STUDENT READING ACHIEVEMENT ON THE RISE: INTEGRATION

OF CLASSWORKS SOFTWARE WITH TECHNOLOGY

by

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Abstract

The purpose of the study was to test the theoretical perspective that related Classworks (2008) technology to reading achievement of fourth grade students to determine if a significant difference existed in student reading achievement between the supplemental uses of Classworks software reading program to that of standard classroom instruction. The study compared Classworks software intervention of standard instruction which used a group of fourth grade students in one school to a group of fourth grade students in another school in two small rural school districts in South Carolina. The independent variable of Classworks instruction was defined as the intervention or treatment and was provided to one group of fourth grade students in addition to their standard reading program. The dependent variable was generally defined as standard classroom reading instruction without the supplement of the Classworks program. Three research questions were tested within the quasi-experimental design approach by using quantitative data. First, the findings of the independent t test compared the pretest with the experimental group to the pretest of the control group which indicated a significant difference. Next, the finding of the independent t test compared the posttest of the experimental group to the posttest of the control group and yielded a significant difference. Last, the paired sample t test for the pretest and the posttest for the experimental group indicated a significant difference and concluded the means were not likely due to random chance and were probably due to the manipulation of the treatment of providing Classworks. The results of the study conclude that utilization of the Classworks software program yielded a significant difference when used with fourth grade students.

Dedication

The dedication of this dissertation goes to Bryan, my husband, for support, to my three children; Bre'Anna, Kaylee, and Cody to know one can achieve great things with hard work and determination and to never give up on those "special" dreams. Also, to my special friends Frances and Doretha who have always been my cheerleaders along with my brother Steve and sister Shannon who never stopped believing in me.

The last dedication goes to a very special guardian angel of mine, Joshua Matthew Goss, whom I love and miss dearly with each passing day. Also a special dedication is in memory of my loved ones that passed during the writing of this manuscript Paul Evans, Corey Young, and Arnold Wilson. I know you are all smiling down from Heaven on me now.

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CHAPTER 1. INTRODUCTION

Introduction to the Problem

As life continues to grow in the technology age it is important for schools to stay current with the technology. The purpose of this study is to investigate the effectiveness of an educational software program on the reading achievement of fourth grade students as a means to supplement reading instruction in two school districts in South Carolina. Technology can help foster student growth and achievement to keep students from falling behind and providing Response to Intervention (RtI) programs (Classworks Research A Research-Proven Solution, 2008).

The reauthorization of Individuals with Disabilities Education Improvement Act of 2004 (IDEA) was in part influenced by No Child Left Behind 2001 (NCLB) to provide all children with academic achievement throughout the United States (Yell, Shriner, and Katsiyannis, 2006). The nation's special education law IDEA 2004 provides funding to support programs of special needs students. IDEA 2004 mandates a free appropriate public education for students in the least restrictive environment. The general principles of IDEA 2004 provide assistive technology to students which can improve the functional capabilities of a child within the curriculum to assist the student in being successful within the classroom (Bartlett, Etscheidt, and Weisenstein, 2007).

The focus for this study, an individual software program by Curriculum Advantage (Classworks Research A Research-Proven Solution, 2008), will be studied to determine the effects of student reading achievement on fourth grade students in two small rural school districts in South Carolina. In addition, the effects of integrating

technology with a software program on the computer will be compared to a similar school that does not utilize the program.

Classworks (Classworks Research A Research-Proven Solution, 2008) is a technology software integrated program used to instruct students on their instructional level to deliver remediation and enrichment of skills. The state of South Carolina has 15 districts currently utilizing the Classworks model for remediation and instruction (Classworks Research A Research-Proven Solution, 2008). Nicholas (2003) reports Classworks has been available to schools since 1993 with 3,000 hours of instruction and used in over 2,000 schools.

Teachers can also benefit from whole class instruction of Classworks when necessary by logging in and taking a specific skill the student may be lacking in and teaching the skill through the use of a Promethean smart board (Promethean Lighting the Flame of Learning, 2011). A Promethean board brings an interactive approach to technology into the classroom by allowing students to interact with the board to learn the skills being taught (Promethean Lighting the Flame of Learning, 2011). The students can view a mini-lesson together as a skill is being taught for the day with whole group instruction. The mini-lesson is then on the Promethean board and the students can interact with it as a whole class.

Classworks software program is aligned with state standards that spiral throughout the curriculum. Curriculum Advantage, Inc. as reported, (Classworks Research A Research-Proven Solution, 2008) addresses alignment of standards by conducting an in-depth analysis and research of the Classworks software with the standards in a particular state by addressing state testing results and conducting item

analysis with lesson activities within the program (Millikin, 2008). In addition, higher order thinking skills are intertwined into the curriculum using Bloom's Taxonomy in developing the questions for the Classworks program (Classworks Research A Research-Proven Solution, 2008).

Nicholas (2003) indicates to meet efficiency the curriculum of Classworks was developed using scientifically based research. Classworks meets the mandates of NCLB 2001 by providing professional development opportunities for teacher growth, aiming for student achievement by providing progress monitoring, providing teachers with immediate feedback, and providing software based on research. In addition, the Institute for Development of Educational Achievement's: A Consumer Guide to Evaluation a Core Reading Program Guide *K-3* is used to assess program efficiency as it is nationally recognized to evaluate reading programs (Nicholas, 2003). Reading programs focusing on the five big ideas of the National Reading Panel of effective reading instruction are eligible for funding and is a key issue of the NCLB 2001 (Slavin, 2003).

Classworks Research: A Research-Proven Solution (2008) discussed in the year 2007 the states of Georgia, Florida, Illinois, California, Utah, and North and South Carolina added or updated Classworks in the states to reflect the state curriculum standards. Classworks has a benchmark assessment specially designed to measure student mastery of content and skills. In addition, the program automatically prescribes students with an individual learning path or individual lesson assignments based on the student results of the benchmark assessment (Classworks Research: A Research-Proven Solution, 2008).

A study conducted by Patterson (2004) examines the effects of computer assisted instruction using Classworks in the area of math for third grade students. Patterson's quasi-experimental study produces data that show an increase in student achievement in the area of math and impact teacher's attitude toward using computer assisted instruction within the classroom.

The purpose of conducting research of Classworks is to determine if the software used as a supplemental program influences student achievement and promotes reading success through utilization of the computer with fourth grade students in two small rural school districts in South Carolina. South Carolina holds school districts to certain accountability standards. The Education Accountability Act of 1998 specifies state accountability measures as defined by the South Carolina State Code of Laws (n.d.) as follows:

1. Using academic achievement standards to push schools and students toward higher performance by aligning the state assessment to state standards,

2. Providing an annual report card with a performance indicator system,

3. Requiring all districts to establish local accountability systems,

4. Providing resources to strengthen the process of teaching and learning in the classroom,

5. Supporting professional development, and

6. Expanding the ability to evaluate the system and to conduct in-depth studies on implementation, efficiency, and the effectiveness of academic improvement efforts.

The goal of schools today is for no child in education to be left behind. It is imperative for schools to use high quality curriculum programs that are research and technology based to keep up with the moving trends and high demands of society. As reported by Hehir (2006) NCLB 2001 and the reauthorization of IDEA 2004 provides for more accountability within school systems including students with disabilities and providing them with the opportunity to take state wide standardized tests to measure student progress.

Background of the Study

The context for the problem is to address a need for student achievement in reading which is mandated by No Child Left Behind legislation 2001. The rise in efforts to meet the requirements of NCLB 2001 is one that is sweeping across the nation. The purpose of NCLB 2001 is to close the gap that is effecting student achievement. In addition, all schools are held to the same high standard of achieving adequate yearly progress (AYP) (Lagana-Riordan and Aguilar, 2009). As reported by Public Law 107-110 'Adequate yearly progress' is distinguished by its qualities of holding all public and secondary schools to certain high standards of academic achievement for each student. The statute measures the schools progress by the following guidelines:

- is statistically valid and reliable;
- results in continuous and substantial academic improvement for all students;
- measures the progress of public elementary schools, secondary schools and local educational agencies; and

- includes separate measurable annual objectives for continuous and substantial improvement (Public Law 107-110).

In the United States 49.8 million students attend public elementary and secondary schools and 5.8 million attend private schools (Digest of Educational Statistics, 2009). Taking into account the number of students that are going through the school system educators have a duty to help make these students responsible productive citizens as they graduate and go into society.

Effective teachers utilize whatever tools they have in a classroom to help make academic gains for students. However, for teacher effectiveness teachers must be provided with the essential tools to help aid in academic success of their students. A teacher can be placed in a classroom and be required to teach, however, without the proper tools and training, ineficiancy may become a serious problem. As reported by Marzano (2003) effective schools have a substantial impact on student academic achievement. An example provided: Given a test in the effective school 72.4 percent of the students would pass as compared to 27.6 percent of the students at the noneffective school. Providing professional development training will allow the teacher to grow and excel in ones teaching abilities. When a school is provided with new technology as is the case for the growing demand to keep up with society, a teacher must also be supplied with the knowledge and skills to implement the new technology in a way that learning can occur. In this effort teachers can aspire students to achieve at a higher rate and attain academic success not only for the moment but to be educated lifelong learners.

The Digest of Educational Statics (2009) reported by 2005 almost every school in the United States had computer technology access to the Internet with 94% as comapared

to 51% in 1998. An increase in computers occurred between 1998 from 90 instructional

computers to 154 in 2005.   From 2005 to the current year of 2011 nearly every

classroom is provided with technology and access to the Internet.

President Barack Obama and his administration developed a blueprint for

educational reform to make significant changes in four areas of the American Recovery

and Reinvestment Act of 2009. These four areas as reported by A Blueprint for Reform:

The Reauthorization of the Elementary and Secondary Education Act (2010) are as

follows:

- Improving teacher and principal effectiveness;

- Providing information to families to help them evaluate and improve their
  children's schools;

- Implementing college- and career-ready standards; and

- Improving student learning and achievement in America's lowest-performing
  schools by providing intensive support and effective interventions.

The blueprint was developed to bring about change and reform in schools to

provide for academic achievement and success among students. An alarming number of

students do not make it to graduation day. Implementing a plan will give students the

extra support needed for high school graduation and continue on to college level

education (A Blueprint for Reform: The Reauthorization of the Elementary and

Secondary Education Act, 2010).

The State of South Carolina: State Education Data Profiles (2007) for fourth grade

statistics in reading reports fourth graders have a scale score of 214 as compared to the

US average of 220. Scaled score refers to a statistical number based on the item response

theory (IRT). The IRT provides test exercises similar in nature that measures or summarizes student performance. Students that scored above basic were 59% of fourth graders in reading as compared to US average of 66%. The term basic demonstrates students have achieved partial mastery of prerequisite skills necessary for prerequisite work in a specific grade. Students scored 26% as being proficient in reading as compared to the US average of 32% and 5% scored above advanced as compared to 7% of the US average in reading (State Education Data Profiles, 2007).

Statement of the Problem

There is a gap in the research literature regarding to what extent the effect of technology of Classworks software has on increasing reading achievement among fourth grade elementary school students. It is not known what extent Classworks technology has on fourth grade students in reading. With the need for compliance with No Child Left Behind 2001 mandates, it is imperative to bridge the gap with student reading achievement specifically focusing on students who are in the "at risk" category (Bernhardt, 2003).

At-risk students are in need of provisional or ongoing instruction to best meet students' needs to be successful in school. Providing students with technology that is enriched with meaningful skills is a growing demand of today's society and is imperative to students' future in the twenty first century (Classworks Research: A Research-Proven Solution, 2008). Discovering educational programs with sound evidence to academic gains can provide schools with more tools to help students at risk or academically challenged to increase their growing knowledge and ability to learn.

Purpose of the Study

The purpose of this quantitative quasi-experimental study is to test the theoretical perspective that relates Classworks technology to reading achievement of fourth grade students to determine if a significant difference exists in student reading achievement between the supplemental uses of Classworks software reading program and that of the standard classroom instruction. This study compares Classworks software intervention to standard instruction, controlling for similar demographics to a group of fourth grade students in one school to a group of fourth grade students in another school in two small rural school districts in South Carolina. The independent variable of providing Classworks instruction will be generally defined as an intervention that will be provided to one group of fourth grade students in addition to the students reading program. The dependent variable will be generally defined as standard classroom reading instruction without the supplement of the Classworks program. The control and intervening variables will be between two schools with the same demographics of free and reduce lunch status and ethnicity, will be statistically controlled in the study.

For the purpose of this research the Measure of Academic Progress (MAP) assessment scores will be utilized to examine academic gains over a period of one academic calendar year as compared to a similar school district with the same demographics to determine academic gains or losses. The MAP assessments is used in school districts throughout the state of South Carolina to provide educators with benchmark scores to determine how students perform with state aligned standards.

Rationale

This study is important to provide information regarding the impact of reading instruction with an intervention or tool that can help raise the reading achievement in public education for fourth grade students. Integrating Classworks software is a monetary investment (Classworks Research A Research-Proven Solution, 2008). School districts funding these types of programs want student achievement on state assessments to excel as a result of investment into the technology software. The topic is worthy to be investigated because it may determine what academic gains are made through the use of Classworks technology software as an intervention or supplement to reading instruction within a classroom as compared to standard reading instruction. The program can then be a tool to be used in schools that have low test scores to bring about change and higher scores.

The theoretical framework for Classworks is broken up into four areas; Classworks instructional design, research-based design and best practices, rigor/relevance with Classworks, and cognitive complexity. In addition, Classworks theoretical framework provides an instructional model with each phase of Response to Intervention (RtI) addressed by combining instruction and assessment with a rich curriculum designed to individually target each student's needs (RtI Overview, 2012). The instructional design or framework of Classworks is based on elements of effective instruction from the Madeline Hunter Model, Gagne which provided basic instruction, and Keller who provided motivational strategies integrated with technology to set the foundation for the instructional design of Classworks (Classworks Research: A Research-Proven Solution, 2008). These are just a few people who have helped to lay the groundwork for the

learning process in education. Using knowledge from these theorist provided knowledge

and a basis for the Classworks program.

In addition, Classworks can be used with special education students with an

Individualized Education Plan (IEP). In a study special education students made a 7%

improvement in first grade reading as reported by Classworks Research: A Research-

Proven Solution, 2008. These students spent 20 minutes per day with a curriculum

director before and after school.

School districts are provided with technology monies that are spent toward

funding educational technology programs. Researching effective software programs that

work in providing academic gains in student growth is what school districts are

maintaining to achieve. As compared to the United States, South Carolina ranks 26th in

Technology access with instructional computers being at 4.0 as compared to 3.8

nationally (SC Students: Access to Technology, 2005).

Research Questions and Hypotheses

The following research question will be represented and explored through this

study:

R_1: Is there a significant difference in the mean pretest scores between the student

achievement scores for fourth grade students who use the supplemental Classworks

software program and the mean scores for fourth grade students who do not use the

supplemental Classworks software program as measured by pre and posttest reading

achievement MAP scores over a period of one academic school year?

H_0: There is no significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program.

H_1: There is a significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program.

R_2: Is there a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program as measured by pre and posttest reading achievement MAP scores over a period of one academic school year.

H_0: There is no significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program.

H_2: There is a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program.

R_3: There is a significant difference in the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

H_0: There is no significant difference between the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

H_3: There is a significant difference between the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

Significance of the Study

This study examines the growth of student achievement before and after Classworks program has been implemented in the specific schools for the fourth grade population for the period of one academic school year in a rural school district in South Carolina. The information obtained in this study may help administrators and teachers in implementing new programs and develop new curricula to promote academic success and growth in reading. School districts spend millions of dollars each year on technology. Researching to find effective programs to significantly improve student achievement is on the rise (Means, 2010).

As reported by Digest of Educational Statistics (2009) fourth through eighth graders had a varied proficiency of reading in public schools. For fourth graders the United States average was 220 with other jurisdictions ranging from 197-236. As noted, the United States had a higher average of reading students at 220.

Special attention to the expectations of NCLB 2001 addresses the emphasis on student growth and achievement. However, it is left up to the school districts to find the best practices to use to increase achievement to meet the legislation signed into effect by the former President Bush to help the schools make adequate yearly progress (Darling-Hammond, 2007). Holding public schools accountable has been controversial for four decades now (Bartlett et al, 2007).

Definition of Terms

The defining key terms are used in the parameters of the study and are as follows:

At risk: The term at risk refers to those students whom are targeted due to needing temporary or ongoing intervention to help them be successful in school and/or to graduate from high school that may be lacking carnage units (The National At-Risk Education Network, 2011).

Adaptive Test: Test items are drawn from a pool of test questions and matches item difficulty of the student (Kingsbury and Hauser, 2004).

Adequate Yearly Progress: States are required to test students and report progress which is measured in a percentage known as AYP (Lagana-Riordan and Aguilar, 2009).

Classworks: Provide teachers with instructional units of skills that spiral throughout the curriculum. In addition, the program includes over 1,000 units distributed among nine instructional sequences in English Language Arts and Nine in Mathematic for grades Kindergarten through eighth grade (Classworks Research A Research-Proven Solution, 2008).

Fixed Form Assessment: A single test form designed to be administered to all students in a particular grade (Kingsbury and Hauser, 2004).

Intervention/Remediation: Provide assistance to students who need extra help by using proven effective strategies and practices to help students who are unable to succeed in the regular education environment (Bartlett, Etscheidt, and Weisenstein, 2007).

Learning curve: The amount of growth over time that a student has shown when working toward a specific skill (Creswell, 2008).

Measures of Academic Progress: Benchmark assessment test given in school districts as a means to monitor progress throughout the school year for state standards.

Paradigm Assessments: An assessment which contains particular questions all based on a particular grade level being administered (Kingsbury and Hauser, 2004).

Posttest: A form of an assessment that is utilized after a treatment or intervention has been implemented in an experiment (Creswell, 2008).

Pretest: A form of an assessment that is given to the participants in an experiment before treatment or intervention is given (Creswell, 2008).

Progress Monitoring: Is used to assess student success of academic performance and keep an ongoing record of progress made over a period of time that is scientifically based (What is Progress Monitoring, 2010).

Response to Intervention: The process of implementing high quality instructional programs to make decisions for the school in placement of a student (Bartlett et al, 2007).

Assumptions

The assumptions in this study are:

1.   All ability levels will be proportionately represented.

2.   Student data collection will be taken from all social economic

backgrounds of low, middle, and upper class families.

3.   Data collection procedures of achievement test data will accurately

represent reading achievement of the participants in the study.

4.   All fourth grade teachers in the experimental group will provide

Classworks practice to students 2-3 times per week.

Limitations

The following limitations were present in this study:

1.   The participants will be selected and represented from only two small

rural school districts in South Carolina. Therefore, the results from

this study may not be generalizable to urban and suburban school

districts.

2.   Scores from one year of achievement will be utilized. A small sample of

scores from one year limits the generalizability of the study.

3.   The study limits itself to fourth grade students; thus, the findings from this

study may not apply to other grade levels.

5.   The research questions do not measure the perceptions of teachers using

Classworks.

Nature of the Study

There is a gap in the research literature regarding to what extent the effect of

technology of Classworks software has on increasing reading achievement among fourth

grade elementary school students. Progress may be made and the impact of the program will be measured through the use of the state wide achievement test.

The study will use a quantitative research methodology in order to gain data to determine gains or losses made in the nature of the study by students who will be exposed to the Classworks Program and those students who will not be given Classworks. The study will use the quasi-experimental design by utilizing an experimental group using the supplemental Classworks program and a control group that will not have access to the Classworks program. The program will be used in a different school from the control group; therefore, the control group will not miss the Classworks program.

Data to test the hypotheses will be reviewed by compiling quantifiable data numbers from the Measures of Academic Progress Assessment which is the districts benchmark assessment test in South Carolina.   The score reports will provide objective data that is measurable and observable to be used. The data will be analyzed from fourth grade students in the area of reading in the study.

Organization of the Remainder of the Study

This study is organized into five chapters. Chapter one presents the overall introduction and background for the purpose of the study. In addition, chapter one provides the problem, purpose, rationale, research questions and significance of the study.

The remainder of this study is organized into four chapters. The first main heading focuses on the foundation of Classworks and how it is used along with the Measures of Academic Progress assessment (MAP). Next, the second main heading is

the importance of computer technology with a subheading of types of technology, how technology has been used in relationship to reading, amount of time spent with programs, perspectives on technology, Technological Literacy, and shortcoming. Then, the third main heading is teaching strategies with a subheading of Response to Intervention (RtI), and Classworks as a tool for intervention. Finally, the last part of the literature review provides information related to No Child Left Behind 2001 (NCLB) with a subheading of mandates that have branched off from NCLB 2001 and professional development opportunities.

Chapter 3 provides an insight into the methodology. The methodology for this research design employs the use of the quantitative method by using the experimental design to test the reading achievement of fourth grade students. The pretest/posttest model uses a year's worth of intervention between the pre- and posttest. For the purposes of the pre- and posttest the Measures of Academic Progress scores will be utilized.

Chapter 4 analyzes the quantitative data of the sample size of fourth grade students in the selected schools in South Carolina. The data source of test scores pulls from the school districts data base and reviewed for this study by the researcher. Next, a t-test is used to determine if a significant difference occurs with the Map scores. Upon compiling the data and reviewing the pre- and posttest from the assessment scores the data is analyzed from the t-test to determine if the Classworks technology has an effect on the reading achievement among fourth grade students, which in turn helps to meet the demands of NCLB 2001.

Finally, chapter 5 presents the data results for Classworks. In addition, this chapter presents conclusions and recommendations for future studies utilizing Classworks.

CHAPTER 2. LITERATURE REVIEW

Introduction

Why should teachers use research base programs within a classroom? Answers may vary depending on one's background and in depth knowledge of educational materials. Morzano (2003) introduces the ideas of what works in schools by providing a viable curriculum, having challenging goals and effective feedback, having parent and community involvement, providing a safe learning environment, and portraying professionalism.

In order to make gains and grow with today's society educational reform is necessary and one that the U.S Government is interested in for the education of America. As reported by Slavin (2003), "The Comprehensive School Reform Demonstration Legislation of 1997 gives grants to schools to adopt "proven, comprehensive" reform designs" (p.12). To be" proven" in education means to be scientifically research based to work in education to provide students with learning success that has been shown to be effect through research. Every student can exhibit some type of learning success and in different ways as students all do not learn by the same approach.

Studies have addressed the use of research-base programs and the importance there of within the classroom structure. Although much research has been done, little has been conducted on fourth grade students in reading using the technology of the Classworks program.

The literature review covers five main topics. The first main topic focuses on the theoretical framework of Classworks and goes into the second topic of the foundation for

what Classworks is and how it is used along with the Measures of Academic Progress assessment (MAP). Next, the third main topic is the importance of computer technology with a subheading of types of technology, how technology has been used in relationship to reading, amount of time spent with programs, perspectives on technology, Technological Literacy, and shortcoming. Next, the fourth main topic is teaching strategies with a subheading of Response to Intervention (RtI), and Classworks as a tool for intervention. Finally, the last part of the literature review provides information related to No Child Left Behind (NCLB) with a subheading of mandates that have branched off from NCLB and professional development opportunities.

Theoretical Framework

The theoretical framework for Classworks is broken up into four areas which are: Classworks instructional design, research-based design and best practices, rigor/relevance with Classworks, and cognitive complexity. The instructional design or framework of Classworks is based on elements of effective instruction from the Madeline Hunter Model, Gagne which provided basic instruction, and Keller who provided motivational strategies integrated with technology to set the foundation for the instructional design of Classworks. As reported by Cawelti (2003) Madeline Hunter taught thousands of teachers and administrators principles of how to focus students' attention to learn a new lesson through anticipatory activities.   Cawelti (2003) reports that a few individuals have been able to produce the huge impact Hunter did with effective teacher design. Lawson (1974) reports the Gagne's developed a hierarchical model composed of eight areas of learning arranging from simple to complex, meaning one task depends on the learning of

the previous task. Corry (1996) defines Gagne's theory of instruction and taxonomy

similar to Bloom's in that they both believed in breaking down learning into categories or

domains. Keller (2008) has five guiding principles of motivation which are: Motivation

to learn is promoted when a learner's curiosity is aroused due to a perceived gap in

current knowledge, is promoted when the knowledge to be learned is perceived to be

meaningfully related to a learner's goals, is promoted when learners believe they can

succeed in mastering the learning task, is promoted when learners anticipate and

experience satisfying outcomes to a learning task, and is promoted and maintained when

learners employ volitional (self-regulatory) strategies to protect their intentions (p.177).

These theorists helped apply knowledge to the educational world and provided effective

instruction design and development theories.

Instructional design integrates technology into instruction with Classworks and

provides teachers with instructional units and skills to spiral through the elementary

curriculum. Educators are provided with benefits of immediate data and are used as a

powerful tool to tailor instruction for students' specific needs while students have

increased motivation and are able to work at a self-paced rate using stimulating software

to meet their individual needs (Classworks Research A Research-Proven Solution, 2008).

Incorporated into the design is the "Classworks Tiered Instructional Model" which

targets grades K-10 with instruction and assessment for each phase of Response to

Intervention (RtI) (RtI Overview, 2012). Within the tiers individualized instruction for

each student is made possible. The Classworks tiered instruction model is composed of

three levels: Tier 1: Universal: All children in the general education classroom receive

high-quality instruction and universal screening. Tier 2: Targeted: Struggling learners are provided with interventions at increasing levels of intensity to accelerate their rate of learning. Tier 3: Intensive: The lowest-performing students receive intensive, one-on-one tutoring, and ongoing analysis of progress (RtI Overview, 2012).

Research-based design and best practices address the next part of Classworks framework. Classworks units provide students with meaningful activities using research-based methods and strategies used to set the foundation and framework for tying Classworks altogether (Classworks Research A Research-Proven Solution, 2008). Classworks units are composed of mini lessons, practice activities, review activties, quizzes, projects, and reports. As reported by Classworks Research A Research-Proven Solution (2008) Standards from the National Council of Teachers of Mathematics, National Council of Teachers of English, International Reading Association and the National Assessement of Educational Progress were used in building the scope and sequence and organizing Classworks instruction (p. 22). In addition, The National Reading Panel's Report was used for validation and aligning the instructional materials for Classworks. Classworks proven practices are evidenced by research intigrated into the instructional delivery, these are; effective instructional design, which is similar to Hunter's lesson design, differentiation capabilities of providing many approaches to different skills and concepts, cognitive complexity of using higher-order thinking by students, high curricular standards aligned by the state, and frequent reporting and monitoring of student progress and feedback from the units learned while using Classworks (Classworks Research A Research-Proven Solution, 2008).

Rigor/Relevance is the next part to the framework of Classworks and is based on two approaches which are Bloom's Taxonomy coupled with "how knowledge is applied or put to use" (Classworks Research A Research-Proven Solution, 2008). Classworks rigor and relevance supports higher order thinking skills as outlined in Bloom's Taxonomy. The units taught are designed to go from simple knowledge of the student to skills that are more complex for the learner. Slavin (2003) reports focusing on rigorously evaluated programs will help to provide educators with confidence that a new program will produce higher student achievement and pay off in the end. Krathwohl (2002) reports knowledge and cognitive processes are represented as a two-dimensional framework for Bloom's Taxonomy. Using the table designed in Bloom's Taxonomy the teacher can examine relative emphasis, curriculum alignment, and missed educational oportunities (Krathwohl, 2002).

Cognitive complexity is the last part of the framework of Classworks which involves thinking on a deeper level. Cognitive complexity builds on information previously learned and takes the learning process to a new level of allowing the student to use critical and creative thinking to problem solve and look for new ways to approach learning to make it meaningful (Classworks Research A Research-Proven Solution,2008). Halawi, McCarthy, and Pires (2009) outlines Bloom's Taxonomy has long been the choice of educators in developing innovated courses, lessons, and objectives.

The purpose of this quantitative quasi-experimental study is to test the theoretical perspective that relates Classworks technology to reading achievement of fourth grade students. This is to determine if a significant difference exists between the supplemental uses of Classworks software reading program by providing intervention in addition to the

average classroom instruction and that of standard classroom reading instruction within the realm of a regular fourth grade classroom. The study compares Classworks software intervention to standard instruction, controlling for similar demographics to a group of fourth grade students in one school to a group of fourth grade students in another school in two small rural school districts in South Carolina.

The independent variable of providing Classworks instruction will be generally defined as an intervention or treatment that will be provided to one group of fourth grade students in addition to their reading program. The dependent variable will be generally defined as standard classroom reading instruction without the supplement of the Classworks program. The control and intervening variables will be between two schools with the same demographics of free and reduce lunch status and ethnicity, will be statistically controlled in the study.

Furthermore, the research could help school districts in making decisions about providing extra support to teachers by providing them with a computer based supplemental program. Classworks has an instructional design targeted to meet the demand of technology in the classroom to provide students with meaningful learning experiences (Classworks Research A Research-Proven Solution, 2008). Classworks, reports sound instructional design and best practices in education are the basis for Classworks. Classworks provides not only students with learning benefits but educators as well by providing standards based instruction, whole class instruction, remediation, and intervention to name a few (Classworks Research A Research-Proven Solution, 2008).

Classworks

Classworks provides individualized targeted instruction in a research-based format with a customized prescription of standards based instruction to meet the individualized needs of each student. The program provides a library of software products which offers integrated support of a sequence of activities. Over 150 different software programs are pulled together to make up the software including award winning titles like Knowledge Adventure, Jumpstart Learning, ESL focus and many more. Classworks is a software web-based program that is utilized by students through the use of computers. Classworks is integrated in the areas of English/Language Arts, Reading, Math, and Science and is aligned with state standards (Millikin, 2008).

The program utilizes and integrates 180 software programs within its frame work of learning materials and houses over 9,000 research-based activities (Research-Based Design and Best Practices, 2008). The program is colorful and eye catching with a quick-pace approach to learning resulting in the engagement of program activities to be high among students (Millikin, 2008). The alignments of Classworks interactive software as reported by Nicholas (2003) took into consideration the National Council of Teachers of English (NCTE), International Reading Association (IRA), and the National Reading Panel (NRP) when determining the national standards and looking at program efficacy.

Classworks program begins each student with a mini lesson of a specific targeted skill with instructional activities to aid in the learning process that is interactive and fun to gain student attention. The program's instructional design is such that the software is set up to take the students through learning cycles of mini-lessons to teach specific skills

or concepts. The core concept of the mini lessons is to learn, apply, and review the skills (Research-Based Design and Best Practices, 2008). Teachers also have the ability to use the Classworks program to review specific targeted skills if the class as a whole is struggling in a specific area through the use of the Promethean board to project the program to the entirety of the class at any given time. With this capability the teacher can use the program as a means of remediation in a specific area if the class is struggling with an area or unit.

Next, a formative assessment on the units which is a 10 question quick quiz is provided to dertermine mastery of skill. The students must reach mastery for a particular mini-lesson taught or the program will take the student through remediation by implementing additional activities to practice that skill. After remediation activities another 10 question quiz is delivered (Classworks Research A Research-Proven Solution, 2008).

Another aspect of the program is the ability to have projects as an extention to the learning process that are real world based application the students can choose to do. These projects are standards based to give the students an extention to the units taught. Teachers have the ability to turn the projects on or off to save on time in the computer labs if warrented (Classworks Research A Research-Proven Solution, 2008).

Classworks is aligned with state standards targeting individual needs of students to best help students to have successful scores on the state standardized testing. Classworks is set up with four key elements and are (a) screening/assessment, (b) instruction, (c) implementation, and (d) progress monitoring (Classworks Research A

Research-Proven Solution, 2008). These four elements are essential to the programs compents and inplementation.

Providing students with Classworks instructional software gives the teachers an opportunity to have immediate feedback to assist in the instructional process and learning. The program provides reports for the teacher with results of units passed and the units students did not pass or meet mastery level on. When provided with immediate data the teacher can analyze and make informative decisions about instruction and know what areas are weaknesses and strengths not only for one student but for the class as a whole. This is a resource of guiding instruction to meet the needs of the students for growth to occur.

Measures of Academic Progress

The Measures of Academic Progress (MAP) is a computerized adaptive test developed by Northwest Evaluation Association (NWEA). MAP is a tool that is utilized for a classroom, entire school, or district wide to see the progress of students, classes, or schools to determine if progresses toward state standards are being met. MAP is aligned with state standards and provides detailed data reports for each individual student, classroom, or school district. This in turn allows the teacher to be able to see student's weak areas and focus on those areas for helping the student make progress for his/her grade level.

MAP is based on the premise that one size does not fit all. By encompassing this idea the assessment program tailors its questions to the individual student and will go up or down in level depending on how the student answers the questions. Kingsbury and

Hauser (2004) makes reference, for the past decade testing was conducted as a single paradigm as students in a particular grade were given the same test for the particular grade level the student was in. These assessments had a "fixed form" paradigm as each student was administered the same assessement (Kingsbury and Hauser, 2004). Over the past decade a new way of assessing has come to the forfront and is proving to be successful in military and professional certification and has now made its way into the K-12 educational programs. This paradigm is called "adaptive-testing" in that students have the ability to take the assessment and the questions adjust to the student in difficulty making the student become less frustrated with a test they are taking (Kingsbury and Hauser, 2004). As the MAP assessment continues the next question the student will answer depends on how the student answered the previous question. The questions self adujust to the student for the level they are at.

MAP will also help to make a prediction of how the student will do on the end of the year state standardized mandated assessments. MAP is aligned with state standards to provide a good overview of questions to determine if the student is ready for the state assessment. As reported by the Northwest Evaluation Association (NWEA) Media Fact Page (n.d.) more than 4 million students take the assessment each school year and an alarming number of 20 million students have taken the assessment since the program was introduced back in 1977. Schools districts have the ability to test their schools up to 4 times a year if need be in reading, math, language, general science and science concepts, and reading and mathematics in primary grades (Kindergarten-second grade) (NWEA Media Fact Page, n.d.) to allow for ongoing and continued progress monitoring of students.

MAP measures the students progress and growth through out a school year as evidence by a spring, winter, and fall assessment. The assessment provides a powerful tool for teachers as the test indicates areas the student needs help with and what skill areas a student stuggles with. The teacher can analyze the data of the assessment and tailor those skills as a means to guide instruction in the classroom (NWEA Media Fact Page, n.d.). The scores for MAP are presented by a RIT score which stands for item response theory methodology. The RIT score is designed to measure the growth a student makes over time (Kingsbury and Hauser, 2004).

Bernhardt (2003) reports the importance of providing data in schools. Schools can get a picture of the learning of students and performance of the school by analyzing specific data. Two questions are important "What data should be analyzed to help the school improve?" And "What data can be used other than the standardized test?"

Data from the Classworks program and from Map assessment provides progress monitoring data that can be analyzed to determine how a strudent is doing over time. This also helps to get a snap shot view on how the classroom is perfoming along with the school. The data allows for student growth to be tracked over a period of a year with the data from a particular grade and also keeps the data for the student every year the assessment has been taken. The data helps teachers to access to see what kinds of gains the students have made from year to year (NWEA Media Fact Page, n.d.).

History of Computer Assisted Instruction in Reading with Pros/Cons

Providing technology within the realm of classroom instruction can aid in the success of students learning to read. In a study conducted by Wild (2009), the use of

computer-aided instruction, to support systematic practice of phonological skills in beginning readers indicated a significant learning curve. The success occurred for students participating in the computer-aided instruction verses the non-traditional method of paper and pencil.

In an effort to address the need to help struggling readers Macaruso and Rodman (2009) looks at the benefits of computer-assisted instruction. The study concluded that using the computer-assisted instruction in phonics and word identification skills proved to have higher gains in student reading achievement than the control group.

A lack of knowledge and professional development of a teacher can limit the amount of technology used within a classroom. When using technology software in a classroom it is important the software provides immediate feedback and has some type of progress monitoring. The progress monitoring will give the teacher feedback as well as the students to know if they are making progress with the skill being addressed (Lovell and Phillips, 2009).

Computer Technology

Barone and Wright (2008) conducts a study with fourth grade students to determine if using laptops in the curriculum will make a difference in student outcome and performance.   Within the framework of the study the teacher used a one-on-one approach to computer technology in the classroom. Each student checked out a personal laptop for school and home use. As reported by Barone and Wright (2008) in Todd Wright's words,

What makes today's kids really sit up and fire their neural fibers?
Technology. Kids don't see laptops, MP3 players, cell phones, PDAs,
DVD players, and video games as technology, it's just life. Schools need
to connect education to their students' lives with technology. (Barone
and Wright, 2008, p.298)

The study discussed took more planning time to meet the differentiated needs of
all the students. However, technology provides students with vast learning opportunities
and passing scores for meeting AYP for the school. It was reported by Barone and
Wright (2008) that 72% met or exceeded the benchmark criteria for English Language
Arts. These modalities of different tools provide a rich environment for the learning
process.

Maninger (2006) conducts a study to determine if using a technology enriched
program will make a difference in the outcome of end of the year test scores for at-risk
students. Providing classrooms with the use of technology gets the students minds
churning in the process of being actively involved. An important point from the article
was students in a technology enriched environment were motivated by the use of
technology as it stimulated them to achieve more success and make greater gains on the
end of the year tests (Maninger, 2006).

Silvernail and Gritter (2007) conduct a study to provide technology through the
use of laptops to each student and teacher along with technical assistance and
professional development of how to implement the technology into the core curriculum.
Writing scores were examined twice, once in 2000 before implementation and again in
2005 after implementation. Results from the study indicated writing scores were 3.44

points higher in 2005 than 2000. Thus, the use of laptops had a positive effect on student writing outcomes. In addition, Gulek and Demirtas (2005) looked at the use of laptops and student achievement and technology had a substantial impact on student achievement.

In another study illustrated by Suhr, Hernandez, Grimes, and Warschauer (2010) technology was utilized in a similar way by providing computers to every student and after two years of use students with laptops outperformed students that did not have laptops within the same school district on the ELA total score and on two sequential subtests.   In the study technology was conducted as a means to improve literacy instruction in the United States for fourth grade students. This study suggested by the time a student gets to fourth grade a "fourth grade slump" is approached and the progress of reading development starts to slow down.   As reported by Suhr et al, (2010) through the use of digital technology academic reading achievement can be enhanced.

The Texas legislature created what is called Technology Immersion Pilot (TIP) as a means to "immerse" a school and students in technology. The Texas Center for Educational Research (2008) conducts a study with technology immersion. By immersing a school in technology wireless mobile computing devices, training, and support for the technology was provided. The results of this study suggested that students immersed in technology had a significantly positive effect with the technology immersion for economically advantaged and disadvantaged students.

These research studies provided evidence to support the use of technology with computers within the educational environment. Technology provides students and teachers with the means to have technology within the grasps of their fingertips which

helps in making long lasting connections in education. Academic gains and growth will help failing schools to meet AYP and to make the necessary growth needed for success within a school district.

How Technology has been used in Relationship to Improving Reading

Venders of software programs provide data related to a specific program. Teachers can access the data and make informed decisions on different lessons to integrate within a classroom. The data can provide information related to an individual student or an entire class as a means of progress monitoring. These data reports will allow for an inside look on which skills have been mastered or skills that may need extra assistance (Means, 2010).

Amount of Time Spent with Programs

Hall (2010) discusses the effect of using technology. Technology may be presented to schools but does not mean it will be implemented effectively or even any at all. Teachers vary in the interest applied to learning technology related to personal preference. Technology as suggested by Hall (2010) needs to be amped up and have a widespread use. Classrooms today are presented with many types and forms of technology that is available to them. How effective the teacher is and trained to use technology will determine how it is implemented to the students. A gap is presented in comparison to students using technology in the classroom verses technology outside the classroom (Hall, 2010).

Hall (2010) reports four important questions to ask about the implementation of technology. The questions are as follows:

1. Is it being used?

2. How well is it being used?

3. What factors are affecting its use/nonuse?

4. What are the outcomes?

Providing these questions will help one to analyze the technology in the classroom. Teachers vary in their ability to dive into the new technology as some may delay the start.

As reported in the study conducted by Means (2010) classroom management appeared to be an issue. Teachers concentrated on classroom management that was considered necessary to be addressed as students were required to be trained in how to log onto and off of the software within a certain time frame. By devoting time to show students how to accomplish this skill instructional time would not be lost and the class would run more smoothly.

A well-managed classroom provides an environment where learning can take place. A teacher with poor classroom management skills will have chaos and learning will not flourish. A teacher is the single most important access of a classroom and how the curriculum will be presented to the students (Marzano, Marzano, and Pickering, 2003). By providing a classroom conducive to learning the students will contribute more as students are in a positive environment that fosters learning.

Perspectives on Technology and Educational Change

How technology is implemented and presented can produce academic gains in students and is a lever for educational change (Means, 2010). A statement from Hall

(2010), states, "Regardless of the potential power of a technology, until it is used and used well, the promised outcomes will not be attained." In order to achieve educational change with technology programs have to be utilized the correct way so that learning occurs.

Means (2010) points out some vendors of technology will issue a motivational support for software programs as a way of getting teachers and students involved. Examples of the motivational system can be charting progress and giving out certificates for modules completed. Learning new software skills takes time and training to be able to deliver to the students properly to see educational change of growth of new skills.

Types of Technology

Types of technology teacher's use in the classroom range from laptops, computer software, to hand held devices that are used to actively engage students in the learning process. The International Technology Education Association (ITEA) (2002) reports technology refers to products of human invention. Technology is growing with each day and in many new ways. Teachers use technology to show video clips for a lesson through United Streaming, use flip charts on a promethean board to engage students in a hands on skills, to using hand held devices to spell words for struggling students. Technology comes in many different forms and engages students to want to actively participate in the learning process.

A master teacher pulls out many different forms of teaching to aid in the differentiated learning of each student (Carolan and Quinn, 2007). Differentiated teaching provides many options and modalities of learning styles to meet the individual

need of the learner. Carolan and Quinn (2007) comment to "match teaching to the needs of the learner" (p. 44) will better meet the diverse population of students and help them apply skills to class work. By providing many different opportunities to students and having high expectations will help the students to thrive within a classroom and meet a higher standard. As reported by Leary (2010), In order to be competitive in the world, students must have access to technology. Integrating technology in the classroom can be exciting and interesting to the students as well as the teacher by finding new and interesting ways of teaching as to not be stuck in the traditional way of chalk and chalkboard. Students quickly get bored with the traditional chalkboard and need to be ingaged in other ways for learning to occur.

Technological Literacy and its Impact on Student Learning

International Technology Education Association (ITEA, 2002) defines technological literacy as the "ability to use, manage, assess, and understand technology" (p. 9) used in society. Technology over time will shape society. A person who is technologically literate will not be afraid of technology but comfortable with it and ready to use it when the need arrises providing a pathway into the growing demands of society in the country in which one lives.

The ITEA developed standards for Technological Literacy in that all students in grades K-12 have the same outcomes or objectives to achieve Technological Literacy as a catalyst for educational reform (ITEA, 2002). Brown and Brown (2010) reinterates that Technology Literacy is what students know and should be able to know through the standards set forth by the ITEA of being able to use and understand technology.

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International Technology Education Association organized technology standards into five major categories. The first one is the Nature of Technology in that a student acquires knowledge of technology through making connections between it and other fields. Second, is Technology and Society as the student understands the effect of tchenology on the environment and in history. Third, is the attributes of Design as students develop an understanding of the role of research and development along with invention and innovation. Fourth, is Abilities for a Technological World as the student becomes able to apply the design process. Last, The Designed World students will be able to take major technologies that are common today and use them (ITEA, 2002).

Shortcomings, Inconsistencies, and Knowledge Gaps

Shortcoming of technology can come in many forms from teacher buy in to computers that can be accessed at a given school. Programs are reviewed based upon research effectiveness, usability, teacher interaction, and cost effectiveness. It is a given that not all programs will work for every school and or student. It is essential to look at the benefits of software programs and weigh options and effectiveness of student outcomes.

Dynarski et al. (2007) develops a study on the effects of software products on reading and math. For the purposes of this paper attention will be given to the reading portion of the test for fourth grade students. Four software reading programs were implemented by 9 districts and 48 schools. The programs reviewed were Leapfrog, Reading 180, Academy of Reading, and Knowledge Box. The fourth grade reading products did not affect test scores and were used at an average of 10 percent of the

students reading time during a given year. Thus, the amounts did not have an effect statistically different from zero. Effects were higher for a particular program when the teacher reported higher use of the program (Dynarski et al., 2007).

Technology implementation review conducted by Means (2010) was a way to determine learning gains associated with technology. In this study reading and math software was observed along with teacher observations and interviews. Students using software with above average achievement gains was reviewed as well as students using software with below average achievement gains. The challenges of the software rooted itself in the area of instructional coherence and competition for instructional time. Means (2010) discussed in order for teachers to provide extra time to use technology as a form of educational change, for gains, the teacher must first know of the learning outcomes associated with a particular software program.

As suggested by Means (2010) the teacher will integrate technology more so when it is proven that a "payoff" of significant gains will be made through the use of the software. Therefore, if the teacher is not properly trained in the software on how to utilize it in the classroom then program benefits are not received by the students.

Teaching Strategies

Using research based teaching strategies that have been proven scientifically to work with at risk students allow for a greater growth area with struggling students. The National At-Risk Education Network (2011) best describe students at risk by the following statement:

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Students are placed at-risk when they experience a significant

mismatch between their circumstances and needs, and the capacity or

willingness of the school to accept, accommodate, and respond to them

in a manner that supports and enables their maximum social, emotional

and intellectual growth and development. (The National At-Risk

Education Network, 2011, para 5)

Maninger (2006) conducts a study of providing an environment to students rich in

technology. Through the use of a technology rich environment student test scores on a

state mandated test improved in an English Literature Course. Maninger (2006)

concluded that 90% of the students passed the state reading test as compared to 87% in

the comparison group by immersing the students in a technology rich environment.

Smith and Okolo (2010) describe using graphic organizers to be sound within the

research. Graphic organizers provide students with the ability to organize information on

any topic of choice into an easy visual map to utilize in a specific class. By using the

technology that is readily available to all students via programs on the Internet students

can make connections through graphic organizers or concept mapping to help students to

organize information. Smith and Okolo (2010) report the programs being that of

Inspiration, Kidspiration, Webspiration, and Free Mind. By organizing this information

it helps kids to better be able to recall it for later use.

Marzano (2003) points out the importance of motivation. Students who are

motivated to learn in some way will have a higher success rate in a particular content

area; as compared to that of a student who is not motivated to learn a certain content area

or subject as the students achievement will be limited. Marzano (2003) suggests students

who are success oriented are more motivated by challenges verses the student who is "failure avoidant" as the student is scared of the negative impacts that may occur.

Response to Intervention

RtI is used as a means to bridge the gap for identifying students with learning disabilities to substitute or supplement along with the IQ achievement discrepancy test (Fuchs and Fuchs, 2001). As outlined by Basham, Israel, Graden, Poth, and Winston (2010) 43 states have RtI practices written into state rules, and over 60% of school districts use some level of RtI implementation within its framework of classifying students. If a classroom is not meeting 80% of its grade level standards then instructional supports must be sought by implementing best practices in instruction (Millikin, 2008).

As reported by the National Center of Response to Intervention, Response to intervention integrates assessment and intervention within a multi-level prevention system to maximize student achievement and to reduce behavioral problems. With RtI, schools use data to identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student's responsiveness, and identify students with learning disabilities or other disabilities (Essential Components of RtI-A Closer Look at Response to Intervention, 2010).

One way to describe RtI is through a three or four step process depending on the state called tiers or levels for service delivery of interventions. Fuchs and Fuchs (2001) describe a four step process of tiers. Step 1: Screening which is the responsibility of the general education teacher. Step 2a, 2b: Implementing and monitoring responsiveness to

classroom instruction which is the responsibility of the general education teacher in a classroom. Step 3, 3b: Implementing and monitoring responsiveness to a supplementary, diagnostic instructional trial is the responsibility of both the general and special education teachers. Step 4: Designation of learning disabled and special education placement is the responsibility of the general and special education teachers along with a team decision. Classworks program from Curriculum Advantage as reported by Classworks Research A Research-Proven Solution (2008) offers RtI in a multi-tiered program of assessment from tier 1 to tier IV.

During tier 1 instruction provides to the entire group of students with evidenced based reading instruction as reported by Gersten, Compton, Connor, Dimino, Santoro, Linan-Thompson, and Tilly (2008). Using researched based practices can help to provide students with stronger teaching experiences to promote learning in reading. During tier 2 instructional lessons provide students who show problems related to on-one tutoring session is set up for the student and progress is monitored to monitor student growth (Gersten et al., 2008). Last, in tier 4 special education placement is considered. The push for RtI comes from IDEAs 2004 reauthorization to help prevent the onset of students with low reading abilities and to help aid in the identification of students with learning difficulties which may classify them as learning disabled (Gersten et al., 2008).

As reported by the Essential Components of RtI-A Closer Look at Response to Intervention (2010) demonstrates through a relationship between making data-based decisions through screening and progress monitioring. Data-based decision making, is the center or core of RtI. All screening, progress monitoring, and multi-leveled prevention systems must stem from data-based decisions. In addition, the tiers must be

culturally responsive and evidenced based to improve student outcome of achievement and performance.

Classworks as a Tool for Response to Intervention

RtI has key components that drive a pyramid of interventions to be proactive and meet the needs of the individual student. Providing Classworks intervention will give the student a direct approach to learning struggling skills of a particular student with best practices in instruction (Millikin, 2008).

Classworks is a tool that can be used in RtI within each tier or level. In Tier 1, Classworks is used as a curricular tool for instruction. Classworks provides research-based best practices of instruction that is differentiated to meet the needs and address the individual learning of a particular student through multisensory concepts. These concepts are standards based and move the student through the process of learning starting with and introduction, guided practice, independent practice, and followed by a creation of a project (Millikin, 2008; Classworks Answering States' Calls for Instructional Technology, 2008).

Next, Classworks works as a tool for Tier 2 in that the software creates an individual learning path. The learning path is customized for the student based on responses to statewide testing or benchmark testing which is MAP for the state of South Carolina. Skills practiced are a direct response from the assessment as Classworks imports the information so the student can practice and engage in necessary skills. Skills can then be monitored by the student's teacher (Millikin, 2008; Classworks Answering States' Calls for Instructional Technology, 2008).

Classworks also can be used as a tool for student learning in Tier 3 or 4 by continuing to customize and individualize assignments of activities for a particular student. As indicated by program reports, teachers can make instructional decisions for a student and create customized design sets for a student struggling within certain areas (Millikin, 2008).

No Child Left Behind Legislation

No Child Left Behind is the principle that steered the reauthorization of the Elementary and Secondary Education Act (ESEA). The change of the Act provided for different federal rules and regulations to have all student tested and sanctions to schools with lower test scores. NCLB holds each state and South Carolina to higher accountability and measure. School districts must report accountability through adequate yearly progress (AYP) by way of a school report card. These scores must be statistically valid and reliable (Public Law 107-110, 2002). Scores are reviewed to determine if gains are being made toward NCLB. As reported by Kingsbury and Hauser (2011) test scores can be identified a few ways surrounding NCLB. The first way is to identify proficiency categories for students to meet the legislation of NCLB. The second use of the score is to identify achievement growth and finally the scores should inform instruction.

Within the framework of NCLB it is encompassed of 9 Titles and many subparts that define the legislation as a means of breaking down how and to what extent educators are to address education in America. For this research Title I and Title II are examined closely.

Title I of the NCLB is to improve the academic achievement of the disadvantaged student providing the student with a fair equal high quality education (Public Law 107-110, 2002). Title I of NCLB provides qualifying schools with funds and grants that are readily available to improve academic achievement. Title I helps schools that are in poverty and students at risk. Title I monies help to close the achievement gap by offering students more research-based programs that are enriching and can accelerate the learning process for students. Title I funding also includes that all recipients include all of the components of "balanced literacy" in the instructional program (Holcomb, 2004).

Title II of NCLB is to recruit and train high quality teachers so students have the best opportunities possible for student learning environments. By providing high quality, teacher grants are available through Title II to provide financial support to educators and training (Public Law 107-110, 2002) of professional development. Having high quality professional development activities for teachers can be funded through this Title. Teachers need special programs to offer students different and alternative ways to learn for the individual student to best meet their needs. Providing highly qualified teachers can aid in this process.

Mandates Branched off from NCLB

Mandates from NCLB are echoed across the nation. In the field of education many educators are either opposed to the legislation or for it. Regardless of the feeling for or against NCLB the legislation is upon us to adhere to and for Educators to work to achieve a 100% status by the year 2014 which is approaching faster with each giving day.

Each teacher regardless of general education or special education is held to the same accountability measures.

Legislation pushes for highly qualified teachers to be recruited in a particular core field of study like English Language Arts, math, science, or social studies. Hiring highly qualified teachers is imperative in raising student achievement within the school system. Darling-Hammond (2007) reports how critical the influence of teacher quality is on education and student achievement. Teachers must be held accountable for student achievement on high stakes testing. NCLBs debate is to raise achievement and standards of excellence in schools and excel with the number of high school seniors graduating with diplomas.

Before NCLB was introduced the earlier reauthorization of Elementary and Secondary Education Act required each state to have high standards and required one major assessment for each elementary grade, middle grade, and high school grade (Holcomb, 2004). Holcomb describes accountability systems of setting goals with change in mind occurs in a school "through authentic, local participation in expressing concerns, setting priorities, and identifying targets for accomplishment" (2004, p.144). Setting clear goals and targeting those goals with set priorities will provide improvement for all and a positive way of reaching NCLB.

Professional Development

Danielson and McGreal (2000) best state professional development in the following way, "Professional development should draw on the expertise of teachers and take differing degrees of teacher experience into account" (p.16) Teachers need different

types of professional development opportunities. Title II of NCLB provides qualifying

schools with the funds available to provide quality opportunities to the teachers (Public

Law 107-110, 2002). Providing many options and different types of training will help to

give a teacher an outlet of different skills that is needed for instruction to be successful in

the classroom. ITEA (2003) define professional development as "a continuous process of

lifelong learning and growth that begins early in life, continues through the

undergraduate, pre-service experience, and extends through the in-service years" (p.40).

Professional development is a continuous cycle of renewing skills within a

teacher's background knowledge and coming up with new and substantial ways of

teaching. School districts are setting forth to bring in new and innovative technology

into every classroom each year. For example, grades are put into a database program like

SASI (Schools Administrative Student Information) or Power schools and are not hand

written or calculated with a calculator. Lesson plans must contain an electronic version;

teachers are required to keep updated websites for parents and community to stay up to

date on classroom learning. Movies are no longer played by a tape or CD as movies are

now being streamlined into the classroom through United Streaming or You Tube,

chalkboards are no longer in use as the growing demand for promethean boards or smart

boards are on the rise.

With these small forms of technology teachers have to be taught how to utilize

these tools to keep up with the growing demand of technology in the twentieth century

and to provide high quality lessons and learning techniques to the students. Dusty chalk

boards do not provide efficient means of teaching as students are seeking higher demands

of actively engaging lessons. Highly engaging lessons can be achieved through the use

of technology providing teachers know how to use the technology provided so the use of technology can be handed down to the students.

Technology is changing the way teachers teach all together and prepare lessons. With this teachers must have new opportunities to learn how to use the new technology in the classrooms. Having technology in the classroom is not efficient if the teacher does not know how to utilize and access the technology being handed as two thirds of teachers are unprepared in how to use the technology (Barone and Wright, 2008). Teachers have an important job to enhance learning and differentiate instruction to each child through lessons taught within a specific classroom each day. Teachers need to know how to work the technology in order to teach with the technology and to help students be technology literate. With growing demands on technology in our society it is important to know the newest information and how to implement programs with the technology in the schools and classrooms.

A benefit of professional development opportunities is to bring about reform in a school or district. With the rapid growth of research and best practices in the schools it is left up to teachers to become better teachers and leaders to provide opportunities for best practices to students to help make the academic gains students need to be productive in society. As reported by Sparks and Hirsh (1997) learning needs to come from both capacities of students and the improvements from school employees to aid in the learning process. This is evident to observe not only students need to learn but teachers as well.

To provide classrooms with the Classworks software program teachers have to be trained in the programs in order to deliver the proper teaching techniques to the students for them to be successful. Teachers as well as administrators need to be trained in how to

read the data and to be able to apply the data to the classroom in a way it can drive instruction and inform decision making. The data can help the teacher know where the student is functioning and the administrator know how a particular classroom teacher is teaching. Teachers and administrators provided with training by way of professional development will help them engage in the learning process and pass on the knowledge to students so necessary gains can be made to be successful.

ITEA (2003) presents seven professional development standards for providers to prepare teachers, administrators, and supervisors on any aspect of technology. Professional development standards are to organize pre-service and in-service opportunities for growth of the professional. The professional development standards are as follows:

PD-1: Professional development will provide teachers with knowledge, abilities, and understanding consistent with Standards for Technological Literacy: Content for the Study of Technology (STL).

PD-2: Professional development will prepare teachers with educational perspectives on students as learners of technology.

PD-3: Professional development will prepare teachers to design and evaluate technology curricula and programs.

PD-4: Professional development will prepare teachers to use instructional strategies that enhance technology teaching, student learning, and student assessment.

PD-5: Professional development will prepare teachers to design and manage learning environments that promote technological literacy.

PD-6: Professional development will prepare teachers to be responsible for their own continued professional growth.

PD-7: Professional development will plan, implement, and evaluate the pre-service and in-service education of teachers (ITEA, 2003, p.4).

Summary

Providing schools with the Classworks program helps to get students to a higher level to provide them with skills that will in turn help to make better scores on the MAP test. MAP assessments give schools the data to paint a picture of how a student, school, or school district is doing and will do on the state standardized testing. This information will then be reported to the state and each school will receive a school report card of progress. As a result of providing these assessment tools schools are provided with the data they need to see if they are meeting the demands of NCLB.

The theoretical framework for Classworks is broken up into four areas of Classworks instructional design, research-based design and best practices, rigor/relevance with Classworks, and cognitive complexity set the stage for how the program is designed. The instructional design or framework of Classworks is based on elements of effective instruction from the Madeline Hunter Model, Gagne which provided basic instruction, and Keller who provided motivational strategies integrated with technology to set the foundation for the instructional design of Classworks.

Technology as outlined in the above literature review has impacted every aspect of education and is on the rise each day in education. As teachers vary in their skills and knowledge of technology in the classroom it is important to put value in technology as

the time is here for new and innovating ways of teaching and learning. The traditional

blackboard is out the window and innovating technology is the way of the future. By

having teacher support and collaboration of new technological advances; learning can

occur in many ways and can reach different learning styles and modalities of each

student. Technology is used in the twentieth century in many forms. States are being

demanded and pushed to meet the requirements of NCLB. Providing schools with the

high quality needed technology and materials will help to meet the demands society has

in place to help students make academic gains. Technological Literacy produces a large

impact on students and achievement. Students need to be able to have the ability to use

and access technology. Providing the access to resources will aid in the ability for

achievement as it allows students to become involved with hands on approach to learning

with new and innovating ways of engagement (ITEA, 2003). Shortcomings are not

without question as some products fail to initiate the results one may be requiring. In

addition, teachers may not be sold on the idea of new software and technology programs

and may delay in applying it to the already full curriculum of standards that must be

taught throughout a school year.

Response-to-Intervention (RtI) is used to integrate assessment and intervention

strategies within a multitier framework. RtI is used for prevention and intervention. RtI

addresses students at risks and provides research-base strategies as an approach to

learning. RtI monitors progress of the student through ongoing assessments and adjusts

intervention as needed to help the student to be successful (Essential Components of RtI-

A Closer Look at Response to Intervention, 2010).

The NCLB legislation is quickly being analyzed by educators to see how to meet the high demands placed upon the education system. Schools and districts are addressing the needs of programs to help in the curriculum to bring about academic achievement and to provide data that will be in the form of progress monitoring. This data can determine if a program is helping students to make necessary gains in a curricular area. Meeting the standard of NCLB that every school will make adequate yearly progress by 2014 is approaching very quickly. The Reauthorization places and emphasis on federal funds to use proven programs and approaches to track improvement of students by using data as a guide for implementation and decision making (Holcomb, 2004). Data plays an important role in progress monitoring of the education system.

Professional development practices need to be held to a high standard as teachers improve skills, motivation, and teaching practices by participating in in-service classes offered. Motivation is important to get a teacher excited about the learning process which will help to foster an interest in the young minds of students which are being worked with. In reality teachers are working toward aspiring young minds to foster academic growth. It is evident that through the research students learn in different ways. Providing high quality instruction will help meet the gap schools are facing. In addition, finding high quality programs will advance and encourage students to want to learn and do as much possible to be successful in school (ITEA, 2003).

CHAPTER 3. METHODOLOGY

Introduction

The focus for this study, an individual software program by Curriculum Advantage (Classworks Research A Research-Proven Solution, 2008) will be studied to determine the effects of student reading achievement on fourth grade students in two small rural school districts in South Carolina. In addition, the effects of integrating technology with a software program on the computer will be compared to a similar school that does not utilize the program.

The chapter begins by integrating the problem, purpose, and research questions utilized in the study along with the hypotheses. Next, the section analyzes the research methodology procedures and design. In addition, provides information related to the population of the sample and instrumentation. The next segment looks at the validity, reliability, and ethical considerations. Finally, a summary is included to finalize the methodology chapter.

Statement of the Problem

There is a gap in the research literature regarding to what extent the effect of technology of Classworks software has on increasing reading achievement among fourth grade elementary school students. It is not known what extent Classworks technology has on fourth grade students in reading. With the need for compliance with No Child Left Behind 2001 mandates, it is imperative to bridge the gap with student reading achievement specifically focusing on students who are in the "at risk" category (Bernhardt, 2003).

At-risk students are in need of provisional or ongoing instruction to best meet their needs to be successful in school. Providing students with technology that is enriched with meaningful skills is a growing demand of today's society and is imperative to students' future in the twenty-first century (Classworks Research: A Research-Proven Solution, 2008). Discovering educational programs with sound evidence to academic gains can provide schools with more tools to help students at risk or academically challenged to increase their growing knowledge and ability to learn.

Research Questions and Hypotheses

The following research questions will be represented and explored through this study:

R_1: Is there a significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program as measured by pre and posttest reading achievement MAP scores over a period of one academic school year?

H_0: There is no significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program.

H_1: There is a significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental

Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program.

R_2: Is there a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program as measured by pre and posttest reading achievement MAP scores over a period of one academic school year.

H_0: There is no significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program.

H_2: There is a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program.

R_3: There is a significant difference in the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

H_0: There is no significant difference between the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

H_3: There is a significant difference between the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

Research Methodology

Quantitative methodology is useful when utilizing data in the form of numbers to provide a researcher with a powerful tool for determining if a significant difference is present. Slavin (2003) describes evidence in the world as a force that drives change. Using evidence by way of numbers can determine if a statistically significant difference has occurred or existed then the researcher can determine which way change can occur. The rationale for using the quantitative methodology uses a criterion "p<0.05" to determine if a difference exists between the achievement of students in the experimental group as compared to those in the control group.

As reported by Creswell (2003) the experimental method requires four general topics for conducting the research. The four areas are participants, materials, procedures, and measures. Selecting participants are important for this study to identify the different demographics such as ethnicity, free and reduced lunch status, school population size, and etc. Providing for participants to be placed into a block or subgroup using covariates of pretest scores allows the researcher the ability to control, statistically, the subgroup. This helps and eliminates the need for controlling when participants leave the experiment. Materials for the quantitative method of the experimental design will provide the information related to the instrument used to gain the scores and collect data to see if a significant difference is noted.

A quasi-experimental design approach will be used in this study. A control group will be selected from one school district and compared to the experimental treatment group in another school district using intact groups of fourth grade students from the school districts. Measures of the study will come from measuring student's individual academic performance with the districtwide Measures of Academic Progress (MAP) assessment. Slavin (2003) discusses using a small number of schools in a study may not be conclusive; however, researchers often conduct research for comparison of programs. He reports programs effects are valid. Slavin (2003) also reports if findings in a study are consistent, then the study may produce meaningful conclusions.

Research Design

For the purpose of this study, a quasi-experimental non-randomized control group pretest-posttest design will be used. This design is used to illustrate cause and effect. As reported by Creswell (2005) an instrument can be used in the quasi-experimental design of a pre-or posttest to gather data. The quasi-experimental design engages the use of two groups, experimental group A and control group B, which will be given a pretest and a posttest. The research for this study will follow this guiding principle of using the quasi-experimental design. These two groups will not have a random selection of how students are chosen for the experimental group verses the control group as an intact group from the schools chosen will be used. During the intervention of the Classworks software program, only experimental group A will receive the intervention in one school and control group B will receive standard instruction in a different school. The dependent variable of student achievement will be measured twice, once at the beginning of the

standard instruction and again at the end of the instruction over the period of one

academic calendar school year.   The independent variable, Classworks software

program, intervention will be applied for the length of one school year (2010-2011).

Population and Sampling Procedure

The populations of the two school districts are similar as treatment group A's

school district has 8,500 students and control group B's school district has 8,451 students.

The treatment group A has an attendance rate of 95.2% for the 2011 school year and the

control group B has an attendance rate of 95.6 % for the entire district for the 2011 school

year (State Level NCLB/AYP, 2012). A blocking method as noted by Creswell (2005)

will be used by blocking all groups to single out fourth grade for the study.

The participants will be selected from two small rural school districts in South

Carolina using fourth grade students by way of using intact groups from the schools. The

participants will range in age from 9-10 years old. Using the intact groups will allow the

use of all fourth grade students to be used in the study.

The setting for the experimental group A of the study will occur within a

computer lab where all students from the fourth grade have computer access. The teacher

delivering the instruction will have prior professional development classes to understand

the framework of the program and how to better help the students during implementation

of the program. The participants for the experimental group A will have access to the

Classworks software program a minimum of twice per week during a 45-50 minute block

of time for at least 35-40 weeks of the school year. The software imports data from the

students MAP scores so students can work on individualized targeted instruction to best

meet their needs. The program's instructional design will take the students through mini-lessons to teach target areas of instruction for each student. The mini-lessons are designed in a manner to teach students to learn, apply, and review skills. After each use of the Classworks program, the teacher can be provided with immediate feedback of lessons learned as a means for progress monitoring.

The setting for control group B will be provided with traditional reading instruction from a fourth grade teacher. This instruction will take place in the regular education fourth grade classroom without utilization of the Classworks program.

Instrumentation

The pre- and posttest will be measured by the benchmark assessment called the Measures of Academic Progress (MAP) (NWEA, n.d.). MAP is used district and state wide to provide data to schools on how each student is performing on standards taught in the school as MAP measures proficiency of academic achievement over time, providing educators with the ability to make data driven decisions. When a student moves schools the data can still track a student as to provide data over several years. The quasi-experimental design will be utilized with the variables to gather the data.

MAP uses what is called a RIT score (for Rasch Unit) (NWEA, n.d.). The RIT score measures student understanding regardless of the grade level which can track a student's progress from year to year. The RIT score assigns a value of difficulty to the questions so it doesn't matter where the student's ability level is the questions will adjust to their level (NWEA, n.d.).

The instrumentation being utilized takes data and puts into a database for researchers to access and study student achievement. This database is called the growth research database (GRD) (NWEA, n.d.). The GRD is a database that is the hub for the NWEA and contains the most extensive collection of student data in the country. This research database is most popular with researchers as it contains a wealth of student growth and achievement (NWEA, n.d.). The range of possible scores can be from Kindergarten level on up to high school level.

<center>**Validity**</center>

Validity uses the individual's scores to determine if the instrument is worthy to be utilized. Validity is the established stability and consistency of the scores. In addition, by making validity a part of the instruments process for review it will determine if the instrument is reliable, meaningful, and allows the researcher to draw conclusions about the sample (Creswell, 2008).

The validity of the Northwestern Evaluation Association (2011) that produces the MAP assessment instrumentation is protected by reviewing the student's time latency spent on a particular question. Five criteria are flagged for validity to identify unidentified test take interaction and are thrown out if the assessment does not meet the demands. The criteria as reported by Hauser and Kingsbury (2009, p.4) are as follows:

- Response latency < 3 seconds to at least 15% of all items

- Less than 30% of all items answered correctly.

- No more than 20% of items answered correctly and response latency < 3 seconds to at least 3 items in any of the 10-item rolling subsets.

- No more than 20% of items answered correctly in at least 20% of the 10-item rolling subsets.

- Response latency < 3 on at least three items in 20% of the 10-item rolling subsets.

The conducted research of the unidentified test takers are removed from the data sample with these five criteria involoved provided for the vality of the assessment to be solid. The study then contained sound assessment data used in conducting neccassary research.

Reliability

To determine if an instrument is reliable, Bloomberg and Volpe (2008) make reference to the notion if two different researchers working under the same premise of research, both would come up with comparable or similar observations. Reliability as defined by Creswell (2008) is a "measure of consistency" meaning that the data has to be consistent with a firm foundation and before it can be meaningful and valid (p. 169). The MAP instrument provides students with assessment questions that are stable and consistent and vary in degree of difficulty base on student responses from the previous questions (NEWA, n.d.). For reliability when an instrument will administer an individual will answer related questions in nearly the same way (Creswell, 2005).

Reliability comes in five forms. For testing the reliability of the MAP instrument, the alternate form and test-retest reliability is implemented. In this approach an individual is administered an assessment for the pretest and then after a time interval, an alternate form of the test is given again. Finally, the data will be reviewed to see if it

relates to one another at a reasonably high level (Creswell, 2005). As reported by the NWEA (n.d.), test and re-test yield statistically valid correlations for the same students.

Data Collection Procedures

Permission to conduct the study will be obtained on the district level through a district office representative for curriculum and accountability. A letter describing the proposed study along with the proposed involvement of the researcher and the research site will be addressed. The researcher will then complete and application to conduct research in the proposed school district for approval. The application will consist of a timeline, summary of research, the purpose of the study, research questions, and an informed consent of confidentiality.

Permission to conduct the study on the school level will be obtained in the form of consent forms. The two schools will be contacted and written consent will be obtained to use the intact groups of participants in the study and obtaining fourth grade MAP test scores. No identifying characteristics of particular students will be used. All participants will remain anonymous for the purpose of the research. The schools will be provided with the research topic and details of the purpose of the study. All information that relates to the demographics or the background information will be kept in the context of a sample.

Upon approval from the school sites and upon receiving IRB approval to move forward, records based confidential archival data in the form of quantitative data from the MAP assessments for the 2010-2011 school year on all fourth grade students will be requested. For the purpose of the sample, an intact group will be used. The intact groups

will be assigned to the experimental group and the control group. For the purposes of this study, no direct contact with students will be made. All information will be held strictly confidential and used solely for its purpose. The Chief Curriculum and Accountably Officer for the school district will provide the MAP data for the research through a secure server for each school.

Data Analysis Procedures

The Statistical Package for Social Sciences version 21.0 will be used to input data and is a tool for data analysis. Each research question according to its statistical analysis will be conducted and calculated with a 0.05 alpha level. The researcher will enter in the data fields and tell the program what type of analysis to conduct and the program will give an "output" of data (George and Mallery, 2007). For this study mean pretest and posttest scores will be used to determine if a statistical significant difference occurs using the quasi-experimental design with the t-test to evaluate for statistical differences in the mean scores in experimental group A with intervention as compared to control group B without intervention. The research will use statistical records based data from a previous school year (2010-2011) using the MAP assessment scores for the spring and fall as a measure of a pretest and a posttest.

Analysis for the first research question will use an independent samples *t* test. As reported by George and Mallery (2007) the key to a t-test is "two" meaning the test measures are taken into consideration and compared against one another for significant differences and contains some variable of interest without any overlap between the two groups. The independent variable for this study will be Classworks instruction as an

intervention provided to one group of fourth grade students in addition to their reading program. The dependent variable for this study will be standard classroom reading instruction. The first hypothesis question compares the results of the mean pretest from experimental group A to the mean pretest of control group B. With the independent t test the researcher will determine if a significant difference occurs between the two groups.

Analysis for the second research question will also use the quasi-experimental design with an independent samples t test to evaluate for statistical differences in the mean scores. The second research question compares the mean posttest of experimental group A to the mean posttest of control group B. This comparison will be made to see if the Classworks program has any significant gains as a result of using the program versus standard instruction. Scores gathered for the variables at the beginning of the experiment and again at the end of the experiment help to determine if a significant difference is noted within each group (Creswell, 2008).

The last analysis for the research question will use the quasi-experimental design with a paired sample t test to compare the pretest and posttest differences for the treatment group only. As reported by George and Mallery (2007) paired sample t test each group must experience the same variable. The paired sample t test will be used to note gains and losses made over the course of the school year of 2010-2011 using the variable of the Classworks program.

Internal validity will be safeguarded with respect to the study to take place within one academic school year. Diffusion of treatments will not be an issue in this study as the two school districts involved will be unaware of the other district, so no collaboration will go on between the two districts (Creswell, 2008).

External validity is the interaction of selection and treatment and interaction of setting and treatment (Creswell, 2008). For external validity to be safeguarded against, the experimental group A will have easy access to computer lab time to use the Classworks software. In addition, for each group, the setting will be analyzed.

Ethical Considerations

Quantitative researchers are bound by ethics and morals when conducting research in that the outcome of the study does not provide any harm to the participants in the study. An Institutional Review Board (IRBs) will be used to review the proposal to assess for any ethical issues that may be present. The IRB committee from Capella University will review the ethical considerations of the proposal to ensure compliance with rules and regulations of the university are followed. Informed consent forms will be provided to the two school districts involved and the actual schools name will not be disclosed in the process of the research to protect the participants and to ensure confidentiality (Bloomberg and Volpe, 2008). Data gathered in this study will be kept in a locked file cabinet and stored for seven years and then shredded. The confidentiality of the participants will be protected throughout the study by keeping all identifiable information out of the study. In addition, all student names will remain anonymous throughout the research process of data collection, analysis, and presentation of the data.

Summary

The methodology for the study was reviewed carefully to determine "what the best fit" for the research question. An overview of the methodology and research design demonstrated a path of the research. The study limits itself to two small rural school

districts in South Carolina that will be represented. In addition, only fourth grade

students are addressed in the realm of this study along with limiting itself to reading

software programs.

CHAPTER 4. DATA COLLECTION AND ANALYSIS

Introduction

This chapter describes the problem and purpose statements as well as the research questions used to guide the study. The second section presents an overview of the demographic information collected from the participants. The third section of this chapter presents the statistical analysis of the data analyzed with the methodology and validity. The next section presents the results used to determine if a significant difference occurs in student achievement scores. The final section of the chapter provides a summary of the findings.

Problem/Purpose Statements

There is a gap in the research literature regarding to what extent the effect of technology of Classworks software has on increasing reading achievement among fourth grade elementary school students. It is not known whether or to what extent Classworks technology has on fourth grade students in reading. With the need for compliance with No Child Left Behind 2001 mandates, it is imperative to bridge the gap with student reading achievement specifically focusing on students who are in the "at risk" category (Bernhardt, 2003).

The purpose of the quantitative quasi-experimental study was to test the theoretical perspective that relates Classworks technology to reading achievement of fourth grade students to determine if a significant difference existed in student reading achievement between the supplemental uses of Classworks software reading program and that of the standard classroom instruction. The study compared Classworks software

intervention to standard instruction, controlling for similar demographics to a group of fourth grade students in one school to a group of fourth grade students in another school in two small rural school districts in South Carolina. The independent variable of providing Classworks instruction was generally defined as an intervention or treatment that was provided to one group of fourth grade students in addition to their reading program. The dependent variable was generally defined as standard classroom reading instruction without the supplement of the Classworks program. The control and intervening variables was between two schools with the same demographics of free and reduce lunch status and ethnicity, was statistically controlled in the study.

Research Questions

Research Question 1: Is there a significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program as measured by pre and posttest reading achievement MAP scores over a period of one academic school year?

Research Question 2: Is there a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program as measured by pre and posttest reading achievement MAP scores over a period of one academic school year.

Research Question 3: There is a significant difference in the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

Descriptive Data

The study took place in a two public elementary schools in South Carolina. During the 2010-2011 school years, the two schools served students from similar diverse ethnic backgrounds. The researcher considered schools within a certain area. The school for the experiment was selected due to the previous purchase of the Classworks program and the control group was selected from a neighboring school that did not use the Classworks program. The participants in the study were selected as an intact group of fourth grade students from the two schools chosen. The table below exhibits these findings.

Table 1 Gender

Gender	Experimental Group	Control Group
Male	52	25
Female	37	31

In analyzing the descriptive data, more males than females were in the experimental group as compared to the control group. The experimental group had 52 males and 37 females and the control group had 25 males and 31 females.

Table 2 Ethnicity

Ethnicity	Experimental Group A	Control Group B
African American	37	38
Asian	3	1
Caucasian	48	13
Hispanic	1	2
Multiracial	0	2

As referenced in the ethnicity table the experimental group had 37 African Americans and 48 Caucasians. The experimental group had a total of 4 students in the Asian, Hispanic, and Multiracial group. The control group had a larger amount, 58, of African Americans as compared to Caucasians with 13. The control group had a total of 5 students in the Asian, Hispanic, and Multiracial group.

Methodology

Quantitative methodology was used in this study.   The rationale for using the quantitative methodology used a criterion of $p=<0.05$ to determine if a difference existed between the achievement of students in the experimental group as compared to those in the control group.   A quasi-experimental design approach was used.   A control group was selected from one school district and was compared to the experimental treatment group in another school district using intact groups of fourth grade students from the school districts. Data was measured by student's individual academic performance with the districtwide Measures of Academic Progress (MAP) assessment in a form of a pretest and a posttest by using fall scores compared to spring scores.

Data Analysis

All Data was entered into the SPSS Statistics Version 21.0 for Windows. Quantitative data was utilized. The descriptive statistics included *t* test with the mean, standard deviation, degrees of freedom and frequencies.

The first research question used an independent samples *t* test to compare the results of the mean pretest from the experimental group to the mean pretest of the control group.

Research Question 1: Is there a significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program as measured by pre and posttest reading achievement MAP scores over a period of one academic school year?

H_0: There is no significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program.

H_1: There is a significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program.

Table 3 Group Statistics-Fall

Group	N	Mean	Std. Deviation	Std. Error Mean
Group A	89	195.52	18.332	1.943
Group B	56	195.98	13.616	1.820

The descriptive statistics showed the number of participants in each of the two groups. The experimental group A has N (89) participants that received the treatment of Classworks instruction as compared to the control group B of N (56) participants that received standard instruction. The Mean average score of the test was M=195.52 in the experimental group with a standard deviation of 18.332 as compared to M=195.98 in the control group with a standard deviation of 13.616 for the pretest of each school. The standard error of mean as reported by the experimental group was 1.943 as compared to the control group of 1.820.

Table 4 Independent Samples Test

			t-test for Equality of Means				
	F	sig.	t	df	sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	6.553	.012	-.164	143	.870	-.465	2.844
Equal variances not assumed			-.175	138.996	.862	-.465	2.662

The next part of the independent samples test described the inferential statistics as reported in the table above. In the Levene's Test for Equality of Variances the significance of the p value was .012, which was less than .05. The results rejected the null hypothesis that the two groups are equal and imply that the variances are unequal.

The Levene's test did show significant differences. Therefore, the bottom row of output was used with the unequal variances test. Next, the t described the calculated t value, which was -.175 and was the difference between means divided by the standard error (George and Mallery, 2007). The df referred to the degrees of freedom which was 138.996 in the table above.

The second research question also used the quasi-experimental design with an independent samples t test to evaluate for statistical differences in mean scores. The research question compared the mean posttest of experimental group A to the mean posttest of control group B. The comparison was used to see if the Classworks program had significant gains as a result of the implementation of the program versus standard instruction.

Research Question 2: Is there a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program as measured by pre and posttest reading achievement MAP scores over a period of one academic school year.

H_0: There is no significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program.

H_2: There is a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental

Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program.

Table 5 Group Statistics-Spring

Group	N	Mean	Std. Deviation	Std. Error Mean
Group A	89	204.67	16.787	1.779
Group B	56	204.16	13.958	1.865

In the Independent Samples test the posttest mean scores of group A was compared to the posttest mean scores of group B. The descriptive statistics described the number of participants in each of the two groups. The experimental group A had N (89) participants that received the treatment of Classworks instruction as compared to the control group B of N (56) participants that received standard instruction. The mean average score of the test was M=204.67 in the experimental group with a standard deviation of 16.787 as compared to M=204.16 in the control group with a standard deviation of 13.958 for the posttest of each school. The standard error of mean as reported by the experimental group is 1.779 as compared to the control group of 1.865.

Table 6 Independent Samples Test

			t-test for Equality of Means				
	F	sig.	t	df	sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	4,251	.041	.191	143	.849	.513	2.688
Equal variances not assumed			.199	132.218	.842	.513	2.578

The next part of the independent samples test described inferential statistics as reported in the table above. In the Levene's Test for Equality of Variances the significance of the p value is .041, which was less than .05. The test resulted in rejection of the null hypothesis that the two groups were equal, implying that the variances were unequal. The Levene's test did show significant differences. Therefore, the bottom row of output is used with the unequal variances test. Next, the *t* described the calculated *t* value, which was .199 and was the difference between means divided by the standard error (George and Mallery, 2007). The df referred to the degrees of freedom which was132.218 in the table above.

The last research question used the quasi-experimental design with a paired sample *t* test, which compared the pretest and posttest differences for the treatment group. The paired sample test was used to note gains and losses made over the course of the school year of 2010-2011 using the variable.

Research Question 3: There is a significant difference in the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

H_0: There is no significant difference between the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

H_3: There is a significant difference between the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

Table 7 Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pretest	195.5169	89	18.33161	1.94315
Posttest	204.6742	89	16.78661	1.77938

The table above presented the descriptive statistics for each of the two groups as defined by the variable in the experimental or treatment group. There are 89 participants in the group with a mean score for the pretest of M=195.569. The mean score of the posttest was M=204.6742, which indicated a significantly greater score.

Table 8 Paired Samples Correlations

	N	Correlation	Sig.
Pretest & Posttest	89	.865	.000

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The table above reported 89 fourth grade participants was in the paired sample. The correlation between the two variables was .865. The p value was .000, which was less than the alpha level at .05 and indicated that the null hypothesis be rejected. Therefore, there was sufficient evidence to conclude and to reject the null hypothesis by the significance level in the table of .000.

Table 9 Paired Samples Test

| | | | | Paired Differences | | | | |
| | | | | 95% Confidence Interval of the Difference | | | | |
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	ddf	Sig. (2-tailed)
Pretest - posttest	-9.15730	9.24035	.97948	-11.10380	-7.21080	-9.349	88	.000

The next table above described statistics for the paired samples test. The mean was -9.15730, which was the difference of the two means (195.5169-204.6742=-915730). The standard deviation was .97948 and was the difference between the two variables. The t value, which was the observed or calculated t value, was -9.349. There was a reported 88 degrees of freedom associated with the t test. In the paired samples test if the sig (2-tailed) value was less than or equal to .05 then there was a statistically significant difference. As reported from the table above, the sig. (2-tailed) value was .000, which indicated a significant difference and concluded that the means are not likely due to random chance and was probably due to the manipulation of the experimental treatment.

Validity

Validity was used to establish stability and consistency of the Measures of Academic Progress assessment scores. Creswell (2008) reported making validity a part of the instruments process for review it will determine if the instrument is reliable, meaningful, and allows the researcher to draw conclusions about the sample. The validity of the Northwestern Evaluation Association (2011) that produced the MAP assessment instrumentation was protected by reviewing the student's time latency spent on a particular question. Five criteria were flagged for validity to identify unidentified test taker interaction and were thrown out if the assessment did not meet the demands. Therefore, any errors in the data due to time latency was removed from the data so the sample was not affected and the vality of the assessment was solid. The study contained sound assessment data used in conducting the research.

Results

Research Question 1: Is there a significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program as measured by pre and posttest reading achievement MAP scores over a period of one academic school year?

H_0: There is no significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program.

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H$_1$: There is a significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program.

The results for the first research question of the *t* test showed a statistically reliable difference between the mean number of students (M=195.52, SD= 18.332) scores in group A as compared to group B of (M=195.98, SD=13.616), *t*(138.996)=-.175, p=.862, a=.05. The results indicated a significant difference occurred between the two means. Therefore, the null hypothesis that "there is no significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program" was rejected which concluded that the research finding was statistically significant and the alternative hypothesis was accepted.

Research Question 2: Is there a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program as measured by pre and posttest reading achievement MAP scores over a period of one academic school year.

H$_0$: There is no significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental

Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program.

H$_2$: There is a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program.

The results for the second research question t test indicated a statistically reliable difference between the mean number of students (M=204.67, SD= 16.787) scores in group A as compared to group B of (M=204.16, SD=13.958), $t(132.218)$=.199, p=.842, a=.05. The results indicated that the mean test scores of the treatment group A were significant. The p value was less than .05, which resulted in rejection of the null hypothesis that "There is no significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program". Therefore, the alternative hypothesis was accepted.

Research Question 3: There is a significant difference in the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

H$_0$: There is no significant difference between the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

H$_3$: There is a significant difference between the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

Research Question 3 results of the paired samples *t* test was conducted to determine if gains were made to the mean score of the assessment given. There was a significant difference in the mean scores for the pretest (M=195.5169, SD=18.33161) and posttest (M=204.6742, SD=16.78661); t (88) =-9.349, p=.000, a=.05. The results suggested that the Classworks program did have an effect on the average mean score of the Measures of Academic Progress Assessment. The p value was less than .05 so therefore the null hypothesis was rejected that "There is no significant difference between the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program" and the alternative hypothesis was accepted.

Summary

Three research questions were tested with quantitative data. The finding of the independent *t* test compared the pretest with the experimental group to the pretest of the control group which indicated a significant difference. The finding of the independent *t* test compared the posttest of the experimental group to the posttest of the control group and yielded a significant difference. Last, the paired sample *t* test for the pretest and the posttest for the experimental group indicated a significant difference and concluded that the means were not likely due to random chance and were probably due to the manipulation of the treatment of providing Classworks.

CHAPTER 5. RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

Overview

This chapter begins with an overview and a summary of the study. The second section presents the methodology and research design and then moves into the finding and conclusion which are organized by the research questions and hypotheses. The next section will present a discussion of the results of the study and present recommendations for future research and recommendations for practice. The final section will note the implications for the study and what will happen as a result of the study.

Summary of the Study

The study described the effectiveness of using the Classworks software program as a means to increase reading achievement as a supplement to the regular reading program in a school. Two schools were identified one of which did get the treatment of Classworks program and one that did not receive the treatment of the Classworks program.

Methodology/Research Design

Quantitative methodology with the quasi-experimental design was used in this study.   The rationale for using the quantitative methodology used a criterion of $p = < 0.05$ to determine if a difference existed between the achievement of students in the experimental group as compared to those in the control group. A control group was selected from one school district and was compared to the experimental treatment group in another school district using intact groups of fourth grade students from the school

districts. Data was measured by student's individual academic performance with the districtwide Measures of Academic Progress (MAP) assessment as a form of a pretest and a posttest by using fall scores compared to spring scores.

Summary of Findings and Conclusion

Research Question 1: Is there a significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program as measured by pre and posttest reading achievement MAP scores over a period of one academic school year?

H_0: There is no significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program.

H_1: There is a significant difference in the mean pretest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean scores for fourth grade students who do not use the supplemental Classworks software program.

The results for the first research question used quantitative data and the *t* test showed a statistically reliable difference between the mean number of students scores in group A as compared to group B by using a $p = < .05$. The results reported that a significant difference occurred between the two means. Therefore, the null hypothesis was rejected and the alternative hypothesis was accepted that there was a significant

difference in the mean pretest scores between the student achievement scores for fourth grade students who used the supplemental Classworks software program and the mean scores for fourth grade students who did not use the supplemental Classworks software program.

Research Question 2: Is there a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program as measured by pre and posttest reading achievement MAP scores over a period of one academic school year.

H_0: There is no significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program.

H_2: There is a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who use the supplemental Classworks software program and the mean posttest scores for fourth grade students who do not use the supplemental Classworks software program.

The results for the second research question used quantitative data for the *t* test. The test presented a statistically reliable difference between the mean number of student scores in the treatment group A as compared to the control group B. The results reported that the mean test scores of the treatment group A were significant. The p value was less than .05, which resulted in rejecting the null hypothesis and accepting the alternative

hypothesis that the two groups are equal and there was a significant difference in the mean posttest scores between the student achievement scores for fourth grade students who used the supplemental Classworks software program and the mean posttest scores for fourth grade students who did not use the supplemental Classworks software program.

Research Question 3: There is a significant difference in the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

H_0: There is no significant difference between the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

H_3: There is a significant difference between the mean pretest and posttest achievement MAP scores over a period of one academic school year for the experimental group of fourth grade students who use the supplemental Classworks software program.

The results of the paired samples *t* test, was conducted to determine if gains were made to the mean score of the assessment. There was a significant difference in the mean scores for the pretest and posttest. The results suggested the Classworks program did have an effect on the average mean score of the Measures of Academic Progress Assessment; therefore, it resulted in a higher reading achievement. The p value was less than .05, so therefore the null hypothesis was rejected and the alternative hypothesis was accepted.

Discussion of the Results

The finding of the study suggested that using technology through the Classworks software program did show a significant difference when used as compared to students without the treatment of Classworks. The variables in the study indicated after the use of one year of supplemental reading instruction students in fourth grade made significant gains.

Integrating Classworks software was a monetary investment (Classworks Research A Research-Proven Solution, 2008). School districts funding technology type programs want student achievement on state assessments to excel as a result of investment into the technology software. The research supported the use of investing in the Classworks program as it described a significant difference in the mean scores which utilized the program. The software program could be a tool used in schools with students that have low test scores to bring about change and high scores.

The theoretical framework for Classworks was broken up into four areas which are; Classworks instructional design, research-based design and best practices, rigor/relevance with Classworks, and cognitive complexity. In addition, Classworks theoretical framework provided an instructional model with each phase of Response to Intervention (RtI) addressed by combining instruction and assessment with a rich curriculum designed to individually target each student's needs (RtI Overview, 2012). The research provided another support for providing Response to Invention to help a stuggling student before the student is identified for special education services and for a regular student that needs an extra means of support in reading to grow and excel.

The instructional design or framework of Classworks was based on elements of effective instruction from the Madeline Hunter Model, Gagne which provided basic instruction, and Keller who provided motivational strategies integrated with technology to set the foundation for the instructional design of Classworks (Classworks Research: A Research-Proven Solution, 2008). These researchers laid the groundwork for the learning process in education and this study helped to support the use of reading instruction as a means to improvement. The knowledge used from these theorist provided knowledge and a basis for the Classworks program.

Classworks could be used with special education students with an Individualized Education Plan (IEP) to provide supplemental instruction to the reading program provided by the classroom teacher. The teacher could also use the Classworks program to teach specific skills to a group or entire class that may struggle with a reading skill as the program has instructional units and skills that spiral through the elementary curriculum. Educators are provided with benefits of immediate data and are used as a powerful tool to tailor instruction for students' specific needs while students have increased motivation and are able to work at a self-paced rate using stimulating software to meet their individual needs (Classworks Research A Research-Proven Solution, 2008).

Studies addressed the use of research-base programs and the importance there of within the classroom structure. Although much research has been done, little has been conducted on fourth grade students in reading using the technology of the Classworks program. Therefore, the results in this study added to the educational community.

The research questions were answered through the use of the SPSS program with quantitative data. The first question used the quasi-experimental design and an

independent samples *t* test to compare the results of the mean pretest from the experimental group to the mean pretest of the control group. The second research question also used the quasi-experimental design with an independent samples *t* test to evaluate for statistical differences in mean scores. The third research question used the quasi-experimental design with a paired sample *t* test, which compared the pretest and posttest differences for the treatment group. Each research question used an alpha of .05. The three research questions each rejected the null hypotheses and accepted the alternative hypotheses that a significant difference occurred. The study yielded these results due to the implementation of the Classworks program with the alignment to Response to Intervention.

Limitations of the Results

Overall the researcher sought to address the gap in the research literature regarding to what extent the effect of technology of Classworks software had on increasing reading achievement among fourth grade students.   Bernhardt (2003) reported students in the at risk category needed to bridge the gap to improve student reading achievement. The following addressed limitations in the study.

One limitation presented in the study was the selection of participants as the participants represented was from only two small rural school districts in South Carolina. Therefore, the results were not generalizable to urban and suburban school districts. Next, MAP achievement scores from one year of achievement were utilized.   A small sample of scores from one year could limit the generalizability of the study. The same study could be conducted for future research using multiple years of achievement and

track student scores. In addition, the study was limited to fourth grade students. Thus, the findings from this study did not apply to other grade levels.   The scope of the study could be conducted with different grade levels to determine achievement levels in different grades. Last, the research questions do not measure the perceptions of teachers using Classworks.   Therefore, the researcher was not able to obtain insight from the teachers on what worked with the program and what did not work.

Recommendations

Educational research needs to be continued each day to find new ways of teaching for teachers, educational leaders, and administrators to make informed decisions and find best practices in the educational field. Based on the findings of this study Classworks provided an extra incentive for students in fourth grade reading. Additional research could be used to find more educational insight into reading instruction to make further educational decisions regarding best reading practices.

Recommendations for Future Research

Further recommendations for future research are based upon the finding of the study and are included in the questions below.

1. A recommendation to study the strands of reading strategies that are used in the Classworks program to determine which areas students are struggling with and which areas students are excelling in could be addressed.

2. Research suggested that the Classworks program showed a significant difference when using the program verses standard instruction. Further research could be

conducted to look at the impact of the Classworks program on the school that did not receive the treatment with Classworks.

3. Further research may be conducted by providing different variables such as gender and social economic status to see if and factors contribute to whether students make achievement gains in the program.

4. Examine more data during the school year at different times other than pretest and posttest like the study to determine what gains students are showing and make informed decisions from those numbers and formulate changes in the curriculum as needed.

5. Use a larger population of students and different areas of the state to determine if further gains are being made with other schools that have implemented the same model of the Classworks program. Analysis of this would provide more insight into the effectiveness of the program.

Recommendations for future research provided above would allow for the use of a quantitative methodology design. Each of the studies would require data collection and the use of the SPSS program or excel to report the results. The research would allow more information when making informed decisions about adopting the Classworks software program for a particular school or school district.

Recommendation for Practice

Recommendations for practice are based upon the finding of this study and are included in the questions below.

1. It is evident with any program professional development is a must. The need for ongoing professional development is needed for success to support teachers to provide optimal intervention of the program.

2. An administrator could hire a technology coach to provide computer instruction to facilitate and implement the program within the computer lab.

3. Time for the program to be implemented should be safeguarded against so students are using the intervention at least twice per week for 45 minutes.

4. Provide the software to all grades in elementary school to bring about increased progress.

Implications of the Results for Practice

Curriculum Advantage created the software of Classworks as a Response to Intervention to help students to make achievement gains in school and close the achievement gap. The theoretical framework for Classworks is grounded in teaching students' research-based design and best practices. As a result of the research, school districts and administrators have another tool to aid in reading instruction for students to close the gap and improve reading instruction. The research implied reading achievement had an impact on student achievement through the use of software and technology. Standard reading instruction of using a basal reading book with teaching strategies is not a standalone program in the ever changing world with technology. With the quick pace of technology on the rise other options for teaching students should be employed.

An implication of the study was to address the need for student reading achievement to find ways to aid in closing the gap for reading achievement with fourth grade students. The software provided an alternative tool for teachers and allowed for another best practice to be utilized in the school to help struggling students. The program was used through technology and was a hands on experience to learning which provided a new and different way of learning material rather than the traditional teacher to book scenario.

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APPENDIX STATEMENT OF ORIGINAL WORK

Academic Honesty Policy

Capella University's Academic Honesty Policy (3.01.01) holds learners accountable for the integrity of work they submit, which includes but is not limited to discussion postings, assignments, comprehensive exams, and the dissertation or capstone project.

Established in the Policy are the expectations for original work, rationale for the policy, definition of terms that pertain to academic honesty and original work, and disciplinary consequences of academic dishonesty. Also stated in the Policy is the expectation that learners will follow APA rules for citing another person's ideas or works.

The following standards for original work and definition of *plagiarism* are discussed in the Policy:

> Learners are expected to be the sole authors of their work and to acknowledge the authorship of others' work through proper citation and reference. Use of another person's ideas, including another learner's, without proper reference or citation constitutes plagiarism and academic dishonesty and is prohibited conduct. (p. 1)

> Plagiarism is one example of academic dishonesty. Plagiarism is presenting someone else's ideas or work as your own. Plagiarism also includes copying verbatim or rephrasing ideas without properly acknowledging the source by author, date, and publication medium. (p. 2)

Capella University's Research Misconduct Policy (3.03.06) holds learners accountable for research integrity. What constitutes research misconduct is discussed in the Policy:

> Research misconduct includes but is not limited to falsification, fabrication, plagiarism, misappropriation, or other practices that seriously deviate from those that are commonly accepted within the academic community for proposing, conducting, or reviewing research, or in reporting research results. (p. 1)

Learners failing to abide by these policies are subject to consequences, including but not limited to dismissal or revocation of the degree.

Statement of Original Work and Signature

I have read, understood, and abided by Capella University's Academic Honesty Policy (3.01.01) and Research Misconduct Policy (3.03.06), including the Policy Statements, Rationale, and Definitions.

I attest that this dissertation or capstone project is my own work. Where I have used the ideas or words of others, I have paraphrased, summarized, or used direct quotes following the guidelines set forth in the APA *Publication Manual*.

Learner

name

and date   Janice Young March, 2014

Mentor

name

and school   Catherine Pulkinen, School of Education