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Measuring Third Grade Reading Performance With and Without Using the Study Island Program

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This is to certify that the doctoral study by

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Doctoral Study in Partial Fulfillment

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Abstract

The low test scores on third graders' Illinois State Assessment Test (ISAT) is a concern in the Allgood Elementary School community. Thirty percent of third graders are retained because they do not meet the standard on the ISAT. A technology-assisted reading program, Study Island, was implemented to increase reading proficiency. The purpose of this study was to determine if there was an improvement in standardized test performance after the implementation of Study Island for the academic school years 2009-2012. Dewey's theory of experience provided the theoretical framework for the study because when students are engaged in hands on experience in education it reflects a meaningful learning experience. A correlational study was conducted to examine whether the computer-based program had an effect on student reading performance on the ISAT. The sample consisted of students in two third-grade classrooms ($N = 305$) enrolled during these years. Archived ISAT scores were used to compare student performance. A one-way ANOVA determined whether statistically significant differences existed in the mean scores of students who did and did not use the Study Island reading program. The results show, ISAT scores were significantly higher only after the second year of implementation of the program. The findings, presented in a white paper, can promote social change by helping school officials make informed decisions on implementing Study Island, ultimately to improve reading outcomes for students and help them become critical thinkers in society.

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Dedication

I am thankful to God and the variables that created the structure and creativity for my life. Among these variables are my loving parents, who taught me as a child to value education. They always instilled in me that education was my inheritance. My father taught me a proverb at an early age, “Educate that you may be free.” Thank God for my loving and wonderful husband; supported me unwaveringly throughout over three years of the dissertation process and allowed me to follow my dream without complaining about the long hours of studying. Thank you for being the extraordinary man you are to our children. Finally, special thanks to my family, friends, and colleagues, who assisted me throughout this process and I shall be forever grateful to God who made it all possible.

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Section 1: The Problem

Introduction

Allgood Elementary School (a pseudonym) is in an urban community setting. The faculty and staff are diverse. The student population is 99% African American, primarily from families considered to be of low socioeconomic status. According to a 2010 public study from the district, Allgood Elementary School's vision states that "Allgood Elementary School will create and support a strong school culture that ensures success for every student, in every classroom, every day." The following is the school's mission statement, according to their website:

> Allgood Elementary School is to provide instruction that will be challenging to all students that will enhance or assist in students being successful with their academics while using fine arts within their curriculum for students to accomplish high marks on the Illinois State Achievement Test at exceeding or meeting standards.

Still, the third-grade students' percentage rate performance on the Illinois State Achievement Test (ISAT) is not reflective of goals in the school's published mission statement and does not represent annual yearly progress for 30% of students who are failing reading. The mission of Allgood Elementary School is for students to meet or exceed reading scores on standardized tests, but actual performance does not align with this mission statement (District Study, 2010).

Definition of the Problem

The problem at Allgood School is that the district implemented the Study Island program and yet more than 30% of students were still retained in third grade because of low scores on the ISAT (District Study, 2010). According to Simms (2012), there has been a gap nationally in reading achievement at the beginning of kindergarten and it extends throughout students' educational years. United States policymakers have attempted to close the achievement gaps between minority groups of students before the start of first grade (D'Agostino, & Rodgers, 2017).

It is concerning that there are test score disparities amongst a racial class of students (Mason, 2016). However, the reading achievement gap will persist if the inequality is not addressed (Huang, 2015). Federal, state and local policies need to advocate for greater equity for all students of a race in order to decrease the academic gap in reading (Herrera, Zhou, & Petscher, 2017). Huang (2015) found that there must be a higher-level learning outcome for students to close the academic achievement gap. Students must have an opportunity to have results that are based in knowledge-transfer skills. These capabilities allow students to solve real-world problems. Students should have an opportunity to reflect on their learning consistently to close the achievement gap in reading (Simms, 2012).

Allgood Elementary School's administrators and teachers are aware of this problem and have been working to rectify the issue, but have reported little success (District Study, 2010). According to the district's internal study, multiple factors have caused learning discrepancies for students, which, in turn, affects their achievement

scores (Thompson, Meyers, & Oshima, 2011). According to Hammond (2007), "Recurring explanations of educational inequality among pundits, policymakers, and everyday people typically blame children and their families for lack of effort, poor child rearing, a culture of poverty" (p. 320). Students are trying their best to achieve at grade level, but educators have not fully addressed the variables that keep them from self-actualizing to their fullest potential (Hammond, 2007). The District Study (2010) noted there were stress factors in the district, such as poverty, that have interfered with effective teaching and learning.

According to the district's internal study in 2010, the stress factors are caused by lack of support in the classroom from the school administration, lack of classroom management skills, low performing test scores, lack of parental support, and lack of resources to aid student academic achievement in the classroom. Subsequently, the administration provided a reading specialist to assist teachers (District Study, 2010). By using the yearly, state standardized test data, teachers discovered that students needed assistance in developing vocabulary skills to assist them in working on comprehension skills through reading more nonfiction (District Study, 2010). Bates (2006) stated that "the fundamental problem with the one size fits all approach is that it decontextualizes learning for many students, decoupling it from the worlds in which they live" (p.149). The District also purchased technology in the form of Study Island reading program to assist teachers in meeting these specific instructional deficits.

Rationale

The 2010 District internal study recommended that the administration at Allgood Elementary School put forth an effort to make a difference in the scores of the students, meeting and exceeding the scores on the annual state test (District Study, 2010). According to the same District study, in the 2005/2006 school year, only 56.4% of students met or exceeded state goals. In 2006/2007, a higher percentage of students met or exceeded state goals, approximately 7%, for a surprising 65.60% (District Study, 2009). However, the District studies illustrated that out of the third-grade population, only 64.80% met or exceeded grade level in 2010. The district study found that the reasons the reading scores have increased from 1 year to the next was due to addressing instructors' concerns and providing them with professional staff development in language arts and support services in overcrowded classrooms.

The 2008 ISAT results showed 64% of students passing compared to 56.9% in 2009, which was a decline of 7.8 %. Reading scores in 2010 were 64.8% passing, compared to 55.4% in 2011 a year-to-year decrease of 9.4%. The 2012 reading scores were 64% passing compared to 2013 reading scores of 54.1% passing a decline of 9.9% (District Study, 2013).

The literacy teachers and administration collaborated on a continuous basis regarding students' improvement by looking at their data on a quarterly schedule (District Study, 2010). The data were used as a driving force for instruction and for analyzing the students' work during common planning time to address any issues (District Study, 2010). To help increase student achievement, parent involvement nights and more

rigorous enforcement of the conduct codes were implemented along with other reading innovations, such as the Study Island reading program. The purpose of this study was to determine if there was an improvement in standardized test performance in reading after the implementation and use of Study Island. The results are expected to promote informed decisions in purchasing and using reading technology programs for the school district.

Definitions

The following definitions define important terms and phrases used in this study.

Adequate Yearly Progress: Each respective state board of education sets its criteria that meet federal guidelines and prevent a student from promoting to the next grade level. The five criteria are (a) academic standards are set at the same scale for every student; (b) standards should be reliable and valid; (c) all students are meeting academic gains at each respective school year; (d) students' progress are monitored throughout the school year; and (e) differentiated instruction is utilized for the purposes of achieving goals for different groups of students that are aligned with No Child Left Behind Act (Thompson, Meyers, & Oshima, 2011).

Assessment: A test or other method for measuring achievement (Virginia Department of Education, (2014).

Correlation: A mutual relationship between two or more things (Crowe, Connor, & Petscher, 2009).

Illinois State Assessment Test: A test given to students on an annual basis in second through eighth grades in the subjects of math and reading and in fourth and

seventh grades in science. The test results are disseminated on the last day of October annually (McNeil, 2006).

Self-Actualization: A need that is present in individuals to fulfill a potential (Dewey 2001).

Study Island Technology Program: This commercial online program facilitates K-12 students to achieve grade-level academic standards ("Archipelago Up to Study Island Grows," 2010).

Significance

This project study was significant because many third graders in the district do not achieve the scores necessary to be promoted. Mahdavi and Tensfeldt (2013) stated it best:

> The ability to read is an important precondition for much of what makes a person successful in modern life. Reading is necessary to get most jobs; to pass a test to get a coveted license to drive; to access menus, contracts, transit schedules, and more. (p. 77)

Third graders' failure to score at a proficient level is a great concern throughout the educational system (Madaus & Russell, 2010). This study may help educators to understand how educational reading software programs may increase students' reading proficiency.

According to Ponce, Mayer, and Lopez (2013), reading technology and programs such as Study Island can improve reading proficiency. However, according to the District's internal study, reading proficiency has not increased over the 2009-2013 period

while Study Island was in use. This gap in practice warrants further investigation about the effectiveness of the Study Island reading program at Allgood Elementary School.

Third-grade students who are struggling readers are at greater risk of not graduating from high school (Simms, 2012). A technology reading program such as Study Island may be effective when used on a continuous basis with the proper guidance from the teacher to promote reading skills that will enhance each student's reading abilities (Adam, 2011). This study may also be significant for teachers, because it can help them gain confidence in using the reading technology provided. Students will benefit if the program is shown to help them become reading proficiently and can be used more consistently in the classroom. Moreover, the study outcome is expected to be significant to building and district administrators who make programmatic and funding decisions. This project study has the potential to guide social change by providing third grade students with a means to become proficient readers. According to Schwerdt and West's (2013) assessment, stigmatization can harm 3rd-grade students who are retained in third grade. Parents and teachers for students who are retained in the same grade level will reduce their academic expectations of these students. In addition, retention causes challenges for students adjusting to a new group of grade-level peers for the following academic school year.

Guiding/Research Question

Educators at Allgood Elementary are aware that third-grade students are not meeting their academic goals on the ISAT and have been working on a plan to address the issue. The following questions will guide the project study:

RQ1: Is there a statistically significant difference in third grade ISAT scores after the implementation of the Study Island reading program?

RQ2: Did the use of the Study Island reading program increase third-grade ISAT reading scores during its first three years of implementation (2009-2010, 2010-2011, and 2011-2012)?

The hypotheses being tested are that there are statistically significant differences between students using Study Island, and those who did not and that there is an increase in third-grade reading scores from 2009-2012.

Review of the Literature

Using technology, such as Study Island, to increase reading proficiency is not a new concept. There are both advantages and disadvantages to using assistive technology to improve the reading scores of elementary students. This review is organized around the themes of (a) advantages and disadvantages to the use of technology for reading proficiency, (b) teachers' collaboration, (c) the importance of promoting community among teachers, administration, and staff to increase reading proficiency and (d) the use of technology to promote learning and comprehension.

I identified scholarly articles from the following databases EBSCO, ERIC, and ProQuest. I retrieved articles by using the following keywords: *third-grade education, reading, computers, Study Island, reading software programs, curricula, educational evaluation, students, educational technology, language arts, reading comprehension, comprehension, learning, teachers, teaching methods, activity programs in education, achievement gap, reading management, programmed instruction, books and reading,*

tutors, academic achievement, elementary schools, school children, evidence-based education, Illinois standard achievement tests, school administrators, school improvement programs, government policy, study and teaching, evaluation, teacher training, low-income students, technology, test scoring, literacy programs, educational test and measurements, school district, fluency, oral reading, social status, struggling readers, computer-assisted programs, and *remedial reading intervention.*

Theoretical Framework

Dewey's theory of experience (1986) provides the theoretical framework for the study. The current disposition about teaching and learning stems from the belief that educators must have respect for students and how they, as human beings, process information. Students teach teachers how to teach. Fulano de T. (2010) discussed that in Maslow's theory "learning can only take place when basic needs have been met" (p. 40). Human beings can do anything they set their minds to do when given the opportunity to excel without the boundaries within schools and in the educational system that hinders their thought processes of living up to their fullest potential. Also, studies have proven the hands-on approach to learning to be successful in teaching as it deals with real-life situations (Samaras, Legge, Breslin, ZMittapalli, Looney & Wilcox, 2007). Students can reach their full potential when they can self-actualize. Theorists Maslow and Dewey had similar beliefs about individuals' needs being met that if hindered, it can disrupt learning (Dewey 2001).

Morant and Maslow (1965) found that a human being not only has the skills to judge his or her work, but also the ability to showcase that individual's intellectual

talents, as they relate to having a knowledge base of interacting with others. To appreciate how the two types of theorists one needs to understand their individuality, the importance of being respectful of what goes on within other human beings, and how that relates to getting the most out of students within the educational system.

According to Maslow, "Knowledge is continuous, flowing, changing and needs to account for individual needs and development" (as cited in Fulano de T., 2010, p. 138). Maslow further stated that humans' right is to "self-actualize" themselves, but he also found that in society this right has been extracted from children (as cited in Fulano de T., 2010, p. 296). How can teaching and learning move students to a place of self-actualization without hindering the student from living up to his or her fullest potential as a human being? This question is essential to educators who are striving toward effective teaching and learning goals. The educational system may be currently hindering students because it does not encourage them to be reflective on the process of their learning, and teachers are not teaching in a capacity to make it possible. Fives et al. (2014) confirm that students with a favorable view of their ability to learn do, indeed, demonstrate higher levels of reading proficiency. The framework informs this project study as the use of targeted programs like Study Island, theoretically, help move students from failure to success and actualization.

Review of Current Literature

The Debate has raged the past three decades over best practices in reading instruction, particularly for struggling readers (Vasquez III and Slocum, 2012). Studies have examined many reading intervention programs to promote an increase in

proficiency on national reading tests (Frost & Sorenson, 2007). According to Frost & Sorensen (2007) third grade students who are taught with "multi-level and simultaneous activity" will make achievement gains in reading scores. Consequently, according to Connor, Jakobsons, and Meadows (2009), the National Assessment of Educational Progress (2007) reported 40% of United States fourth graders were not able to excel on a basic reading level assessment. It has been concluded with about 15 million children in the United States are not at the 50% mastery level of fundamental reading skills (Conner& et al., 2009). The Department of Education has implemented a scientific approach to address the needs of struggling readers in third grade (Conner et al., 2009). The United States federal government focused attention on student achievement rather than resources for students in grades kindergarten through third grade (Manacorda, 2012). The Reading First Initiative was funded with 6 billion dollars to address students in low performing schools (Conner et al., 2009). According to the Education Commission of the States (2015), 14 states are now even requiring new teachers to demonstrate some competence in the teaching of reading. The Commission report (2015) clearly states, "Ensuring that students are reading proficiently by third grade is a key component of keeping students on track to graduate high school and pursue college and careers" (para 1). There is considerable interest in finding and funding interventions which increase reading proficiency.

The utilization of early reading intervention is paramount for diagnosis of reading disabilities and scientific approaches to facilitate proficiency of struggling readers (Blachman, Fletcher, Munger, Schatschneider, Murray, & Vaughn, 2014). Students tend

to excel in reading and increase their confidence as lifelong learners when given early intervention strategies (Blachman et al., 2014). Smithson (2012) found when students set goals they become higher achievers in reading. There is a positive relationship between students diagnosed as struggling readers and effective strategies used to promote reading achievement (Blachman et al., 2014). In summary, there is national concern about third-grade students' low reading scores and how low results has affected academic achievement in public education among low-income students. In the past, laws such as *No Child Left Behind* were to enforce educational equality (Bellei, 2013). Reading initiatives like Reading First were funded to address low reading scores in kindergarten through third grade (Manacorda, 2012). The benefit of the programs implemented is evidence that reading academic achievement is a concern nationally. Though much research has focused on the problem of low reading achievement, the practical solutions have not been shown to promote much success (Gibson, Cartledge, & Keyes, 2011).

Computer-Based Reading Instruction

The use of computer-based instruction may increase reading comprehension. For children to be able to read, they must think and use cognitive development skills and abilities, which promote understanding of what they learn. Computer-based instruction has increased dialogue among students regarding the number of independent reading passages students had read (Ponce, Mayer, & Lopez, 2013). When students use computers to facilitate instruction, they have a higher reading achievement rate (Wild, 2009). Investigators concluded that paper-based, as opposed to computer-aided, the teaching was not as successful as it related to phonological awareness with beginning

readers. Therefore, a computer-aided instruction was more favorable, and students had great opportunities to learn using the computer (Wild, 2009).

Ng (2008) argued that there is a vast discrepancy between a child's performance and their actual abilities because they are not in unison with the teacher's expectations. The concern has brought forth tension in the "learning process" of the child (Ng, 2008, p. 28). The computer offers differentiated approaches to facilitating the child in his or her thinking abilities. It helps the child to learn through a self-directed plan. The computer-based instruction does not hinder the child from learning but promotes achievement while the student is in control of his or her progress (Ng, 2008). Furthermore, technology gives the teacher an opportunity to view his or her students' becoming self-confident while engaged independently (Groenke, 2011). When support for learning is prevalent during instructional time, students show reading comprehension gains (Carlisle et al., 2011).

Cole and Hillard (2007) investigated the impact of a reading program, that included music and video technology, had on 36 third-grade students. Teachers diagnosed the third-grade students, who were all from low socioeconomic backgrounds, as struggling readers, and the researchers randomly assigned the students to groups using both a traditional approach to reading instruction and a web-based approach (Cole & Hillard, 2007). The students who took advantage of the conventional method did not score as well as the students who used the technology-enhanced reading program (Cole & Hillard, 2007).

Likewise, Fenty, Mulcahy, and Washburn, (2015) found all the African American students in their pre-posttest study showed gains in reading fluency and comprehension

after interacting with a technology-enhanced reading program. Volpe, Burns, DuBois, and Zaslofsky, (2011) reported similarly positive results using computer-enhanced instruction to teach early literacy skills to Kindergarteners. Cheung and Slavin (2012) meta-analyzed 84 studies on the impacts of educational technology on K-12 reading proficiency and found technology had a positive effect on the reading outcomes of elementary school students. Knezek and Christensen (2007) concluded that the integration of technology increased students' reading comprehension and reading accuracy. There are studies available indicating the positive effects of technology in the teaching of reading.

In other studies, supplemental technology also increased reading ability. Delacruz (2014) used technology to supplement guided reading instruction in a low income, Southern school. All students in this qualitative study indicated the use of technology during reading instruction increased their motivation to read. Additionally, House (2012) found the use of technology was significantly related to increasing reading achievement in immigrant students. Technology is most certainly emerging as a trend in reading instruction. The use of e-readers and companion software produced a statistically significant increase in reading end-of-year test scores when compared to students who did not use the e-readers or programs (Union, Union, & Green, 2015).

While access to technology has increased, the impact of these programs is unclear. While many studies report successes (Fenty, Mulcahy, & Washburn, 2015; Mahdavi & Tensfeldt, 2013; Ponce, Mayer, & Lopez, 2013), there are also studies that do not report success. Khan and Gorard (2012) published in their randomized experimental

study that while students using the computer program to reinforce reading proficiency did show gains, the control group showed even more massive increases in reading proficiency. Another relevant concern is the cost of hardware, software, and reliable, high-speed internet access to use many of the reading programs available (Mayora, Nieves, & Ojeda, 2014). There are also documented risks that teachers may merely add technology to the reading classroom and not consider the real benefits and uses of the technology (Spencer, & Smullen, 2014). When teachers are not adequately trained, or software is not carefully matched to the needs of the population, both time and valuable resources may be wasted.

Students are in need of more than just increasing the amount of time they spend reading to improve reading achievement (Amendum, S. J., Vernon-Feagans, L., & Ginsberg, M. C. (2011). Researchers have mixed reviews about the subject. However, there is a need for formative feedback that will give teachers and students a comprehensive insight of the actions they need to take to increase students' reading comprehension (Topping, Samuels, & Paul, 2007). The learning gap for reading may be closed if the use of individualized computer programs to increase literacy is increased (Putman, 2014). A Las Vegas high school adopted a reading program to assist students who are struggling with reading, and their scores have risen to a proficient reading level (Adam, 2011).

According to Marinak (2007), technology-based programs increases reluctant readers reading comprehension levels. Marinak (2007) designed a study to investigate 75 third-grade students' involvement with reading books. Marinak measured the effects of

how reading rewards promoted students' reading the text. Marinak found that there is not a need for educators to reward students for reading because those students who were motivated to read had a desire to do so without external rewards to encourage them to read. For instance, for a child to be motivated to read, he or she has to be confident about reading. The reading scores of third-grade students will not increase if their confidence in reading is not evident (Martin, 2011). Sokal (2010), found that boys are less involved in reading than girls. While it may seem that girls are more proficient in reading than boys that are not absolute. Research has proven computer-based instruction to have had an impact on males' reading achievement gains (Sokal, 2010).

Marinak and Gambrell (2010) surmised a child's motivation to read increases their success rate in reaching reading abilities in respective grade level. Throughout the years researchers have found that there is an erosion of elementary-level students being motivated to read. Marinak and Gambrell performed a research study on 288 third-grade students whom educators considered to be reading at an average readability level. The constructs that the researchers explored in the study were students' values about reading and them having an inner motivation to learn. The results were a higher percentage of girls read more than boys in the research study (Marinak & Gambrell, 2010).

Students' success rate is predicated upon their motivation when using reading technology programs and teachers' formative feedback (Topping et al., 2007). However, McCollum, McNese, Styron, and Lee (2007) investigated three types of reading strategies for 323 third graders to select an effective reading program to promote reading growth for the students within the Caribbean school district. Hence, it is essential for educators to

understand that any successful program must include cooperative learning, assessment of progress, a full-time facilitator to monitor the program, heterogeneous grouping, progress monitoring and literacy, and an oral skills curriculum (McCollum et al., 2007). The monitoring of reading technology programs is essential for students' reading academic growth (McCollum et al., 2007).

Study Island

Study Island, one reading technology program, has many features to assist students in achieving their academic goals. Study Island, in short, is an assistive technology program aligned with common core standards and aimed at increasing literacy learning (Steyers, 2012). The program also allows educators to create assessments aligned to the needs of their students (Hixson, 2010). One compelling feature is a custom assessment builder, which gives students an opportunity to build their skills in reading and math. The targeted grade levels for assessment builders were third through eighth grade. Also, teachers can observe each student as he or she works. The facilitator can give students immediate feedback. Helpful guides within the Study Island program allow parents to receive notification via e-mail, and students can make selections on the application for assistance for reading unknown words (Hixson, 2010). Study Island has features to assist students in their academic pursuits.

A 2012 efficacy study (Edmentum, 2012) described the rates of improvement in reading proficiency for classrooms using Study Island compared to those where the software was not in use. Seventy percent of classes (N = 327) demonstrated increases in reading, compared to non-using classrooms. On average, classes experiencing gains in

reading showed 9% growth, compared to non-using classrooms (Edmentum, 2012). Unfortunately, in a thorough search of the literature, and sub-searches for the term "Study Island" within search results, no recent research could be found. Having access to only studies produced by the owner of Study Island is insufficient to conclude.

In the absence of peer-reviewed literature to better explore the effectiveness of the Study Island program, recent dissertations were consulted. While a thesis is not considered peer-reviewed, panels of faculty "experts" do supervise and "vet" these studies. Bernard (2013) found that while the cohort of middle school students made statistically significant gains in reading after using Study Island technologies, at the elementary level, no difference was detected. Another study (Grimes, 2012) found that Study Island only increased reading proficiency if students were adequately managed, well-behaved and focused on the online modules. At the high school level, in a non-equivalent groups design, when means of two cohorts of students (N = 800) were compared, those using Study Island scored significantly higher than those who did not use the program. Empirical studies detailing the benefits and detriments of the Study Island computer program are scarce. Among those studies available, the impact of the computer-assisted learning is unpredictable.

Other Reading Software

Pye (2007) found that integrating technology increases reading achievement for kindergarteners through third-grade students. The Award program targets students in primary grades for the success of students' reading by the age of eight. Moreover, to create a practical design to ensure it met the reading curriculum of students using the

program took approximately seven years. The program entitled Award allows educators to give immediate feedback to students about their progress as in the Study Island reading program. Besides, parents and students can have access to printouts and program reports for monitoring progress. All the amenities of the program met guidelines for Reading First legislative laws. Students can improve their reading scores by using technology ("Education Week Releases Annual Special Report: Quality Counts," 2006). In the article, the authors noted that technology supports students who have challenges with reading. Children should have learned how to read by the end of third grade ("Education Week Releases Annual Special Report," 2006). The need to use technology to support their grade reading gains is an urgent matter, and using technology makes the difference ("Education Week Releases Annual Special Report," 2006).

Reading initiative technology programs are useful when aligned with state standards (Pye, 2007). According to Pye (2007), the Reading First initiative is a kindergarten through a third-grade program that helps students become better readers. Reading First has 300 selections of programs that address story elements to increase students' comprehension levels. Story elements that are on databases have shown promise for kindergarteners through third grade (Union, Union, & Green, 2015). When technology programs are aligned with reading instruction standards, students can make gains on reading tests.

The Assessment of Reading

In America, testing is a part of how people think, and because of this, it is difficult to comprehend that testing is technology. However, testing in schools and using the

scores demean the learning process and the quality of education (Huddleston, (2015). For example, teachers complain they are teaching to the test and not to the whole child (Madaus & Russell, 2010). Administrators place pressure on teachers to increase scores, so teachers do not use their best judgment and their teaching methodology becomes less effective because they administer lessons on a routine basis (Madaus & Russell, 2010). Madaus and Russell (2010) stated,

> Like many of today's policymakers, DeValera posits that tests provide the evidence that determines whether taxpayers' money is well spent. This reasoning is reflected clearly in President Bush's and President Obama's reliance on tests to evaluate the success of educational programs. This use of tests to measure the outcomes of education reflects a larger belief in the use of metrics to determine the success of any policy. (Madaus & Russell, 2010, p. 21)

Reading remediation strategies are used in primary grade levels to increase reading comprehension (Lucariello, Butler, & Tine, 2012). Authors of a seven-year longitudinal study investigated the progress of 166 students. The authors investigated if a software application that was created for remediation would be effective. The results were positive because the computer programs that assessed students on remedial reading content showed that reading technology is good for increasing students' reading scores (Saine, Lerkkanen, Ahonen, Tolvanen, & Lyytinen, 2011). Reading remediation technology programs are significant tools for developing reading comprehension.

Kontovourki and Campis (2010) conducted an ethnographic case study, which consisted of educators working with third-grade students to prepare them for annual tests.

The researchers collected data using interviews, observations, official documents, and booklets used for test preparation. The study sheds light on how students were able to share their feelings about taking tests. According to Kontovouki and Campis, educators encouraged students to succeed on the test. For example, teachers in public schools find themselves teaching to the test in many cases. Some of the students do not feel that they can make the score on the third-grade test. Depending upon the students' prior knowledge and experiences, if it is either simple or more challenging to teach the students test-taking strategies that will promote higher test scores. Third-grade students need much motivation, especially when they have low morale about taking tests (Venable, 2015).

Ineffectiveness of Computer-Based Reading Instruction

According to Sorrell, Bell, and McCallum (2007), utilizing technology that supported reading instruction did not improve reading comprehension. Reading the instruction on computers is significantly different than traditional reading instruction, and the Sorrell et al.'s study results indicated that there were no differences between the two instructional deliveries. Students using educational reading software did not increase their reading comprehension (Sorrell et al., 2007).

Hansen (2009) noted that reading management is essential when managing a computer software program. There is limited research concerning the effectiveness of computer software for reading (Niedo, Lee, Breznitz, & Berninger, 2014). There is not a significant determinant of which reading program product is the best or could have been compared on a critical basis (Hansen, 2009).

Researchers deem students struggling with reading in the United States to be less effective when utilizing computer-assisted instruction on an individualized basis. According to Jarmulowicz, Taran, and Hay (2007), "Both morphological awareness and phonological awareness are metalinguistic skills that are believed to be important to reading" (p.1593). However, students to whom educators gave cooperative learning opportunities in their classrooms had a higher rate of reading success than those who used computer-assisted instructions. The participants included K-5 grade students (Slavin, Lake, Davis, & Madden, 2011).

Other Factors Influencing Literacy

Myrberg and Rosén (2009) noted that parental involvement promotes literacy. In the socioeconomic disparities, there was a high rate of literacy issues. The foundation of the study stemmed from the fact that the researchers investigated 10,000 third-grade students along with the level of their parents' educational history. For instance, if a child is reading below grade level, there is a possibility that the parents lack reading abilities or that there is a need for specialized services that deal with learning disabilities along with other variables (Myrberg & Rosen, 2009). The level of variables changed according to the home constructs. In the study, the researchers mentioned that some students may have not ever been read aloud to at home or have been a part of the Head Start program in education. The parents and their children work together because the children are affected by the household in which they live, and consideration has to be taken into account by the teachers of third-grade students that have low reading scores and reading abilities (Myrberg & Rosen, 2009). There is a vast difference in upper and lower socioeconomic

children's achievement rate in schools. Crowe et al. (2009) studied a large sample of third-grade students (30,000) in the Reading First program in the state of Florida. Crowe et al. (2009) concluded, using hierarchical linear modeling, the lower socioeconomic class did play a role in their academic failure. The comparison between the two social classes showed that social class made a difference in the success rate of students' reading gains.

Judge, Puckett, and Bell (2006) completed a study on the technology being accessible to third-grade students in low and extreme poverty schools. The sampling included over 8,000 students who attended public schools. The researchers conducted the study over a period of four years. Researchers (Judge et al., 2006) conclusion points to the fact that those students who were from a low poverty background did not have as many computers in their schools but had access to a computer in their homes. However, students from a higher socioeconomic household had a wealth of computers within their school setting but did not have a computer at home. The high achievement was seen in students with computers at home who were also from a middle-class background; as opposed to students who did not have a computer due to low poverty level has proven that there is a digital divide (Judge et al., 2006). The use of reading software at school to enhance reading achievement in these cases did not provide an improvement in the low-income students' reading achievement (Judge et al., 2006).

The International Reading Association ("Children's Choices for 2008," 2008) concluded students could learn how to enhance their reading abilities, even with a lack of resources, such as technology and additional reading resources that would increase

reading behaviors. Students viewed themselves on a video that the educators recorded, and the educators informed them about their reading behaviors in various segments. The facilitators and students discussed the segments as a group, which enabled students to monitor their reading abilities and make self-corrections ("Children's Choices for 2008," 2008). Technology has a limited impact on students' reading abilities and the assessment process ("Children's Choices for 2008," 2008). Educators can use limited resources to make students want to be lifelong readers.

A study by Sturm et al. (2006) examined alternative communication to enhance students' literacy skills in first through third grades. They found there was a need for communication and reading and writing tools to support the program at school (Sturm et al., 2006). Cheung (2013) noted that most students who have used such a program but are unsupported at home had not shown substantial growth in their literacy. Furthermore, Richardson (2014) found that many of the students did not have necessary literacy skills before the program. The researchers disseminated surveys among first- and third-grade teachers to assess their literacy instructional techniques to evaluate the paradigm of the changes in teaching literacy skills to students (Richardson, 2014).

When teachers collaborate, and there is administrative support, the students excel. The energy of effective instruction supersedes the disparities of students not accomplishing their learning goals in school (McCombs, 2010). The school must also have an atmosphere that is conducive to learning (Shirvani, 2009). Technology plays a significant role in students' becoming successful or education-oriented, but it must start from the facilitators who give them a bridge to cross in on the environment of learning.

McCombs (2010) clearly stated, “Students are so excited about what they can accomplish now that they want to incorporate technology into everything they do” (p. 13). The technology program does not work if there is not proper guidance from teachers (McCombs, 2010). Therefore, teachers need support for computer-assisted programs to facilitate students thoroughly in their quest toward increasing their literacy skills (McCombs, 2010). Consadine, Horton, and Moorman (2009) stated,

> Students today live in an environment in which reading and writing, through digital media as well as traditional texts, are pervasive. The challenges for teachers are to connect the literacy skills that students develop in their social environment with the literacy environment of the school. (p. 471)

To use technology for students for literacy purposes is essential due to the technical skills they have acquired from living in the technology age. Educators need to bring together their computer skills and literacy content and allow students to connect what they learn while using digital information to become successful. Educators facilitate students to become productive individuals (Considine et al., 2009). Moreover, with computers students can assess their strengths and weaknesses.

Learning can build upon prior knowledge when using digital devices. Technology is a tool that educators can use to promote learning. Yi-Mei, Swan, and Kratcoski (2008) performed research to investigate ways in which students’ use of technology could evaluate the abilities of students’ learning. The use of technology allowed students to construct meaning and use multimedia to assess their knowledge simultaneously. Technology will enable students to collaborate and learn in many ways. Most

importantly, when students learn using technology, it promotes higher achievement (Yi-Mei et al., 2008).

The researchers also proved that teacher collaboration plays a vital role in students' achieving the test-taking goals (Kontovouki & Campis, 2010).

Lamb, Porter, and Lopez (2008) found that teacher collaboration is a powerful tool in technology to complete a language arts activity. The reading coach, bilingual teacher, and third-grade teacher worked together as a team to promote learning. Lamb et al. found that the students were more enthusiastic about completing language arts lessons using technology. Also, students' attitudes about technology were evident when they were excited about reading their summaries on the computers (Lamb et al., 2008). More important, "the cycle of planning, implementing studying results, and adjusting strategies so that improvement is continuous, must frequently be repeated" (Simmons, 2011, p. 39).

In conclusion, knowledge evolves on a continuous basis. Contemporary trends come about, and educators must stay abreast with the latest trends of teaching and learning to be effective in motivating students to make academic gains. Teachers must upgrade their computer skills for education and learn to facilitate students accordingly (Moorewood, Ankrum, & Bean, 2010). While the research may indicate inconsistent outcomes of using technology in reading instruction, it is unlikely programs like Study Island will gain less momentum in a 21st Century curriculum. Teachers are committed to being lifelong learners because they have to stay connected to the importance of effective instructional practices as they relate to the subject matters that are being taught (Moorewood et al., 2010).

Implications

Third-grade reading proficiency is a concern at Allgood Elementary School. By comparing gains in reading achievement before and after using a technology-based reading program such as Study Island, the school may be able to understand better how technology-based programs can help third graders' reading proficiency. The impact of this project study may be to further implement technology-based programs to assist students and individualize reading instruction to meet the needs of all students. By helping students feel more efficacious in their reading, not only may their reading scores increase, but it may help students attain Maslow's higher levels of belonging, such as self-actualization. Ultimately, all educational innovations should lead students to self-actualization. While this change in a child's self-view would be unlikely from one reading program, this project study uses Maslow's hierarchy of needs to investigate whether or not technology addresses students' human needs within the area of reading and technology. According to Storz and Nestor (2008), the philosophy discussed in this study gives teachers a better view of why it is essential to be critical in reflecting on their teaching of reading.

According to Dotson and Henderson (2009), reflective activities, like this study, might modify future practices. The findings from this examination of the impact of a technology program can benefit the District in making an informed decision in purchasing instructional programs to increase learning outcomes and reading scores. Educators concluded that activities that promote social change foster a sense of self and

how one sees him or herself in the world of others, as well as how to meet the needs of others in a positive matter (Scoffhan & Barnes, 2009).

As a result of this project study, teachers and school leaders may gain a better grasp of whether or not time- and resource-consuming programs, like Study Island, are indeed providing the intended results for students. While the project portion of the study will be determined by the results of the data analysis, project directions might include targeted staff development on the uses of Study Island, or a white paper outlining the findings and advocating for the increase, or even the dissolution of the program, depending on the outcome of the study.

The project study may lead to a project that would increase teachers' comprehension of how to better use technology to empower readers in the classroom. Ultimately, the goal of social change may be reached by giving teachers and school leaders information that will assist the school in providing students with firm foundations in reading (Babcock, & Bedard, 2011). A reading skill is needed to succeed not only in school but also in life ("Children's Choices for 2008," 2008).

Summary and Transition

Section 1 addressed the problem of the study and provided the rationale for the investigation. Additionally, definitions were included, the significance of research, guiding questions, theoretical framework, and review of the literature. The problem at Allgood Elementary School is that 30% of third graders do not perform sufficiently well on the ISAT, and it is unclear whether implementation of the Study Island computer-aided instructional model has helped students increase their reading proficiency. While

other noncurricular innovations have been implemented, such as teacher collaboration, technology-assisted reading programs like Study Island have been purchased to support teachers in better individualizing the instruction of reading. Whether or not Study Island has been effective in increasing ISAT is unknown. Determining whether this program is helping students improve reading proficiency was the primary purpose of this project study. The literature review supported such an investigation by presenting the disadvantages and possible advantages of the use of technology in reading instruction.

Section 2 will present the methodology, design, and approach to answering the guiding research questions. The sections thenceforth address confidentiality, participants' participation, and how participants are selected. Additionally, this section will include limitations, assumptions, scope, and delimitations.

Section 2: The Methodology

Introduction

The problem at Allgood School was that although the district had implemented the Study Island technology program, more than 30% of students were retained in third grade because of low scores on the ISAT (District Study, 2010). I investigated whether the Study Island program improved third-grade students' standardized assessment performance, which predicted the ISAT scores. To examine the program's effectiveness, I used (a) students' prior benchmark assessment scores and (b) archival data from the teachers' records about students' academic performance. The archival data were used to determine whether fewer third grade students were retained in the years following Study Island implementation. For this project study, the hypothesis was that student ISAT scores increased by using the Study Island technology program. Also, I compared the test scores of the students from the years 2009-2013 to look for ongoing trends in the use of technology to improve reading scores.

At Allgood Elementary, 64% of the school's third-grade population had scored met or above standard. However, there was still concern about the 44% of third graders who were not meeting the ISAT requirements and achieved at grade level proficiency. The study investigated whether there was growth in third-grade students' ISAT scores in reading when they used the program on a regular basis.

Research Design and Approach

In this study, a quantitative design was used to translate human experiences into numbers (Fitzgerald, Rumrill, & Schenker, 2004). In this case, the numbers consisted of

two sets of student scores. The aim was to determine the relationship between them, that is, to determine whether ISAT reading scores improved after the Study Island program was implemented. A qualitative approach was not appropriate, as the comparative nature of the study does not indicate this design. According to Creswell (2008), comparative designs are used to determine a possible difference between two or more variables. Analysis of variance research describes the difference between two variables (Duffy & Chenail, 2008). The project study met the definition of quantitative research because it used quantitative data to investigate the relationship between variables. The purpose of this project study was to investigate if Study Island after the purchase and use of it has assisted in improving third-graders' test scores in the school years since implementation (2009-2013).

Setting and Sample

The population at Allgood Elementary School is 99.1% African American who live within an urban environment; 98.7% of students receive free lunch and 12.8% of students are homeless. The study sample included only third-grade students, ages 8 -10 years. The sampling method was a convenience sampling (Creswell, 2008), as all students attended the school study site and were enrolled in the third grade during the years that the Study Island program was introduced into the curriculum. I analyzed all third graders' test scores from the time of Study Island implementation.

Third-grade students' archival data were required for the study. The school contained two teachers per grade level with an average of 23 students per class. One principal, one assistant principal, one counselor, nurse, speech pathologist, social worker,

lunch manager, three porters, one engineer, two custodians, 18 general education classroom teachers, 3 Special Education teachers and 6 paraprofessionals staff members staff the school. There were approximately 100 third graders per year, from 2009-2013. All available archived scores were represented for this convenience sample. The sample consisted of third graders enrolled in Allgood during the study period, 2009-2013. The exact sample size included 316 third graders. Students were in third grade for the 2009-2013 school years and had attended Allgood Elementary School long enough for their scores to be counted by the State.

Instrumentation and Materials

The primary instrument was the Illinois Standards Achievement Test (ISAT), which measured the achievement of students in reading and mathematics in grades three through eight and science in grades four and seven (Godt, 2010). It defines what students in public schools in Illinois should have accomplished at the end of each respective grade level. In 2010 Illinois aligned the curriculum to be more rigorous and to prepare students for being productive citizens (Godt, 2010). According to the ISAT Interpretative Guide (2013),

> The ISAT includes multiple choice, short response and extended response items consistent with the learning standards for that grade and subject. Beginning with the 2006 ISAT administration, reading, mathematics, and science tests included a combination of multiple-choice items from the Stanford Achievement Test, Tenth Edition (SAT 10) and items written by Illinois educators. The reading and mathematics tests also contain open-ended questions that require a written

> response from students. ISAT assessment is aligned with Illinois Learning Standards, which defines what students in public schools in Illinois should have accomplished at the end of each tested grade level. (p. 1)

The data consisted of archived ISAT scores. The ISAT scores from the school years 2009-2013 were used to determine if the impact of the Study Island technology program affected reading achievement. A Post-test only design was used.

Reliability and Validity

Reliability

Test reliability refers to the degree to which a test is consistent and stable in measuring what it is intended to measure. Most simply put, a test is reliable if it is consistent within itself and across time (Duffy & Chenail, 2008). The ISAT reliability is based on testing students in third grade through eighth grade. The test-retest reliability coefficient measures the consistency of scores over time. For example, a low-test retest reliability coefficient is based on students' test scores are prone to shift unpredictably from one time to another (Illinois State Board of Education, 2011). Additionally, it is complex to predict and decide based on the internal consistency of overall test scores. Test scores are characterized by internal consistency, which is index coefficient alpha. The alpha range varies from 0.00 to 1.00 which relates to coefficient generalizability by items an individual selected on the test. (Illinois State Board of Education, 2013). However, the ISAT alpha coefficients have a value above 0.90 are considered to be a robust test (Illinois State Board of Education, 2013).

Validity

According to Creswell (2008), test validity refers to the degree to which the test measures what it claims to measure. Test validity is also the extent to which inferences, conclusions, and decisions made based on test scores are appropriate and meaningful. Results from the study may not generalize to the greater population as the entire sample is drawn from one school. Test validity is the degree to which test measures what it is intended to measure (Illinois State Board of Education, 2013). Evidence that supports to test validity argument is gathered for various aspects and through different methods. This process is known as validation of test scores interpretation and use (Illinois State Board of Education, 2013). Additionally, an alignment analysis for each subject area was conducted in September 2006 and reported in November 2006 by Norman Webb (Illinois State Board of Education, 2013). The alignment has been noted as consistent across the continuous use of the Illinois Assessment Framework (Illinois State Board of Education, 2013). Another piece of evidence content validity was provided in the form of the 2013 test construction specifications. This document contained a description of the blueprint, the process, the decisions made for defining and developing the ISAT tests (Illinois State Board of Education, 2013).

Data Collection and Analysis

Data Collection Technique

I began data collection after receiving (a) Walden's Institutional Review Board approval (08-24-16-0148384) and (b) approval from the school district. As no students were involved, and only archival, de-identified data were used, there was no consent needed. Once the archived benchmark assessments for ISAT from the 2009-2013 schools' years were presented, the analyses were completed. Data were requested in an excel spreadsheet, coded only for the significant variables, with no other identifiers attached.

All data were password protected stored in the school district's database. According to Cresswell (2008), it would not be necessary to obtain approval from the parents if the (a) archival data were used to collect information about the performance of the students in an educational program in the school; (b) information collected about the performance of the students on the ISAT is a part of the regular education program at the school; and (c) no information will be collected that would enable the identification of any student individually.

To store and analyze the data, the IBM SPSS Statistics (Statistical Package for the Social Science) package was used. An analysis of variance (ANOVA) was used to assess whether the means of the groups were statistically different from each other (Cresswell, 2008). For example, the test helped determine if students who used technology in 2009-2010 had statistically different test scores than those students who did not have access to technology before the implementation of Study Island.

The hypothesis tested was that third-grade students who used the technology-assisted reading instruction scored statistically higher than students who received no technology-assisted reading instruction. The ANOVA compared the means and standard deviations of the two samples to see if there were a statistically significant difference between mean scores of students when using Study Island compared to the students who did not have access to the program. As is acceptable in education, the critical alpha value was set at $p = 0.05$ with a 95% confidence band (Johnston, 2012). Additionally, if F-calculated is greater than the critical value for F, the hypothesis was rejected, meaning there was a statistically significant difference between groups. However, if the F value is less than the critical value the hypothesis is accepted, meaning there was not a statistically significant difference between test scores on ISAT of those students who used reading comprehension technology. I used IBM's Statistical Package for the Social Sciences (SPSS), version 21, to analyze the data. The examination of three years of data allowed for a more consistent picture of potential score changes over time. A trend analysis was completed to detect if the overall use of the Study Island software allowed scores to trend in a positive direction.

Assumptions, Limitations, Scope and Delimitations

Assumptions and Limitations

The study assumed that all archival data were accurate. The information provided by the District was analyzed accurately and promptly. All data were password protected to secure student confidentiality. The data were void of any student identifiers.

The limitations for the project study were that data collection was restricted to

Allgood Elementary School within one school district. In addition, the data were limited to only third grade students' archived test scores. Since this was a quantitative study, no students were interviewed, which could have provided insight into the uses of the program. Teachers' insights regarding proficiency of reading-based technology effectiveness were not collected. The results were not applicable to the single school setting and were not generalizable to other districts.

Scope and Delimitations

I conducted a quantitative study in which I used archival data based on reading ISAT scores. Participants included third-grade students from Allgood Elementary School located in an urban area. I investigated third-grade students who used Study Island technology program to determine if the introduction of Study Island and the use of the program made a significant difference on ISAT reading test scores for third graders.

Protection of Participants Rights

All data were password protected and stored in a locked cabinet. I completed the district data use application and obtained formal approval from the Walden Institutional Review Board before the study was implemented. According to Cresswell (2008), it is not necessary to obtain permission from the parents of the students as only archival, de-identified data were used in the analysis. No further protections were needed, as the data were already anonymized by the District before it was provided. All data collected will be destroyed after completion of the project study.

Data Analysis Results

I conducted two, one-way ANOVAs to determine (a) whether there was a significant difference in ISAT scores during Study Island implementation, and (b) whether subsequent years of Study Island implementation resulted in higher ISAT scores. I evaluated the ANOVAs at the .05 significance level, as is acceptable in education (Johnston, 2012). First, I present descriptive statistics. Next, I reiterate the research questions and hypotheses, followed by the results of the analyses conducted to answer those research questions.

Descriptive Statistics

I collected data from Allgood Elementary school for academic years 2008 to 2012, for a total of four years of third-grade ISAT test scores. There were 305 total students assigned to these classrooms, all of whom were African American. No other demographic variables were provided in the archival dataset. The Study Island program was used during academic years 2009-2012.

Outliers and normality. I assessed the data for outlying values in ISAT scores, which could bias results (Tabachnick & Fidell, 2013). I used Tabachnick & Fidell's (2013) procedure, where *Z* scores are created and assessed for values falling beyond ±3.29. No ISAT score had an associated *Z* score beyond that threshold, indicating that no outliers were present in the sample. I then assessed the data for normality at each year grouping. Kline (2015) states that if associated skew and kurtosis values are approximately 2.00 or below, the shape of the distribution can be assumed to be normal.

ISAT score skew and kurtosis values were below 2.00 (see Table 1), indicating that the data are normally distributed.

Means, standard deviations, frequencies, and percentages. The lowest ISAT score was in Year 1 (2008-2009), which was the year prior to the implementation of the Study Island program. The highest ISAT score was in Year 3 (2011-2012) (M = 209.78, SD = 40.02), the year after Study Island was implemented (see Table 1). In school year 2008-2009, most students were below standards (n = 37, 48.1%). In year 1 and 2, most students were still below standards (Year 1: n = 38, 47.5%; Year 2: n = 39, 52.7%). In Year 3, most students met standards (n = 33, 44.6%). In Year 4, most students were below standards (n = 45, 38.1%) (see Table 2).

Table 1

ISAT Scores by School Year

School Year	*n*	*M*	*SD*	Skew	Kurtosis
Pre-Implementation (2008-2009)	77	192.83	38.10	0.59	1.99
Post-Implementation:					
Year 1 (2009-2010)	80	193.54	39.25	0.53	1.36
Year 2 (2010-2011)	74	203.20	43.16	1.15	1.33
Year 3 (2011-2012)	74	209.78	40.02	0.58	0.73

Table 2

ISAT Reading Score Standards Met by School Year

Year	Standard Met	*n*	%
Pre-Implementation (2008-2009)	Exceeds Standards (236-329)	3	3.9
	Meets Standards (207-235)	25	32.5
	Below Standards (160-206)	37	48.1

	Academic Warning (120-159)	12	15.6
Post-Implementation:			
Year 1 (2009-2010)	Exceeds Standards (236-329)	5	6.3
	Meets Standards (207-235)	22	27.5
	Below Standards (160-206)	38	47.5
	Academic Warning (120-159)	15	18.8
Year 2 (2010-2011)	Exceeds Standards (236-329)	10	13.5
	Meets Standards (207-235)	14	18.9
	Below Standards (160-206)	39	52.7
	Academic Warning (120-159)	11	14.9
Year 3 (2011-2012)	Exceeds Standards (236-329)	7	9.5
	Meets Standards (207-235)	33	44.6
	Below Standards (160-206)	25	33.8
	Academic Warning (120-159)	9	12.2

Inferential Statistics

Research Question 1. Is there a statistically significant difference in third grade ISAT after the implementation of the Study Island reading program?

$H1_0$. There is no statistically significant difference in third grade ISAT scores after the implementation of the Study Island reading program.

$H1_a$. There is a statistically significant difference in third grade ISAT scores after the implementation of the Study Island reading program.

To answer this research question, I conducted a one-way ANOVA. The independent grouping variable was school year, with groups representing the year prior to the implementation of the Study Island program, and the years during the Study Island program (2009-2012). To make appropriate inferences from ANOVAs, the assumptions of normality and homogeneity of variances should be met (Tabachnick & Fidell, 2013). I

previously assessed the normality of the sample. Skew and kurtosis values indicated that normality can be assumed (See Table 1). I assessed homogeneity of variances using Levene's test, which should not be significant for the assumption to be met (Tabachnick & Fidell, 2013). Levene's test was not significant (p = .934), indicating that the assumption of homogeneity of variances was met.

The results of the one-way ANOVA were significant, $F(3, 301) = .026$. This indicates that there were significant differences in ISAT scores during the Study Island program implementation. The mean ISAT score during Study Island implementation (Years 1-3, 2009-2012; $M = 201.95$, $SD = 41.18$) was statistically significantly different than the mean of the prior year. The null hypotheses was rejected. Table 3 presents the results of the one-way ANOVA used to answer this research question. Figure 1 presents mean ISAT scores prior to and during the program.

Table 3

Results of One-Way ANOVA Comparing ISAT Scores Between Pre-Implementation and During Implementation

Source	*SS*	*df*	*MS*	*F*	*P*
Between Groups	15102.565	3	5034.188	3.125	.028
Within Group	495214.17	301	1610.947	-	-
Total	499997.76	304	-	-	-

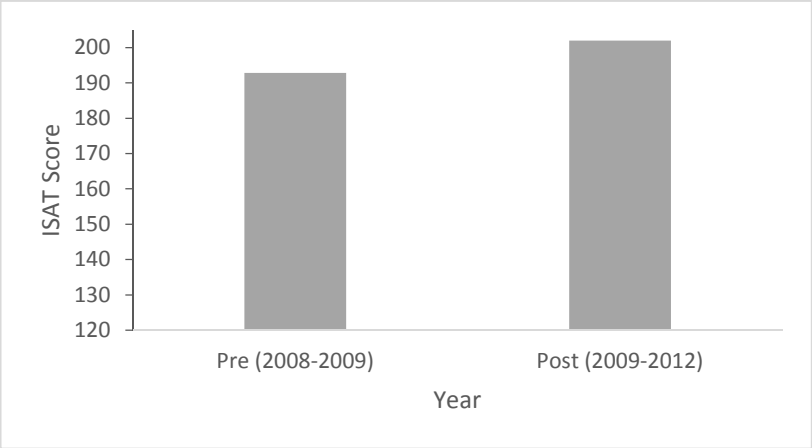

Figure 1. ISAT scores prior to and during Study Island.

Research Question 2. Did the use of the Study Island reading program increase third-grade ISAT reading scores during its first three years of implementation (2009-2010, 2010-2011, and 2011-2012)?

$H1_0$**.** There is not a significant increase in ISAT reading scores during the first three years of implementation.

$H1_a$**.** There is a significant increase in ISAT reading scores during the first three years of implementation.

I used a one-way ANOVA to answer this research question. The independent grouping variable was school year, with groups consisting of school year 1 (2009-2010), school year 2 (2010-2011), and school year 3 (2011-2012). These represent the three years that the Study Island program was implemented. The dependent variable was ISAT scores. The assumption of normality was met (see Table 1), as was the assumption of homogeneity of variances (p = .934).

The results of the one-way ANOVA in table 4 comparing school years 1, 2, and 3 were significant, $F(2, 225) = 3.10$, $p = .047$. This indicates that there were significant differences between Years 1, 2, and 3. Figure 2 presents mean ISAT scores by year. As such, I examined the individual years using Tukey's *post hoc* comparisons. There was a significant difference between Year 1 and Year 3 (mean difference: 16.25, $p = .038$), but not between any other year. The mean ISAT score was significantly higher in the last year of the program when compared to the first year of program. The null hypothesis may be rejected. Table 6 presents the results of the ANOVA. Figure 2 presents mean ISAT scores by year.

Table 4

Results of One-Way ANOVA Comparing ISAT Scores Between Academic Years 1, 2, and 3

Source	*SS*	Df	*MS*	*F*	*P*
Between Groups	10319.00	2	5159.49	3.10	.047
Within Group	374596.39	225	1664.87	-	-
Total	384915.67	227	-	-	-

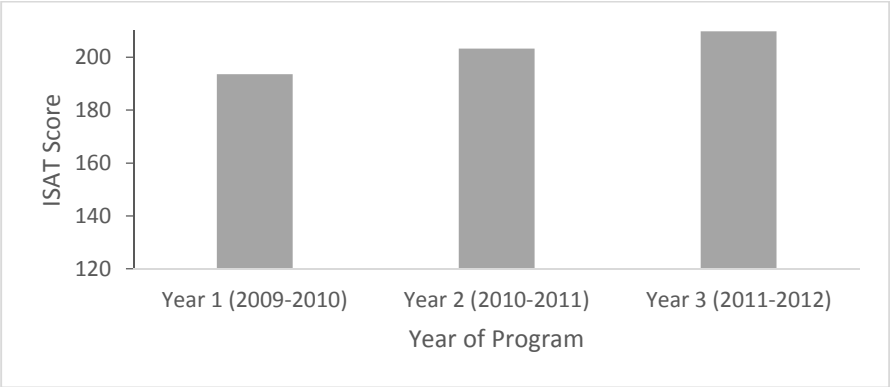

Figure 2. ISAT scores by year.

Conclusion

The purpose was to determine if there was an improvement in third graders' standardized test performance in reading after the purchase and use of technology-based reading program, Study Island. I utilized archival data consisting of third grade ISAT scores from the 2008-2012 school years. No other identifiers were included in the data. All data were password protected and stored in the school district's database.

I utilized two one-way ANOVAs to answer the research questions. The results for Research Question 1 indicated that the null hypothesis could be rejected; there was a significant difference in ISAT scores before and after the implementation of the Study Island program. However, statistically significant differences in mean scores were present after 2 years of implementation. The programs' use is related to increased ISAT scores by the 2nd year of implementation. This supports the conceptual framework when students can reflect and self-actualize about their learning they tend to be successful in reading (Five et al., 2014).

The results for Research Question 2 indicated that the null hypotheses could be rejected; there was a significant increase in ISAT scores from the beginning of Study Island implementation (2009-2010) to the last year of the program (2011-2012). This supports Morant and Maslow (1965) that students can analyze their progress and make intellectual decisions to correct their errors during learning and processing information.

The findings of this research will drive the project, a white paper.

Section 3 will consist of a description of the white paper (see Appendix A), recommendations, goals, and literature review. Included is a discussion of how the

project is a deliverable for the school district, based on the findings of the study, and supported by relevant literature.

Section 3: The Project

Introduction

Third graders are struggling to meet state standards in reading tests despite the use of the Study Island computer-based reading software program. This quantitative project study is expected to enhance administrators and educators' knowledge in the district about how to facilitate third-grade students' use of Study Island to increase reading proficiency and elevate their test scores. Section 3 will consist of description and goals, rationale, review of the literature, implementation and evaluation, and implications for social change. Because there was a significant difference found in third grade reading results after a research-driven software program was implemented, the most appropriate project for this study is a white paper, which will advocate for an increase of Study Island Program to increase third-graders reading proficiency scores and test scores.

Description and Goals

Analysis of the research data indicated that the use of reading technology software was associated with an increase in third-grade test scores. To address the reading scores and concerns about low-test scores, I developed a white paper to advocate for increased use of the Study Island program. A white paper is a recommendation about a specific policy based on facts (Lumby & Muijs (2014). One goal of this white paper was to increase the use of the Study Island program and with teacher fidelity. Other goals were (a) to help decision makers understand the effects Study Island can have when used on a consistent basis and (b) to use white paper recommendations to influence the use of the program throughout the district. The white paper will be presented during an

administrative in-service meeting date immediately after completion of the project. The teachers and other stakeholders are individuals of interest for the white paper recommendations.

The recommendation was to encourage stakeholders to use Study Island program effectively in all schools in the district. The data were also used to make informed decisions about promoting the program to encourage learning and to integrate Study Island during a reading block and an intervention block schedule in order to increase third-grade reading scores.

Rationale

The project genre I selected is a white paper with policy recommendation for third-grade teachers, administrators, and district officers to recommend Study Island be utilized more than 3 years and with teacher fidelity to increase third-grade reading and test scores. The white paper or position paper will be used for the project because (a) it is the most effective approach to present findings from a quantitative study (Lumby & Mujs, 2014), (b) it is a form of media to advocate for issues to promote change (Willerton, 2012; Mattern, 2013). When there is a problem and the researcher can recommend a solution, a position paper is a good way to present it (Lumby & Mujs, 2014).

The white paper will be centered on the results from data analysis section: there was a significant difference between the reading scores of students who used Study Island and those who did not. The findings from data analysis indicated a need to ensure that stakeholders and teachers understood that there should be an increase in the use of

Study Island and that teachers should be encouraged to use the software with teacher fidelity. Other ways to present the results, such as professional development, curriculum plan, and evaluation plans, were not as appropriate for this study.

Review of Literature

The research study addressed the concern of low test scores on third graders' ISAT with the use of Study Island to improve reading proficiency for this group of students. The review of literature is based on a white paper project to address the concern of recommendation of increasing usage of Study Island. According to Creswell (2012), the purpose of a literature review is to present a framework in which to convey the relevance of the research by using other studies to substantiate meaning to findings for the project study. Creswell (2012) found that when a literature review is performed, it creates a new direction for further studies in the future. The literature review will enlighten educators on current issues relating to how effective computer base technology programs affect third graders' reading scores and recommendations for best teaching practices in the classroom to promote academic gains. The first section of the literature review will be based on white paper genre and second literature review will be to support the project recommendation for advocating the consistent use of technology.

The databases that were utilized to search scholarly articles were EBSCO, ERIC, and ProQuest. The following keywords and phrases were used: *white paper, position paper, policy recommendation, educational policy, and policy effective use of technology, instruction, teacher perceptions and fidelity, instructional technology.*

White Paper Effectiveness

Researchers found the white paper has been a form of media to advocate for issues to promote change (Willerton, 2012; Mattern, 2013). When there is a problem and researcher have a recommended solution, a white paper is relevant means of media to present recommendations (Lumby & Muijs (2014). According to Cobb, Jackson, Smith, Sorum, and Henrick, (2013), white papers promote meaningful dialogue amongst stakeholders in an effective manner. Additionally, the purpose and facts are relevant when presenting a recommendation to decision makers (Grahm, 2015). Also, white paper recommendations are being utilized to promote improvement in various education fields to encourage math engagement within a student-centered environment (Nellie Mae Education Foundation, 2014). White papers or position papers have been the impetus to encourage policymakers to make informed decisions for technology in k-12 schools (Fox, Water, Fletcher, & Levine, 2012; Turner, Smith & Lattenzo, 2014). White papers have affected student learning (Fox, Water, Fletcher, & Levine, 2012; Cunningham, 2014). The white paper (Appendix A) will advocate for and make recommendations that will promote change for students in the local school district to increase the usage of Study Island.

Effective Use of Technology in Reading Instruction

In a qualitative study composed of three third and fourth grade students with learning disabilities the use of technology intervention program made a positive impact on their reading fluency and encouraged them to want to study more, but parents were concerned about students using a tablet for entertainment as opposed to learning (Ozbek,

& Girli, 2017). On the other hand, DAgostiono, Rodgers, Harmey, and Brownfield (2016) conducted a research study with 6- and 7- year-old children who were noted as at risk to use an iPad app that was integrated into the teachers' literacy instruction to promote academic achievement. Researchers used one key learning component of letter recognition to assess the effectiveness of the intervention program and found that it was successful (DAgostino et al., 2016). Thus, it has been noted the use of an iPad device cannot be used to predict how well students reading comprehension will be in the future (DAgostino et al., 2016). Students' reading development accomplishments consisted of comprehending methods of predicting, decoding unfamiliar words, letter identification, word recognition, word identification and understanding of oral language (DAgostino et al., 2016).

Also, it has been found that when students are confident and are independent learners the outcome use of technology-based instruction has a significant impact on students' learning experience (Pierce, 2011). (Lu & Liu, 2015). Students must have a sense of "self-regulatory skills" to maintain progress (Yeboah & Smith, 2016). Bently and Kehrwald (2017) investigated how a curriculum development project was implemented in the University of Australia within the School of Education for purposes of analyzing how effective a face to face lesson distribution would be opposed to face to face and online delivery. Many of the students were not meeting academic goals because they were not independent learners and did not have the necessary foundational skills of being able to draw on life experiences and the world to world events to approach literacy and online learning to be successful. (Bently, et al. 2017).

A qualitative study of 34 undergraduate participating students at North Eastern concluded that some college students are not computer literate academically, but had excelled when using instructional technology (Watulak, 2012). Additionally, the purpose of technology should be based on the skills students have been previously taught in the classroom to be impactful in the use of utilizing technology (Kirkman, 2014). It has been noted that educational web-based technology has many flaws that affect students learning because it apparently does not make a distinction between the learning needs of students regarding assuring that programs are based upon rigor and needs assessments for "instructional support" (Zhang, & Chu, 2016). Pierce & Cleary (2016) have the same concerns as technology design system effectiveness in the United States. It is essential that a chain of value in educational technology be in place for keeping abreast with computer-based learning programs for k-12 students. It has been recommended student's utilization, and teacher fidelity should be monitored throughout the school year to assure student are excelling academically (Pierce et al., 2016).

Impact of Technology and Student Learning

The United Kingdom has been testing students with achievement tests since 1980 and has seen the pedagogy of teaching change through technology use (Males, Bate, & Macnish, 2017). Males et al., (2017) completed a longitudinal study in Western Australia that investigated the use of devices for first three-year implementation and a post analysis for two years to examine any changes in students' academic growth. The results showed an increase that placed the school in a favorable position.

Kuo, Yu, and Hsiao (2013) conducted a study to investigate the effectiveness of multimodal presentation software for English as a second language students. The research consisted of 134 fifth graders and evaluated traditional teacher-led instruction as opposed to using multimodal presentation software integrated with an interactive whiteboard. As a result, ESL students who used the technology software improved in vocabulary acquisition in comparison to their peers in traditional classrooms. Additionally, Mellecker, Witherspoon, and Watterson (2013) conducted a study which showed a significant success rate for students who utilized a nutritional gaming technology program to learn how to make dietary decisions compared to students who did not use the technology gaming program. The use of technology made a difference in how students process information to make informed nutritional choices.

Hwang, Yang, and Wang (2013) concluded that a concept map, embedded technology game, presented to some of the 92 sixth-grade science students created a significant difference between students who used the technology program embedded with the concept map. The control group was taught using the digital game without the concept map. However, the experimental group learned with concept map embedded within the digital game. Researchers found that it was essential to give students a questionnaire to answer questions about learning their learning experiences. Final analysis showed the experimental group experienced a higher level of achievement with concept maps embedded into a digital game (Hwang et al., 2013).

Educational Technology

Based on a qualitative study, Holt et al. (2013) found that in urban school districts, some technology initiatives were successful but had some issues**.** Many school districts are concerned about the lack of effectiveness of technology integrated into the school curriculum because of lack of funding from government (Holt et al., 2013). For technology integration to be successful in the classrooms, standards must be simultaneously aligned to the mandated curriculum (Surjono, 2015; Harris, Al-Bataineh, M.T., & Al-Bataineh, A., 2016).

However, there is lack of funding for professional development to support the implementation of computer-based instruction (Holt et al., 2013; Howley, Wood, & Hough, 2011). Professional events are essential for teachers to facilitate struggling students in schools (Mancabelli, 2012). Many educators have concluded that blended instruction is shifting the paradigm from traditional teaching to building a foundation on one on one and integration of technology to reach struggling students (Murray, 2014).

However, a flipped classroom discourages traditional teaching lectures and relies solely on media teaching (Cheng & Weng, 2017). Researchers Delgado, Wardlow, McKnight and O'Mally (2015) believed that computer-based programs help students develop various skill sets aligned with academic reading achievement goals.

Using Instructional Technology with Fidelity

It was pointed out by Moye, DTE, and Weather (2014) that Americans have always been a nation of people who have learned by doing and not attached to a computer daily to learn (Moye et al., 2014). Stonebradker, Robershaw, and Moss (2016)

investigated a treatment and controlled group of undergraduate students with an interactive and non-interactive tutorial on a technology program and its effectiveness. They found students who were able to interact with the notes on the side of the computer showed academic gains as opposed to students who watched a video on the computer and tested. The point has been proven that humans are known for doing and interacting with the learning process (Moye et al. 2014). A computer-based program is only as useful as it allows students to communicate with what he or she knows before interacting with the skills via the application (Pierce et al., 2016). According to researchers, doing is the ability to be able to put things together, produce and synthesize what one has created (Moye, et al., 2014). Abdullah, Ziden, Aman and Mustafa, 2015) found that the more time students spent using computers in Iraq with a positive behavior their academic achievement increased and those students who had a negative or low motivation attitude towards the use of computers scores did not increase. Most importantly, students' and teacher's perceptions relating to using technology to improve learning is a crucial element.

Some learners that used educational technology achieved higher test scores (Petko, Cantieni & Prasse, 2017). Abdullah et al. (2015) stated three essential factors are related to how well students perform academically. These included: affection, behavior, and belief. It has also been noted by Holt and Burkman (2013), that computer-based programs can be productive with teacher professional development training. Providing professional development assures educators are using technology with fidelity as technology (Holt et al., 2013).

Additionally, Yamaguchi, Sukhbaatar, Takad, and Dayan-Ochir (2014) investigated a study regarding: "The One Laptop per Child" project which entails supplying some of America's most impoverished countries with laptops. The study included approximately 2,000 fifth grade students who were assessed in reading and math within 14 schools. The results were biased in that schools who did not have quality teaching methodologies students' scores did not have a significant difference compared to schools with exemplary teaching pedagogy (Yamaguchi et al., 2014). The quality of teaching makes a substantial difference in the results of students test scores and not the use of technology (Barseghian, 2012; Demski, 2012).

Many of struggling students' variables stem from students feeling as if lessons are not rigorous enough, disconnected from learning, or a lack of student understanding that decreases students' success rates in school (Mancabelli, 2012). Thus, there is a definite need for a system approach to assure students are learning and educators are abreast with current research regarding new technology trends to be useful (Schrum, & Levine, 2016; Desplaces, Blair, & Salvaggio, 2015; Shinobu, Javzan, Jun-ichi, Khishighuyan, 2014).

Technology and Collaboration With Fidelity

Currently, many teachers and districts are collaborating on technology and how it is going to make an impact on student learning. Williams (2012) strongly believes many school districts are implementing blended classrooms and personalizing computer base instruction in accordance to student's deficiencies. Basing guidance on student deficiencies is a practical approach to integrating technology into the school to meet common core standards and assure teacher fidelity. Additionally, researchers concluded

teachers who have access to adequate professional training for blended classroom instruction increased student achievement of academic goals (Archer, Savage, Sanghera-Sidhu, Wood, Gottardo, & Chen, 2014). Students in grades k-12 outperformed classrooms who were not using blended learning. The mixed learning model was found to be an effective way to integrate technology into the curriculum and close the achievement gap (Schechter, Kazakoff, Bundschuh, Prescott, & Macaruso, 2017).

Collaboration is a determining factor if teachers within school districts are going to be proactive in blending technology. Also, formal classroom instruction curriculum is needed to promote academic growth and close the achievement gap (Blaine, 2014). Teachers must have sufficient staff development and professional development to assure collaboration is meaningful to increase technology use in their classrooms as well as assess and personalize differentiated instruction for all students (Blaine, 2014). Support is a critical factor in how successful teachers will be in their classroom to improve student achievement (Adesola, 2012; Spencer, & Smullen, 2014). Technology has promoted meaningful dialogue among many teachers (Adesola, 2012). An academy was formed ten years ago in Missouri for teachers to collaborate about their experiences in the classroom around the use of technology (Blaine, 2014). The collaboration was found to be successful and showed promise for teachers who integrate technology during literacy instruction (Blaine, 2014). The technology was found to be a useful tool for academic success of students (Pierce & Cleary, 2016).

Project Description

The findings in the white paper project study will be presented to administrators, teachers, technology coordinators, reading specialist and other stakeholders to communicate recommendations and conclusion based on research results of the implementation of Study Island. The results support there was a significant difference in third grade reading scores with use of Study Island.

The presentation of the white paper will give administrators, teachers, and all stakeholders an opportunity to make informed decisions about utilizing Study Island to increase student reading achievement. The white paper includes an introduction, data results, literature review, recommendation, and a conclusion. The white paper will be presented at an administrative in-service meeting.

Needed Resources and Existing Supports

The white paper will be distributed and presented to district administrators and other stakeholders. The principals are essential to existing support within their school buildings to ensure Study Island is implemented with fidelity. Additionally, the principal will communicate with reading specialists, technology coordinators, and parents to assure results from the project study are communicated and recommendation guidelines will be followed to promote academic growth when using Study Island. I will need copier paper, staples, computer, and printer and email addresses to distribute the white paper. These will be provided by the district. The school district is supportive of current research being delivered for best teaching practices. The district administrator officer will be informed about the project and copies of the white paper study will be sent for a review of project

study to be disseminated to district administrators. The presentation will promote a meaningful dialogue of the results and recommendations. Stakeholder questions will be answered during and after presentation.

Potential Barriers

The potential barriers may include of lack of availability of stakeholders for the presentation of the white paper. All stakeholders may not be available on the potential scheduled date, or meeting date may change due to district issues. However, I plan to be proactive in assuring all potential participants know the schedule through two-way communication with all network district administrators before the meeting. The school district may not have adequate funding to implement Study Island in other schools or to provide professional development for teachers immediately.

Implementation and Timetable

I plan to schedule the presentation of the white paper after Walden University approves the doctoral study. The plan is for me, as the researcher, to prepare a presentation that will guide administrators through the white paper by June 2019. Administrators, teachers, technology coordinators, reading specialist, and other stakeholders will have an opportunity to review white paper and discuss findings and recommendations

Project Evaluation Plan

The evaluation for this white paper will be a combination of both formative and summative, outcome-based evaluation for the purposes of determining if the use of Study Island program for three consecutive years with teacher fidelity will have a significant

effect on third grade students reading ISAT scores. The purpose of the formative evaluation is to present research-based information to administrators to recommend an increased usage of Study Island to promote increasing reading scores and reading achievement for third grade students. At the end of the presentation, I will provide a survey (Appendix A) to determine if administrators are willing to reimplement Study Island with fidelity. A successful project outcome will be assessed if administrators make an informed decision to increase usage of Study Island with teacher fidelity over a three-year period. The survey results will allow facilitator to retrieve feedback about each participant's views and provide feedback about next steps for using Study Island with fidelity throughout the school district. This evaluation process facilitates the presenter to identify concerns relative to project study outcomes (Lam, & Shulha, 2015). The results from the survey will be a strategic guide for utilizing and advocating for the use of Study Island with accuracy in the next three years. The survey consists of approximately ten questions in Appendix B that is aligned to the project in Appendix A. A summative evaluation of the project will determine if there are significant differences in test scores after three years of Study Island usage with fidelity. The focus of project evaluation is anticipated to begin 2019-2020 school year. Third grade students will begin to use Study Island Program for three consecutive years if the white paper recommendations are followed.

At the end of each school year students will be assessed to determine if there were significant difference compared to the previous year. If the recommendations from the white paper are implemented, when the 3-year trial period has expired, it should be

assessed to determine if the use of Study Island with teacher fidelity made a significant difference on third grade student reading test scores.

If the project is well received, I will assess the project by asking stakeholders such as, administrators, and teachers to complete the ten-question questionnaire with comments (Appendix B). This will provide feedback on stakeholder viewpoints. If the stakeholders decide to utilize the five recommendations addressed in the white paper, then a plan is set to monitor whether or not the recommendations made a significant difference in the reading scores of students in third grade after three years. The stakeholders are teachers, administrators, and school district representatives. Each of these stakeholders has a vested interest in third grade students high retention rates because of low reading test scores. The project study findings will affect administrators and teachers because they will have data from the use of Study Island to drive instruction and potentially decrease retention rates of third grade students. The parents could be affected by a positive outcome for their children if there is a significant difference with test scores because the increase usage of Study Island. School district representatives are stakeholders that are advocates for all students to achieve academically and if the project results are significant it could help school districts make informed decision to promote Study Island usage to increase reading scores of 3rd. grade students throughout their networks.

Roles and Responsibilities

As the preparer of white paper, it is my responsibility to assure that all resources and information conveyed is research-based. I also am the facilitator and it is my

responsibility to make sure all questions are answered promptly and throughout the process of presentation of the white paper. I am also responsible for assuring that all stakeholders receive a hardcopy of white paper and understand the problems and recommendations to make an informed decision for increasing the usage of Study Island to impact students' third-grade reading scores and test scores. The role and responsibility of the stakeholders such as the administrators and literacy leaders will be to utilize data to make informed decisions to use and integrate Study Island with fidelity at the school.

Project Implications

The project study white paper was designed to assist administrators at Allgood Elementary School district in making necessary changes in how third grade students use the Study Island program to increase reading proficiency and test scores for third grade students. Thus, the project study will assist the decision makers in making an informed decision in purchasing and using Study Island technology programs for the school district over 3 years to promote reading growth on the third-grade ISAT test. Third-grade reading proficiency is a concern at Allgood Elementary School. By analyzing results of comparing gains in reading achievement after using a technology-based reading program like Study Island, the school may be able to understand better how technology-based programs can help third graders' reading proficiency and increase test scores. The influence of this project study may be the further implementation and increased usage of technology-based programs to assist students and individualize reading instruction to meet the needs of all students

Importance of Project to Stakeholders

The stakeholders are the school district officers, teachers, administrators, parents, and community. The project will be important to all these stakeholders because they are the principle parties who will benefit from its research-based information. The project study white paper will assist the school district in making informed decisions about how to invest funds to increase 3rd. graders reading scores. Furthermore, students will be able to utilize the Study Island program on a consistent basis to increase reading scores. Parents will benefit from students' reading, and test scores increasing due to increase in usage of Study Island. Additionally, the school district administrators give recommendations to principals throughout the district on how they should expend funds on Study Island program to facilitate students in increasing test scores.

Importance of Project in a Larger Context

As a researcher, I believe this project study will be significant for school districts throughout the nation to assist in making informed decisions about how technology benefits third grade students. Children who are proficient readers can synthesize information and enhance their reading skills. Also, if more third grade students become successful with reading comprehension and learn how to read on a proficient level, educators will be promoting responsible citizens using Study Island. Educators, parents, students, and other stakeholders can work towards decreasing the high percentage of third-grade retention. The white paper will help administrators, teachers, reading specialist, technology coordinators, and other stakeholders to make future informed

decisions for purchasing Study Island program to improve third grade students reading abilities.

Conclusion

Section 3 presented the goals, rationale, and review of the literature, project description, project evaluation plan, and project implications for social change. Allgood Elementary School utilized Study Island for 3 years in hopes to increase third grade reading test scores. Previously, scores were stagnated, because of a hypothesized lack of consistency and teacher fidelity. The presentation of white paper recommendations will enlighten stakeholders understanding about how vital Study Island program can and will be when used effectively as an intervention.

In Section 4 I will discuss the project's strengths, limitations, recommendations in addressing the problem, and overall insights of this scholarly project. Additionally, I will reflect on project development, evaluation, leadership change, the importance of work, self as a scholar, and self as project developer.

Section 4: Reflections and Conclusions

Introduction

In Section 4, I address the strengths and limitations of this project. I also review recommendations for the project study. Scholarship is reflective of what was learned about the project study. I reflect on project development, evaluation, leadership change, the importance of the work, self as a scholar, self as project developer, the project's potential impact on social change, the implications of the project, the applications of the project, including a sense of direction for further research.

Project Strengths and Limitations

Study Island is an assistive technology program in reading that is aligned with common core standards and is aimed at increasing literacy learning (Steyers, 2012). The program has many features to help students achieve their academic goals. Indeed, when teachers use it with fidelity, and when they are properly trained to use computer-based technology the users benefit (Archer, Savage, Sanghera-Sidhu, Wood, Gottardo, & Chen, 2014).

According to Lumby & Mujs (2014), a white paper makes a recommendation based on facts. The strength of the project's white paper is that teachers, administrators, and district officers will have a research-based supported guide to help them make an informed decision about whether to increase the use of the Study Island program for 3 years, with fidelity. The goal is to promote learning and decrease third grade retention rates due to low reading scores. The use of Study Island on a consistent basis will provide an opportunity for third-grade students to become proficient readers.

The goal of the project is to increase the use of Study Island technology program with teacher fidelity for 3 consecutive years to increase third grade student's reading test scores because it allows educators to create assessments aligned to the needs of their students (Hixson, 2010). The effective use of technology has been found to increase reading proficiency (D'Agostino et al.).

The limitations of the project are that teachers using the program may not want to use it with fidelity. Administrators need to support the program. Also, professional training will be necessary for teachers to learn how to use the technology program with fidelity. Administrators may not buy into purchasing Study Island technology program due to budgetary concerns (Holt et al., 2013).

Recommendations for Alternative Approaches

A quantitative research design was used for this project study. However, a case study may have provided a more thorough examination of the use of technology-based reading programs through observations and interviews with teachers and students. A qualitative approach may have provided more nuanced understanding of how teachers used the Study Island. Additionally, a qualitative approach might have provided insight into why there were some significant differences between students who used Study Island compared to those students who did not.

Scholarship, Project Development, and Evaluation & Leadership Change

I have learned to become a scholar of knowledge through the learning process at Walden University. This project has taught me the foundational and essential skills for adequate research and how to become a change agent for society. I can identify a problem

within the educational arena, and research potential solutions while mitigating my own biases. Also, working within the educational setting gave me an opportunity to work with peers to make a notable change in how students are taught to become more proficient readers.

Scholarship

My scholarship consisted of identifying a problem and formulating a problem statement and, research questions. I also conducted a thorough literature review about third grade reading scores technology. I have learned the importance of the research process including how to search for peer review articles relating to a project study and synthesize previous scholarship. I understand the importance of managing bias about an issue and to become a problem solver. Specifically, in this project, I discovered that it is important to address concerns within the educational arena regarding third grade low test scores in reading.

Using my experience in the classroom and previous research in conjunction with the findings from this study, I gained a deeper insight into third grade low reading scores on test and technology that supports increasing test scores. I aligned my research with third grade reading scores and technology. I used the study findings to create and present a white paper. The process included continuing research and locating additional articles to support the white paper based on using technology. The purpose was to provide a resource with fidelity to increase third grade reading scores.

My experience as a researcher at Walden University taught me to be data-driven and make decisions based on my data analysis as opposed to my perceptions. I learned to

support an argument in the field of education with credible documentation. The work I do going forward will benefit my colleagues from supported research. It is important to me to be a change agent and efficacious leader, and to become a better scholar.

My doctoral journey has oriented me toward being a researcher who seeks knowledge stemming from empirical data. I do not rely on my biases or assumptions about my profession without supporting it with research. Completing the proposal and white paper has given me a more in-depth view of how I will assist students, teachers, administrators, and stakeholders to become lifelong learners. I will share credible information for educational problems to a find a solution.

Project Development and Evaluation

The project genre selected was a white paper with policy recommendation for Grade 3 teachers, administrators, and district officers. I recommend Study Island be utilized for more than 3 years, with teacher fidelity, to increase Grade 3 reading and test scores. The quantitative project study will enhance administrators and educators' knowledge bases, in the district, about how to facilitate Grade 3 student use of Study Island to promote an increase in reading proficiency and test scores. The results of data analysis indicated there was a significant increase in ISAT scores from the beginning of the Study Island Implementation and after implementation.

The white paper is a medium to share with administrators of the school district to make informed decisions to purchase Study Island for an additional 3 years and use it with teacher fidelity. Researchers found the white paper has been a form of media to advocate for issues to promote change (Willerton, 2012; Mattern, 2013). In this white

paper, I share five recommendations to help administrators and stakeholders make an informed decision to purchase Study Island to promote academic reading gains for third graders. A questionnaire-based evaluation has been created for participants to complete at the end of the presentation of the white paper as described in Section 3.

Leadership and Change

My doctoral journey has opened many doors of understanding and opportunities for me throughout the process. Currently, at the school where I work, I am very active on various committees to be a change agent. I identify gaps in practice in the learning community and research solutions. I research information on multiple issues within my learning community and initiate meetings to promote meaningful dialoguing about problems and how they can be resolved.

The project study has given me an opportunity to share what a difference a research project makes among my learning community. Many educators are very receptive to dialoging with me because they understand the information I seek to disseminate is research-based. I firmly believe as a change agent we must lead by example, and what I have learned through my doctoral journey at Walden University is a more profound understanding of what leadership means. The knowledge I have gained from Walden University will allow me to continue to complete project studies to assist educators in making a difference with their teaching best practices.

Reflection on Importance of the Work

Grade 3 students are suffering because they are not proficient readers, and society, I assert that it is society's job to continue to find solutions to combat this issue. The high

retention rate of third grade students is known to predict their future and lead to literacy. Students who are reading below a proficient rate need additional assistance with reading strategies. As school districts are spending funds for technology to facilitate students to increase reading scores, there should be ongoing research to monitor the effectiveness of computer-based programs. The study I have completed has exemplified the necessity for students needing additional usage time of the Study Island program to support them to increase reading scores and test scores.

Analysis of Self as a Scholar

Through the doctoral journey, I was able to reflect on myself as a scholar. At the beginning of my journey I thought it would be a straightforward process, but nothing could have prepared me for this quest, as a scholar. I have been challenged mentally, physically, and spiritually. Walden University's rigorous doctoral curriculum prepared me to become a scholar. I identified a problem, created research questions aligned to the problem, conducted a literature review related to measuring reading performance with and without technology, and lead a research project based on those components. It has prepared me as a scholar for becoming an active change agent within our global society. I consider myself a lifelong learner who will be dedicated to making a positive impact within the educational community and within the global educational society. A scholar, in my opinion, is one who never gives up on investigating contemporary trends and research to make a difference in their respective field. Also, it was my duty as a scholar to encourage my colleagues within my school district to believe in the project study by framing the issues to influence their thinking for purposes of social change. As a scholar,

I experienced how important it is to be committed to be a change agent and a competent researcher. It is my responsibility as a scholar to address the problem based on a theoretical framework to support the problem and understand how to resolve those problems for a social change.

Analysis of Self as Practitioner

As a lifelong learner, I am always participating in various professional developments to assure, as a licensed practitioner, that I am an active change agent. As a librarian and educator, it is essential that all students, especially third grade students' academic needs are met in reading to prevent students being retained in third grade for a second school. The literature I have researched has given me an opportunity to review and address concerns of the high retention rate of third grade students throughout the United States.

The doctoral journey allowed me to understand how third grade retention rate is a global issue and the need to address this issue with my school district will help to promote awareness and change. The doctoral educational experience has given me a platform to share and communicate clearly with my constituents about educational problems and sharing resolutions that are research based. I believe meaningful dialogues will continue with constituents that will promote trust and credibility with my guidance as an effective change agent. I also understand that change does not happen immediately, but as a practitioner, I can share research resources that will be beneficial. As a cogent change agent, I must facilitate educators on a needs basis to share the wealth of knowledge relating to increasing third grade reading scores and assisting them to become

proficient readers. I have incurred a strong knowledge base for researching current peer reviewed articles to support and stay current with issue and trends aligned with third grade reading scores and reading proficiency.

Analysis of Self as Project Developer

At the beginning of my doctoral journey, I had lack of understanding of what or how to convey my thought processes for a project study into scholarly writing. I learned a problem had to exist to develop a project. The process was long and resulted in an extensive approach for developing the project. At times, it was an ambiguous learning experience because I was not aware how to identify a problem and include the structure based around the problem statement.

Additionally, I had to learn how to write the problem statement, rationale, research components for creating a proposal, and align the problem statement with recent peer review research literature. Thus, the literature review section was intense because it took months to locate current peer review articles to align with the problem. As a professional practitioner, it was imperative for me to read each article and synthesize the information to write in a scholarly manner for the project study. Last, it is essential for a project developer to have a mentor to facilitate throughout the doctoral journey because the journey was long, but with patience, and faith in myself as a scholar, I endured as a project developer.

Project's Potential Impact on Social Change

The project study results will allow teachers, parents, administrators, and district officers to make informed decisions. Third graders will now be able to get the assistance

they need from the current research to enhance the usage rate of Study Island and the results of how competent technology is in providing support to increase test scores. I believe that when third grade students are utilizing reading technology on a consistent basis with teacher fidelity, they can upsurge test scores. Teachers and all stakeholders must be informed of research-based best practices throughout the process of teaching and monitoring students reading growth using technology and Study Island to decrease high retention rate that society is experiencing among third grade students. Technology is a resource tool, but not a means to an end. Third grade students and children, in general, must also be taught literacy skills to promote academic gains. As a society, I believe if we continue to utilize technology or computer-based instruction into our curriculum with teacher fidelity, high retention rates will change. This project study and white paper is part of this process of meaningful change.

Implications, Applications, and Directions for Future Research

Third graders' retention rate is high throughout the United States because of low test scores (Rodríguez, Amador, & Tarango, 2016). Educators, legislators, and all stakeholders are pondering how to resolve this problem (Huang, 2015). The project study can assist educators and other concerned parties to make informed decisions with teaching strategies and lack of reliance solely on computer based programs for academic achievement. Teachers and district leaders may become more engaged with a review of white papers to promote social change in education. Also, teachers and stakeholders will receive a better understanding that technology is a resource that can benefit students if it

is monitored and used with fidelity. Teachers will be encouraged to become researchers of change to promote lifelong learners.

Furthermore, the white paper will help teachers, administrators, and stakeholders to assess third grade retention issues, and may result in a more positive attitude about working with students that have been retained in Grade 3. Teachers may build an alliance with other schools within the district to brainstorm and visit each other's classroom for best practices in the use of computer-based technology. Finally, yet importantly, stakeholders can better understand each third-grade students' learning challenges as it relates to his or her reading abilities. Teachers and stakeholders may apply how they use technology in their curriculum to support reading comprehension skill sets. Educators may improve best practices as well as reading test scores with the use of computer-based programs. Teachers may learn technology is a resource tool, but not intended to replace the teacher. Teacher confidence may be increased when they use research-based technology teaching methodologies to increase Grade 3 annual assessment scores in reading.

Future Research

The future research into Grade 3 high retention rates after the usage of computer-based technology should be investigated. Through my white paper recommendations, I discussed how third-grade reading scores could increase by increasing the usage rate of Study Island. A study on the topic of appropriate implementation of computer-based programs should be conducted. Teacher use of the Study Island program with fidelity

could be investigated to determine if there will be a continual increase and meaningful change in third grade reading scores.

Conclusion

Section 4 addressed an extensive view of the white paper developed for this project study. The development of the project was based on the quantitative approach study that investigated whether the computer-based program affected student reading performance on the ISAT. The data consist of archival data of third grade test scores and analyzed by IBM SPSS program. A project study was designed to investigate if Study Island made a significant difference in third grade test scores.

The results conveyed a significant difference in third grade test scores who utilized Study Island Technology Program versus students who did not. The conclusion of this project study will help teachers and stakeholders make informed decisions about how they monitor students' academic growth when using technology to promote academic gains. The white paper will enlighten them on why the increased use of Study Island is paramount and provide research based on increasing students reading scores. Lastly, the project study will have a positive impact on third-grade teachers use of Study Island technology with fidelity to improve reading scores.

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Appendix A: Project

Increase Usage of Study Island Intervention White Paper

Introduction

The low test scores of third graders' Illinois State Assessment Test (ISAT) is a concern in the community and a technology-assisted reading program, Study Island, was implemented to help. Third graders in the district are struggling to meet state standards in reading despite the usage of Study Island. The purpose of this white paper is to enhance district administrators, school administrators; and teachers' knowledge base on how to facilitate third-grade students' use of Study Island to promote an increase in reading proficiency and test scores. To enhance the knowledge base of district stakeholders the findings of a literature review and a quantitative research study will be presented. This paper will present a literature review that will address the advantages and disadvantages of the use of technology for reading proficiency, teachers' collaboration, and the importance of promoting community among teachers, administration, and staff. This paper will also present methods and results of a quantitative correlational study on whether Study Island effected student reading performance on the ISAT of third-grade students in the district. Results concluded ISAT scores were significantly higher only after the second year of implementation of the program. The paper will conclude with recommendations based on research findings and a discussion of literature that supports those recommendations.

Background of Existing Problem

The 2010 district internal study recommended the administration at Allgood Elementary School put forth an effort to make a difference in the scores of the students,

meeting and exceeding the scores on the annual state test (District Study, 2010). According to the same district study, in the 2005/2006 school year, only 56.4% of students met or exceeded state goals. In 2006/2007 a higher percentage of students met or exceeded state goals, and that number increased by approximately 7% for a surprising 65.60% (District Study, 2009). However, the district studies illustrate that out of the third-grade population, only 64.80% met or exceeded grade level in 2010. The district study found the factors regarding why the reading scores have increased from one year to the next came from addressing concerns and providing instructors professional staff development in language arts and support services in overcrowded classrooms.

The 2008 ISAT results show 64% of students passing compared to 2009 at 56.9% passed, which was a decline of 7.8 %. Reading scores in 2010 were 64.8% passing, compared to 55.4% passing in 2011, which means a year-to-year decrease of 9.4%. The 2012 reading scores were 64% passing compared to 2013 reading scores of 54.1% passing, which means a decrease of 9.9% (District Study, 2013).

Current Review of Literature of Study

Conceptual Framework

Dewey's theory of experience (1986) provides the theoretical framework for the study. The current disposition about teaching and learning stems from the belief that educators must have respect for students and how they, as human beings, process information. Students teach teachers how to teach. Fulano de T. (2010) discussed that in Maslow's theory "learning can only take place when basic needs have been met" (p. 40). Human beings can do anything they set their minds to do when given the opportunity to

excel without the boundaries within schools and in the educational system that hinders their thought processes of living up to their fullest potential. Also, studies have proven the hands-on approach to learning to be successful in teaching as it deals with real-life situations (Samaras, Legge, Breslin, ZMittapalli, Looney & Wilcox, 2007). Students can reach their full potential when they can self-actualize. Theorists Maslow and Dewey had similar beliefs about individuals' needs being met that if hindered it disrupts learning (Dewey 2001).

Morant and Maslow (1965) found that a human being not only has the skills to judge his or her work, but also the ability to showcase that individual's intellectual abilities, as they relate to having a knowledge base of interacting with others. To understand how the two types of theorists one needs to understand their individuality, the importance of being respectful of what goes on within other human beings, and how that relates to getting the most out of students within the educational system.

According to Maslow, "Knowledge is continuous, flowing, changing and needs to account for individual needs and development" (as cited in Fulano de T., 2010, p. 138). Maslow further stated that humans' right is to "self-actualize" themselves, but he also found that in society this right has been extracted from children (as cited in Fulano de T., 2010, p. 296). How can teaching and learning move students to a place of self-actualization without hindering the student from living up to his or her fullest potential as a human being? This question is paramount to educators who are striving toward effective teaching and learning goals. The educational system may be currently hindering students because it does not encourage them to be reflective on the process of their

learning, and teachers are not teaching in a capacity to make it possible. Fives et al. (2014) confirm that students with a favorable view of their ability to learn do, indeed, demonstrate higher levels of reading proficiency. The framework informs this project study as the use of targeted programs like Study Island, theoretically, help move students from failure to success and actualization.

The Debate has raged the past three decades over best practices in reading instruction, particularly for struggling readers (Velasquez III and Slocum, 2012). Studies have examined many reading intervention programs to promote an increase in proficiency on national reading tests (Frost & Sorenson, 2007). According to Frost & Sorensen (2007) third grade students who are taught with "multi-level and simultaneous activity" will make achievement gains in reading scores. Consequently, according to Connor, Jakobsons, and Meadows (2009), the National Assessment of Educational Progress (2007) reported 40% of United States fourth graders were not able to excel on a basic reading level assessment. It has been concluded with about 15 million children in the United States are not at the 50% mastery level of fundamental reading skills (Conner& et al., 2009). The Department of Education has implemented a scientific approach to address the needs of struggling readers in third grade (Conner et al. 2009). The United States federal government focused attention on student achievement rather than resources about to students in grades kindergarten through third grade (Manacorda, 2012). The Reading First Initiative was funded with 6 billion dollars to address students in low performing schools (Conner et. al., 2009). According to the Education Commission of the States (2015), 14 states are now even requiring new teachers to

demonstrate competence in the teaching of reading. The Commission report (2015) clearly states, “Ensuring that students are reading proficiently by third grade is a key component of keeping students on track to graduate high school and pursue college and careers” (para 1). There is an exceptional interest in finding and funding interventions which increase reading proficiency.

The utilization of early reading intervention is paramount for diagnosis of reading disabilities and scientific approaches to facilitate proficiency of struggling readers (Blachman, Fletcher, Munger, Schatschneider, Murray, & Vaughn, 2014). Students tend to excel in reading and increase their confidence as lifelong learners when given early intervention strategies (Blachman et al., 2014). Smithson (2012) found when students set goals they become higher achievers in reading. There is a positive relationship between students diagnosed as struggling readers and effective strategies used to promote reading achievement (Blachman et al., 2014). In summary, there is national concern about third-grade student low reading scores and how low results has affected academic achievement in public education among low-income students. In the past, laws such as *No Child Left Behind* were to enforce educational equality (Bellei, 2013). Reading initiatives like Reading First were funded to address low reading scores in kindergarten through third grade (Manacorda, 2012). The benefit of the programs implemented is evidence that reading academic achievement is a concern nationally. Though much research has focused on the problem of low reading achievement, the practical solutions have not been shown to promote much success (Gibson, Cartledge, & Keyes, 2011).

Summary of Analysis and Findings

Overview

A quantitative approach was necessary for the project study as two sets of scores was compared. The data for the study was quantitative. A quantitative design was needed to determine the relationship between the two sets of student scores; that is, whether reading scores (ISAT) improved after the Study Island program was implemented. A qualitative approach was not appropriate, as the comparative nature of the study does not indicate this design. Comparative designs are used to determine a possible difference between two or more (Creswell, 2008; Cresswell, 2013). Analysis of variance research describes the difference between two variables (Duffy, & Chenail 2008).

The purpose of quantitative research is to use human experiences and translate them into numbers (Fitzgerald, Rumrill, & Schenker, 2004). The project study met the definition of quantitative research because it used quantitative data to investigate the relationship between variables. For this project study, the proposed hypothesis was that students' ISAT scores increased by using the technology program Study Island. Also, I compared the test scores of the students from the years 2009-2012 to look for ongoing trends in the use of technology to improve reading scores. The problem at Allgood School is that the district has spent money and resources to implement the Study Island program and yet more than 30% of students were retained in third-grade because of low scores on the ISAT (District Study, 2010). I investigated whether the Study Island technology program facilitated third-grade students' standardized assessment performance, which predicted impact of their ISAT scores. Data was also presented to

determine whether less third grade students were retained in the years following Study Island implementation. Students' prior benchmark assessment scores, and archival data from the prior teachers' record about students' academic performance was used to examine the effectiveness of the program.

The purpose of this project study was to determine if there were an improvement in standardized test performance in reading after the purchase and use of a technology-based reading program, Study Island. The study l investigated if Study Island has assisted in improving third graders' test scores in the school years since implementation (2009-2012). At Allgood Elementary, 64% of the school's third-grade population was scoring or above standard. However, there was still a concern for the 44% of third graders who were not meeting the ISAT requirements and achieved at grade level proficiency. Educators at Allgood Elementary School may have underutilized the school's Study Island computer-based instruction. Previous years have shown a decline in the third graders' achievement gains on the state test. The focus of the study was to investigate when educators used the program on a regular basis, and has it influenced the growth measures on third-grade students' ISAT scores in reading.

Instrumentation and Materials

The primary instrument was the Illinois Standards Achievement Test (ISAT), which measured the achievement of students in reading and mathematics in grades three through eight and science in grades four and seven (Godt, P.T., 2010). It defines what students in public schools in Illinois should have accomplished at the end of each respective grade level. In 2010 Illinois aligned the curriculum to be more rigorous and to

prepare students for being productive citizens (Godt, 2010). According to the ISAT Interpretative Guide (2013),

> The ISAT includes multiple choice, short response and extended response items consistent with the learning standards for that grade and subject. Beginning with the 2006 ISAT administration, reading, mathematics, and science tests included a combination of multiple-choice items from the Stanford Achievement Test, Tenth Edition (SAT 10) and items written by Illinois educators. The reading and mathematics tests also contain open-ended questions that require a written response from students. ISAT assessment is aligned with Illinois Learning Standards, which defines what students in public schools in Illinois should have accomplished at the end of each tested grade level. (p. 1)

The data consisted of archived ISAT scores. The ISAT scores from the school years 2009-2012 were used to determine if the impact of the Study Island technology program affected reading achievement.

Guiding Research Questions

For this project study, the proposed hypothesis is that student's ISAT scores increased by using the technology program Study Island. Also, I will compare the test scores of the students from the years 2009-2012 to look for ongoing trends in the use of technology to improve reading scores. The problem at Allgood School is that the district has spent money and resources to implement the Study Island program and yet more than 30% of students are retained in third grade because of low scores on the ISAT (District Study, 2010). I investigated whether or not the Study Island technology program

facilitated third-grade students' standardized assessment performance on ISAT scores. Data will also be presented to determine whether or not less third grade students were retained in the years following Study Island implementation. Students' prior benchmark assessment scores and archival data from the prior teachers' record about students' academic performance will be used to examine the effectiveness of the program. The guided research questions are:

Research Question 1. Is there a statistically significant difference in third grade ISAT after the implementation of the Study Island reading program?

$H1_0$**.** There is no statistically significant difference in third grade ISAT scores after the implementation of the Study Island reading program.

$H1_a$**.** There is a statistically significant difference in third grade ISAT scores after the implementation of the Study Island reading program.

Data Collection

The data consisted of archived ISAT scores. The ISAT scores from the school years 2009-2012 were used to determine if the impact of the Study Island technology program affected reading achievement. A Post-test only design was used. I began data collection after receiving Institutional Review Board at Walden University and school district. As no students were involved, and only archival, de-identified data was used, there was no consent needed. Once the archived benchmark assessments for ISAT from the 2008-2012 school years were presented, the analyses were completed. There were 305 total students assigned to these classrooms, all of whom were African American. No

other demographic variables were provided in the archival dataset. The Study Island program was used during academic years 2009-2012.

All data was password protected stored in the school district's database. According to Cresswell (2008; Cresswell, 2013), it would not be necessary to obtain approval from the parents of the as (a) archival data will be used to collect information about the performance of the students in an educational program in the school; (b) information collected about the performance of the students on the ISAT is a part of the regular education program at the school; and (c) no information will be collected that would enable the identification of any student individually.

Results

Data Analysis Results

I conducted two, one-way ANOVAs to determine (a) whether or not there was a significant difference in ISAT scores during Study Island implementation, and (b) whether subsequent years of Study Island implementation resulted in higher ISAT scores. I evaluated the ANOVAs at the .05 significance level, as is acceptable in education (Johnston, 2012). First, I present descriptive statistics. Next, I reiterate the research questions and hypotheses, followed by the results of the analyses conducted to answer these research questions.

Means, standard deviations, frequencies, and percentages.

The lowest ISAT score was in Year 1 (2008-2009), which was the year prior to the implementation of the Study Island program. The highest ISAT score was in Year 3 (2011-2012) (M = 209.78, SD = 40.02), the year after Study Island was implemented (see Table 1). In school year 2008-2009, most students were below standards (n = 37, 48.1%). In year 1 and 2, most students were still below standards (Year 1: n = 38, 47.5%; Year 2: n = 39, 52.7%). In Year 3, most students met standards (n = 33, 44.6%). In Year 4, most students were below standards (n = 45, 38.1%).

Table 1

ISAT Scores by School Year

School Year	*n*	*M*	*SD*	Skew	Kurtosis
Pre-Implementation (2008-2009)	77	192.83	38.10	0.59	1.99
Post-Implementation:					
Year 1 (2009-2010)	80	193.54	39.25	0.53	1.36
Year 2 (2010-2011)	74	203.20	43.16	1.15	1.33
Year 3 (2011-2012)	74	209.78	40.02	0.58	0.73

To answer this research question, I conducted a one-way ANOVA. The independent grouping variable was school year, with groups representing the year prior to the implementation of the Study Island program, and the years during the Study Island program (2009-2012). To make appropriate inferences from ANOVAs, the assumptions of normality and homogeneity of variances should be met (Tabachnick & Fidell, 2013). I previously assessed the normality of the sample. Skew and kurtosis values indicated that normality can be assumed (See Table 1). I assessed homogeneity of variances using Levene's test, which should not be significant for the assumption to be met (Tabachnick & Fidell, 2013). Levene's test was not significant ($p = .934$), indicating that the assumption of homogeneity of variances was met.

The results of the one-way ANOVA were significant, $F(3, 301) = .026$. This indicates that there were statistically significant differences in ISAT scores during the Study Island program implementation. The mean ISAT score during Study Island implementation (Years 1-3, 2009-2012; $M = 201.95$, $SD = 41.18$) was statistically significantly different than the mean of the prior year. The null hypotheses are rejected.

Table 3 presents the results of the one-way ANOVA used to answer this research question. Figure 1 presents mean ISAT scores prior to and during the program.

Table 3
Results of One-Way ANOVA Comparing ISAT Scores Between Pre-Implementation and During Implementation

Source	*SS*	df	*MS*	*F*	*P*
Between Groups	15102.565	3	5034.188	3.125	.028
Within Group	495214.17	301	1610.947	-	-
Total	499997.76	304	-	-	-

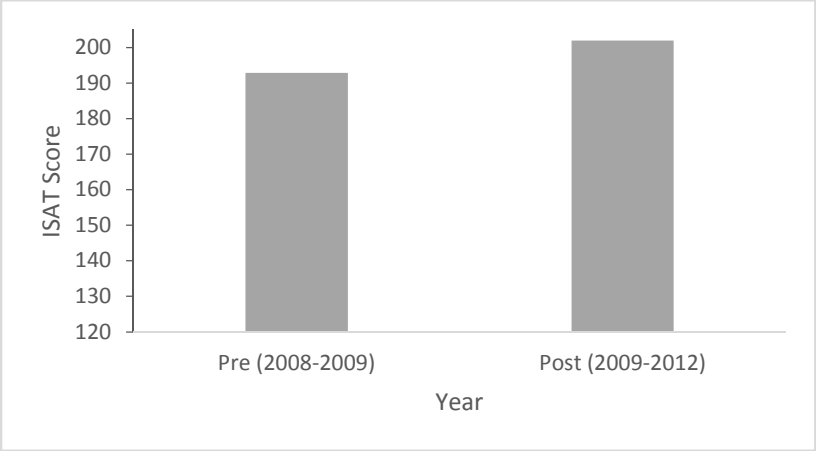

Figure 1. ISAT scores prior to and during Study Island.

I used a one-way ANOVA to answer this research question 2. The independent grouping variable was school year, with groups consisting of school year 1 (2009-2010), school year 2 (2010-2011), and school year 3 (2011-2012). These represent the three years that the Study Island program was implemented. The dependent variable was ISAT scores. The assumption of normality was met (see Table 1), as was the assumption of homogeneity of variances (p = .934).

The results of the one-way ANOVA in table 4 comparing school years 1, 2, and 3 were significant, $F(2, 225) = 3.10$, $p = .047$. This indicates that there were significant differences between Years 1, 2, and 3. Figure 2 presents mean ISAT scores by year. As such, I examined the individual years using Tukey's *post hoc* comparisons. There was a significant difference between Year 1 and Year 3 (mean difference: 16.25, $p = .038$), but not between any other year. The mean ISAT score was significantly higher in the last year of the program when compared to the first year of program. The null hypothesis may be rejected. Table 6 presents the results of the ANOVA. Figure 2 presents mean ISAT scores by year.

Table 4
Results of One-Way ANOVA Comparing ISAT Scores Between Academic Years 1, 2, and 3

Source	*SS*	Df	*MS*	*F*	*P*
Between Groups	10319.00	2	5159.49	3.10	.047
Within Group	374596.39	225	1664.87	-	-
Total	384915.67	227	-	-	-

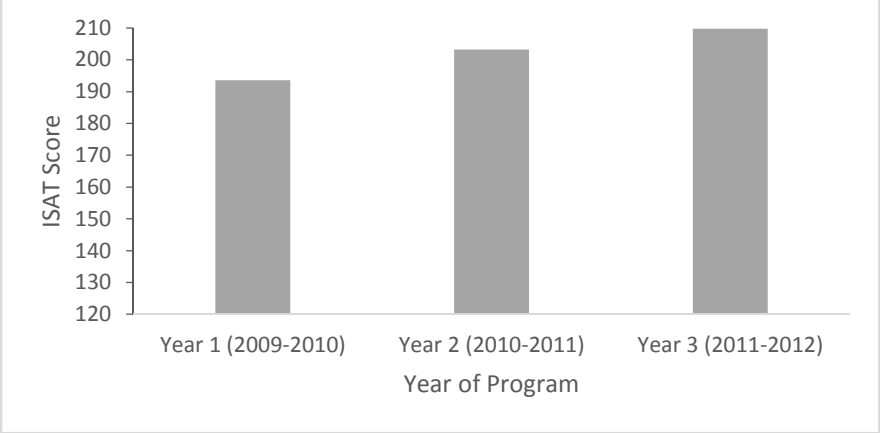

Figure 2. ISAT scores by year.

Summary

The purpose was to determine if there was an improvement in third graders standardized test performance in reading after the purchase and use of a technology-based reading program, Study Island. I utilized archival data consisting of third grade ISAT scores from the 2008-2012 school years. No other identifiers were included in the data. All data was password protected and stored in the school district's database.

I utilized two one-way ANOVAs to answer the research questions. The results for Research Question 1 indicated that the null hypothesis could be rejected; there was a significant difference in ISAT scores before and after the implementation of the Study Island program. However, ISAT scores were significantly higher after the implementation of the program for two years and one year of Study Island did not make a difference,

Recommendation

The recommendations are based on project study findings for the white paper. I have five concise recommendations for the stakeholders of Allgood Elementary School.

- Increase usage of Study Island with an emphasis on teacher fidelity.
- Implement Study Island for five years with teacher fidelity
- Improve utilization of Study Island as an intervention on a consistent basis to promote fidelity.
- Assess Study Island impact on third-grade reading scores throughout the district.

- Consider funding Study Island for every school within the district, if shown effective to promote learning and increase reading test scores.

Research from the Literature to Support Recommendations

Increase Usage of Study Island. Study Island, one reading technology program, has many features to assist students in achieving their academic goals. Study Island, in short, is an assistive technology program aligned with common core standards and aimed at increasing literacy learning (Steyers, 2012). The program also allows educators to create assessments aligned to the needs of their students (Hixson, 2010). One compelling feature is a custom assessment builder, which gives students an opportunity to build their skills in reading and math. The targeted grade levels for assessment builders were third through eighth grade. Also, teachers can observe each student as he or she works. The facilitator can give students immediate feedback. Helpful guides within the Study Island program allow parents to receive notification via e-mail, and students can make selections on the program for assistance for reading unknown words (Hixson, 2010). Study Island has features to assist students in their academic pursuits.

A 2012 efficacy study (Edmentum, 2012) described the rates of improvement in reading proficiency for classrooms using Study Island compared to those where the software was not in use. Seventy percent of classes (N=327) demonstrated gains in reading, compared to non-using classrooms. On average, classes experiencing gains in reading showed 9% growth, compared to non-using classrooms (Edmentum, 2012). Unfortunately, in a thorough search of the literature, and sub-searches for the term “Study

Island" within search results, no recent literature could be found. Having access to only studies produced by the owner of Study Island is insufficient to draw conclusions.

In the absence of peer-reviewed literature to better explore the effectiveness of the Study Island program, recent dissertations were consulted. While a dissertation is not considered peer reviewed, panels of faculty "experts" do supervise and "vet" these studies. Bernard (2013) found that while the cohort of middle school students made statistically significant gains in reading after using Study Island technologies, at the elementary level, no difference was detected. Another study (Grimes, 2012) found that Study Island only increased reading proficiency if students were properly managed, well-behaved and focused on the online modules. At the high school level, in a non-equivalent groups design, when means of two cohorts of students (N=800) were compared, those using Study Island scored significantly higher than those who did not use the program (Grimes, 2012). Empirical studies detailing the benefits and detriments of the Study Island computer program are scarce. Among those studies available, the impact of the computer assisted learning is unpredictable.

The use of computer-based instruction may increase reading comprehension. However, for children to be able to read, they must think and use cognitive development skills and abilities, which promote understanding of what they read. Computer-based instruction has increased dialogue among students regarding the number of independent reading passages students had read (Ponce, Mayer, & Lopez, 2013). When students use computers to facilitate instruction, they have a higher reading achievement rate (Wild, 2009). Investigators concluded that paper-based, as opposed to computer-aided, the

instruction was not as successful as it related to phonological awareness with beginning readers. Therefore, the computer-aided instruction was more favorable, and students had great opportunities to learn using the computer (Wild, 2009).

Monitor and support teachers to promote fidelity of program implementation. It is essential as pointed out by Moye, DTE, & Weather (2014) that Americans has always been a nation of people who have learned by doing and not attached to a computer daily to learn (Moye et al., 2014). Stonebradker, Robershaw & Moss (2016) investigated a treatment and controlled group of undergraduate students with an interactive and non-interactive tutorial on a technology program and its effectiveness. Stonebradker et al. (2016) found students who were able to interact with the notes on the side of the computer showed academic gains as opposed to students who watched a video on the computer and tested. The point has been proven that humans are known for doing and interacting with the learning process (Moye et al, 2014). A computer-based program is only as effective as it allows students to interact with what he or she knows prior to interacting with the skills via the program (Pierce et al., 2016). According to researchers, doing is the ability to be able to put things together, produce and synthesize what one has created (Moye, et al., 2014). Thus, Abdullah, Ziden, Aman & Mustafa, 2015) found out that the more time students spent using computers in Iraq with a positive behavior their academic achievement increased and those students who had a negative or low motivation attitude towards the use of computers scores did not increase. Most importantly, it is in accordance to how students' and teacher's perceptions are relating to using technology to improve learning.

However, it also relies on the "sociodemographic factors" of learners that the use of educational technology was associated with higher test scores (Petko, Cantieni & Prasse, 2017). Abdullah et al, (2015) has stated the three essential factors are related to "affection, behavior, and belief "is based on how well students perform academically. It has also been noted from Holt & Burkman (2013) computer-based programs can be effective with teacher professional development training, and assuring educators are using technology with fidelity as technology continue to advance in society (Holt et al., 2013).

Additionally, Yamaguchi, Sukhbaatar, Takad, & Dayan-Ochir (2014) investigated a study regarding: "The One Laptop per Child" project which it entails supplying some of America's most impoverished countries with laptops to become educated. The study included approximately 2,000 fifth grade students who were assessed in reading and math within 14 schools. The results were biased in that schools who did not have quality teaching methodologies students' scores did not have a significant difference compared to schools with exemplary teaching pedagogy (Yamaguchi et al., 2014). The quality of teaching makes a substantial difference in the results of students test scores and not the use of technology (Barseghian, 2012).

Many of struggling student's variables stem from students feeling as if lessons are not rigorous enough or disconnected from learning from lack of understanding that decreases students' success rates in school (Mancabelli, 2012). Thus, the fact all educators and decision makers want students to be successful learners through computer base instruction, but there is a definite need for a system approach to assure students are

learning and educators are abreast with current research regarding modern technology trends to be effective (Schrum, & Levine, 2016).

In a qualitative study composed of three third and fourth grade students with learning disabilities and the use of technology intervention program made a positive impact on their reading fluency and encouraged them to want to study more, but parents were concerned about students using a tablet to be entertained as opposed to learning (Ozbek, & Girli, 2017). On the other hand, DAgostiono, Rodgers, Harmey & Brownfield (2016) conducted a research study with 6 and 7-year-old children who were noted as at risk to use an iPad app that was integrated into the teachers' literacy instruction to promote academic achievement. However, researchers used one key learning component of letter recognition to assess the effectiveness of the intervention program and found that it was successful (DAgostino et al., 2016). Thus, it has been noted it cannot be a determining factor that to predict how well students reading comprehension will be in the future (DAgostino et al., 2016). Students' reading development accomplishments consisted of comprehending methods of predicting, decoding unfamiliar words, letter identification, word recognition, word identification and understanding of oral language (D'Agostino, et. al., 2016).

Also, it has been found that when students are confident and are independent learners the outcome use of technology base instruction deem to have a significant impact on students' learning experience (Pierce, 2011). As well as game-based learning technology programs to promote students learning attitudes (Lu & Liu, 2015). Students must have a sense of "self-regulatory skills" to maintain progress (Yeboah & Smith,

2016). Bently, & Kehrwald (2017) investigated how a curriculum development project was implemented in the University of Australia within the School of Education for purposes of analyzing how effective a face to face lesson delivery will be opposed to face to face and online delivery. Many of the students were not meeting academic goals because they were not independent learners and did not have the necessary foundational skills of being able to draw on life experiences and the world to world events to approach literacy and online learning to be successful Bently et al. (2017). A qualitative study of 34 undergraduate participating students at North Eastern concluded that some college students are not computer literate, but have excelled academically (Watulak, 2012). Additionally, the use of technology must be based on the skills students have been previously taught in the classroom to be impactful in the use of utilizing technology (Kirkman, 2014). It has been noted that educational web-based technology has many flaws that affect students learning because it does not make a distinction between the learning needs of students regarding assuring that programs are based upon rigor and needs assessments for "instructional support" (Zhang, & Chu, 2016). Pierce & Cleary (2016) have the same concerns as technology design system effectiveness in the United States. It is essential that United States chain of value in educational technology be in place for keeping abreast with computer-based learning programs for k-12 students. Pierce et al. (2016) has concluded that it is essential to address the weak links within technology-based programs within the educational setting to make an academic impact on students' academic progress. United States student's utilization and teacher fidelity

must be evaluated on a continuous basis for students to learn in an efficient manner using computer-based programs to meet their needs academically (Pierce et al., 2016).

Technology and collaboration with fidelity. Currently, many teachers and districts are collaborating on technology and how it is going to make an impact on student learning soon. Williams (2012) strongly believes many school districts are implementing blended classrooms and personalizing computer base instruction in accordance to student's deficiencies to embark upon an effective approach to integrating technology into the classroom to meet common core standards and assure teacher fidelity. Additionally, researchers concluded teachers who have access to adequate professional training for blended classroom instruction students achieve academic goals (Archer, Savage, Sanghera-Sidhu, Wood, Gottardo, & Chen, 2014). Students in grades k-12 outperformed classrooms who were not using blended learning. It is an effective way to integrate technology into the curriculum and close the achievement gap (Schechter, Kazakoff, Bundschuh, Prescott, & Macaruso, 2017).

Collaboration is a determining factor if teachers within school districts are going to be proactive in blending technology and formal classroom instruction into their curriculum to promote academic growth and close the achievement gap. Teachers must have enough staff development and professional developments to assure collaboration is meaningful in moving their schools in the right direction to increase technology approaches in their classrooms to assess and personalize differentiated instruction for all students in the classroom. Support is a critical factor in how successful teachers will be in their classroom to improve student achievement (Adesola, 2012). Technology has

promoted meaningful dialogue among many teachers. An academy was formed about ten years ago in Missouri for teachers to collaborate about their experiences in the classroom around the use of technology. Collaboration has been found to be quite effective and the promise of moving from within rural school districts to larger school districts to engage teachers in growing in their craft around technology and classroom instruction (Blaine, 2014). Teachers need to grow as well as students they are accountable for throughout the school year. Technology is an effective tool for the academic success of students (Pierce, 2011).

Study Island implemented for five years. It has been reported the United Kingdom has been testing students in accordance to achievement test since 1980 has and have seen pedagogy of teaching change through technology (Males, Bate, & Macnish, 2017). Males et al., (2017) completed a longitudinal study in Western Australia that investigated the use of a device for first three-year implementation and a post-analysis for two years to investigate any changes in students' academic growth. In accordance with the results, students showed growth that placed the school in a favorable position.

Educational technology funding and school districts. Based on a qualitative study by Holt et al. (2013) found that in urban district school districts there were some technology initiatives that were successful but had some issues**.** Many school districts are concerned about the lack of effectiveness of technology being integrated into the school curriculum because of lack of funding from government (Holt et al., 2013). For technology to be successful inside the classrooms, there must be standards that simultaneously match to what is expected within the curriculum and what is expected for

integrating technology for all learners (Surjono, 2015). Educators are asked to implement computer-based instruction and various software that is intended to support students and teachers, but many educators are burden with funding for programs that are not so readily available to assist educators in urban school districts for students to be effective in using computer-based learning programs (Holt et al., 2013). The implementation of technology that merits for 21st. century learners must be set forth first by supporting teachers through professional developments to facilitate struggling students in our schools (Mancabelli, 2012). Many educators have concluded that blending instruction is shifting the paradigm as opposed to building a foundation on one on one and integration of technology to reach struggling students (Vance, M., Hynan, J., Murray, J, Goldbart, J. (2014). However, Jacobs (2014) has found blended learning is not as effective as it was designed to be, but hopefully, in the future, it will meet standards. However, a flipped classroom discourages traditional teaching lectures and relies solely on media teaching (Cheng & Weng, 2017; Price, & Kirkwood, 2014). It is imperative to note formal education, can never compare to media education and it does not serve students' metacognition needs (Cheng & Weng, 2017). Furthermore, researchers Delgado, Wardlow, McKnight & O'Mally (2015) believe that computer-based programs only help students to develop various skill sets on their deficient level (Delgado et al., 2015). Another relevant concern is the cost of hardware, software, and reliable, high-speed internet access to use many of the reading programs available (Mayora, Nieves, & Ojeda, 2014).

Conclusion

Third-grade low test scores are a concern, and the school district has been investigating solutions to remediate the problem. Data analysis shows the use of Study Island has made a statistical difference with the third-grade reading test scores. The current research supports when the integration of technology is used with fidelity by students and teachers it results in a significant difference in reading scores. Additionally, there was a significant difference in ISAT scores before and after the implementation of Study Island program. Increase usage of Study Island will benefit third-grade students' test scores, and administrators can make informed decisions to continue to support the program with teacher fidelity. When third-grade students succeed they gain academic achievement and can make a significant contribution to society by being proficient readers.

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Appendix B: Survey

Please complete the following survey questions. Thank you for your time and consideration.

Study Island: Administrative Survey

	Strongly Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Strongly Agree
Should the project findings support recommendations for an increase for usage of Study Island with an emphasis on teacher fidelity?	◯	◯	◯	◯	◯
Should teachers be monitored as they allow students to utilize Study Island as an intervention on a consistent basis to promote fidelity?	◯	◯	◯	◯	◯
Should Study Island program be implemented for five years with teacher fidelity and a project study performed to assess its impact on third-grade reading scores throughout the school district?	◯	◯	◯	◯	◯
Should funding be allocated on an annual basis for every school within the district to purchase Study Island program to promote learning and increase reading tests scores?	◯	◯	◯	◯	◯

	Strongly Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Strongly Agree
Should students be given a pretest before using the Study Island program?	◯	◯	◯	◯	◯
Should teachers check students' results after Study Island usage?	◯	◯	◯	◯	◯
Should teachers conference with students about Study Island data results daily?	◯	◯	◯	◯	◯
Should all students understand how to use the Study Island program efficiently?	◯	◯	◯	◯	◯
Should teacher monitor all misconceptions about the usage of the Study Island program?	◯	◯	◯	◯	◯
Should students understand the importance of using Study Island program?	◯	◯	◯	◯	◯
Should the teacher be skilled in the proper usage of the Study Island program?	◯	◯	◯	◯	◯
Should all students be knowledgeable about the proper usage of Study Island Program?	◯	◯	◯	◯	◯
Should teachers use study Island and a reading curriculum simultaneously to promote literacy?	◯	◯	◯	◯	◯

	Strongly Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Strongly Agree
Should study Island and a reading curriculum program be used simultaneously to promote literacy?	◯	◯	◯	◯	◯
Should students be engaged when using Study Island?	◯	◯	◯	◯	◯
Should students be monitored when using Study Island?	◯	◯	◯	◯	◯
Should teachers use Study Island data to drive instruction during Language Arts class time?	◯	◯	◯	◯	◯
Should students work in cooperative learning groups during class time to work on deficient skills?	◯	◯	◯	◯	◯
Should students be given an opportunity to share their reflections about using Study Island with their homeroom teachers?	◯	◯	◯	◯	◯
Should students use Study Island more than three times a week consistently?	◯	◯	◯	◯	◯

Should students use logs to record skill test results when using Study Island?	◯	◯	◯	◯	◯

Additional Comments and Questions