading tests help students to enjoy reading.	1	2	3 **X**	4	5
8. The ReadWorks reading resources help me to teach reading.	1	2	3	4 **X**	5
11. ReadWorks helps to improve students' STAR reading test scaled scores.	1	2	3	4 **X**	5
13. Most of my students succeeded in passing their ReadWorks reading tests with at least 80% passing scores.	1 **X**	2	3	4	5

Part II. Directions: Please write a short response to complete each of the following four statements below.

14. My opinion of the ReadWorks tests that best promote reading fluency have certain characteristics such as…**The narration feature permits struggling readers to improve their fluency by listening to the text narration and read alongside the narrator. It also allows students to reread the text by clicking on the narration button as often as needed before answering any comprehension questions or short-answer written responses.**

15. My opinion of the ReadWorks tests that best promote reading comprehension have characteristics such as…**I believe that the questions were thought-provoking and encouraged students to refer back to the text to show their understanding by answering both multiple-choice and short-answer written responses. The variety of types of standards like cause-effect, main idea, details, drawing conclusions, and inference were evident in the reading comprehension questions.**

Part III. Please answer the following demographic information about yourself.
Age: _**43**__ Gender: Female **X** _ Male ___ Race: Are you of Hispanic, Latino, or Spanish origin? Yes _ **X** _ No ___
How would you describe yourself? American Indian or Alaska Native ___ Asian ___ Black or African American ___
Native Hawaiian or Other Pacific Islander ___ White _ **X** _ Write-In _____
Number of Years Teaching in Norfolk Public Schools _**13**__ Number of Years Teaching in General _**13**__
Number of Years Teaching Second Grade _**2**__ Other Grades Taught _**1, 3, 5**_____

Figure 9. Teacher ReadWorks Self-Reflection results.

Triangulation

Since this study has qualitative and quantitative components, triangulation was necessary to overcome any reliability and validity issues in the data collection methods. Data triangulation incorporates various data collection methods to verify that the collected data are as accurate as possible. By comparing detailed field notes, reviewing self-reflection data, and comparing the quantitative reading test score data and reading lessons to each other, I analyzed these various data results against each other to demonstrate the ReadWorks program's (ReadWorks Inc., 2017) effectiveness in improving students' reading fluency and comprehension skills.

I answered the six research questions through the mixed methods described below in Table 4, and aimed to triangulate the data using a combination of the various data collection methods.

Table 4

Research Study Data Collection Method and Analysis

Research Question	Main Data Collection Method	Data Analysis Procedure
How do Title I students' STAR oral reading fluency rates change, if at all, after participation in the ReadWorks program?	STAR data, DRA 2 data, my field notes observations or oral reading fluency	Individual student participant growth measurement data in pre- and post-tests
How do Title I students' Lexile measures change, if at all, after participation in the ReadWorks program?	STAR diagnostic data report.	Individual student participant growth measurement data in pre- and post-tests
How do Title I students' STAR scaled scores change, if at all, after participation in the ReadWorks program?	STAR diagnostic data report.	Individual student participant growth measurement data in pre- and post-tests
How do Title I students' STAR grade equivalent scores change, if at all, after participation in the ReadWorks program?	STAR diagnostic data report.	Individual student participant growth measurement data in pre- and post-tests
How do Title I students' DRA 2 independent reading levels change, if at all, after participation in the ReadWorks program?	DRA 2 administration	Individual student participant growth measurement data in pre- and post-tests
How does a teacher's whole and small group reading lesson plans incorporate data from the STAR and ReadWorks data reports?	Whole and small group reading lesson plans, field notes, ReadWorks and STAR data reports.	Horizontalization data analysis of documents

There are four principles in triangulation that guided my investigation (Corner, 1991). First, the research questions must be focused and clear. I knew that I could not establish relationships between the students' usage of the ReadWorks program (ReadWorks Inc., 2017) and their STAR reading test (Renaissance Learning, Inc., 2018) results because of the factors of my whole and small guided reading groups possibly influencing the STAR results. Second, each data collection method must coordinate with the others to support the end goal of accurate results. While I was only able to rely on the STAR or the DRA 2 test data to answer some of the research questions, the net result was that I was able to answer the main research question of whether or not using the ReadWorks program could result in students markedly improving their STAR test scores. Third, the data collection methods should directly relate to the kind of phenomenon that is the subject of the study. I believe that my data collection methods did have a strong relationship with the phenomenon that I was studying, as all of the data related to the students' reading abilities in terms of DRA 2 level, STAR reading levels, Lexile measures, and oral reading fluency rates. My lesson plan analysis was important to determining whether my plans in fact contributed a little or a lot to the students' STAR scores. Lastly, I continually reflected on how well the ReadWorks program worked in my classroom as shown in my self-reflection responses and my field notes.

Table 5

Triangulation of Different Data Collection Methods

Research Question Topic	Data Collection Method	Triangulation Results
Change in STAR oral reading fluency rates	1. Self-Reflection: As reflected in the students' STAR test scores (all improved scores except for 3 Tier 1 high-achieving students), their oral reading fluency rate growth also grew along with their STAR scaled and grade-equivalent scores. 2. Field Notes: Students tried their best, taking their time up to 20 minutes on average to do well. 3. Quantitative Data: All students' oral reading fluency rates grew except for 1 student reading at a 3.8 (high) STAR level- Their scores decreased slightly. 1 Student- 119 to 111.	Individual student participant growth measurement data in pre- and post-tests. I ensured that the students took an appropriate amount of time to take their STAR tests, a minimum of 20 minutes. The reason for 3 Tier 1 students' STAR test scores lowering slightly could have been due to not feeling confident or well enough to take a test well.
Change in Lexile measures	1. Self-Reflection: As reflected in the students' STAR test scores (all improved scores except for 3 Tier 1 high-achieving students), their Lexile measure growth also grew along with their STAR scaled and grade-equivalent scores. 2. Field Notes: Students tried their best, taking their time up to 20 minutes on average to do well. 3. Quantitative Data: All students' Lexile measures grew except for 3 students- who were all performing above grade level near or at a fourth grade level. Their scores decreased slightly. 1 Student- 545 to 490 L. 2nd Student- 755 to 610 L. 3rd Student- 555 to 490 L.	All students did well in improving their Lexile measures, except for 3 students (all high achievers). Any improved STAR independent grade-equivalent reading score coincides with a Lexile level that reflects the student's reading comprehension ability.
Change in STAR scaled scores	1. Self-Reflection: All students improved their STAR scaled scores except for three Tier 1 high-achieving students. They took their time, about 20 minutes average. 2. Field Notes: Students were quiet test-takers who took an adequate amount of time to do their best. 3. Quantitative Data: All students' STAR scaled scores grew except for 3 students- who were all performing above grade level near or at a fourth grade level. Their scores decreased slightly. 1 Student- 448 to 419. 2nd Student- 558 to 476. 3rd Student- 453 to 421.	All students took at least 20 minutes to take their STAR tests, which based on previous experience, improves their STAR scores compared to rushing on the test. Only 3 students' scores fell slightly. This discrepancy could have also been due to the test date being near the end of the school year, and some were not in a testing frame of mind.
Change in STAR grade equivalent scores	1. Self-Reflection: All students improved their STAR grade-equivalent (GE) scores except for three high-achieving students (near 4th grade level). I believe that whole and small group reading and ReadWorks program usage improved their STAR GE scores. 2. Field Notes: Students took their time to take their STAR tests, on average about 20 minutes, which helped improve their STAR scores. Even the 3 students who underperformed slightly compared to previous STAR scores took their time on the test. 3. Quantitative Data: All students' STAR grade-equivalent test scores grew except for 3 students- who were all performing above grade level near or at a fourth grade level. Their scores decreased slightly. Their scores decreased slightly. 1 Student- 4 to 3.8. 2nd Student- 4.9 to 4.2. 3rd Student- 4 to 3.8.	All students took at least 20 minutes to take their STAR tests, which based on previous experience, improves their STAR scores compared to rushing on the test. Only 3 students' scores fell slightly. All students fared well, remaining at their high Tier 1 level over the study's duration, or improving that Tier over time.

Change in DRA 2 independent reading levels	1. Self-Reflection: In small and whole group, students have retold the stories to other students in paired groups. They retell the stories in their Jacob's Ladder worksheets too. This retelling helped them improve their DRA retelling component. 2. Field Notes: Students retell and reflect on story questions in whole and small group, which aided them when they took their DRA tests which involve retelling and answering comprehension questions. 3. Quantitative Data: All students' DRA independent reading levels grew.	All the students' DRA independent levels grew. I was proud of their accomplishment. I know that a combination of whole and small group retelling and answering reading comprehension questions helped them achieve their DRA growth. ReadWorks narration could have helped students' DRA fluency rates too.
Degree that STAR and ReadWorks data reports information was incorporated into whole and small group reading lesson plans	1. Self-Reflection: I used the ReadWorks question stems in my small group reading lesson plans. I used the STAR data that dictated student weaknesses in Standards of Learning to teach certain topics in whole and small group reading lessons. 2. Field Notes: I noted that many students struggled to answer ReadWorks questions. ReadWorks passages had a 4.3 average Flesch Kincaid readability level. But in small group, students needed my guidance to answer the questions correctly. I also guided students to answer their Jacob's Ladder questions. They worked in pairs of higher and lower readers to answer these questions. 3. Quantitative Data: N/A	ReadWorks passages were higher level, at least two grade levels on average, compared to the second grade students' independent reading levels, which cause me to understand why most students did not answer the ReadWorks questions well.

Data Analysis Procedures

Using the score information from the STAR (Renaissance Learning Inc., 2018), DRA 2 (Beaver & Carter, 2006), and the ReadWorks (ReadWorks Inc., 2017) tests, I compiled data on an Excel spreadsheet for each of the student participants for pre-test information and for post-test information to determine any growth from the beginning to the end of the study.

I conducted open coding to classify the descriptive information of the frequently occurring phrases and words noted in my self-reflection (Colton & Covert, 2007; Glaser, 2016). I segmented the qualitative data into categories based on similarities of themes or main ideas in a process called horizontalization, whereby the observer constantly reviews the various quantitative and qualitative data components to get to the central meaning of the content (Moustakas, 1994). I reviewed the data categories to ensure that I fully analyzed and interpreted the data.

Using a constant comparative method to analyze the data gathered from my field notes, self-reflection, document analysis, and surveys, I discovered patterns of common themes that emerged from the data by using a Microsoft Word document to find the number of instances of a repeated word or synonymous words (Fink & Kosecoff, 1985). Comparing the various data, I noticed how themes arose if a couple or a few data forms supported each other.

My goal was to investigate if the students' use of the ReadWorks (ReadWorks Inc., 2017) program promoted students' reading fluency and comprehension skill growth. I used the STAR (Renaissance Learning, Inc., 2018) and ReadWorks data reports to create appropriate reading lesson plans to increase my students' reading fluency and comprehension test scores. The themes generated conceptual knowledge of how one teacher can attempt to produce proficient readers.

When I included my observations of the small and whole group reading lesson activities with my observations of student behavior while working on the ReadWorks program (ReadWorks Inc., 2017), I reviewed my self-reflection responses to determine if any common themes intersected with each other. I found that I tried to incorporate the ReadWorks passages' comprehension question stems when I designed my small group reading lessons. I would pose similar question stems and students would answer the questions by justifying their answers and underlining the text.

The students tended to answer the questions correctly when I prompted them after noticing any incorrect answers and justifications. In whole group reading lessons, I also guided the students to answer the questions correctly by stopping at certain pages and locations within the text and posed questions about the main idea, details, cause and effect, compare and contrast of main characters, and summary of the story. I also often allowed them to work in pairs in small and whole group reading times. I noticed that in my self-reflection, I was not satisfied with the ReadWorks program's lack of hints and clues given

to the students. I also did not appreciate the ReadWorks passages' 4.3 average Flesch Kincaid reading score.

Assumptions

This research study has several assumptions. I proficiently assessed students to take the STAR (Renaissance Learning, Inc., 2018) and DRA 2 (Beaver & Carter, 2006) reading tests. I attest to being an experienced writer and developer of shared whole and small group guided reading lesson plans. I did not unduly pressure the study participants into participating in the study.

Limitations and Delimitations

Limitations

This study had several limitations. While several measures such as the self-reflection, lesson plan analysis, field notes, and quantitative test data analysis measures documented the study's data as fully as possible, the low number of fifteen student participants was a great limitation since I could not determine if any correlation exists using correlation analyses. Student participants could have exhibited the Hawthorne effect by putting forth more effort in learning from the ReadWorks (ReadWorks Inc., 2017) program than other students not participating in the program because they knew that I was recording and analyzing their performance. I had also promised these students prizes at the end of the study. The attainment of a prize could have motivated them to try their best to earn the best prize from their teacher.

The unique learning needs of my students was the basis for another limitation of the study, which is that I taught each student how to read based on their individual needs. I designed my different sets of guided reading plans to target specific students' reading deficits. Within each tiered guided reading group, I individualized guided reading instruction to challenge readers to read at their particular instructional levels and eventually increase their independent reading level (Fountas & Pinnell, 1999). Thus, the guided reading instruction that occurs on a daily basis was different for each of my student groups, and

this difference in instruction content may have affected the degree that the student participant improves one's reading skills as measured on the STAR test.

Maturation of student participants' reading abilities over the study's duration could have easily contributed to their STAR and DRA 2 test score improvement. If a control group had been included in this study, I could have been able to determine the degree of maturation between the control and treatment groups. Not having a control group inhibited my ability to determine any sort of a relationship between using the ReadWorks program and the students' reading fluency and comprehension skill scores as shown on the STAR and DRA 2 tests.

Student absences could have critically affected the student's opportunity to use the program as often as the rest of the student participants. The goal was for the average timed sessions to be equal for each student participant to ensure that the study's conditions were as controlled as possible for me to make fair conclusions of the study's results. However, although one student lost a whole week in the study, resulting in a loss of 140 minutes in participation of the ReadWorks program, this student's STAR and DRA 2 score growth was commensurate with another students' STAR and DRA 2 score growth who possessed the same initial STAR and DRA 2 data in the beginning of the study.

Delimitations

Delimitations of the study are choices made by me regarding the procedures to conduct this study. The boundaries put in place are meant to protect the autonomy of my choice in designing the most appropriate reading lessons to cater to my students' learning needs based on my interpretation of the students' DRA 2 (Beaver & Carter, 2006), STAR (Renaissance Learning, Inc., 2018), and ReadWorks (ReadWorks Inc., 2017) data reports. I have the choice of what lesson activities that my students need to improve their fluency and comprehension skills. Small group or whole class groups of students may need to be taught certain skills based on their STAR and ReadWorks performance results.

Delimitations of the study included data collected from only one elementary school and the inclusion of only this teacher-researcher within this school for three months of the school year. The population that I am studying is convenient for me to be able to observe the participants learning in the same workplace as me, where I teach second grade. The in-depth analysis of this teacher's reading instruction in the classroom and the students' participation in the ReadWorks (ReadWorks Inc., 2017) program could generate sufficient data to generalize some effective reading instruction results to benefit NPS stakeholders including administrators, teachers, parents, and students.

Permission to Conduct the Study

To conduct this study, I obtained permission from the principal of ABC Elementary School, and the District's Department of Assessment, Research, and Accountability senior coordinator. The ReadWorks program (ReadWorks Inc., 2017) is an educational program that the school is already using as an instructional intervention, and thus I applied for an exemption by the College Human Subjects Review Committee (HSRC). ODU did grant permission to do the study using human subjects as long as the study's parameters met the guidelines of the federal and state regulations for exemption. I had completed the Collaborative IRB Training Initiatives (CITI) Training Modules online on the respective website. Parents received a letter of informed consent that allowed me, the researcher, access to conducting my study with their children, the study participants. Parents filled out a form giving me permission to observe their child in the classroom setting.

Ethical Considerations

I respected all of the participants' privacy. I permitted the participants' parents and guardians to review my study data, and I revealed the student's individual DRA 2 (Beaver & Carter, 2006) and STAR test (Renaissance Learning Inc., 2018) data immediately to them. I used pseudonyms to protect the

students' identities. The student participants had parental consent (see Appendix C). Parents and guardians were able to withdraw their child as a study participant at will without any penalty.

Data Storage Procedures

Protection of the confidential data is of the utmost importance. I maintained all original study documentation in a private encrypted and password-protected OneDrive Outlook account that required my username and password information. After five years have passed after the completion of the study, I will purge the data file electronically by deleting it.

Summary

The quantitative application of the STAR (Renaissance Learning Inc., 2018), DRA 2 (Beaver & Carter, 2006), and the ReadWorks (ReadWorks Inc., 2017) test data analyses and the use of qualitative measures such as the lesson plan document analysis, field notes, and teacher reflection enabled me to understand how the ReadWorks' program could improve students' reading fluency and comprehension skills. My goal was to be able to understand how well the ReadWorks program promoted my students' reading fluency and comprehension. I wanted my students to pass their upcoming third grade online SOL reading tests with a solid foundation and background in answering computer-based reading comprehension questions.

Chapter IV: Results

Introduction

The purpose of this mixed methods study was to explore my implementation of the ReadWorks (ReadWorks Inc., 2017) reading program and determine if it had any strong impact on my fifteen second grade students' DRA 2 (Beaver & Carter, 2006) and STAR reading test (Renaissance Learning, Inc., 2018) scaled scores, oral reading fluency, and Lexile measures.

My research questions were the following:

1) How did Title I students' STAR oral reading fluency rates change, if at all, after participation in the ReadWorks program?
2) How did Title I students' Lexile measures change, if at all, after participation in the ReadWorks program?
3) How did Title I students' STAR scaled scores change, if at all, after participation in the ReadWorks program?
4) How did Title I students' STAR grade equivalent scores change, if at all, after participation in the ReadWorks program?
5) How did Title I students' DRA 2 independent reading levels change, if at all, after participation in the ReadWorks program?
6) How did a teacher's whole and small group reading lesson plans incorporate data from the STAR and ReadWorks data reports?

I used a mixed methods research design for this study because I relied on quantitative STAR (Renaissance Learning, Inc., 2018), DRA 2 (Beaver & Carter, 2006), and ReadWorks (ReadWorks Inc., 2017) test data to determine student reading improvement or lack thereof after participating in the ReadWorks computer program. I also utilized the qualitative data that arose from my collection of field

notes, analysis of reading lesson plan documents, and self-reflection. I recorded any outstanding patterns in student words or actions when they learned to read with me in small and whole group reading instruction as well as when they participated in the ReadWorks program. This chapter will analyze the quantitative test data along with my self-reflection, and give an overview of my daily classroom reading time observations, the guided and whole group reading lesson plans, and quantitative data from the DRA 2, ReadWorks, and STAR assessments.

Mixed Methods Findings

To explore each research question, I focused on understanding any underlying themes that arose while I was observing my class in small and whole group reading instruction and their ReadWorks (ReadWorks Inc., 2017) program instruction. Table 6 illustrates the common themes that I discovered based on my field notes and test score data.

Table 6

Research Questions and Themes

Research Questions	Themes
1) How do Title I students' STAR oral reading fluency rates change, if at all, after participation in the ReadWorks program?	Improved, increased rates
2) How do Title I students' Lexile measures change, if at all, after participation in the ReadWorks program?	Improved, increased Lexile measures
3) How do Title I students' STAR scaled scores change, if at all, after participation in the ReadWorks program?	Gradual increase of STAR scaled scores
4) How do Title I students' STAR grade equivalent scores change, if at all, after participation in the ReadWorks program?	Gradual increase in STAR grade equivalent scores
5) How do Title I students' DRA 2 independent reading levels change, if at all, after participation in the ReadWorks program?	Improvement in DRA 2 independent reading levels
6) How does a teacher's whole and small group reading lesson plans incorporate data from the STAR and ReadWorks data reports?	Questions, oral response, written response noted in the field notes, lesson plans, self-reflection

Holistic Findings

Upon reviewing the student participants' April STAR (Renaissance Learning, Inc., 2018) reading pretest scaled scores, Lexile measures, and estimated oral reading fluency rates, I noticed that three tiers of students existed based on the STAR test criteria (see Table 7). Five students had failing scores and belonged in Tier 3, eight students had proficient scores and belonged in Tier 2, and two students had advanced scores and belonged in Tier 1. By the end of the study, after students had participated in the ReadWorks (ReadWorks Inc., 2017) program for approximately 8 weeks, students took the June STAR reading post-test. In the June STAR reading test, three students had failed scores and belonged in Tier 3, seven students had proficient scores and belonged in Tier 2, and five students had advanced scores and belonged in Tier 1.

It appeared that some students' reading improved during the 8-week study. Of the 5 Tier 3 low-performing students in April 2018, two became proficient Tier 2 readers according to the STAR (Renaissance Learning, Inc., 2018) benchmark scaled scores that they earned in June, while three students remained Tier 3 readers. Three students were proficient Tier 2 readers in April, but became advanced Tier 1 readers in June. Another student was an advanced Tier 1 reader in April, but became a proficient Tier 2 reader in June. One student remained an advanced Tier 1 reader from April to June.

According to the STAR (Renaissance Learning, Inc., 2018) test creators, the benchmarks are "the minimum performance levels students are expected to reach by certain points of the year in order to meet end-of-year performance goals" (Renaissance Learning, Inc., 2014, p. 1). In September, second graders should have a scaled score of at least a 322 and have an estimated oral reading fluency (ORF) of 84. In January, second graders should have attained a scaled score of at least 370 and have an estimated ORF of 98. In May, second graders should have earned a scaled score of at least 427 and have an estimated ORF of 112.

Table 7

Compiled Quantitative Data

Stud.	April DRA	June DRA	April STAR Tier	June STAR Tier	April STAR GE	June STAR GE	April STAR SS	June STAR SS	April Lexile Measure	June Lexile Measure	April Est. ORF	June Est. ORF
1	28	38	2	1	3.6	4.7	391	535	430	720	104	146
2	24	34	2	2	2.7	4	279	454	160	560	72	119
3	20	30	2	2	2.8	3.5	289	381	190	415	75	101
4	28	38	2	2	3.3	3.6	363	396	365	445	95	105
5	20	30	3	2	2	3	186	318	-90	260	48	83
6	28	38	2	2	4	3.8	448	419	545	490	117	110
7	20	28	3	2	2.3	2.9	234	306	40	230	60	80
8	2	3	3	3	0.7	1.2	74	90	-400	-400	19	27
9	30	38	1	1	4.6	4.7	515	526	685	705	138	142
10	28	38	1	1	4.9	4.2	558	476	755	610	155	125
11	18	28	3	3	1.9	2.3	168	231	-140	35	44	59
12	28	38	2	2	4	3.8	453	421	555	490	119	111
13	28	38	2	1	3.9	4.3	441	479	530	615	115	126
14	28	34	2	1	3.7	5	401	566	455	775	106	161
15	3	4	3	3	1.1	1.4	85	99	-400	-345	25	30

Student Profiles

Student 1's STAR (Renaissance Learning, Inc., 2018) scaled score grew from 391 on April 17 to 535 on June 14. His Lexile measure grew from 430L in April to 720L in June. His estimated STAR ORF rate increased from 104 to 146 correctly read words per minute from April to June. He improved his reading after being a proficient Tier 2 reader in April to being an advanced Tier 1 reader in June. His grade-equivalent STAR reading score improved from a 3.6 (third grade, sixth month) to a 4.7 (fourth grade, seventh month). He is a good reader overall, improving his DRA 2 (Beaver & Carter, 2006) level from 28 to 38 from April to June, which is close to the end of the third grade reading scale.

Student 1 was the main student who complained every day about how long he had to work on ReadWorks (ReadWorks Inc., 2017), preferring to do two activities rather than spend 20 minutes in one learning session. He has problems staying on task for periods longer than ten minutes. He needed some teacher redirection to remain on task, especially when working on the ReadWorks program. His overall reading comprehension performance on ReadWorks was 52.82%. Compared to his high DRA 38 reading

level and high STAR (Renaissance Learning, Inc., 2018) reading scaled score of 4.7, his ReadWorks average comprehension scores were surprisingly low.

Student 2's STAR (Renaissance Learning, Inc., 2018) scaled score grew from 279 on April 19 to 454 on June 14. His Lexile measure grew from 160L in April to 560L in June. His estimated STAR ORF increased from 72 to 119 correctly read words per minute from April to June. He maintained his reading performance after being a proficient Tier 2 reader in April to still being a proficient Tier 2 reader in June. His grade-equivalent STAR reading score improved from a 2.7 (second grade, seventh month) to a 4.0 (beginning of fourth grade), which is a fourth grade level. He improved his DRA 2 (Beaver & Carter, 2006) score from a 24 to a 30 from April to June. He is an English Language Learner (ELL) who was a high reader overall, understanding both English and Spanish quite proficiently. He would often translate English words to Spanish when I asked for help when translating texts for another ELL student who was struggling to understand English words and meanings.

Student 2 followed instructions well and never complained aloud about any tasks to complete on ReadWorks (ReadWorks Inc., 2017). He said that he liked working on ReadWorks as long as he could play on Prodigy Game (Prodigy, 2018) afterwards. His average ReadWorks reading comprehension score was a 43.56%. Compared to his average DRA 30 level and high 4.0 STAR reading scaled score, his ReadWorks scores were low.

Student 3's STAR (Renaissance Learning, Inc., 2018) scaled score grew from 289 on April 19 to 381 on June 14. His Lexile measure grew from 190L in April to 415L in June. His estimated STAR ORF increased from 75 to 101 correctly read words per minute from April to June. He maintained his reading performance after being a proficient Tier 2 reader in April to still being a proficient Tier 2 reader in June. His grade-equivalent STAR reading score improved from a 2.8 (second grade, eighth month) to a 3.5 (third grade, fifth month), which is a third grade fifth month level. He is an average reader overall,

improving his DRA 2 level from a 20 to a 30 from April to June, which is close to the beginning of the third grade reading scale. He is bilingual and proficient in reading and speaking English and Spanish. He and Student 2 would often translate English words to Spanish when I asked for help when translating text for the ELL student who was a below-level English reader.

Student 3 sometimes complained about the 20-minute length of time to read using the ReadWorks program (ReadWorks Inc., 2017). He would gladly work on ReadWorks as long as he could play on Prodigy Game (Prodigy, 2018) afterwards. His average ReadWorks reading comprehension score was a 60.46%, which is below average. His ReadWorks average score was lower than the benchmark DRA 2 (Beaver & Carter, 2006) 30 level and the high 3.5 STAR reading scaled score.

Student 4's STAR (Renaissance Learning, Inc., 2018) scaled score grew from 363 on April 19 to 396 on June 14. His Lexile measure grew from 365L in April to 445L in June. His estimated STAR ORF increased from 95 to 105 correctly read words per minute from April to June. He remained a proficient Tier 2 reader from April to June. His grade-equivalent STAR reading score improved from a 3.3 (third grade, third month) to a 3.6 (third grade, sixth month), which is a third grade sixth month level. He is an excellent reader overall, growing from a DRA 2 (Beaver & Carter, 2006) level of 28 to 38 from April to June, which is close to the end of the third grade reading scale. He is a native English speaker.

Student 4 was always commenting about the content in the ReadWorks (ReadWorks Inc., 2017) passages and I would often remind him to be quiet so that others could concentrate. He seemed to enjoy reading the content because he would still whisper to others and point out interesting information to others near him. Though he enjoyed playing Prodigy Game (Prodigy, 2018), he did not need any extra reward such as that game in order to read using the ReadWorks program. His average ReadWorks reading comprehension score was a low 50%, and it paled in comparison to his high DRA 2 (Beaver & Carter, 2006) 38 level and high 3.6 STAR (Renaissance Learning, Inc., 2018) reading scaled score.

Student 5's STAR (Renaissance Learning, Inc., 2018) scaled score grew from 186 on April 19 to 318 on June 14. His Lexile measure grew from BR90L in April to 260L in June. His estimated STAR ORF increased from 48 to 83 correctly read words per minute from April to June. He improved his reading after being a Tier 3 below-level reader in April to being a proficient benchmark level reader in June. His grade-equivalent STAR reading score improved from a 2.0 to a 3.0 from April to June. He is an average reader overall, improving his DRA 2 level from a 20 to a 30 from April to June, which is the beginning of the third grade reading scale. He is a native English speaker.

Student 5 seemed to enjoy reading the content because he would still want to work on ReadWorks (ReadWorks Inc., 2017) after I called for students to stop working on it. I allowed him and others still trying to finish answering questions to do so. Although he thoroughly enjoyed playing Prodigy Game (Prodigy, 2018), he liked to work on the ReadWorks program overall. His average ReadWorks reading comprehension score was a low 50.75 %, and it paled in comparison to his benchmark DRA 2 (Beaver & Carter, 2006) 30 level and benchmark 3.0 STAR (Renaissance Learning, Inc., 2018) reading scaled score.

Student 6's STAR (Renaissance Learning, Inc., 2018) scaled score decreased from 448 on April 19 to 419 on June 14. However, her grade equivalent score for her April STAR test was an above-average score of 4.0 (fourth grade) and in June, it was 3.8 (third grade, eighth month), which is far above the expected benchmark of a 2.8 (second grade, eighth month) in April and a 2.10 (second grade, tenth month) in June. Her Lexile measure did decrease from 545L in April to 490L in June, but again those scores are above average for a second grader. Her estimated STAR ORF decreased from 117 to 110 correctly read words per minute from April to June. She maintained her Tier 2 proficient reading scores from April to June.

Student 6 is an excellent reader overall, improving her DRA 2 (Beaver & Carter, 2006) level from 28 to 38 from April to June, which is close to the end of the third grade reading scale. She is a native

English speaker. She appeared to appreciate working on ReadWorks (ReadWorks Inc., 2017) because I noticed that she was consistently paying attention to the content, ready to answer questions independently. She never needed any rewards to work on the program. Her average ReadWorks reading comprehension score was a high 85.8%, and it compared to a similarly high DRA 2 38 level and high 3.8 STAR (Renaissance Learning, Inc., 2018) reading scaled score.

Student 7's STAR (Renaissance Learning, Inc., 2018) scaled score increased from 448 on April 19 to 419 on June 14. Her grade equivalent score for her April STAR test was a below-average score of 2.3 (second grade, third month) and a 2.9 (second grade, ninth month) in June, which is benchmark level, meaning second grade, ninth month of school. Her Lexile measure likewise increased from 545L in April to 490L in June, but again those scores are above average for a second grader. Her estimated STAR ORF increased from 60 to 80 correctly read words per minute from April to June. She improved her Tier 3 failing reading score from April to a Tier 2 proficient reading score in June. Her problem was fluency, as the words that she read correctly per minute were below average, at about 50 words per minute. She is a native English speaker.

Student 7 was generally a hard worker in doing all of her academic tasks, and liked to read using the ReadWorks (ReadWorks Inc., 2017) program as she was constantly reading and answering questions without any prompting or rewarding from me. She is an average reader overall, improving her DRA 2 (Beaver & Carter, 2006) level from 20 to 28 from April to June, which is close to the end of the third grade reading scale. Her average ReadWorks reading comprehension score was 70.56%, and it did somewhat compare to her average scores of a DRA 2 28 level and benchmark 2.9 STAR (Renaissance Learning, Inc., 2018) reading scaled score.

Student 8's STAR (Renaissance Learning, Inc., 2018) scaled score increased from 74 on April 19 to 90 on June 14. Her grade equivalent score for her April STAR test was a below-average score of 0.7

(kindergarten, seventh month) and a 1.2 (first grade, second month) in June. Her Lexile Measure remained the same, BR400L, in April and June. Her estimated STAR ORF increased from 19 to 27 correctly read words per minute from April to June. She kept a Tier 3 below-level score in reading from April to June. Her problem was being able to remember the words she just read correctly a moment beforehand. She was born speaking Spanish, but slowly began learning English when she entered school as a kindergartener. She is an ELL who struggles to remember how to pronounce newly learned English words correctly.

Student 8 tried her best in accomplishing all of her academic tasks, and liked to read using the ReadWorks (ReadWorks Inc., 2017) program as she was constantly reading and answering questions without any prompting or rewarding from me. She would repeatedly come to me showing her laptop that had a high 80% or 100% ReadWorks comprehension test score. I was amazed because I know that she struggled to read on her own until the ReadWorks narrator read aloud the text to her. It was then that she understood the text. Normally, I translated any English words from the text to Spanish so that she could do well on her reading comprehension tests. The school then identified her as having a specific learning disability in reading two days before the study ended on June 14. Overall, her DRA 2 progress was minimal, growing from a level 2 to 3 from April to June, which is a beginning kindergarten level. Her average ReadWorks reading comprehension score was a below-average score of 66.42%, but this ReadWorks score was much higher than her kindergarten level equivalent DRA 2 (Beaver & Carter, 2006) of 3 and her first grade level 1.2 STAR reading scaled score (Renaissance Learning, Inc., 2018).

Student 9's STAR (Renaissance Learning, Inc., 2018) scaled score increased from 448 on April 19 to 419 on June 14. Her grade equivalent scores for her April STAR test (Renaissance Learning, Inc., 2018) improved slightly from a 4.6 (fourth grade, sixth month) to a 4.7 (fourth grade, seventh month) in June, which are both above-average levels. Her Lexile measure likewise increased from 685L in April to

705L in June. Her STAR estimated ORF increased from 138 to 142 correctly read words per minute from April to June. She maintained her Tier 1 advanced reading scores from April to June. She read fluently and with expression. She is a gifted student, and is bilingual in Tagalog and English.

Student 9 was a high achiever and quite mature for her age, and appeared interested in reading using the ReadWorks (ReadWorks Inc., 2017) program as she was always on task. She improved her DRA 2 (Beaver & Carter, 2006) level from 30 to 38 from April to June, which is close to the end of the third grade reading scale. Her high 91.97% average ReadWorks reading comprehension score was as high as her DRA 38 and 4.7 STAR reading scaled score.

Student 10's STAR (Renaissance Learning, Inc., 2018) scaled score increased from 558 on April 19 to 476 on June 14. Her grade equivalent for her April STAR test lowered from a 4.9 (fourth grade, ninth month) in April to a 4.2 (fourth grade, second month) in June, but both are above-level scores. Her Lexile measure likewise decreased from 755L in April to 490L in June, but again those scores are above average for a second grader. Her estimated STAR ORF decreased from 155 to 125 correctly read words per minute from April to June. She remained an advanced Tier 1 reader from April to June. She was a very fluent reader. She is a native English speaker. She is an average reader overall, improving her DRA 2 level from 28 to 38 from April to June, which is close to the end of the third grade reading scale.

Student 10 normally had an easy time comprehending how to do academic tasks, and appeared to enjoy reading the ReadWorks (ReadWorks Inc., 2017) program passages. Her high 88.7% ReadWorks reading comprehension average score matched her high DRA 2 (Beaver & Carter, 2006) 38 reading level and above-average 4.2 STAR (Renaissance Learning, Inc., 2018) reading scaled score.

Student 11's STAR (Renaissance Learning, Inc., 2018) scaled score increased from 168 on April 19 to 231 on June 14. Her grade equivalent score for her April STAR test improved from a 1.9 (first grade, ninth month) in April to a 2.3 (second grade, third month) in June, but both are below-average

scores. Her Lexile measure likewise increased from BR140L in April to 35L in June, but again those scores are below average for a second grader. Her estimated STAR ORF increased from 44 to 59 correctly read words per minute from April to June. She remained an advanced Tier 3 reader from April to June. She was a native English speaker. She did improve her DRA 2 level from 18 to 28 from April to June, which is a slightly below average score compared to the benchmark 30 level.

Student 11 had trouble focusing on how to do academic tasks, but she appeared engrossed in reading the ReadWorks (ReadWorks Inc., 2017) program passages and answering its questions. Her low 52.58% ReadWorks reading comprehension average score matched her below-level DRA 2 (Beaver & Carter, 2006) 28 reading level and below-average 2.3 STAR (Renaissance Learning, Inc., 2018) reading scaled score.

Student 12's STAR (Renaissance Learning, Inc., 2018) scaled score decreased from 453 on April 19 to 421 on June 14. Her grade equivalent score for her April STAR test lowered from a 4.0 (fourth grade, beginning month) in April to a 3.8 (third grade, eighth month) in June, but both are above-average scores. Her Lexile measure likewise increased from 555L in April to 490L in June, but again those scores are below average for an average second-grader. Her estimated STAR ORF lowered from 119 to 111 correctly read words per minute from April to June. She remained an advanced Tier 2 reader from April to June. She was a native English speaker. She did improve her DRA 2 level from 28 to 38 from April to June, which is a very high score compared to the benchmark 30 level.

Student 12 easily mastered most of her academic tasks, and she appeared highly interested in reading the ReadWorks (ReadWorks Inc., 2017) program passages and answering its questions. Her high 91.85% ReadWorks reading comprehension average score matched well with her high DRA 2 (Beaver & Carter, 2006) 38 reading level and above-average 3.8 STAR (Renaissance Learning, Inc., 2018) Reading scaled score.

Student 13's STAR (Renaissance Learning, Inc., 2018) scaled score decreased from 441 on April 19 to 479 on June 14. His grade equivalent score for his April STAR test increased from a 3.9 (third grade, ninth month) in April to a 4.3 (fourth grade, third month) in June, and both are above-average scores. His Lexile measure likewise increased from 530L in April to 615L in June. His estimated STAR ORF increased from 115 to 126 correctly read words per minute from April to June. He grew from being a Tier 2 reader in April to being a Tier 1 reader in June. He was a native English speaker. He did improve his DRA 2 level from 28 to 38 from April to June, which is a very high score compared to the benchmark 30 level.

Student 13 easily mastered most of his academic tasks, and he read and understood how to read and answer questions related to the ReadWorks (ReadWorks Inc., 2017) program passages. His low 53.70% ReadWorks reading comprehension average score was mismatched compared to his high DRA 2 (Beaver & Carter, 2006) 38 reading level and above-average 4.3 STAR (Renaissance Learning, Inc., 2018) reading scaled score.

Student 14's STAR (Renaissance Learning, Inc., 2018) scaled score increased from 401 on April 19 to 556 on June 14. Her grade equivalent score for her April STAR test increased from a 3.7 (third grade, seventh month) in April to a 5.0 (fifth grade, beginning month) in June, and both are above-average scores. Her Lexile measure likewise increased from 455L in April to 775L in June. Her estimated STAR ORF increased from 106 to 161 correctly read words per minute from April to June. She grew from being a Tier 2 reader in April to being a Tier 1 reader in June. She was a native English speaker. She improved her DRA 2 (Beaver & Carter, 2006) level from 28 to 34 from April to June, which is a very high score compared to the benchmark 30 level.

Student 14 easily mastered most of her reading and writing academic tasks, and she seemed to understand how to answer the ReadWorks (ReadWorks Inc., 2017) program passages. Her below-average

62.89% ReadWorks reading comprehension average score was mismatched compared to her above-average DRA 2 (Beaver & Carter, 2006) 34 reading level and high 5.0 STAR (Renaissance Learning, Inc., 2018) reading scaled score.

Student 15's STAR (Renaissance Learning, Inc., 2018) scaled score increased from 85 on April 19 to 99 on June 14. His grade equivalent score for his April STAR test increased from a 1.1 (first grade, first month) in April to a 1.4 (first grade, fourth month) in June, and both are very below-average scores. His Lexile measure likewise increased slightly from BR400L (below average second grade reading proficiency) in April to BR335L in June. His estimated STAR (Renaissance Learning, Inc., 2018) ORF increased from 25 to 30 correctly read words per minute from April to June. He remained a Tier 3 reader from April to June. He was a native English speaker. He did improve his DRA 2 level from a three to a four from April to June, which are both kindergarten-reading levels.

Student 15 struggled in doing any academic task proficiently without direct help from another student or the teacher. He expressed great dislike working on the ReadWorks (ReadWorks Inc., 2017) program, often crying out in disgust or groaning when I announced that everyone needed to grab a laptop to work on ReadWorks. His very low 36.70% ReadWorks reading comprehension average score was correctly matched to his poor DRA 2 (Beaver & Carter, 2006) four reading level and first grade level 1.4 STAR (Renaissance Learning, Inc., 2018) reading scaled score.

Overall, the student participants' reading improved. Their DRA 2 (Beaver & Carter, 2006) levels rose from a class average of 22.2 to 30.2 from April to June 2018. In Figure 10, the data illustrates that all of the 15 student participants improved their DRA 2 reading level scores. The scores rose from 21% to 56%.

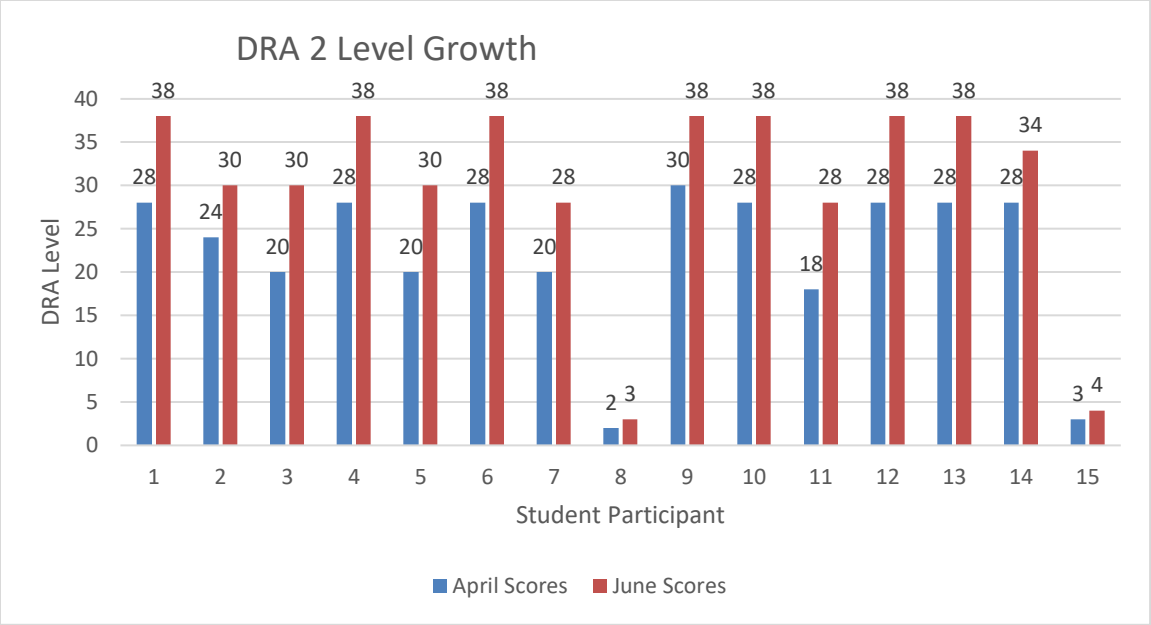


Figure 10. DRA 2 level growth.

Figure 11 shows that 80%, or 12 out of 15, of the participants' grade-equivalent STAR (Renaissance Learning, Inc., 2018) reading test scores improved.

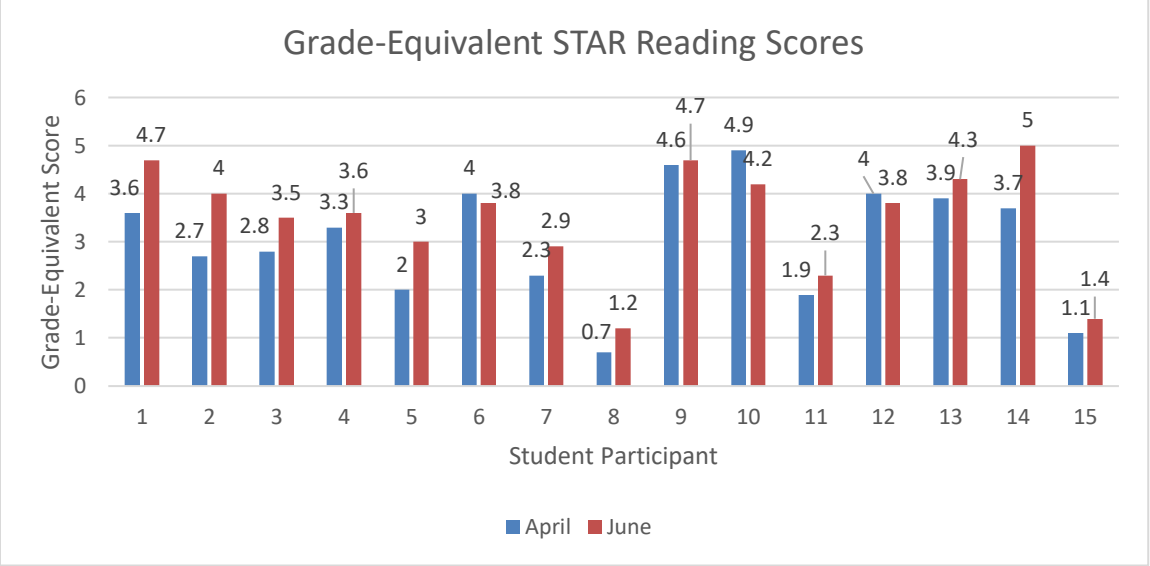


Figure 11. Grade-equivalent STAR reading test scores.

Figure 12 also shows that the same 80% of the participants improved their STAR (Renaissance Learning, Inc., 2018) reading test scaled scores. Some students lowered their June scores by 6%, 7%, and 15%, but others improved their scores by as much as 37%, 41%, and 71%.

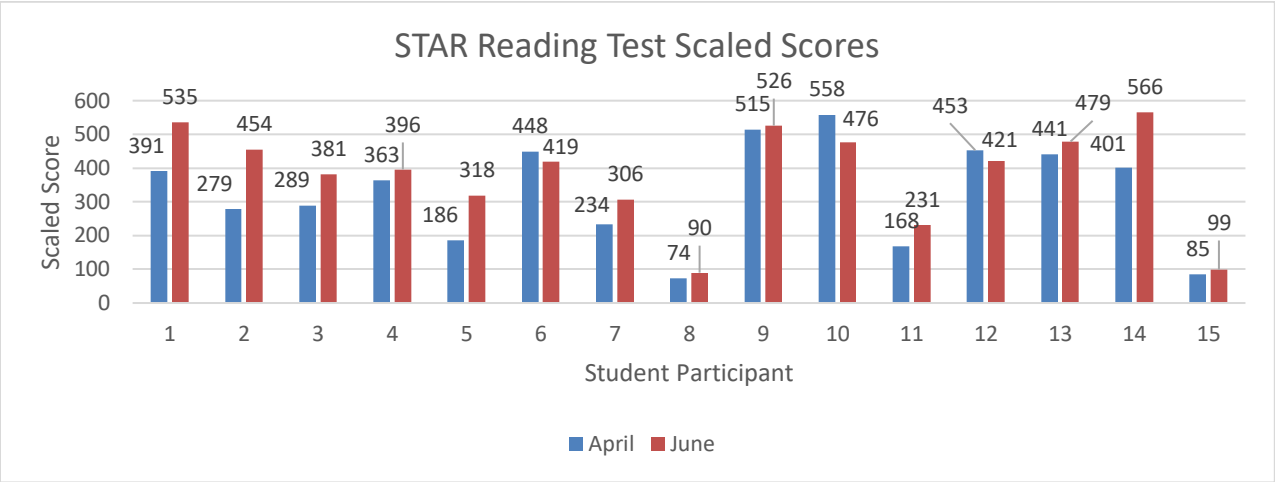


Figure 12. STAR reading test scaled scores.

Lexile measures improved for the same 80% of the student participants, as shown in Figure 13.

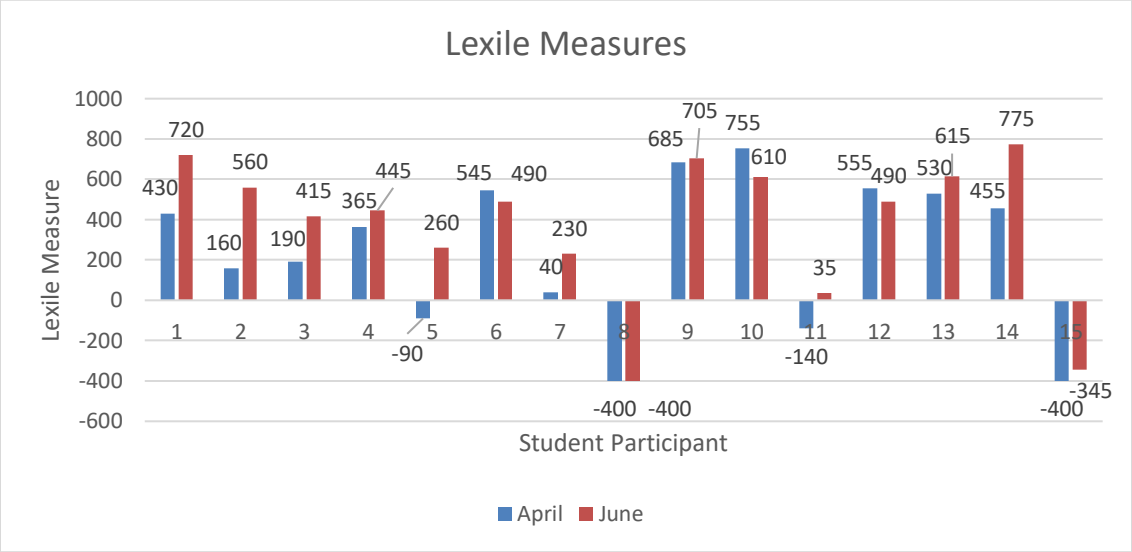


Figure 13. Lexile Measures.

The same 80% of students improved their estimated oral reading fluency as reflected in Figure 14. When the student performed above average on the STAR test, then the student's growth was not as significant as others who had an average or below average STAR test score.

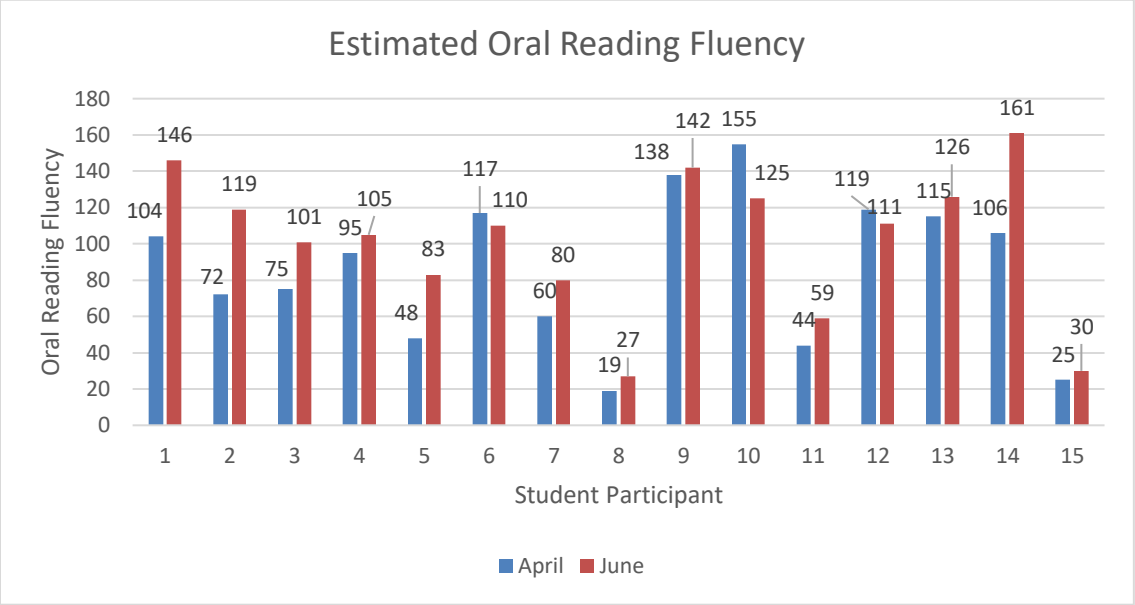


Figure 14. Estimated oral reading fluency rates.

I will describe some key characteristics of the three student participants whose STAR (Renaissance Learning, Inc., 2018) reading test scores dropped. Two female students lowered their STAR grade-equivalent scores from a 4.0 (fourth grade) to a 3.8 (third grade, eighth month) level. Both students maintained their proficient scores from April to June. Another student had Advanced grade-equivalent scores, which was a 4.9 (fourth grade, ninth month) in April and a 4.2 (fourth grade, second month) in June. Thus, these lowered STAR scores reflected the students' above-average reading proficiency over time. Quantitatively, the student participants improved their STAR test scores.

In-Depth Qualitative Findings

I will describe my lessons in whole and small group reading time with my students, as well as describe the students' interactions with me during their reading time and with their ReadWorks (ReadWorks Inc., 2017) independent reading time. After the study ended, I reflected on my study

observations and it yielded data about my perceptions about the features of the ReadWorks program (ReadWorks Inc., 2017) that may or may not have contributed to the students' reading fluency and comprehension scores on reading tests.

Small Group Reading Lessons

In my small group reading lessons, I would guide the students to read with understanding by posing similar questions as the ReadWorks tests (ReadWorks, Inc., 2017). The rationale for using ReadWorks-type questions was to help them perform better on their ReadWorks tests as well as read with improved comprehension. Vygotsky's Social Constructivist Theory (1978) supports an expert guiding the emergent readers to attain proficiency with some prompts and teaching of reading fluency and comprehension strategies. The readers learn within their zone of proximal development to become skillful readers.

I utilized various ReadWorks (ReadWorks Inc., 2017) question stems to teach my students reading comprehension using Reading A-Z books (LAZEL Inc., 2018). Some stems were: 1) "What is one example from the text that shows…"; 2) "Based on this information, what can you conclude about…"; 3) "What is the main idea?"; 4) "Reading the sentence, what does the word mean?"; and 5) "What is one possible effect?" I could use these types of questions in non-fiction Reading A-Z books, of which there were plenty to choose from in their library. There were very few fictional ReadWorks passages.

Whole Group Reading Lessons

Students appeared to enjoy when I read aloud the Reading A-Z (LAZEL Inc., 2018) stories in whole group reading instruction. I commonly asked them questions that I would ask if I were reading the text by myself. I tried to exemplify a good reader who reflects on the text and attempts to relate the text content to my own experiences to make sense of the text. Afterwards, the students would answer ten reading comprehension questions about the book we read together. I would read the questions and answer

choices aloud, translating the text to Spanish to accommodate the one primarily Spanish-speaking student. The students would sometimes repeat my Spanish phrases and I would comment that I was proud of their Spanish-speaking skills.

When reading either of the two Journeys (Houghton Mifflin Harcourt, 2012) basal readers that had many second grade level stories in genres like realistic fiction, non-fiction, biography, and fantasy, I would encourage students to read the text aloud with me. I would emphasize reading the text aloud full of expression. I would constantly ask and answer questions to better comprehend the text's meaning. I asked students to ask and answer questions, especially those that could pertain to the Jacob's Ladder worksheet questions and answers. Knowing that the students would be showing their reading comprehension afterwards by answering Jacob's Ladder worksheet questions, I would ask the students to point to the text that would answer such relevant questions. This strategy helped students to independently answer the Jacob's Ladder questions with confidence.

ReadWorks Program

I observed how much the students appeared to enjoy using the ReadWorks (ReadWorks Inc., 2017) program based upon the number of positive and negative comments they made about ReadWorks. Overall, it seemed that they did not enjoy using the program, because of the greater number of questions asking for how much longer they needed to be on the program. I rarely heard any positive comments. I did notice that some Tier 1 students did not complain about the time they had to work on the ReadWorks program, while many Tier 2 and 3 students did complain about the time requirement. Only one Tier 3 student enjoyed it because she earned high marks on the reading comprehension section. She would bring her Chrome notebook computer to me to show me her great results. I cheered her on by congratulating her.

When interacting with my students and informing them that they would work on ReadWorks (ReadWorks Inc., 2017), a few would ask me for how many quizzes. Some would ask for how long. I would simply repeat my first comment that students would work for at least 20 minutes on the ReadWorks program. One of my Tier 1 and one of my Tier 3 males would constantly make complaints about that time limit. I would encourage them to do their best, and if they did, that they would be able to explore a fun math website called Prodigy Game (Prodigy, 2018). Most times these students focused on doing their ReadWorks reading program.

The other students did not complain at all. They appeared quite engrossed in the stories that they read in the ReadWorks program (ReadWorks Inc., 2017). Some were anxiously typing their answers or trying to reread the text to answer a multiple-choice question when I called, "Time!" to inform them to stop working on the ReadWorks program. In that case, I told them to finish their activity, and then they could practice on their Prodigy Game (Prodigy, 2018). They happily obliged, and it appears that the Prodigy Game did become a good incentive for students to practice reading using the ReadWorks program. They began to practice on the Prodigy Game, inviting each other to visit their homes online. This scenario of 20 minutes of students working on the ReadWorks program and 20 minutes of them working on the Prodigy Game was a regular occurrence. They were used to these two events occurring daily in class. Thus, while Guthrie (2011) intimated that encouraging students to read related to knowing the students' reading goals, interests, and freedom to choose their own book or story and to read along with friends, another potent idea is the reward for reading, which is playing a game such as the Prodigy Game (Prodigy, 2018).

When students answered ReadWorks (ReadWorks Inc., 2017) comprehension questions, they were primarily multiple-choice questions and a few short-answer type questions. Students would refer back to the text to click on the answer or type the response. The ReadWorks program would grade the

multiple-choice questions immediately so that the students could click on "Submitted Assignments" to discover their score, but only the teacher could correct their typewritten responses (ReadWorks, Inc., 2017). A sample multiple-choice ReadWorks question asked the reader to determine the vocabulary word meaning based on the text excerpt. Another example asked the reader to choose the answer that best completed the sentence.

Short answer responses were also part of the ReadWorks reading comprehension questions (ReadWorks Inc., 2017). I was able to view the ReadWorks program suggestions for correct responses to grade each student's responses, but it was very tedious for me to have to log into each student's individual ReadWorks program account to grade their responses. One sample open-ended question asked the reader to name the kind of treasure that the protagonist would find in a treasure hunt. Another question asked for the reader's opinion with a justification found from the article.

The disappointing reality was that 14 out of 15 students rarely answered any of the short written response questions in their ReadWorks (ReadWorks Inc., 2017) assignments. I had constantly reminded them to do this before submitting their work. I also told them that their ReadWorks assignments were part of their reading grade. Those students who did well on their ReadWorks assignments would get free time to explore other educational websites. However, these two incentives were inadequate, as the students continued to disregard my request for them to answer the ReadWorks short written response questions. A huge problem in effectively implementing the ReadWorks program was that I could not give more personalized assistance to those students working on the program because I was more occupied teaching other students in small reading groups.

Self-Reflection Results

The results from my self-reflection showed that I believed that the ReadWorks program (ReadWorks Inc., 2017) may have helped to improve my students' STAR (Renaissance Learning, Inc.,

2018) reading test scaled scores, Lexile measures, and oral reading fluency rates. However, other factors could have improved students' reading scores and oral reading fluency rates such as the whole group book reading time and Jacob's Ladder reading comprehension question activities, quizzes, and small reading group activities. I agreed about the ReadWorks program not having such appealing graphics as compared to the animation found in i-Ready (Curriculum Associates, 2015b) or Istation reading programs (Mathes, Torgesen, & Herron, 2015). The ReadWorks program had insufficient graphics for the passages, which consisted of only one photograph per article. However, the ReadWorks e-books included many colorful graphics on each page.

I disagreed that the ReadWorks (ReadWorks Inc., 2017) tests gave students immediate feedback, since the students often had to answer all of the ten or so questions and submit the entire set of answers first. Then the students could review completed tests to review their answers. I would have preferred the students to get immediate feedback upon answering each individual question.

I agreed that most of my students wanted to practice reading on the program, but that it was only because I offered them the reward of playing a Prodigy math game online (Prodigy, 2018). I believed that the ReadWorks (ReadWorks Inc., 2017) program improved their reading comprehension skills as reflected in their STAR scores. However, I did not believe that it helped them to enjoy reading more because of the constant bickering from certain students about having to practice on it. All of the students would ask if they were done working on the ReadWorks program after completing only a few tests in about ten minutes. That indicated to me that they felt obligated to read on the program, and did not actually enjoy it. I felt that students needed some external motivation to participate in the ReadWorks reading program. This disappointed me, as I felt that they should have responded well in the ReadWorks program just as they did in the whole and small group reading activities.

I appreciated that the ReadWorks (ReadWorks Inc., 2017) program allowed the students to hear each article's text read aloud to them as often as they clicked on the play button, because if the students were tracking the text independently, then their fluency rates would have improved with this practice. However, the ReadWorks program did not highlight each word of the article's text as it read the text aloud, and considering the high third, fourth, fifth, and sixth grade Flesch Kincaid readability levels that means many students were not able to track the text. The result would be that they could understand the text by only listening to the ReadWorks program narrator read the text aloud, but they were not able to read the text independently over time. Their fluency rates could not improve if they could not track the text and read it aloud. Their low ReadWorks program reading comprehension test scores attest to the fact that they did not read the text with satisfactory comprehension either.

It appeared that the students struggled to comprehend the ReadWorks program (ReadWorks Inc., 2017) passages. Only a few Tier 1 and Tier 2 students answered some of the reading comprehension questions satisfactorily. Their results were inconsistent. Sometimes a student would excel in the test performance, and at other times, would fail miserably. I could only ascertain two students who performed well overall throughout the entire study. These Tier 1 students read above grade level, which means that they were able to comprehend the ReadWorks passages that were purportedly a second grade readability level, but were actually at a third through seventh grade readability level. I felt that I did a disservice to my students by not investigating the ReadWorks passages' readability levels more thoroughly. I should check the reading program passages' readability levels to provide appropriate second grade level text. Next time, I will check the text's Flesch Kincaid readability level before allowing my students to read it.

Chapter V: Discussion

Introduction

Upon evaluating my administration of the ReadWorks program to improve my students' reading fluency and comprehension scores on the DRA 2 (Beaver & Carter, 2006) and the STAR (Renaissance Learning, Inc., 2018), I observed several important results. While the students' average ReadWorks (ReadWorks Inc., 2017) test performance was below average as compared to their raised estimated oral reading fluency scores, Lexile measures, and STAR (Renaissance Learning, Inc., 2018) reading test scaled scores over the study's duration, the students' ReadWorks comprehension results did not match the students' STAR test or DRA 2 (Beaver & Clark, 2006) results.

It is odd that there were incongruent test results from the beginning of the study in April 2018 to the end of the study in June 2018. The ReadWorks (ReadWorks, Inc, 2017), the DRA 2 (Beaver & Clark, 2006), and the STAR (Renaissance Learning, Inc., 2018) test results did not show the same growth or lack thereof over time. This incongruent growth may be a result of these various tests measuring the students' reading fluency and comprehension in different manners using different criteria for proficiency. The students' average ReadWorks test score was 60% from April to June. The students' average DRA 2 independent reading level grew from a 22.2 in April to a 32.2 in June. The students' average STAR grade-equivalent score grew from 3.03 in April to 3.49 in June. The ReadWorks study student participants showed no reading comprehension growth based on the ReadWorks program test results alone.

Summary of Findings

Research Question 1

In response to the question, How does Title I students' STAR oral reading fluency change, if at all, after participation in the ReadWorks program (ReadWorks Inc., 2017), 14 out of the 15 participants experienced oral reading fluency growth.

Reflecting on the Repeated Readings Method (Samuels, 1979), students likely reread the ReadWorks (ReadWorks Inc., 2017) passages in order to answer the article comprehension questions. I noticed that the students constantly reviewed the text before answering the multiple-choice questions. I had taught them to refer back to the text to reread parts of it whenever answering a comprehension question on Jacob's Ladder, in guided reading group and whole group discussions, and on tests. I believe that if the students had followed my modeling of how to use the ReadWorks program effectively, then they would have actually reread the text more often. The rereading would likely have improved their reading comprehension and reading fluency test scores.

The ReadWorks (ReadWorks Inc., 2017) program read aloud the text to students, which was an excellent tool to improve their oral reading fluency and reading in general. My English learner understood the text only when she heard it read to her aloud. My Tier 3 student also understood the text using the ReadWorks narration feature. My only desire was for the feature to have simultaneously highlighted each word of the text as it read the text aloud, so that the students could make a better connection between the narrated word and the sound that it makes.

Research Question 2

In answering the question, How do Title I students' Lexile scores change, if at all, after participation in the ReadWorks program (ReadWorks Inc., 2017) 12 out of 15 students' Lexile measures did improve slightly. I think that the addition of the ReadWorks program in the daily reading part of the school day helped them become more proficient in reading.

I believe that I could have modeled to the students more frequently how to reread the ReadWorks (ReadWorks Inc., 2017) passages and review the text continuously to answer each comprehension question to gain better reading comprehension test scores, which could have raised their Lexile measures. I think that I was wrong to believe that after a couple of times of me modeling how to work on the

ReadWorks program, that the students would be proficient users of the program and succeed without any further help from their teacher. Utilizing the Theory of Contingent Scaffolding (Wood, 1998), I should have retaught the students more frequently on an regular basis how to work on the ReadWorks program and observed them more closely to ensure that they were becoming proficient independent readers (Wood, 1998).

Research Question 3

In response to the question, How do Title I students' STAR scaled scores change, if at all, after participation in the ReadWorks program (ReadWorks Inc., 2017), 12 out of 15 student participants' scores improved. I know that the STAR tests the test-taker's knowledge of Standards of Learning (SOL), in varying levels of text readability levels. If the test-taker answers a test item incorrectly, then the following test item has a lower readability level. If the test-taker answers a test item correctly, then the following test item has a higher readability level. The test-taker's overall test score is a result of the weight of the total number of correctly answered test items The STAR test results are reliable proof that the students' reading fluency and comprehension skills grew over time.

Research Question 4

In response to the question, How do the Title I students' STAR (Renaissance Learning, Inc., 2018) grade equivalent scores change, if at all, after participation in the ReadWorks program (ReadWorks Inc., 2017), the same 12 students whose scaled scores improved also had improved their grade equivalent scores. The grade equivalent score is another manner of stating the scores in a more user-friendly format, using grade level and month in that grade level to describe the student's independent reading level.

Research Question 5

In response to the question, How do Title I students' DRA 2 (Beaver & Carter, 2006) independent reading levels change, if at all, after participation in the ReadWorks program (ReadWorks Inc., 2017), I

found that all of the fifteen student participants increased their independent reading levels within a range of 21% to 50% growth. This growth could be attributed to the ReadWorks program, but also to the small and whole group reading lesson plans. My lesson plans focused on teaching the Standards of Learning that the students struggled with on tests, as the STAR test report indicated (Renaissance Learning, Inc., 2018) I also helped students improve their reading fluency as reflected in their DRA 2 (Beaver & Carter, 2006) test results.

Research Question 6

To answer the question of how does a teacher's whole and small group reading lesson plans change to reflect the STAR (Renaissance Learning, Inc., 2018) and ReadWorks program (ReadWorks Inc., 2017) data reports, I believe the reports guided the lessons that I created. I reviewed the ReadWorks program test questions and attempted to create similar types of question to ask the students during their whole and small group reading lessons. I do not believe that even though I did encourage students to write out their responses in their Jacobs Ladder reading comprehension worksheets, this writing ability did not directly transfer to the students typing in their short written responses in the ReadWorks program. It was very disheartening to see the astounding number of blank areas of no written response. I think that further investigation could aid in understanding the causes of the students' lack of participation in the writing section of each ReadWorks tests.

Students are more interested in text that relates to their own background knowledge and experiences, or schema, and I believe that the ReadWorks (ReadWorks Inc., 2017) stories were interesting to the students. Often, the students would talk to me about a topic that they read about in a ReadWorks article. Kant (1963) realized that readers were more interested in reading and understanding the text if the text topic was something that the reader had some knowledge or experience in relation to the topic. The reader could comprehend the text much more readily if the reader possessed sufficient

schema. Piaget's cognitive constructivist theory (Piaget, 1964) asserted that when the reader can use their schema to comprehend the text, then the reader is melding the new text content to form new schema to assimilate and accommodate the new knowledge gained when reading the text (Piaget, 1964).

Reader Response Theory (Rosenblatt, 2005) explained that readers would want to read the text that is relevant to their interests and schema. Though many students did not enjoy typing their short responses to the ReadWorks program's (ReadWorks Inc., 2017) comprehension questions, they were generally engrossed in listening to the narrated text while reading, too. I believe that the students thought about the text content more critically when they reacted personally and even emotionally to the text content by referring to the text content during class discussions of other topics such as in science and social studies. Some interesting ReadWorks second grade reading article topics were about solid and liquids, landslides, hiking, plants, Rosa Parks, flying cars, storms, African animals, acrobats in a circus (ReadWorks, Inc., 2017). The students would tell me tidbits of information that they learned from reading the passages, which caused me to infer that they enjoyed the text content.

ReadWorks (ReadWorks Inc., 2017) did not offer many teacher resources to guide me in creating individualized lesson plans. I felt that I had to follow my students' progress by logging in as each student, because the data reports just showed me the percentage of correct responses per test, while the student view showed each question that was correct and incorrect. It was frustrating to see that 14 out of 15 students did not answer their written responses. I believe that the Tier 2 and 3 students rushed through answering the multiple-choice questions and got poor scores overall. One reason is that the passages' readability levels were above the second grade level, based on the Flesch-Kincaid levels. Another reason is that they may have needed more prompts to answer the questions correctly. The final reason is that the ReadWorks program did not give immediate feedback after the student answered each question. Only

after the student finished the test was the student able to view his or her score. The student could not retake the test to improve his or her understanding of the text.

The kinds of questions that the ReadWorks (ReadWorks Inc., 2018) tests posed to the students were mostly literal and inference questions. Each ReadWorks test posed seven multiple-choice questions and three short written response questions. Of the seven multiple-choice questions, the types of questions pertained to inferring character feelings, inferring the vocabulary word meaning using context clues, cause and effect, drawing a conclusion, main idea, grammar, sequence, and identifying a supporting detail for a main idea or conclusion. For the three short written response questions, the student had to compare and contrast, justify a ReadWorks statement about the article, or write an opinion statement using the article's evidence. These types of questions matched with the Reading A-Z (LAZEL Inc., 2018) questions, except that the ReadWorks test questions were more in-depth and required written responses.

Reflecting on my first-grade and third-grade students' past usage of other computer-based reading programs in the classroom, I know that I sometimes incorporated their reading materials in my whole group reading lesson plans. The students have used Breakthrough to Literacy (McGraw Hill Companies, 2002), Achieve 3000 (Achieve 3000 Inc., 2017), Istation (Mathes, Torgesen, & Herron, 2015), i-Ready (Curriculum Associates, 2015a), and ReadWorks (ReadWorks Inc., 2017) computer programs. The Breakthrough to Literacy was a CD-ROM based program, and the other programs were online. We used the big books at school and the take-home student books at home to increase the students' reading skills. I thoroughly enjoyed getting the Breakthrough to Literacy (McGraw Hill Companies, 2002) hardback colorful softcover books in regular size, black and white take-home, and big book formats. This way the students could read the text in a variety of ways, alone, at home with family and at school with the teacher and the class. Achieve 3000 was better suited for students who already knew how to read, and their questions were multiple choice and challenging. When I was teaching a small group of students how

to read, another group of students were working on Achieve 3000 online on computers. I did not try to incorporate any content or question stems from Achieve 3000 in any of my reading lessons, as my administration did not require me to do so.

Meanwhile, Istation (Mathes, Torgesen, & Herron, 2015) and i-Ready (Curriculum Associations, 2015a) programs did have read-alouds and interactive characters that gave immediate feedback to the reader to guide the reader to answer each question correctly. Both Istation and i-Ready programs had many reading lessons on PDF for the teacher to teach the same reading objectives using similar material from these programs in the classroom. I was very grateful for these teacher lesson resources, and regretted that my district cut funding for our school to continue using these programs. I could not find these kinds of resources on the ReadWorks program (ReadWorks Inc., 2017), and instead had to investigate each article and its accompanying questions to use some question stems in my own reading lesson plans using my own reading materials.

In addition, I would have liked the teacher to be able to obtain reports with more data that detail each student's progress, such as an item analysis identifying the kinds of questions that the student excelled and struggled in answering. Unfortunately, the ReadWorks (ReadWorks Inc., 2017) program did not have detailed enough reports, because all that I saw were the percentage of correct answers for each test. It did not identify the problem at hand, such as the kinds of questions that the student knew well and did not know well. In addition, it would be helpful if ReadWorks highlighted the text as the narrator reads it aloud. The narration feature read the text aloud to the students, which helped when they read the text with the narrator. If the ReadWorks program highlighted each word that the narrator read aloud, it would have helped the students identify each word more readily when rereading the text on his or her own.

Overview of Findings

It is valuable to note the relationship between my self-reflection, the lesson plan analysis, the field notes of student behaviors, and the quantitative data of student STAR (Renaissance Learning, Inc., 2018) and ReadWorks (ReadWorks Inc., 2017) reading test results (see Table 5). At the inception of the study, I felt confident that I would be able to glean a lot of information from my students' ReadWorks response data to use when designing my lesson plans. My students did an excellent job when answering reading questions in small group time and answering DRA 2 test questions, but they failed in answering the ReadWorks reading comprehension and written response questions. When I reviewed the ReadWorks questions with the students by asking similar questions but reading a different text sample, the students were able to answer these questions orally. However, many students failed to type their written responses at all or they simply wrote random letters or statements, which was very uncharacteristic of their whole and small group oral responses to similar ReadWorks-type reading comprehension questions.

After I reviewed the students' low ReadWorks program reading comprehension test scores and low quality short-answer written responses, I realized that there was another reason for these results other than student apathy or lack of interest in a reading program. I discovered that the average ReadWorks passages were a 4.5 Flesch-Kincaid reading level, although ReadWorks described these passages as appropriate for second grade. I then figured out that the Reading A-Z (LAZEL Inc., 2018) books were also actually at a fourth grade Flesch-Kincaid level, although they were purportedly at second grade DRA 2 levels. Since I read the Reading A-Z books aloud and along with the students in small and whole group reading lessons, the students fared well when answering the accompanying Reading A-Z comprehension tests. However, although the ReadWorks program offered students a narration feature to read the text aloud to them, it did not discuss with students any important concepts to revisit, especially as it related to answering particular cause and effect, main idea and details, inference, and other valuable reading

comprehension facets. Thus, the ReadWorks program narration feature was not an adequate substitute for a teacher or even a computer-based character who could give immediate feedback when the student did not understand how to comprehend the text.

Research Implications

Due to the research study's limitations of a very small number of study participants, this study may not be generalizable to other classrooms. If at least two classrooms or more could participate in the study with the addition of a control group, the researcher could likely determine if the ReadWorks program's usage actually does have an actual positive or negative effect on the student participants' reading fluency and comprehension skill growth as reflected in their STAR and DRA 2 test scores. The difficulty that this teacher had in utilizing the ReadWorks program (ReadWorks Inc., 2017) to gather data results on student performance affected my opinion of the usability of the program. It was tedious to log in as each student and then evaluate the correctness of each of the questions. The ReadWorks program did not offer many resources to teachers to apply when writing lesson plans.

Students appeared to feel coerced into reading the text and answering the relevant comprehension questions. The well-behaved students did the tests but, overall, only one student attempted to answer all of their short written response questions. The rest of the students half-heartedly answered some questions or blatantly disregarded answering the questions at all. I was disappointed at these results. Though the students only write short-answer responses in the DRA 2 (Beaver & Carter, 2006) test, I was not evaluating the relationship between the student participants' ReadWorks program (ReadWorks Inc., 2017) average test results and their DRA 2 test results. The fact many students were either unwilling or unable to answer the short response written answers on the ReadWorks program, but they were able to correctly give oral responses to similar questions in small reading groups. This student

behavior made me wonder if they felt intimidated by having to spell and type correctly and instead chose not to respond because of this feeling of intimidation.

The Matthew Effect could have been a reason for students who felt that they were not able to read a challenging text with sufficient fluency and comprehension. The Matthew Effect shows that over time, low readers do not make the same degree of large reading gains as compared to high readers (Stanovich, 2000). Since the second grade reading level ReadWorks passages were actually fourth grade Flesch Kincaid reading level text, these students most likely felt like they were incompetent low readers who were unable to progress as they felt that I expected them to progress. I realize that I impressed upon them the belief that the ReadWorks passages were easy to read and that the accompanying questions were simple to answer, judging by the students' STAR and DRA 2 test results.

Engaging students to read by being in control of their choice of reading material through project-based learning could make reading more enjoyable in a social and technological context. Depending on the group's interest in a particular topic, they will use the internet and books to research a topic in depth. They are then reading for a purpose, which is to find important information to share with others. When they share their written and drawn presentations of the topic with others, they further engage others to read more about this subject matter (Kuhlthau, Maniotes, & Caspari, 2007).

Recommendations for Future Research

Future studies about the degree of success that students will have in reading due to using the ReadWorks (ReadWorks Inc., 2017) program should have a large student participant population. Having a control group not using the ReadWorks program would have benefited this study's relevance and applicability to other teachers' potential use of this program. More teacher participation would be extremely valuable in producing more generalizable study results.

Suggestions for Practice

It is worthwhile to encourage students to use technology to facilitate their individualized reading lessons, especially when teachers are having small group instruction with other student groups. The students feel independent and in control of their own learning, and mature their reading skills at their own pace, without a lot of pressure. The teacher should constantly evaluate how students are performing on their ReadWorks (ReadWorks Inc., 2017) tests in order to address the students' weaknesses in answering the ReadWorks comprehension questions when teaching reading in small and whole group lessons.

Another important realization is that the teacher needs to be a critical thinker regarding the validity of the claims that second grade level text is actually second grade level text. It is time-consuming but crucial to check the text's Flesch Kincaid readability level by simply copying and pasting the text to a Word document and reviewing its spelling and grammar. By checking the text's Flesch Kincaid readability level, you can ensure that your student is reading a text that is either his or her independent or instructional level text. It is never a wise idea to challenge a student by telling that student to read a text that is at his or her frustration level.

Conclusion

The ReadWorks program (ReadWorks Inc., 2017) is constantly evolving to improve its free service to all students. It has created more e-books, more passages and topics for students to explore, and it offers an individualized learning platform that benefits readers of all reading levels. I believe that the ReadWorks program could be a helpful program for all students to utilize if the teacher is cognizant of each student's Lexile measure and the teacher chooses the most appropriate ReadWorks program passages for each student based on the Lexile data as found in the STAR (Renaissance Learning Inc., 2018) reports. This one important facet of the teacher's implementation of the ReadWorks program could make a significant difference in the students' success in reading the text with fluency and comprehension.

When a teacher who attempts to use a new intervention in the classroom, that teacher has a responsibility to know as much as possible how to best utilize the program to promote their students to learn optimally. That program's text, strategies, and question types should integrate with the teacher's design of the small and whole group reading lesson plans. The program should not just be another workstation that switches over time based on a theme or a time of year, but it should be part of the regular reading regimen year-round. The teacher's constant contingent scaffolding can ensure that student program practice yields positive reading growth results as shown in the students' formative and summative reading tests. Teachers should constantly review students' program performance and alter reading instruction to teach students how to improve their program test results. It is only then that the program can be an asset as a reading intervention, and not just another burden or responsibility, that the teacher must unwillingly accept.

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Appendix A

Teacher ReadWorks Self-Reflection

Part I. Directions: Please circle the number that most accurately reflects your beliefs and opinions of the i-Ready Program and reading instruction.

	Strongly Disagree	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Strongly Agree**
1. The ReadWorks program has appealing graphics.	1	2	3	4	5
2. ReadWorks tests give students immediate corrective feedback when they are incorrect.	1	2	3	4	5
3. I observed that most of my students wanted to practice on the ReadWorks program.	1	2	3	4	5
4. The ReadWorks program can improve most of my students' reading fluency.	1	2	3	4	5
5. ReadWorks can improve most of my students' reading comprehension skills.	1	2	3	4	5
6. Students make positive comments about how ReadWorks helped them read better.	1	2	3	4	5
7. The ReadWorks reading tests help students to enjoy reading.	1	2	3	4	5
8. The ReadWorks reading resources help me to teach reading.	1	2	3	4	5
11. ReadWorks helps to improve students' STAR reading test scaled scores.	1	2	3	4	5
13. Most of my students succeeded in passing their ReadWorks reading tests with at least 80% passing scores.	1	2	3	4	5

Part II. Directions: Please write a short response to complete each of the following four statements below.

14. My opinion of the ReadWorks tests that best promote reading fluency have certain characteristics such as…

15. My opinion of the ReadWorks tests that best promote reading comprehension have characteristics such as…

Part III. Please answer the following demographic information about yourself.

Age: ___ Gender: Female ___ Male ___ Race: Are you of Hispanic, Latino, or Spanish origin? Yes ___ No ___

How would you describe yourself? American Indian or Alaska Native ___ Asian ___ Black or African American ___ Native Hawaiian or Other Pacific Islander ___ White ___ Write-In _____

Number of Years Teaching in Norfolk Public Schools ___ Number of Years Teaching in General ___

Number of Years Teaching Second Grade ___ Other Grades Taught _____

Appendix B

Informed Consent Document for Parents

INFORMED CONSENT DOCUMENT

OLD DOMINION UNIVERSITY

PROJECT TITLE: Impact of A Teacher's Implementation of the ReadWorks Digital Reading Program on Second Graders' Reading Fluency and Comprehension Test Scores.

INTRODUCTION

The purpose of this form is to give you information that may affect your decision whether to say YES or NO to participation in this research and to record the consent of those who say YES. The project is to be conducted in Norfolk City Public Schools, specifically Tanners Creek Elementary School.

RESEARCHERS

The responsible supervising investigator for this study is Dr. Thomas Bean, Associate Professor of Literacy Education, Darden College of Education, Department of Teaching and Learning. The primary researcher is Cynthia Molina, a second-grade teacher at Tanners Creek Elementary School, and an Old Dominion University doctoral student in Curriculum and Instruction. If you have any questions, please contact me, Cynthia Molina, at 757-852-4555 or cmolina@nps.k12.va.us. You may also contact Dr. Thomas Bean at 757-683-3283 or tbean@odu.edu.

DESCRIPTION OF RESEARCH STUDY

I am investigating the extent to which this second grade teacher-researcher will utilize the ReadWorks reading program to improve her students' reading fluency and comprehension as shown on the reading tests of the STAR test and its measures of estimated oral reading fluency and comprehension and Lexile Levels. I seek to understand the how myself as a teacher will use the STAR and ReadWorks data reports to design her small and whole group reading lessons to improve students' reading fluency and comprehension skills.

Your participation in this study is voluntary. If you decide to participate, you will join a study that begins from April to June 2018. Your student will learn to read using the ReadWorks program, which is a normal part of the reading curriculum at Tanners Creek Elementary School.

Once you start, you may withdraw from the study at any time without any penalty. The results of the research study may be published, but your identity will remain confidential, and your name will not be made known to any outside party.

If you say YES, then your participation will last for three months (April 20, 2018-June 20, 2018) at your school, Tanners Creek Elementary.

EXCLUSIONARY CRITERIA

The researcher has invited and encouraged the second grade students at Tanners Creek Elementary School to participate in the study.

RISKS AND BENEFITS

RISKS: No psychological, social, legal, or physical discomforts, stress, or harm is expected to occur as a result of individuals participating in this research; however, there is a potential risk of release of confidential information. The project investigator intends to minimize this risk by providing you with confidentiality as to your identity through the use of pseudonyms. Additionally, all collected data will be stored on a secure, password-protected storage site and in a locked file cabinet. Only the researchers and outside evaluator will have access to this data. At the conclusion of the study, data will be kept in a secure and locked area for three years and then destroyed. As with any research, there is some possibility that you may be subject to risks that have not yet been identified.

BENEFITS: Although there may be no direct benefit to you, a possible benefit for your being part of this study is in identifying perceived barriers in implementing reading lessons in your classroom. This study may be significant in providing insights that would allow schools to focus teacher professional development on increasing the confidence of guiding teachers how to use the ReadWorks program to improve student reading fluency and comprehension.

COSTS AND PAYMENTS

The researchers want your decision about participating in this study to be absolutely voluntary. Since your student will normally participate in reading using the ReadWorks program, no cost or payment will be given. However, a pizza party will be given to those students participating in the program.

NEW INFORMATION

If the researchers find new information during this study that would reasonably change your decision about participating, then we will give it to you.

CONFIDENTIALITY

The researchers will take reasonable steps to keep private information such as pseudonyms to mask identity. The researchers will remove identifiers from the information, delete audio files, and store information in a locked filing cabinet prior to its processing. The results of this study may be used in reports, presentations, and publications; but the researchers will not identify you. Of course, your records may be subpoenaed by court order or inspected by government bodies with oversight authority.

WITHDRAWAL PRIVILEGE

It is OK for you to say NO. Even if you say YES now, you are free to say NO later, and walk away or withdraw from the study—at any time. Your decision will not affect your relationship with Old Dominion University. However, your withdrawal will cause a loss of benefits to which you might otherwise be entitled.

COMPENSATION FOR ILLNESS AND INJURY

If you say YES, then your consent in this document does not waive any of your legal rights. However, in the event of harm arising from this study, neither Old Dominion University nor the researchers are able to give you any money, insurance coverage, free medical care, or any other compensation for such injury. In the event that you suffer injury as a result of participation in any research project, you may contact the principal investigator, Dr. Jori Beck, at 757-683-3392, or Dr. Jill Stefaniak, the current chair of the human subjects committee at jstefani@odu.edu or 757-683-6696 who will be glad to review the matter with you.

VOLUNTARY CONSENT

By signing this form, you are saying several things. You are saying that you have read this form or have had it read to you, that you are satisfied that you understand this form, the research study, and its risks and benefits. The researchers should have answered any questions you may have had about the research. If you have any questions later on, then I should be able to answer them. My phone number is 757-852-4555, and my email address is cmolina@nps.k12.va.us.

If at any time you feel pressured to participate, or if you have any questions about your rights or this form, then you should contact **Dr. Jill Stefaniak, the current chair of the human subjects committee at jstefani@odu.edu or 757-683-6696 who will be glad to review the matter with you. And importantly, by signing below, you are telling the researcher YES, that you agree to participate in this study. The researcher should give you a copy of this form for your records.**

Subject's Printed Name & Signature	**Date**

INVESTIGATOR'S STATEMENT

I certify that I have explained to this subject the nature and purpose of this research, including benefits, risks, costs, and any experimental procedures. I have described the rights and protections afforded to human subjects and have done nothing to pressure, coerce, or falsely entice this subject into participating. I am aware of my obligations under state and federal laws and promise compliance. I have answered the subject's questions and have encouraged him/her to ask additional questions at any time during the course of this study. I have witnessed the above signature(s) on this consent form.

Investigator's Printed Name & Signature	**Date**