The Impact of KinderQuest on Reading and Math in Early and Intermediate Elementary Students

Stephanie Sullivan

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The Impact of KinderQuest on Reading and Math in Early and Intermediate Elementary Students

Stephanie Sullivan
Murray State University
Committee Approval Page

This Dissertation Manuscript, directed and approved by a Dissertation Review Committee, has been accepted by the Doctor of Education Program of Murray State University’s College of Education and Human Services in partial fulfillment of the requirements for the degree.

The Impact of KinderQuest on Reading and Math in Early and Intermediate Elementary Students

By

Stephanie D. Sullivan

for the degree of

Doctor of Education in P-20 and Community Leadership (Ed.D.)

Chair, Dissertation Review Committee

Faculty Member 1, Dissertation Review Committee

Faculty Member 2, Dissertation Review Committee

Client/External Partner, Dissertation Review Committee
College/University Approval Page

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_______________________________
Director, Doctor of Education Program

_______________________________
Graduate Director, College of Education and Human Services

_______________________________
Provost, Murray State University
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Acknowledgement

This study is based on research conducted at an elementary school that is near and dear to my heart. It is my home away from home where individuals devote endless hours to making a positive impact on students. It is where the creation of a school, in which I have tremendous pride, began just thirteen years ago. A school that not only wants to maximize student learning, but also wants to leave memories that will last a lifetime. Thank you to the staff for investing your time and energy into the students, creating programs that will increase student learning, supporting programs to engage students, and being a team that I will never forget.

I am grateful for the support I have received from the central office to allow us the flexibility and innovation to explore programs directed toward increasing student achievement. The guidance provided has helped our school excel and reach the achievement levels at which we currently perform. Working together, we are able to help students reach their highest potential.

I am grateful to the Murray State University staff that had a vision for this doctoral program that has allowed those of us in the cohort to aspire to greater heights than would have been achieved without the program. Thank you especially to those on my dissertation team, Dr. Lyons, Dr. Walker, and Dr. Grant, who invested time and energy to help me plan, edit, and ultimately complete this study, which was only a thought three years ago.

Finally, thank you to my family who had to share me with a computer and research books for the past three years. I appreciate the support and love you have shown me through this process. I love you very much and cannot wait to dedicate my time once again to being a mom, daughter, and wife.
Abstract

This paper explored the history of education, including how the focus has evolved into the current demand for a qualified workforce, and the practices of retention and social promotion. Grade level retention research examined the positive and negative impacts on students, as well as alternative intervention approaches. An in-depth study of an early intervention program, KinderQuest, was conducted to determine the relationship between students’ reading and math achievement. Data was analyzed by comparing students that participated in the KinderQuest program and students that progressed through the traditional progression of kindergarten through Grade 6. Additionally, reading and math scores of KinderQuest participants were compared to non-participants who were retained to determine how each intervention affected achievement. Student achievement was measured both in the short-term, as observed in Grade 1 to Grade 3, and long-term, as observed in Grade 4 to Grade 6. Overall findings indicated there was no significant difference in the achievement of students in KinderQuest and those who traditionally progressed from grade to grade, suggesting the program was a successful intervention for students at risk of performing below grade level peers in reading and math. Additionally, the impact of KinderQuest and the traditional program showed similar results in both short-term and long-term achievement. Finally, there was no significant difference between the reading and math achievement of students who participated in KinderQuest and those that were retained.

Keywords: social promotion, retention, response to intervention
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Chapter 1

This chapter focused on the importance of schools providing students with the foundational knowledge to achieve future success in school and the workforce. Reading and math were both predictors of future academic achievement. Early education was critical to later school success, with early intervention recommended to counter the learning difficulties that could compound later. This study determined if KinderQuest, an early intervention program created to provide students the maturity and foundational knowledge to have success in kindergarten, had a significant impact on reading and math in elementary school students. The program was transitional since it was not a repeat of preschool nor kindergarten, and it had its own specially designed curriculum to meet the needs of the students referred to the program. The study determined if the program was effective by focusing on the impact it had on reading and math achievement both in the short-term and long-term, as well as comparing results to students that had been retained and students that had followed the traditional progression of kindergarten through Grade 6.

Introduction

The reauthorization of the Elementary and Secondary Education Act (ESEA) in 2001, known as No Child Left Behind (NCLB), created educational reform that raised the expectations for what American students needed to know. There has been a cradle to career continuum to help prepare students to be ready for college success and career attainment (Duncan, 2013). To ensure that the country had a skilled workforce ready to contribute to economic growth, it was necessary that students graduated proficient in reading and math. Employees were faced with meeting the demands of a global economy, yet many students did not graduate equipped with the knowledge and skills required by employers. Former United States Secretary of Education Arne
Duncan stated, “The truest measure of a society’s worth is whether it offers all of our children the opportunity to go where they want to go, do what they want to do, and fulfill their dreams. This is the promise of education. This is the American promise” (Duncan, 2009, para 3). The path of opportunity began with early education. It was crucial in achieving future success in school and the workforce that elementary schools provided students with the foundational knowledge for skill development.

Reading was a necessary component to success in society and was essential for social and academic advancement. Students who struggled to succeed in school often lacked the ability to read and understand text. The Committee on the Prevention of Reading Difficulties in Young Children claimed that an important step toward preventing reading difficulties was to reduce the number of children who entered school with below level literacy related knowledge and skills. The committee recommended that schools ensure high-quality preschool and kindergarten environments to counter the deficits that many children possessed when starting school in order to meet the demands of an increasingly competitive economy (Snow, Burns, & Griffin, 1998).

A reasonably accurate prediction of academic success had been seen as early as the end of Grade 3 when the student’s reading skill level was known. A student who was not a proficient reader was likely to drop out of school (Snow, Burns, & Griffin, 1998). An emphasis was placed on improving children’s reading skills early, since a lack of reading ability was a strong predictor of increased high school dropout rates. Research, however, also showed that the development of early math skills might be an even greater predictor of future academic success. Early knowledge of math was a better predictor of later reading achievement than early reading skills (Clements & Sarama, 2013). It was imperative that schools acted with urgency to implement research-based interventions to prepare every child to be college and career ready by ensuring
students reached proficiency in reading and math, thereby increasing the child’s chances for later academic success and decreasing the child’s chances of dropout. Rumberger (2001) stated, “Early intervention may be the most powerful and cost-effective approach to dropout prevention” (p. 22).

**Context**

A quantitative study was conducted to determine the impact an early intervention program had on reading and math achievement of elementary students. The elementary school established in 2004 enrolled approximately 500 students in preschool through Grade 6, with an 84% free/reduced lunch eligible population. It was part of a district comprised of one high school, one middle school, and seven elementary schools. Eight years ago, a need was identified at the elementary school that led to the formation of a program called KinderQuest. It was brought to the school administration’s attention that the preschool teachers were telling some parents that their exiting preschool children were not ready for kindergarten. Administration realized the situation was problematic since the students were too old to remain in public preschool. There was no other option for these students besides kindergarten, unless parents could afford private preschool or daycare, which excluded many students due to poverty.

The school staff began discussing options that would address the situation. Since preschool followed a set curriculum under Head Start’s guidance, as well as a philosophy of learning through play, it was decided to create a transitional, intervention class with more rigor and different structure to compensate for the learning deficits. The School Based Decision Making Council (SBDM) approved the formation of a newly created program called KinderQuest. Additionally, the SBDM committed to allocating school staff to hire an elementary certified teacher for the KinderQuest program.
KinderQuest was established to address the academic and social needs of students that were not ready to be successful in kindergarten, because they lacked foundational skills in reading or math or lacked the maturity to focus in the classroom. The primary emphasis of this program was to provide academic intervention for students identified in preschool as not having the prerequisite skills for early literacy and numeracy needed to be successful in the kindergarten setting. Beyond referral for academic and social needs, KinderQuest was also an optional classroom setting that parents could choose for their child. The program provided an extra foundational year of intensive instruction before kindergarten, especially in the areas of phonics, phonemic awareness, and early numeracy. This option was available to all kindergarten-aged students, not just those referred by their preschool teacher, creating a diverse population with varied academic levels. Some parents preferred enrollment of their child into KinderQuest instead of kindergarten for a multitude of reasons including late birthdays, academics, immaturity, and other social reasons. Additionally, some students not initially enrolled in KinderQuest were referred to the program by their kindergarten teacher, which allowed them to transfer classes during the first nine weeks of the school year if intensive needs were identified.

Cannon and Lipscomb (2011) asserted that educators must identify struggling students early in their education and begin providing interventions, with retention considered only as a last resort. KinderQuest was not designed to be a retention program but rather a prevention program. The state records KinderQuest students as kindergarten students, and they are marked as retained for taking an extra year to complete the primary program; however, KinderQuest students progressed with their classmates from KinderQuest to kindergarten the following year, so the students did not experience a change in peer grouping. This was believed to eliminate the negative stigma often associated with retention. KinderQuest was not referred to as a
kindergarten class, nor did students, parents, or staff consider participants as retained.

KinderQuest was considered its own unique class by all school stakeholders.

KinderQuest was not intended to be a repeat of preschool. It required a more structured and rigorous instructional environment extending beyond the content required of the preschool curriculum and provided a different format than experienced in the traditional preschool setting. It was also important to the development of KinderQuest that it would not be a repeat of content and instruction that would be received in the kindergarten setting the following year. The KinderQuest teacher collaborated with the kindergarten teachers to analyze the state standards required of kindergarten in order to design a set of standards that were considered to be the foundation upon which kindergarten success would be built. KinderQuest chose standards that would be instrumental in providing a strong foundation in both reading and numeracy skills. The KinderQuest standards that were developed can be seen in Appendix A. The KinderQuest curriculum had overlapping standards with kindergarten; however, instruction was provided using varied and different resources than used in the kindergarten classes. For example, kindergarten used a particular reading series to teach reading standards, while KinderQuest used different instructional resources so the students would be exposed to different reading passages each year.

While KinderQuest was meant to serve as an academic prevention program, many students excelled while in the program and completed work beyond the basic standards. Teachers, as in any other class, met the needs of all students by differentiating to ensure each child was receiving the appropriate level of instruction needed for the child to grow academically. As in any other classroom, many students accelerated beyond the grade level’s academic standards, while other students struggled with reaching the benchmarks that were set.
The KinderQuest teacher collaborated each week with the kindergarten teachers to share resources and to discuss the needs of both the KinderQuest students and kindergarten students. Collaboration served as a way to ensure that KinderQuest was preparing its students for a strong academic foundation, so they would be successful in kindergarten the following year. As literature suggested, success in kindergarten leads to future academic success, which was the goal of the program. Duncan (2007) claimed “the single most important factor in predicting later academic achievement is that children begin school with a mastery of early math and literacy concepts.”

Purpose of the Study
The purpose of this study was to assess the effectiveness of the intervention program that had not been assessed previously by the school or district. Results evaluated reading and math achievement for KinderQuest students and traditional students in Grade 1 to Grade 6. Additional investigations evaluated reading and math achievement for KinderQuest students and retained students in Grade 1 to Grade 6. The results of this study served as data to make informed decisions related to the academic achievement of KinderQuest participants, leading to the continuation, or possible discontinuation, of the program.

Perspective Guiding Research
KinderQuest had been in existence for the past eight years, yet it was not formally evaluated to determine its effectiveness. The Annie E. Casey Foundation (Fiester, 2010) conducted research showing the importance of reading proficiency by Grade 3. Additional research by Jordan (2010) showed that basic number concepts and skills, referred to as numeracy, began to develop before entry to school and often predicted future school achievement. This extra year of intervention provided by KinderQuest was intended to meet achievement needs and to prevent the future recommendation for retention by reducing the
academic gap that occurred as early as kindergarten. This study was designed to determine if the intended outcomes of improved student achievement were accomplished through the extra year of intervention.

Many students that were referred for this program were from low-income families, which was a qualification for the preschool program. When low-income students entered kindergarten, they were already 12 to 14 months below national norms in language and pre-reading skills (“Council of Chief State School Officers,” 2009). Additionally, children from low-income families had not been exposed to interactions that promoted linguistic development. Children from higher income families had been exposed to 30 million more words than children coming from low-income families by age three. A good predictor of reading achievement by Grade 3 was measured by vocabulary development by the age of three (Hart & Risley, 2003).

KinderQuest was designed as an intervention program rather than retention, although the state considers the program retention. Retention research was important as these two types of intervention were compared. Years of early research showed retention had negative effects on student success in school as well as long-lasting impacts in later life, such as being less likely to be working fulltime, making less per hour, and reflecting less worker competence (Jimerson, 1999, McCoy & Reynolds, 1999). Later research using propensity matching, however, showed retention could show academic gains. Many of the gains were seen in the short-term and faded in later years (Greene & Winters, 2007; Hong & Yu, 2008; Hughes, Chen, Thoemmes, & Kwok, 2010; Wu, West, & Hughes, 2008).

New and Cochran (2007) stated, “Implementing prevention and early intervention programs is more promising than waiting for learning difficulties to accumulate” (p. 399). The goal of the former presidential administration was to provide high-quality early learning
opportunities for all children in order to prepare them to be kindergarten ready and to succeed in school and life.

A common practice that allowed students an additional year to mature was referred to as “redshirting”. Students were held out of school for the year that they could have enrolled in kindergarten. Research indicated that it is more important for a child to be exposed to formal classroom learning, regardless of the age, than to only learn from activities of engagement outside of school (Stiped, 2009).

Non-traditional kindergarten programs such as developmental and transitional kindergartens have been created to address the concern of school readiness for children entering kindergarten. Developmental kindergartens served as pre-kindergartens for students who met the age requirement to enter kindergarten but were not yet ready to enter kindergarten due to developmental or behavioral delays (Morrison, 2010). Transitional kindergartens were designed to provide children the extra time needed to achieve the goals set for entry into Grade 1. Students who participated in transitional kindergarten programs had two years to complete what other students mastered in one year (Morrison, 2010). Research showed that students who participated had improved reading and math outcomes, as well as increased executive functions such as following rules, regulating self-behavior, and thinking skills (“American Institutes for Research,” 2015).

**Research Questions and Hypotheses**

The questions selected for this study focused on the impact that KinderQuest had on the reading and math achievement of elementary school students in Grade 1 to Grade 6. The various cohort achievement levels were compared to determine the relationship between KinderQuest students and traditional students and also KinderQuest students and retained students. The first set of research questions (RQ1 and RQ2) were centered on the impact of KinderQuest on reading
achievement in elementary school in the short-term and long-term. The second set of research questions (RQ3 and RQ4) centered on the impact of KinderQuest on math achievement in elementary school in the short-term and long-term. The third set of research questions (RQ 5 and RQ6) centered on comparing the reading and math achievement of KinderQuest students and retained students in Grade 1 to Grade 6.

**Research question 1.** Does KinderQuest impact short-term gains in reading achievement that can be seen in Grade 1 to Grade 3?

**Hypothesis 1.** There will be no significant difference between the reading achievement of KinderQuest students and traditional students in Grade 1 to Grade 3.

**Research question 2.** Does KinderQuest impact long-term gains in reading achievement that can be seen in Grade 4 to Grade 6?

**Hypothesis 2.** There will be no significant difference between the reading achievement of KinderQuest students and traditional students in Grade 4 to Grade 6.

**Research question 3.** Does KinderQuest impact short-term gains in math achievement that can be seen in Grade 1 to Grade 3?

**Hypothesis 3.** There will be no significant difference between the math achievement of KinderQuest students and traditional students in Grade 1 to Grade 3.

**Research question 4.** Does KinderQuest impact long-term gains in math achievement that can be seen in Grade 4 to Grade 6?

**Hypothesis 4.** There will be no significant difference between the math achievement of KinderQuest students and traditional students in Grade 4 to Grade 6.

**Research question 5.** Is there a difference between KinderQuest students and retained students in reading achievement in Grade 1 to Grade 6?
Hypothesis 5. There will be no significant difference between the reading achievement of KinderQuest students and retained students in Grade 1 to Grade 6.

Research question. Is there a difference between KinderQuest students and retained students in math achievement in Grade 1 to Grade 6?

Hypothesis 6. There will be no significant difference between the math achievement of KinderQuest students and retained students in Grade 1 to Grade 6.

Scope

This study focused only on the academic achievements of the students that participated in the KinderQuest program. The preschool through Grade 6 population consisted of 503 students, with 84% eligible for free/reduced meals. The racial/ethnic composition of the school was 88.3% White, 8.8% Hispanic/Latino, 2% Black/African American, and 1% Asian. Approximately 15% of the students qualified to receive special education services. The school had a high mobility rate of 23.4%. Of the 375 students enrolled in Grade 1 through Grade 6, 106 attended the Head Start preschool program, 38 were KinderQuest participants, 41 were retained, 24 were identified as ESL, and 47 received special education services. ESL and special education students were not included in the study due to their specialized instruction that may have skewed results. Of the 38 KinderQuest participants, 31% had attended the Head Start preschool program and 61% were eligible for free/reduced meals.

An area of study was to determine if the extra year of intervention, prior to entering Kindergarten, impacted reading achievement, math achievement, or both. The achievement of students enrolled in KinderQuest was compared to traditional and retained students to determine how the extra year of instruction impacted reading and math achievement. Academic achievement was determined by comparing the relationship of each cohort of students,
traditional, KinderQuest, and retained students with their grade-level performance. Performance was indicated according to STAR grade level equivalency.

Research by Hong and Yu (2008) revealed that some retained students showed immediate short-term gains, but those gains faded out in a few years. Therefore, the analysis of academic gains determined if short-term gains were identified in the first few years following KinderQuest, as seen in Grade 1 to Grade 3, as well as analyzing academic achievement in Grade 4 to Grade 6 that represented long-term gains.

Existing research highlighted the importance of literacy by Grade 3 (Snow et al., 1998), as well as early numeracy as a predictor of future school success (Jordan, 2010). Therefore, this research study focused on the reading and math achievement of KinderQuest students. Additionally, research indicated that students who were retained performed worse than students who were promoted both academically and socio-emotionally, leading to possible long-lasting affects. (Allensworth, 2005; Andrew, 2014; Jimerson, 1999; McCoy & Reynolds; NASP, 2003). Therefore, a trend was examined between a group of students who were retained and a group of students who participated in the KinderQuest program. Without the KinderQuest program, retention would be the only other alternative offered to these students unless the student was socially promoted.

Based upon current year enrollment, 50% were referred to the program due to academic performance and 50% due to parent requests, which were because of maturity, late birthdays, or the desire for the extra year of instruction before enrolling in kindergarten. Sixty-one percent of all students in Grade 1 to Grade 6 that attended KinderQuest qualified for free and/or reduced meals. Research suggested that these students, who were from low-income families, were
already beginning 12 to 14 months behind national norms (CCSSO, 2009). This program focused on reducing the learning deficits that existed for many students upon entry to kindergarten.

**Significance of the Study**

This study was significant on a global scale since an educational gap existed in the country. Students were not achieving at levels to fulfill the demands of the workforce. This placed an economic hardship on both the individual as well as the country. Educating America begins in elementary school and early intervention must be effective to counter learning barriers, which may lead to school dropout. Early intervention must be implemented to lead students to have success in school and as contributing members of the economy.

Rumberger (2001) stated that at-risk behaviors and attitudes began to surface as early as elementary school; therefore, prevention strategies should begin in the child’s early school years. When the problems were not addressed until middle and high school, years of failure had compounded into long-lasting issues. Overcoming obstacles at this level may be costly and ultimately ineffective. Rumberger also stated “early intervention may be the most powerful and cost-effective approach to dropout prevention” (p. 22).

The significance of the study at a local level was related to funding and promoting effective intervention programs. Each year the funding for this program was taken from the overall school staffing allocation provided by the Board of Education. It was important that the SBDM Council approved staffing in order to maximize student learning. It was the goal of the school to provide intervention for learning deficits at the earliest age possible. There were other staffing options that competed for the KinderQuest funding, so it was essential that the program was assessed to determine the impact on student achievement. Competing programs included the Read to Achieve and the Math Achievement Fund intervention programs, both of which served kindergarten through Grade 3 students. Additionally, AmeriCorp and para-educators were hired
to assist with small group instruction to provide both intervention and remediation. While there were many teachers who strongly believed in the importance of the KinderQuest program and early intervention, others questioned whether it was the most beneficial way to allocate staffing. One criticism was that the enrollment in this class was limited to 12 students in order to provide a low teacher/student ratio. Therefore, some teachers believed the funds could be spent to benefit more students each year by assisting struggling students across multiple grade levels rather than focusing only on students entering kindergarten. Each year, the program’s continuation was debated before being approved by the SBDM Council. The results of this study served as data to make informed decisions related to the academic achievements of KinderQuest participants, leading to the continuation, or possible discontinuation, of this program.

If the KinderQuest outcomes exceeded those of the other cohorts, the program was considered successful. If the KinderQuest outcomes were similar to the outcomes of the traditional group, then the program was considered successful since the traditional group began with higher achieving students. The lowest performing students in the traditional group were either referred for KinderQuest or were retained in a later grade level, since those students did not reach grade level benchmarks. Due to the placement of these lower performing students in KinderQuest or being retained, those two cohorts had lower performing students, which resulted in lower achievement scores at the onset of the study. If no statistical difference was seen, the program was successful in helping those students to perform at similar achievement levels of students who typically reached benchmarks and were not referred for tier services.
Definitions

Retention. The process of having a student repeat a grade because the student failed to meet grade-level expectations and/or standards.

Social Promotion. The practice of promoting a student to the next grade level regardless of whether standards and skills were mastered due to the belief that promotion will improve student self-esteem.

Dropout. A student who leaves school without completing the course of study.

Response To Intervention (RTI). A multi-tier approach used to provide support to students who are identified with learning or behavior needs or who struggle with a particular skill or lesson.

Summary

The study focused on the impact that an early intervention program had on the reading and math achievement of elementary students. Interventions were provided at an early age to counter learning deficits that may have been present before entry to school. KinderQuest students’ reading and math achievement were compared to students not participating in the program to determine whether or not the program was a successful intervention for students at risk of being below grade level peers in reading and math.
Chapter 2

This chapter presented literature that emphasized the importance of education and how it affected the nation. The role of education has changed throughout the years, from a secular focus to a nationalist focus to the current academic focus that prepares students to compete globally. The influence of technology changed the workforce and students were required to be even more prepared to compete for jobs with students from other countries that were outperforming the United States in the area of academic achievement. The lack of commitment to educational excellence by all members of society has led to the nationwide problem of school dropout, which negatively affected the individual as well as the overall economy. To prevent academic problems from compounding in later years, early intervention was crucial.

Relevant studies to determine the effectiveness of the KinderQuest program, included early intervention, retention, social promotion, and alternate kindergarten programs. The research related to retention was found to be inconclusive. Earlier studies showed significant negative impacts to the students that were retained, while later studies showed academic gains.

History of Education in the United States

The role of education has evolved and emphasized the necessity that schools prepare students for the workforce. To be globally competitive, students must be equipped with world-class creativity and innovation as well as world-class skills and knowledge (Friedman & Mandelbaum, 2012). The objective of schools changed from simply providing a solid foundation of knowledge to creating a workforce with the following traits: high skill acquisition, problem-solving ability, creativity, synthesizing ability, collaboration skills, leadership capabilities, team member skills, and high ethical standards (Tucker & Hammond, 2015). Education, however, was established to meet different needs, and those needs have evolved over time.
In the first colonial schools, religion played an important role. Bible reading and prayer were common practices among the schools that were established by private individuals and religious groups. The need for students to be educated was evident in the Old Deluder Satan Act, Massachusetts Laws of 1647, which stated that one of Satan’s objectives was to keep men from the knowledge of the scriptures. With the birth of a new nation, came the need for the creation of schools and a new approach to education. Between 1820 and 1850, massive numbers of immigrants came to American cities such as Boston and New York due to the demands of commerce. With this movement came the need for “Americanization” to accommodate for the varying religions and cultures (Pulliam & Van Patten, 2007, p. 137). This new focus on nationalism resulted in the teaching of patriotism, American ideals, the country’s history, and its potential for the future (Pulliam & Van Patten, 2007).

The educational principles transitioned from the religious, colonial perspective to a more secular focus. The period from 1812 to 1865 was a transitional time that evolved education into a free, public school system that was supported and controlled by the state. The focus of education began to be concerned with social, political, and moral character, as well as the teaching of basic skills. The common elementary school for all children became a practice between 1865 and 1900 for most Americans. Typical elementary schools in the 1860s consisted of a crowded one-room schoolhouse with poor facilities, resources, and often inadequate teachers (Pulliam & Van Patten, 2007). By 1918, all states required children to attend school through their elementary years (Pulliam & Van Patten, 2007).

Secondary education took the form of Latin grammar schools, the academy, and the high school. In 1821, the English Classical School, later renamed as the English High School, was established in Boston. The first high school was established for boys who did not plan to attend
college. High schools began to grow in the nation, but at a slow rate. By 1900, over 6,000 high schools had been established enrolling more than 500,000 students, with the American high school becoming a common practice for the majority of the nation (Pulliam & Van Patten, 2007).

The first junior high school, Indianola Junior High School of Columbus, Ohio, began in 1909. The movement to reorganize the secondary school began with Charles W. Eliot in 1888 addressing the social and academic needs of the time, as well as taking into account the nature of young adolescents. By the 1950s, the dominant structure of the public school system was a separate junior high school followed by a separate high school (Lounsbury, 1960).

The origin of kindergarten began as a European influence. The concept of a “garden of children” (Pulliam & Van Patten, 2007, p. 148) involved play, songs, and stories. In 1848, Margarethe Meyer Schurz established the first American kindergarten in Watertown, Wisconsin. It was essentially a German kindergarten located in America, complete with German language as the means of communication. In 1860, Elizabeth Peabody established the first English-speaking kindergarten in Boston. As of 2007, more than 90% of American 5-year-olds were enrolled in this type of institution (Pulliam & Van Patten, 2007).

Coulson categorized education into four eras. The first era was the “permissive” era, which lasted from 1642 to 1821 (p. 1). During this time, the government permitted the organizations of schools, dependent upon voter approval. Next, came the “encouraging” era, from 1826 to 1851 (p. 1). This was a time when the government encouraged, yet not required, the establishment of school districts and supported raising taxes to help support them. From 1855 to 1980 was the era of “compulsory” education (p. 2). The government compelled the establishment of school districts, taxation to support government schools, curriculum, and school attendance. The fourth era began in 1980 and was known as “freedom or school choice” (p. 3). In this era,
many educational options were available to families such as homeschooling, vouchers, and charter schools (Coulson, 1999).

**State of the Nation**

The purpose of education has evolved throughout the history of the United States. Currently, the country is suffering not only an education gap, but also an economic gap. In *That Used to Be Us*, Friedman and Mandelbaum (2012) constructed a road map for America “for rising to the challenges and opportunities that will determine whether we remain a country that can continue to pass prosperity from one generation to the next, as we always have, and can continue to play the role of global stabilizer, as we surely must” (p.xii). In 2012, there were more than three million jobs vacant in America yet unemployment rates were at 8%. This statistic could indicate that although jobs were available, Americans did not possess the math, reading, comprehension, or technical skills required for the positions. The need for more Americans to acquire the skills and education required for the twenty-first century workplace is urgent and every community must ensure that it is producing skilled workers for the jobs of the future.

According to Friedman and Mandelbaum (2012) “America seems to be losing its hunger to demonstrate its excellence” (p. 12). The information technology revolution changed how work was defined with the addition of computers, cell phones, Internet, and social media outlets. This movement eliminated many of the old jobs and created a new demand for critical-thinking skills to meet the expectations of the newly formed jobs. Every American must be better educated than before to secure and maintain a job that will support the American dream.

The price paid for a poorly educated generation of students was not just for students, but also for the entire country. The education gap led to a productivity gap. McKinsey & Company (2009) estimated that if American students equaled achievement levels of higher-performing
nations between 1983 and 1998, a gain of $1.3 trillion to $2.3 trillion higher in the Gross Domestic Product (GDP) would have resulted. McKinsey & Company (2009) stated the “educational gaps impose on the United States the economic equivalent of a permanent national recession” (p. 5). Former United States Secretary of Education, Arne Duncan, proclaimed, “It’s a chance to educate our way to a better economy and create economic prosperity for our country” (“U.S. Department of Education,” 2009, para. 8).

Since 2000, the world has quickly changed, and people have become more connected to those around the world through the Internet and other social means. Since The World is Flat was published in 2005, Facebook, Twitter, the cloud, 4G, apps, LinkedIn, and Skype have been introduced. This global expansion enabled even more connectivity, and around 2010, the world entered Flat World 2.0. Businesses began to seek imagination, design, marketing, and craftsmanship through whichever global supply chains provided the best quality at the lowest cost (Friedman & Mandelbaum, 2012).

To be globally competitive, it was necessary for students to be equipped with world-class creativity and innovation as well as world-class skills and knowledge (Friedman & Mandelbaum, 2012). The objective for schools was not only to provide a solid foundation of knowledge, but also to create a workforce with proficient skills, creativity, problem-solving abilities, collaboration skills, and leadership potential (Tucker & Hammond, 2015).

In 2009, 26% of seniors who took the National Assessment of Educational Progress (NAEP) scored below the basic reading level (Friedman & Mandelbaum, 2012). Former Secretary of Education, Arne Duncan, gave a speech to the Council on Foreign Relations (“DOE,” 2010) stating:
Just one generation ago, the United States had the highest proportion of college graduates in the world. Today, in eight other nations…young adults are more likely to have college degrees than in the U.S. … (para. 15). About one in four high school students…drops out or fails to graduate on time…High school dropouts today are basically condemned to poverty and social failure… (para. 18). 75 percent of young Americans, between the ages of 17 to 24, are unable to enlist in the military today because they have failed to graduate from high school, have a criminal record, or are physically unfit (para. 21).

Duncan goes on to state that the Center on Education and the Workforce projected that by 2018 there will be a need in the U.S. economy for approximately 22 million more college-educated workers, yet current graduation rates indicate there will be a shortage of about three million. In a 2010 interview with the Harvard Gazette, Harvard labor economist Lawrence Katz stated that America historically produced a better educated generation than the one before by receiving the equivalent of two more years of schooling than their parents. That trend had been reduced to only .4 years of schooling. It was apparent that “education is not keeping up” (Ireland, 2016, para. 24).

Stacey Childress, Deputy Director of Education for the Bill and Melinda Gates Foundation, wrote in the March 2012 Harvard Business Review essay “Rethinking School” the following:

Over the past 30 years nearly every labor-intensive service industry in the U.S. has seen dramatic increases in productivity, while public education has become roughly half as productive – spending twice the money per student to achieve the same results (para. 4)…. In 1990 the U.S. was first in the world in the percentage of 25- to 34-year-olds with college degrees. Today it is 10th and dropping (para. 6).
Former President Barack Obama ("U.S. Department of Education," 2009) stated, “The relative decline of American education is untenable for our economy, unsustainable for our democracy, and unacceptable for our children, and we cannot afford to let it continue” (para. 1).

There was a cost to the United States taxpayers for an undereducated, unskilled workforce. The education gap led to an economic gap for our country. Failure to tap into human potential resulted in lower earnings, poor health, and higher rates of incarceration. This dilemma could be prevented if students were equipped with the knowledge and skills to function as contributing employees (McKinsey & Company, 2009).

**How the United States Compares to Other High Performing Countries**

The Organization for Economic Cooperation and Development (OECD) Programme for International Student Assessment (PISA) assessed fifteen-year-old students in 70 countries every three years in math, science, and reading. The assessment was designed to inform countries of how well their students were prepared educationally for life. In 2009, results showed that countries earning the highest scores in reading were Shanghai, Korea, Finland, Hong Kong, Singapore, Canada, New Zealand, Japan, and Australia. The United States only performed in the average range. Countries performing the highest in math were Korea, Shanghai, Singapore, Hong Kong, Finland, and Switzerland. The United States scored significantly below average. In science, countries performing at the top were Shanghai, Singapore, and Finland. The United States performed in the average range (Tucker & Hammond, 2015). In response to the results, then Secretary of Education Arne Duncan (2010) stated, “Being average in reading and science—and below average in math—is not nearly good enough in a knowledge economy where scientific and technological literacy is so central to sustaining innovation and international competitiveness” (para. 3).
Although the United States had many more students entering college than the OECD average, the completion rate was 17 points below the average (Friedman & Mandelbaum, 2012). American students in Grade 4 performed well academically in reading and math with peers in Finland, Korea, and Singapore. However, American high school students did not perform well in comparison. Consulting firm, McKinsey & Company’s, The Economic Impact of the Achievement Gap in America’s Schools stated, “the longer American children are in school, the worse they perform compared to their international peers” (p. 8).

The Department of Education reported that approximately one third of first year students entering college were required to take at least one remedial course in reading, writing, or math. At public two-year colleges, that number increased to 40%. To add to the bleak outlook, there was a high correlation between taking one remedial course and failure to graduate from college. One specific difference in the more successful countries as compared to the United States was that they spent the most money on the students that were at the most risk. In fact, they intentionally assigned their best teachers to the schools that served the most disadvantaged students (McKinsey & Company, 2009).

**Dropout**

In his first major address to Congress, former President Barack Obama, shared his vision of a country where dropping out of school would not be an option (“White House Release,” 2010). He believed one way of improving the nation’s economic and political standing in the world was linked to improving high school graduation rates. Former President Obama stated, “This is a problem we can’t afford to accept or ignore…for our children, for our economy, for our country. It’s time for all of us to come together…to end America’s dropout crisis” (para. 15). According to McKinsey & Company (2009), high school dropout led to a nationwide problem of creating an uneducated society that cannot globally compete with other nations.
The Annie E. Casey Foundation (Fiester, 2010) forecasted problems for our nation, due to many students not reaching proficiency and ultimately choosing to drop out of school. For each dropout, the cost to society was an estimated $260,000 in accumulated lost earnings, taxes, and productivity not to mention the additional costs of being at higher risk for incarceration and having children out of wedlock (Riley & Peterson, 2008). National Assessment of Adult Literacy (NAAL) (2003) reported that 90% of welfare recipients were high school dropouts. In 2007, approximately 6.2 million people in the United States between the ages of 16 and 24, an estimated 16% of people in that age range, were high school dropouts (CNN, 2009).

According to the National Center for Education Statistics the median income of a dropout aged 18-67 was $25,000 compared to a graduate who earns $46,000 (as cited in Chapman, Laird, Ifill, & KewalRamani, 2011). The difference in median income resulted in approximately $670,000 over a person’s lifetime (Rouse, 2007). According to the Alliance for Excellent Education (2011), dropouts not only financially harmed themselves, but also accumulated excessive costs to the communities and states in which they lived. If the students who had dropped out of the class of 2011 had graduated, rather than only 72 percent graduating, the nation’s economy would have benefitted from an additional $154 billion income over the course of their lifetimes (“Alliance for Excellent Education,” 2011). Students who dropped out of school cost the U.S. economy billions of dollars annually in lost revenue.

To add to the difference in median salaries, dropouts were more likely to be unemployed as compared to a high school graduate, or the equivalent. The Bureau of Labor Statistics (2017) showed the unemployment rates for Americans over twenty-five years old according to educational attainments as follows: less than a high school degree (7.7%), high school degree and no college (5.3%), some college or an associate degree (3.8%), and bachelor’s degree or
higher (2.5%). These unemployment rates increased the probability of dropouts living in poverty. To add to the economic obstacles, dropouts aged 25 and older reported worse physical health conditions, which resulted in greater costs for health care (Lleras-Muney, 2005). Not only does the individual suffer, but also society as a whole pays the price.

Factors associated with dropping out of school were seen many years before high school, suggesting experiences in a student’s elementary years could positively or negatively influence success in later years. Demographics that led to drop out included family poverty, gender, racial/ethnic minority group, test scores, mobility, and overage for age, which could have been a result of being retained in previous years (Allensworth, 2005).

The What Works Clearinghouse made recommendations to help prevent dropout. First, each school needed a data system in order to keep track of the students that were showing signs of being at-risk such as poor attendance, poor grades, and lack of earning credits. Next, targeted intervention had to be in place, which may have included adults assigned as advocates, academic supports to improve performance, programs implemented to improve students’ classroom behavior and social skills, and the learning environment and instructional process personalized to address individual learning needs. Finally, instruction had to be provided to better prepare students with the skills necessary to not only graduate, but to be productive members of the workforce (Dynarski, Clarke, Cobb, Finn, Rumberger, & Smink, 2008).

Another reason for school dropout was academic and social issues. Rumberger (2001) stated that effective prevention strategies had to focus on both areas to provide a comprehensive program. There existed a wide range of reasons that students dropped out of school. Therefore, the interventions had to be tailored to the student’s individual needs. He also stated that at-risk behaviors and attitudes began to surface as early as elementary school. Therefore, prevention
strategies should begin in the child’s early school years. When the problems were not addressed until middle and high school, years of failure had compounded into long-lasting issues. Overcoming obstacles at this level may be costly and ultimately ineffective. Rumberger (2001) stated “early intervention may be the most powerful and cost-effective approach to dropout prevention” (p. 22).

The Impact of Poverty
Poverty was an additional barrier to academic and social achievement. Girls at the poverty level or below, aged 16 to 19 with below average skills were six times more likely to have children out-of-wedlock. Children whose mothers had low levels of overall education were more likely to have been exposed prenatally to cigarette smoke, alcohol, drugs, and folic acid deficiencies that often resulted in preterm birth, retardation, and long-lasting cognitive and behavior problems (Case & Paxon, 2006). When low-income students entered kindergarten, they were already 12 to 14 months below national norms in language and pre-reading skills (“Council of Chief State School Officers,” 2009). Additionally, children from low-income families lacked vocabulary rich interactions that promoted linguistic development. Children from higher income families were exposed to 30 million more words than children from poverty by age three. Vocabulary development by age three was considered a good predictor of reading achievement in Grade 3 (Hart & Risley, 2003).

Retention and Social Promotion in America
As academic standards became a priority in the 1980s, retention policies were implemented, and the trend to retain became a more frequent practice for students who did not master grade-level content. During the 1990s, schools began to reduce the practice of retention due to research indicating retained students did not achieve higher academic goals than those who were not retained. Also, it was found that those who were retained were more likely to drop
out of school (Neill, Guisbond, Schaeffer, Madden, & Lageros, 2004). By the late 1990s, the practice again switched from social promotion back to retention due to educational reform efforts and the expectation for students to master standards according to high-stakes testing. With the NCLB Act of 2001 and other reform efforts, there was a significant increase in retentions due to the emphasis on grade-level performance standards (Jimerson, Pletcher, & Kerr, 2005). Educators were faced with the continual question of whether to retain or socially promote students that were not performing at grade level.

**Retention**

During the days of one-room schoolhouses, the idea of retention was not a consideration. All grades were in a single classroom, and students were promoted based on the mastery of content. As schools grew in the mid-19th century to expand beyond the one-room schoolhouses, retention became a practice for students who failed to achieve (Steiner, 1986). In 1908 the government printing office reported a study by Thorndike discussing “elimination”, which then described today’s term “retention.” The study showed that 81.7% of students entering school between 1900 and 1904 were “eliminated” by Grade 9 (Owings & Kaplan, 2001, p.11).

Numerous studies have researched the effect of retention, a practice that was often the response to academic failure, yet the studies yielded varying results. The intent of retention was to accommodate for the academic failure that the student experienced by having the child repeat another year of the same instruction in the same grade. However, researchers such as Jimerson (1999) and Owings and Kaplan (2001) found that retention was not an effective intervention. Schools often expected that requiring a student to repeat a grade without making instructional changes would produce positive effects. This practice, according to Jimerson, Ferguson, Whipple, Anderson, and Dalton (2002), continued to lead to low achievement and an increased likelihood of dropping out of school. Additionally, research studies by Jimerson (1999) showed
the impact that retention had on employment outcomes between the ages of 18 and 20. When compared to low-performing, yet promoted students, those retained were less likely to be working fulltime, made less per hour, and reflected less worker competence. Other studies conducted by Hong and Yu (2008), however, indicated immediate gains in achievement during the year of retention, with gains fading in later years.

**Retention predictors and effects.**

The National Association of School Psychologists (NASP) (2016) estimated that 15% of all school children repeated a grade level each year and between 30% and 50% of all students repeated a grade before entering Grade 9. Students at a higher risk for retention tended to be male, a member of a racial or ethnic minority group, developmentally delayed, or from a low-socioeconomic family. Other characteristics included exhibiting attention, behavioral, or emotional problems, having low achievement in early school performance in reading and math, or moving schools often (McCoy & Reynolds, 1999). Jimerson (1999) suggested that immaturity, later birthdates, low parental educational attainment, difficulty with peer relations, and low self-esteem were additional characteristics leading to risks for retention.

Research from 2007 showed statistical data for students in kindergarten through Grade 8. Results showed 12% of males were retained as compared to 8% of females. Retention was greater among poor families with 23% of students from poor families retained, as compared to 11% from near-poor families, and 5% from non-poor families. Retention was also more common when the mother had a lower educational level; 20% of students with mothers having less than a high school education were retained and only 3% of students with mothers having a bachelor’s degree or higher were retained. Additionally, students who had educated parents were more likely to score in the upper quartile for both reading and math and have better motor
skills. (Planty et al., 2009). Jimerson, Anderson and Whipple (2003) found that retained students were more likely to move schools more often and have higher absentee rates. Students that were retained were more likely to come from large families where parent’s education and family involvement were both low.

Retention research.

Proponents of retention believed that low-performing students would benefit from an additional year of instruction before attempting the more challenging content the following year. Opponents to retention, however, contended that retained students suffered from lower self-esteem, faced challenges of being placed with a new peer group, and encountered reduced expectations from parents and teachers. Jimerson, Anderson, and Whipple (2003) claimed “a century of research has failed to demonstrate the benefits of grade retention over promotion to the next grade for any group of students” (para. 12).

Overwhelmingly, early studies indicated that retention was an ineffective practice. Retained students performed lower academically than similarly performing promoted students and suffered negative consequences both at the time they were retained and in later years (Jimerson, 1999; McCoy & Reynolds, 1999). More recent studies, however, indicated retained students did show academic gains (Greene & Winters, 2007; Hong & Yu, 2008; Hughes, Chen, Thoemmes, & Kwok, 2010; Wu, West, & Hughes, 2008).

Studies of mental health concluded that by the time students were in Grade 6, fear of retention was one of the top three fears of children. It was found that being held back was one of the most negative events a child encounters (Andrew, 2014; Jimerson, Anderson, & Whipple, 2003). Additionally, students who were retained were more likely to show aggression, be suspended or expelled from school, act out in the classroom, and/or display Attention Deficit
Hyperactivity Disorder and Conduct Disorder behaviors (Jimerson et. al., 2003). Retained students had lower self-esteem and poor attendance that may have led to the increased likelihood of school dropout (Jimerson et. al., 2003). The negative effects continued into adolescence and often resulted in poor peer relations, sexual behavior, suicidal tendencies, violent behaviors, and substance abuse. Continued negative impacts continued to be evident into adulthood. Adults who were retained were more likely to be unemployed, make significantly less per hour, exhibit a lower level of work competence, rely on public assistance, and be incarcerated (Jimerson, 1999; Lleras-Muney, 2005).

In addition to problems with social emotional adjustment from adolescence to adulthood, research indicated that retained students experienced negative outcomes in reading, math, oral language, and written language. When compared to low-achieving peers that were promoted, the retained students had lower achievement than the promoted low-achieving peers and had an increased chance of dropping out of school (Andrew, 2014; Jimerson, 1999). Roderick (1994) found that the timing of retention yielded different results related to school dropout. Students retained between kindergarten and Grade 3 were 75% more likely to drop out than students who had not been retained. Students retained between Grade 4 and Grade 6 were 90% more likely to drop out than those who had never been retained. Overall, the National Center for Education Statistics (“U.S. Department of Education,” 2006) reported that students who dropped out of school were five times more likely to have been retained than those who graduated.

Jacob and Lefgren (2009) studied the effects of retention and found that retention increased the dropout rates for students in Grade 8 but not Grade 6. In another study of Florida students, Greene and Winters (2007) found that retention in higher grades may have detrimental effects on students, but early grade retention may be beneficial. Test scores of students who were
retained in primary grades sometimes showed increases in achievement the first couple of years, but then achievement may have declined below equally low-achieving but socially promoted peers (Jimerson, Anderson & Whipple, 2003).

The majority of studies over the past decades do not indicate that retention remediates academic deficits. The lack of controlling factors made it difficult to know if preexisting conditions caused poor post-retention academic and social outcomes rather than the retention itself. More recent studies used controls to better determine the effect of retention. Wu, West, and Hughes (2008) conducted a four-year longitudinal study to determine the effect of retention on Grade 1 students using propensity scores, a conditional probability of the student being assigned to the retention intervention. Results showed that the retained students benefited from both short-term and long-term effects of decreased hyperactivity, decreased sadness and withdrawal, and increased behavioral engagement. Short-term increases were shown in attitude toward school and sense of belonging; however, effects decreased over time. Positive long-term effects were found in academic self-efficacy, with effects varying depending on whether the comparison was made to same grade or same age peers, as well as short-term (1-2 years) or long-term (2-4 years) comparisons. When compared to same age peers, retained students showed a slower increase in both math and reading achievement in the short term; however, results indicated a faster increase in reading achievement in the longer term. When compared by same grade, retained students reflected a faster increase in the short term, but a faster decrease in the long term in both math and reading as compared to the promoted student; however, gains fade within four years (Wu et. al., 2008). In a later study with the same sample, students retained in the first grade obtained a passing score on third grade state assessments in reading and math
more frequently than promoted propensity matched students (Hughes, Chen, Thoemmes, & Kwok, 2010).

Other researchers also argued that there existed bias in the studies that showed negative effects of retention, which lead to skewed results. Most of the studies had methodological limitations such as the lack of a comparison group of promoted peers equivalent to the retained group related to achievement and other predictive variables of achievement. Allen, Chen, Willson, and Hughes (2009) used higher quality controls for selection and the results indicated fewer negative effects for retention than prior research studies had found. Studies implementing more controlled methodological designs yielded effect sizes not statistically different from zero. Retention also indicated short-term benefits when assessments were conducted that aligned with the curriculum experienced in the retained grade level. There was a significant association in math scores of retained students and a marginal significance in reading scores (Hughes, Chen, Thoemmes & Kwok, 2010).

Hong and Yu (2008), also believing previous studies had selection bias and therefore using propensity score stratification, studied the effects of kindergarten retention on a child’s social-emotional development. Overall, results did not indicate that kindergarten retention was harmful to a child’s social-emotional development. In fact, findings suggested that if the retained kindergartners had been promoted, it was possible the student would have had lower self-confidence as well as lower interest in reading. Additionally, it was predicted that those students would lose interest in all subjects within two years. By the end of the treatment year and following two years later, the student displayed higher levels of internalizing problem behaviors.
A study conducted by Schwerdt and West (2013) used state-wide data of all Florida public school students in Grade 3 to Grade 9 to determine the causal effect of Grade 3 retention on future outcomes the following six years. Since 2003, Florida had mandated retention for Grade 3 students that failed to show proficiency on state reading tests. The analysis determined that students retained in Grade 3 experienced substantial short-term gains in both reading and math achievement. In the three years after retention, the retained students out-performed same-age peers who were promoted by .34 standard deviations in reading and by .26 standard deviations in math. The positive effects, however, became insignificant within five years. The results indicated that after six years, students who were retained in Grade 3 were performing .74 grade levels behind non-retained peers (Schwerdt & West, 2013).

Cannon and Lipscomb (2011) conducted research on early grade retention with elementary students in the Los Angeles Unified School District (LAUSD). The study showed that retaining students in Grade 1 or Grade 2 helped to remediate grade-level skill acquisition during the retained year. Many students improved by at least one proficiency level, with greater gains in math as compared to English language arts. Findings showed that early intervention to prevent retention is in the best interest of the student. The study suggested that students who were retained in Grade 2 performed at higher achievement levels in Grade 3 than they would have had they not repeated the grade. Retained Grade 2 students were tested each year, and results showed that the repeated year yielded significantly higher proficiency rates (Cannon & Lipscomb, 2011).

Reports conducted by RAND concluded that retention is not harmful and is more effective than promoting fifth grade students. The Hechinger Report states “a growing consensus was emerging in the research community that holding a kid back in younger grades
isn’t harmful and sometimes helpful if accompanied by support services, such as summer school, tutoring and advising” (Barshay, 2013, p. 8).

**Social Promotion**

In the 1930s, social promotion began to address concerns regarding the psychology of individuals (Steiner, 1986). Due to the multiple research studies that indicated retention had no positive effects for students, and the evidence that showed those students were at-risk of dropping out of school, a new approach, social promotion, emerged in the early 1960s. Social promotion, a practice that allowed students who failed to remain with their age group, was an appealing option to those that viewed retention as damaging to a child’s self-esteem. This seemed to be a better alternative to retention, since students who were promoted appeared to do as well academically as those retained, would not be as high of a risk factor for dropping out of school, and their self-esteem would not be damaged. However, a new problem surfaced. Students could then interpret social promotion as a way of opting out of accountability. Regardless of academic performance, the student was passed to the next grade level. Educators began to see this problem occur in the classrooms, and parents perceived education as less rigorous since all students, even the non-productive, were ensured successful transition to the next grade. Students who were promoted had difficulty meeting academic expectations in the next grade levels since they had not met standards and skills for the former grade level. Deficits in learning resulted in continued failure of expectations. This practice seldom resulted in improved learning since students were no longer responsible for meeting performance standards (Owings & Kaplan, 2001).

In 1983, a panel was established consisting of educators and political leaders to examine the state of the county and its educational system. A report titled *A Nation at Risk* indicated that the country’s educational system was placing the nation at risk (“National Commission on
Excellence in Education,“ 1983). One major issue that surfaced was the practice of social promotion, which allowed students to eventually become graduates without truly meeting standards expected throughout their educational journey.

In 2000, President Bush campaigned with education reform as a major focus. During his candidacy, he signed into action the No Child Left Behind Act of 2001. He was concerned that “too many of our neediest children are being left behind” (“U.S. Department of Education,” 2004, p. 2) although nearly $200 billion had been spent on educational reform since 1965 with the Elementary and Secondary Education Act (ESEA). Every state was required to set standards in math and reading, with all students performing at proficiency by 2014. School accountability required adequate yearly progress and public reporting of progress (“U.S. Department of Education,” 2004). The new expectations for performance brought an era of high standards accountability. With this expectation, schools cycled back to retention as a means of promoting standards mastery.

**Alternatives to Retention and Social Promotion**

As indicated by multiple studies conducted over the past decades, consensus was not reached to determine the effectiveness of retention or social promotion in fostering student achievement. Those against retention claimed that retained students did not perform better than their similarly promoted peers and were at a greater risk of dropping out of school. Additionally, social promotion had negative effects, such as placing students in a grade where content was difficult to learn and sending the message that students did not have to be accountable for expectations to receive the honor of being promoted. The attempt to preserve the “student’s social and psychological well-being, without regard to achievement” created a society of unaccountable individuals and influenced classrooms to be less rigorous to account for the student’s lack of content (“U.S. Department of Education,” 1999, p. 5). The recommended
alternative was early identification of struggling students and the provision of individualized instruction and frequent progress monitoring (“National Association of School Psychologists,” 2016). Jane David (2008) stated that many students, especially those who start school far behind their peers, might need intensive intervention prior to kindergarten.

Since neither repeating a grade nor being promoted to the next grade without the supports needed to improve academic and social skills resulted in benefits to the student, it was a necessity for schools to take accountability for student progress through effective intervention strategies (“National Association of School Psychologists,” 2016). Instead, the goal was to “focus on implementing evidence-based prevention and intervention strategies to promote social and cognitive competence to facilitate the academic success of all students” (para. 12). Interventions suggested as alternatives to retention included parent involvement, effective instructional strategies, small reading and math groups, intensive early reading programs, interventions to address specific learning or behavioral problems, and smaller class size for struggling students, (Jimerson, 1999; Jimerson, Anderson, & Whipple, 2003; Jimerson, Pletcher, Graydon, Britton, Nickerson, & Kundert, 2006; National Association of School Psychologists, 2003).

The NASP recommended the identification of early at-risk students and the provision of individualized instruction applying evidence-based instructional practices along with frequent progress monitoring (“National Association of School Psychologists,” 2016). A tiered system, referred to as Response to Intervention (RTI), provided research-based strategies to target the students’ identified area of need, whether it was academic, behavioral, or social-emotional (“National Association of School Psychologists,” 2011). This type of model included a first tier, or universal tier, that was the instruction and support provided for school-wide screening,
academics, and behavior. The second tier provided more intensive academic and behavior supports for students that needed the intervention. The third tier was more intensive and more individualized for the students that needed intervention beyond tier two according to the student’s progress, or lack of progress. Instructional strategies were individualized and adjusted depending on the success the child had with a particular intervention (Fletcher & Vaughan, 2009). When RTI was implemented with fidelity utilizing evidence-based strategies, screening, and progress monitoring, educators were less likely to be forced to choose between grade retention and social promotion to meet the needs of the struggling student to achieve grade-level standards (“National Association of School Psychologists,” 2016).

**Impact of Early Learning**

The U.S. Department of Education (2015) stated, “the foundation of a thriving middle class is a strong education” (para. 1). Research showed that students that were exposed to rigorous early learning were better prepared for school, however the U.S. only ranked 28th in the world for enrolling 4-year-olds in early education (“U.S. Department of Education,” 2015). Early childhood education was part of education theory that focused on the teaching of young children up to the age of eight. In 2002, President George W. Bush emphasized the importance of building the foundation for early academic skills in his speech endorsing Head Start reform efforts. He stated that upon entering school, students should know letters, numbers, and possess a strong vocabulary, all of which are the building blocks of learning that the nation must provide its youth (Government Publishing Office, 2002). In 1965, President Johnson proclaimed the Head Start program as a war on poverty (Johnson, 1965).

In the past several years, the national push for state and federal policy to address early education made an impact on public education. The Race to the Top Early Learning Challenge was key to education reform initiatives, awarding $500 million to states with a plan for
comprehensive early childhood education (“U.S. Department of Education,” 2011). Brookings Institution Research found that “children who attend some form of preschool program at age four are nine percentage points more likely to be school-ready than other children” due predominately to the instruction of early math and reading skills (Haywoode, 2013, p. 9).

One specific preschool program, High/Scope Perry Pre-School, targeted 123 at-risk African Americans living in poverty. The results showed that one-third more preschool program participants graduated from high school or received their General Education Diploma (GED) certification as compared to those who did not receive a preschool education. These results indicated that early interventions for at-risk students were highly effective in decreasing the chances of dropping out of school (Barnett, 1995). Barnett (1995) explained “for many children, preschool programs can mean the difference between failing and passing, regular or special education, staying out of trouble or becoming involved in crime and delinquency, dropping out or graduating from high school” (p. 43).

It was found that the age of entry into childcare programs had an influence on the achievement level of math and reading for children five and six years of age. Children from low-income families reaped greater gains in reading scores when their entry to preschool was earlier and when they remained in the program for multiple years. Consequently, children from higher income families actually had negative effects on reading because higher-income families would have provided support and enhanced the child’s cognitive and social development at greater levels than was provided by the preschool programs (Barnett, 1995).

**Importance of early reading.**

Research conducted by Hernandez analyzed the relationship between Grade 3 reading proficiency and high school graduation. Findings showed that students that were not proficient
readers in Grade 3 were four times less likely to graduate than peers that read proficiently (Haywoode, 2013). When poverty was an additional barrier, a student who was not proficient in reading was 13 times less likely to graduate on time as compared to peers not in poverty (Sparks, 2011).

Research indicated Grade 3 was a crucial year for students as they transitioned from learning to read to reading to learn (Paul, 2012). According to the Annie E. Casey Foundation’s analysis of 2009 National Assessment of Educational Progress (NAEP) data, 83% of low-income students, and 55% of moderate and high-income students, performed below proficiency in reading at the beginning of Grade 4. Overall, about two-thirds of students performed below proficiency in reading in 2009 (Fiester, 2010). Some states realized the importance of reading and developed policies to retain students that did not master grade-level content to help ensure students learned the Grade 3 reading standards. As of 2012, mandatory retention bills were passed in Arizona, Florida, Indiana, and Oklahoma, with the practice being considered in Colorado, Iowa, New Mexico, and Tennessee (Paul, 2012). Rose (2012) indicated that 14 states created policies mandating retention for students who did not demonstrate basic reading proficiency at the end of Grade 3.

As far back as 2003, literacy statistics reported that two-thirds of students who could not read proficiently by the end of Grade 4 would end up either in jail or on welfare. An estimated 85% of all juveniles in the court system and more than 60% of all prison inmates were functionally illiterate. The likelihood of an inmate returning to prison that had received literacy instruction was 16%, which was much lower than the 70% that did not receive any literacy instruction. The social cost of inmates, and financial cost to taxpayers, was high. For example,
inmates cost the country the equivalent of $25,000 per year, and juvenile offenders cost even twice that amount ("National Assessment of Adult Literacy,” 2003).

The Campaign for Grade-Level Reading was a national collaborative effort by foundations, states, and communities to ensure more children from low-income families succeeded in school and graduate college and career ready. Results indicated that children struggling in reading were most likely to remain behind grade-level peers throughout their schooling. Additionally, the struggling readers continued to fall further behind their grade-level peers. Researchers describe the “Matthew Effect” when relating this increased gap to “the academically rich get richer and the poor get poorer, as small differences in learning ability grow into large ones” (Paul, 2012, para. 4).

**Importance of early numeracy.**

Jordan (2010) found that the development of foundational number competencies often occurred before Grade 1 and was predictive of future mathematics achievement. The higher level of number competence seen in kindergarten indicated statistically significant performance in mathematics achievement by the end of Grade 3. Therefore, number competence was recommended as an emphasis in preschool and kindergarten instruction.

The first years of education were critical in preparing students with the mathematics foundations needed to develop confident and capable lifelong learners. The Early Numeracy Research Project (ENRP) conducted research and prepared a report on the impact and importance of mathematics. The research team referred to the definition of numeracy as the application of mathematics used at school, at home, at work, and in the community. Number competencies were associated with whole number relations, operations, language abilities, quantitative knowledge, and spatial knowledge. The intervention approach recommended in the
study involved working with low achieving math students in groups of three for 30 minutes each day to receive instruction in a specialized intervention program.

The National Association for the Education of Young Children (NAEYC) and the National Council of Teachers of Mathematics (NCTM) claimed that a high-quality mathematics education was crucial for three-year to six-year-old children for future mathematics learning ("NAEYC," 2010; "NCTM," 2010). This finding emphasized the role that early childhood teachers played in students’ mathematics development. Essential domains in the early childhood education program were number and geometry, spatial thinking, and measurement. Subcategories of these domains included quantity, counting, representation of written numbers, addition and subtraction operations, two and three-dimensional objects, spatial relations, and processes of composition and decomposition (Cross, Woods, & Schweingruber, 2009).

**Academic Redshirting**

Academic redshirting was a practice that intentionally delayed a student’s entry to school to allow an extra year to mature and gain prerequisite foundational skills. Most parents that chose to use this option were from higher-income families since they could more easily pay for childcare in the year that the students delayed entrance. This practice was often endorsed when students were held back to improve their performance in a nonacademic area, most commonly athletics. Research showed that regardless of academic performance, students that were red-shirted were not likely to carry the same negative social stigma that was normally associated with retention (Davidson, n.d.).

In the LAUSD, this late enrollment was three times higher among families that did not qualify for the free/reduced meal program than those that were eligible. This practice was seen as a predetermined form of retention; however, the children did not gain an additional year of instruction in the school setting, as retained students did. Although children did not have formal
instruction during the extra year, they may have benefited from other resources depending on the opportunities provided by the often higher-income families. Districts that utilized this practice often had fewer cases of retention because the students were older when they entered school.

Research showed retention occurred more frequently with younger children; therefore, red-shirted students eliminated that risk factor. Most parents selected this option when their child would normally have been one of the youngest in the class. The LAUSD study showed children with fall birthdates were more than seven times as likely to be redshirted as those with later birthdates, and boys were approximately 60% more likely to be redshirted than girls. Results indicated redshirting was an effective practice with high participation in the practice seen in the highest-performing schools and low participation rates in the lowest performing schools.

Additionally, this practice was eight times more common with white families than Latinos (Cannon & Lipscomb, 2011).

An earlier study, conducted by Graue and DiPerna (2000), utilized a representative sample of Wisconsin school districts examining more than 8000 students. Seven percent of the sample had delayed school entry, primarily boys with birthdates immediately before the kindergarten entrance cutoff. Graue and DiPerna suggested “schools expect children to be ready when they come to school rather than acquiring readiness in kindergarten” (p. 511). To compensate for meeting the needs of children that were considered not ready for kindergarten, a structured extra year of instruction could be added in the form of retention or developmental kindergartens. Redshirting was considered as an extra year of intervention, although the child was not necessarily in a structured instructional program for that year. Redshirting, however, did not carry with it the negative stigma often associated with retention. With so many options for delayed or repeated kindergarten, Graue and DiPerna referred to this situation as the “graying of
the kindergarten” (p. 511). Increasingly, students were likely to be six years old when they were in kindergarten classes, which brought different skills and expectations than may have typically been expected in schools.

Although redshirting was often conducted as a means to prevent the need for extra support since the child has received an extra year of growth, the results of the study indicated a higher participation in special education services. Whether the overage-for-grade was a result of being redshirted or retained, more students were referred for services for learning, cognitive, and/or emotional disabilities. Redshirts were 1.89 times more likely to receive services, and retained students were 2.76 times more likely, than those students that entered at the expected age or were promoted. The likelihood of boys receiving special services was 1.4 times that of girls (Graue & DiPerna, 2000).

When comparing the reading scores of Grade 3 retained students, redshirts, and regularly entered or promoted students, the achievement of redshirts was similar to regularly entered and promoted peers. The gaps in achievement were largest between the oldest and youngest children, when comparing the retained students (Graue & DiPerna, 2000). For some redshirts, missing that year of instruction was missing a year of needed intervention. Additionally, the extra year places the redshirts in an overage-for-grade category, which past research indicated increased the likelihood of dropping out of school (Grissom, 2004). Graue and DiPerna (2000) stated that to find the students that would most benefit from the “gift of time,” educators should be investing in appropriate developmental assessments that can be used along with other factors such as birthdate” (p. 527).

Although some students showed more maturity than others, research showed that all students were ready to learn. The concept to consider was what a child was ready to learn.
Research indicated that it was more important for a child to be exposed to learning, regardless of the age, than to only learn from activities of engagement outside of school. Therefore, schools must provide appropriate instruction for the particular social and academic skills of all children and encourage early entry to school settings (Stipek, 2009).

**Non-traditional Kindergarten Programs**

Non-traditional kindergarten programs, alternate kindergartens, developmental kindergartens, and transitional kindergartens, were developed to address the concern that many students were not entering school ready for kindergarten. The Cedar Rapids Community School District in Iowa offered a full day kindergarten program, called Alternate Kindergarten (AK), giving a child the opportunity to grow and develop another year before entering the traditional kindergarten setting. Students who participated in this program were considered as being retained and were assigned to a traditional kindergarten classroom the year after AK. The focus of this program was on developing strong social skills and developing meaningful relationships. A screener was given to each student to determine eligibility. This program has been in existence for the past 25 years in the Cedar Rapids School District and was offered in three of the district’s schools. Each year, over 100 students participated in this program (“Cedar Rapids Community School District,” 2017).

Developmental kindergartens served as pre-kindergartens for students who were of age to enter kindergarten, but were not ready due to developmental or behavioral delays. Some districts required placement tests for their students or had a specific set of criteria to determine participation in the program. At the end of the developmental kindergarten year, a committee of school personnel and parents met to determine whether the student would be placed in kindergarten or Grade 1 (Morrison, 2010).
Transitional kindergartens were designed to provide children the extra time needed to achieve the goals set for entry into Grade 1. Students who participated in transitional kindergarten programs had two years to complete what other students mastered in one year. This program allowed students to progress at a pace appropriate for their abilities. Transitional kindergartens promoted success rather than retention, which resulted from failure (Morrison, 2010).

A 2010 study conducted in California’s transitional kindergarten programs showed that students who participated had improved reading and math outcomes, as well as increased executive functions such as following rules, regulating self-behavior, and thinking skills. The program was established for students who were born between the dates of September 2 and December 2, which emphasized the district’s commitment to early education. The goal of the program was to promote school readiness by providing an additional year of early education to young five-year-olds (“American Institutes for Research,” 2015).

**Synopsis of Literature Review**

The role of education has evolved throughout the years to the current academic focus of preparing students to compete globally. The lack of a commitment to educational attainment has led to many problems for the country. Not only has an education gap existed, but also an economic gap. The country has paid the cost for an uneducated society. High school dropout has led to a nationwide problem of creating an uneducated society that cannot globally compete with other nations (McKinsey & Company, 2009).

Numerous studies researched the effects of retention, yet the studies yielded varying results. Researchers such as Jimerson (1999) and Owings and Kaplan (2001) found that retention was not an effective intervention. This practice, according to Jimerson, Ferguson, Whipple, Anderson, and Dalton (2002), continued to lead to low achievement and an increased
likelihood of dropping out of school. Additionally, research studies by Jimerson (1999) showed the impact that retention had on employment outcomes between the ages of 18 and 20. When compared to low-performing, yet promoted students, those retained were less likely to be working fulltime, made less per hour, and reflected less worker competence. Later studies, however, indicated gains in achievement during the year of retention, with gains sometimes fading in later years (Hong & Yu, 2008; Greene & Winters, 2007, Hughes, Chen, Thoemmes, & Kwok, 2010 Wu, West, & Hughes, 2008).

As indicated by multiple studies conducted over the past decades, consensus was not reached to determine whether retention or social promotion was effective in promoting student achievement. Retained students were at a greater risk of dropping out of school, which resulted in economic costs to both the individual due to loss of income as well as the state and nation assuming costs related to unemployment, health care, and possible incarceration (Andrew, 2014; Jimerson, 1999; Riley & Peterson, 2008). Social promotion, the attempt to preserve the “student’s social and psychological well-being, without regard to achievement,” was believed to create a society of unaccountable individuals or influence classrooms to be less rigorous to account for the student’s lack of content (“U.S. Department of Education,” 1999, p. 5).

Therefore, other research-based practices were recommended to take the place of these often ineffective options. New and Cochran (2007) stated, “Implementing prevention and early intervention programs is more promising than waiting for learning difficulties to accumulate” (p. 399).

It was found that children who participated in early childhood programs had a higher chance of graduating high school, improved performance on standardized tests, and less chance of retention and special education referrals (Barnett, 1995). The first years of education were
critical in preparing students with the mathematics foundations needed to develop confident and capable lifelong learners. The development of foundational number competencies could occur before Grade 1 and were predictive of future mathematics achievement. The higher level of number competence seen in kindergarten indicated statistically significant performance in mathematics achievement by the end of Grade 3 (Jordan, 2010).

Results indicated that children struggling in reading were most likely to remain behind grade-level peers throughout their schooling and continued to fall further behind their grade-level peers. Researchers described the “Matthew Effect” when relating this increased gap to “the academically rich get richer and the poor get poorer, as small differences in learning ability grow into large ones” (Paul, 2012, para. 4). Research conducted by Hernandez analyzed the relationship between Grade 3 reading proficiency and high school graduation. Findings showed that students who were not proficient readers in Grade 3 were four times less likely to graduate than proficient peers (Haywoode, 2013).

Academic redshirting and non-traditional kindergarten such as alternate kindergartens, developmental kindergartens, and transitional kindergartens, have been implemented to address the concern that many students were not ready for kindergarten. Redshirting was a practice that intentionally delayed a student’s entry to school to allow an extra year to mature and gain prerequisite foundational skills. For some redshirts, however, missing that year of instruction was missing a year of needed intervention (Graue & DiPerna, 2000).

Developmental kindergartens served as pre-kindergarten settings for students who were of age to enter kindergarten but were not ready due to developmental or behavioral delays. Some districts required placement tests for their students or had a specific set of criteria that had to be met to participate in the program. At the end of the developmental kindergarten year, a
committee of school personnel and parents met to determine whether the student would be placed in kindergarten or Grade 1 (Morrison, 2010).

Transitional kindergartens were designed to provide children the extra time needed to achieve the goals set for entry into Grade 1. Students who participated in transitional kindergarten programs had two years to complete what other students mastered in one year. Transitional kindergartens promoted success, whereas retention promoted failure (Morrison, 2010). A 2010 study conducted in California’s transitional kindergarten programs showed that participants had improved reading and math outcomes as well as increased executive functions such as following rules, regulating self-behavior, and thinking skills. The goal of the program was to promote school readiness by providing an additional year of early education to young five-year-olds (“American Institutes for Research,” 2015).

Jane David (2008) stated that many students, especially those who start school far behind their peers, needed intensive intervention prior to kindergarten. The best alternative was early identification of struggling students and the provision of individualized instruction and frequent progress monitoring (“National Association of School Psychologists,” 2016).
Chapter 3

This chapter focused on procedures for the collection and analysis of data to be used in the study. The purpose of the study was stated, and the intervention program, KinderQuest, was defined. The research design was explained stating the independent and dependent variables.

Purpose of the Study

The purpose for the study was to evaluate a program that was believed to have a high impact on student achievement in reading and math. The focus on reading and math was due to research that indicated the importance of reading proficiently by Grade 3 (Paul, 2012) and the importance of number competence (Jordan, 2010), both of which led to future school success.

The plan was designed to show parents that the program was effective in helping their child perform at similar achievement levels to grade level peers, leading parents to choose this as a possible intervention option for their child. Many parents have dismissed this option when their child was referred for the program, resulting in retention at the end of the school year. If the results of this assessment plan proved KinderQuest to be an ineffective intervention, then SBDM should seek other alternatives for improving student achievement to prepare students for future school success and to be ready for the workforce. With this study, the school was equipped with the data to make informed decisions to implement the best instruction for students.

Research Design

The quantitative study was designed to determine the impact of KinderQuest as compared to retained students and those who traditionally moved from kindergarten through Grade 6 as indicated by academic measures of reading achievement and math achievement. Renaissance Learning, a resource that provided STAR reading and STAR math assessments, was used five times per year to monitor students’ progress. Mid-year data assessed during the fourth month of
the school year was used to determine reading and math achievement. Students were considered to be performing “at or above grade level” if the student was performing at the specific grade level and month. For example, a third-grade student in the fourth month of school should have received a 3.4 grade equivalency to be considered reaching benchmark goals. The first number represented the grade level, and the second number represented the month.

All students enrolled at the elementary school in Grade 1 to Grade 6 were assessed. A spreadsheet of all currently enrolled students was compiled, with each student identified as a member of KinderQuest, retention, or traditional cohorts. These three categories differentiated the cohorts, which were compared in terms of reading and math achievement. Students who qualified for ESL (English as a Second Language) or special education services were removed from the study, regardless of the cohort to which they belonged, due to their specially designed instruction, which may have skewed the results. The spreadsheet indicated the grade level of each student, allowing short-term and long-term achievement to be analyzed, Grades 1 to Grade 3 and Grade 4 to Grade 6, respectively.

**KinderQuest Defined**

KinderQuest was not a packaged program, and it began eight years ago to address the concern that students exiting the preschool program were not ready for kindergarten due to weaknesses in academics or social immaturity. The school’s SBDM council approved this program, which created a more rigorous experience than preschool and was aligned to kindergarten standards. The program did not take the place of kindergarten, and all students were expected to attend the regular kindergarten program the following year. This was a necessity, since the KinderQuest curriculum did not include a comprehensive curriculum of all kindergarten standards, but only included the standards which the kindergarten teachers deemed the most important for a strong foundation for kindergarten success.
To create the curriculum, the KinderQuest teacher collaborated with the kindergarten teachers to identify the standards that most students had not mastered after completing preschool, the Common Core standards that kindergarten students often struggled to master, and the standards that were considered as a basis for the foundation of future reading and numeracy skills. Appendix A showed the reporting form provided to parents indicating the KinderQuest standards by which their child would be monitored according to mastery of content.

The curriculum was designed to be more structured and rigorous than the preschool setting, yet not as demanding as the kindergarten setting, which required the teaching of standards in reading, math, science and social studies. The KinderQuest curriculum focused primarily on reading and math skills, with appropriate pacing aligned to the students’ readiness to learn. Students were provided the basic foundational skills for literacy and numeracy, while also being provided remediation and acceleration during collaborative small group labs with the other kindergarten classrooms. When reading and math labs were incorporated across all grade levels four years ago, the KinderQuest classroom became a more blended program with kindergarten during afternoon instruction that was designed to address each student’s level of learning. Students were placed in a specific small group setting based on their performance on STAR assessments, using STAR Learning Progressions and Instructional Planning reports to inform educators of the skills each student was ready to develop next. This allowed students to progress at their own level, through differentiated instruction involving either remediation or acceleration.

The KinderQuest program was carefully planned to not be a repeat of preschool or a comprehensive preview of what would be received the following year in the kindergarten classroom. While some standards overlapped, the resources used varied between the grade
levels so students were exposed to different materials each year. For example, in KinderQuest the Saxon Math materials were utilized, while in kindergarten, Math in Focus and KinderMath were used. In reading, kindergarten used the Journeys reading series that was adopted through Grade 6, while KinderQuest used supplemental resources such as Reading A-Z. The same standards were often taught, yet the resources varied so the students were not presented with the identical materials the following year.

Research on KinderQuest had not previously been conducted. Although the program was similar to redshirting, it was also quite different since students were in a school setting being provided structured instruction. It was similar to the developmental kindergartens, but it focused more on the academics than the socio-emotional development. It was also similar to the transitional kindergartens, except kindergarten assignment was required the year following KinderQuest, unlike transitional kindergartens that had committees determine kindergarten or Grade 1 placements. Therefore, the studies on redshirting, developmental kindergartens, and transitional kindergartens did not have direct correlations to KinderQuest.

**KinderQuest versus Retention**

Although state regulations classified students who participated in KinderQuest as retained, the school and community stakeholders thought of it as pre-emptive rather than reactive. The students had a different curriculum than kindergarten students, and it was an optional program for parents, not a mandatory assignment of a repeated grade due to failure. Therefore, research on retention did not directly apply to the KinderQuest program. While it may have been seen as an extension of pre-school, students were not pre-school age, but instead met the age requirements for kindergarten entry. Additionally, KinderQuest did not follow the philosophy of learning through play, as pre-school practices, but rather focused on a more rigorous and structured environment similar to the kindergarten setting. Therefore, previous
research on preschool did not have a direct correlation to this type of program. This research was important to determine if there was a positive impact on reading and math instruction for the students that participated in this optional, intervention program designed to promote future academic success as compared to retention or the more traditional approach of completing kindergarten to Grade 6.

**Variables**

Two sets of investigations were conducted. The first set of investigations examined the independent variables, KinderQuest and traditional, answering research questions one through four. The second set of investigations examined the dependent variables, KinderQuest and retention, answering research questions five and six. In all investigations, the dependent variables were reading or math achievement using STAR reading and math grade equivalencies, which were expressed as standard scores.

**Description of Research Instrumentation**

STAR was a Renaissance Learning tool with assessments that allowed teachers to assess students with reliable and valid data, as determined by the National Center on Intensive Intervention, the National Center on Response to Intervention, and the National Center on Student Progress Monitoring. Assessments provided a comprehensive system of providing data based on skills-based test items. Renaissance Learning conducted extensive research with reading and math experts to determine the skills most appropriate for assessing reading and math development (“Renaissance,” 2013).

STAR assessments were computer adaptive tests (CATs) that continually adjusted the difficulty of the test items depending upon the student’s previous performance. Research showed that CATS were more efficient than tests that provided all students with the same
questions. Research suggested that CATs were appropriate for progress monitoring to assess Response to Intervention (RTI) instruction (“Renaissance,” 2013).

The reliability of STAR reading and math assessments was determined using internal consistency and test-retest correlation coefficients conducted between June 2012 and June 2013. The overall reliability for reading was .97 with retest reliability of .9, and the overall reliability for math was .97 with retest reliability of .93. STAR reading and math content was aligned to the Common Core State Standards. Psychometric reliability and alignment of test content to standards supported test validity. Further correlations between STAR and other measures such as survey achievement tests, diagnostics measures, and state accountability tests resulted in average correlations in reading between .6 and .87, which was considered strong. Correlations in math ranged between .55 and .8, which was considered to be moderate to strong (“Renaissance,” 2013).

STAR reading and math assessments had 34 items per administration. The assessments were fixed-length tests, usually lasting about 20 minutes. STAR used a multiple-choice format, which permitted sampling of several areas of content leading to relatively confident generalizations. The assessments could be given as often as weekly for progress monitoring purposes; however most schools administered the test to all students in the fall, winter, and spring for screening purposes (“Renaissance,” 2013). The school of study assessed students five times per year, and used the scores that were assessed during the month of December.

Research Questions and Hypotheses

Research question 1. Does KinderQuest impact short-term gains in reading achievement that can be seen in Grade 1 to Grade 3?

Hypothesis 1. There will be no significant difference between the reading achievement of KinderQuest students and traditional students in Grade 1 to Grade 3.
**Research question 2.** Does KinderQuest impact long-term gains in reading achievement that can be seen in Grade 4 to Grade 6?

**Hypothesis 2.** There will be no significant difference between the reading achievement of KinderQuest students and traditional students in Grade 4 to Grade 6.

**Research question 3.** Does KinderQuest impact short-term gains in math achievement that can be seen in Grade 1 to Grade 3?

**Hypothesis 3.** There will be no significant difference between the math achievement of KinderQuest students and traditional students in Grade 1 to Grade 3.

**Research question 4.** Does KinderQuest impact long-term gains in math achievement that can be seen in Grade 4 to Grade 6?

**Hypothesis 4.** There will be no significant difference between the math achievement of KinderQuest students and traditional students in Grade 4 to Grade 6.

**Research question 5.** Is there a difference between KinderQuest students and retained students in reading achievement in Grade 1 to Grade 6?

**Hypothesis 5.** There will be no significant difference between the reading achievement of KinderQuest students and retained students in Grade 1 to Grade 6.

**Research question 6.** Is there a difference between KinderQuest students and retained students in math achievement in Grade 1 to Grade 6?

**Hypothesis 6.** There will be no significant difference between the math achievement of KinderQuest students and retained students in Grade 1 to Grade 6.

**Population**

The preschool through Grade 6 population consisted of 503 students, with 84% eligible for free/reduced meals. The racial/ethnic composition of the school was 88.3% White, 8.8% Hispanic/Latino, 2% Black/African American, and 1% Asian. Approximately 15% of the
students qualified to receive special education services. The school had a high mobility rate of 23.4%. Of the 375 students enrolled in Grade 1 through Grade 6 that were considered for the study, 106 attended the Head Start preschool program, 38 were KinderQuest participants, 41 were retained, 24 were identified as ESL, and 47 received special education services. ESL and special education students were not included in the study due to their specialized instruction, which may have possibly skewed results. Of the 36 KinderQuest students included in the study, 11 attended the Head Start preschool program.

The three cohorts in this study were composed of students with varying levels of academic performance as indicated by the STAR Early Literacy scale scores. To compare estimated achievement levels of the three groups, a sample of the scores of the students who were in the current kindergarten grade level, including KinderQuest, were calculated to compare school entry assessment results. Results were shown in Table 1. STAR Early Literacy beginning of year scale scores indicated students in the retention cohort performed the lowest with a mean scale score of 395.7, students in the KinderQuest cohort had a mean scale score of 456.4 and the students in the traditional cohort performed the highest with a mean scale score of 507.1. All students in the retention cohort were categorized as early emergent readers, which was the lowest performance level according to STAR reports. The KinderQuest cohort was composed of 71.4% early emergent readers, and 28.6% of the next lowest performing category, late emergent readers. The traditional group was composed of 39% early emergent readers, 58.5% late emergent readers, and 2% transitional readers, which is a higher performance category compared to early and late emergent readers. The information suggested that the three cohorts in kindergarten did not begin at comparable achievement levels and inferred that KinderQuest participants began at a lower academic level than traditional students.
Table 1.

*STAR Early Literacy Scale Scores for Cohorts*

<table>
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<th></th>
<th>N</th>
<th>M</th>
<th>Early Emergent</th>
<th>Late Emergent</th>
<th>Transitional</th>
<th>Probable</th>
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<td>28.6%</td>
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<td>0%</td>
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<tr>
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<td>39.0%</td>
<td>58.5%</td>
<td>2.4%</td>
<td>0%</td>
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<tr>
<td>Retained</td>
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<td>395.7</td>
<td>100%</td>
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</tr>
</tbody>
</table>

**Procedures for Data Analysis**

This study used the T-test of Independent Means to determine if there was a statistically significant difference between the means of the two groups. A t-test was performed for each hypothesis. The dependent variables were the STAR reading and math grade equivalency scores, depending upon which hypothesis was being examined. The independent variable was the type of education a child received related to interventions, KinderQuest, retained, or traditional. To determine the results of the first four hypotheses, the independent variables were the KinderQuest students and the traditional students. To determine the results of hypotheses five and six, the independent variables were KinderQuest students and retained students.

The means of the groups’ grade equivalency scores were expressed as standard scores to compare achievement across multiple grade levels. Since the mean of the original STAR grade equivalencies at each grade level was expected to increase as the student’s particular grade level in school increased, it was important to compute the grade equivalency scores to standard z-scores, so comparisons could be made across multiple grade levels. For example, Grade 2
benchmark grade equivalencies in the fourth month would be 2.4 as compared to Grade 6 benchmark grade equivalencies in the fourth month of 6.4. After scores were converted to standard scores, an average student in any grade level would have a standard score of 0. Results were analyzed in the short-term for Grade 1 to Grade 3 and in the long-term for Grade 4 to Grade 6.

The T-test of Independent Means assumed at least 15 members were in each group, homogeneity was met using Levene’s Test, and the group members were independent of each other. If Levene’s test was significant, with the critical value of \( p \leq .05 \), then it was determined that the variances were significantly different. If \( p > .05 \), then it was assumed that the variances were fairly equal and assumptions of homogeneity of variances were met. The critical value of .05 was used as is standard in social science research. All groups met the minimum size requirements, homogeneity, and independence.

Since assumptions were met, the \( t \)-test was used, and the exact significance value of \( t \) was determined. If the two-tailed value of \( p > .05 \), then it was concluded that there was no significant difference between the means of the two samples. If \( p < .05 \), then it was concluded that there was a significant difference between the means of the two samples (Field, 2013).

Even if the \( t \)-statistic was not statistically significant, it could be determined how important the effect was by converting the \( t \)-value to an \( r \)-value. According to Rosenthal, the formula for conversion was \( r = \sqrt{t^2/(t^2 + df)} \) (as cited in Field, 2013). The effect size, according to Cohen, was considered to be a small effect, explaining only 1% of the variance if \( r = .1 \). If \( r = .3 \), it had a medium effect and accounted for 9% of the variance. An effect size of .5 was considered a large effect and accounted for 25% of the variance (as cited in Field, 2013).
Chapter 4

The research questions and hypotheses regarding the intervention program, KinderQuest, were reported. STAR reading and math grade equivalencies for Grade 1 to Grade 6 were identified, with the mean expressed for each cohort. Although performance levels could be observed with mean grade equivalencies, it was necessary to examine whether or not the differences were statistically significant. A T-test of Independent Means was conducted to determine if the difference in reading and math achievement was statistically significant between the cohorts, KinderQuest and traditional, in the short-term and long-term. Short-term results were observed in Grade 1 to Grade 3, and long-term results were observed in Grade 4 to Grade 6. Another set of investigations compared the achievement results of the two types of intervention, as indicated by the KinderQuest and retained cohorts.

Grade Level Means Using STAR Grade Equivalencies

The STAR reading and STAR math grade equivalencies were shown for students in Grade 1 to Grade 6. Table 2 and Table 3 showed the mean performance level for the three cohorts at each grade level. In Grade 1, each cohort performed within a two-month range in both reading and math, with the retention group slightly outperforming the other cohorts. In Grade 2, KinderQuest and retention students performed similarly in reading but eight months behind the traditional students. In math, there was a four-month range between the groups. The traditional cohort performed higher in both reading and math. In Grade 3, there was a two-year range between groups in reading achievement, with the retention group outperforming KinderQuest and traditional groups. In math, there was a four-month difference between groups, with the retention cohort outperforming KinderQuest and traditional cohorts. In Grade 4, there was a one-year and one-month difference in reading achievement with the traditional group outperforming the other cohorts. In math, there was a one-year and nine-month range between
groups with KinderQuest outperforming other cohorts. In Grade 5, there was a one-year and two-month range in reading scores with the traditional cohort outperforming other cohorts. In math, there was a one-year and three-month range, with the traditional group outperforming other cohorts. In Grade 6, there were no members in the retention cohort. The KinderQuest cohort outperformed the traditional cohort in both reading and math.

Table 2.

*STAR Reading Grade Equivalency Cohort Means*

<table>
<thead>
<tr>
<th></th>
<th>STAR Reading Grade Equivalency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KinderQuest</td>
</tr>
<tr>
<td>Grade 1</td>
<td>2.0 (n = 4)</td>
</tr>
<tr>
<td>Grade 2</td>
<td>2.5 (n = 9)</td>
</tr>
<tr>
<td>Grade 3</td>
<td>4.1 (n = 7)</td>
</tr>
<tr>
<td>Grade 4</td>
<td>5.9 (n = 6)</td>
</tr>
<tr>
<td>Grade 5</td>
<td>5.7 (n = 5)</td>
</tr>
<tr>
<td>Grade 6</td>
<td>8.3 (n = 5)</td>
</tr>
</tbody>
</table>

* There were no retained students in the population.
Table 3.

*STAR Math Grade Equivalency Cohort Means*

<table>
<thead>
<tr>
<th>Grade</th>
<th>KinderQuest (n =)</th>
<th>Traditional (n =)</th>
<th>Retention (n =)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td>1.9 (4)</td>
<td>2.0 (36)</td>
<td>2.1 (5)</td>
</tr>
<tr>
<td>Grade 2</td>
<td>2.8 (9)</td>
<td>3.2 (41)</td>
<td>3.1 (9)</td>
</tr>
<tr>
<td>Grade 3</td>
<td>4.8 (7)</td>
<td>4.5 (47)</td>
<td>4.9 (2)</td>
</tr>
<tr>
<td>Grade 4</td>
<td>6.9 (6)</td>
<td>5.8 (51)</td>
<td>5.0 (7)</td>
</tr>
<tr>
<td>Grade 5</td>
<td>6.6 (5)</td>
<td>7.9 (40)</td>
<td>6.5 (2)</td>
</tr>
<tr>
<td>Grade 6</td>
<td>11.1 (5)</td>
<td>10.3 (40)</td>
<td>*</td>
</tr>
</tbody>
</table>

* There were no retained students in the population.

The grade level means in reading and math for each of the cohorts did not show consistency. In some grades, KinderQuest outperformed the other cohorts as seen in Grade 4 math, Grade 6 reading and Grade 6 math. The retention cohort outperformed other cohorts in Grade 1 reading and math and Grade 3 reading and math. In all other categories, the traditional cohort outperformed KinderQuest and retention, the two types of intervention being researched. To determine whether or not these differences were statistically significant and to answer the research questions regarding short-term and long-term gains, a T-test of Independent Means was conducted.

**Results of Research Questions**

The tables and narratives reported the results of the analyses. For this study, statistical assumptions were met for all hypotheses. Assumptions for the T-test of Independent Means...
included homogeneity of variances, minimum group membership of 15, and independence of groups.

Research question 1 examined the short-term reading achievement of the independent variables, KinderQuest and traditional students. The hypothesis stated that there would be no significant difference between the reading achievement of KinderQuest students and traditional students in Grade 1 to Grade 3. Table 4 was used to determine whether there was a significant difference in the achievement of these cohorts. Using Levene’s test for equality of variances, \( p = .78 \) which was greater than .05, assumed homogeneity of variances were met, and the \( t \) statistic could be used. The KinderQuest group (\( M = -.36, SD = .9 \)) and the traditional group (\( M = .08, SD = .66 \)) did not reach statistical difference, \( t(145) = 1.90, p = .06, r = .16. \) The two-tailed value of \( p = .06 \) was greater than .05, so it was concluded that there was no significant difference between the means of these two groups, although results were very close to the significance level. Therefore, the null hypothesis held true that there was no significant difference between the reading achievement of KinderQuest students and traditional students in Grade 1 to Grade 3. Additionally, \( r = .16, \) indicated a small effect size for the difference in total variance.

Table 4.

Reading Achievement for KinderQuest and Traditional Groups, Grade 1 to 3

<table>
<thead>
<tr>
<th></th>
<th>( N )</th>
<th>( M )</th>
<th>( (SD) )</th>
<th>( SE )</th>
<th>Levene’s Test</th>
<th>( t )</th>
<th>( df )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>KinderQuest</td>
<td>20</td>
<td>-.36</td>
<td>(.90)</td>
<td>.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional</td>
<td>127</td>
<td>.08</td>
<td>(.66)</td>
<td>.09</td>
<td>.78</td>
<td>1.90</td>
<td>145</td>
<td>.06</td>
</tr>
</tbody>
</table>
Research question 2 examined the long-term reading achievement of the independent variables, KinderQuest and traditional students. The hypothesis stated that there would be no significant difference between the reading achievement of KinderQuest students and traditional students in Grade 4 to Grade 6. Table 5 was used to determine whether there was a significant difference in the achievement of these two cohorts. Using Levene’s test for equality, \( p = .93 \) was greater than .05, assumed homogeneity of variances were met, and the \( t \) statistic could be used. The KinderQuest group (\( M = -.01, SD = .93 \)) and the traditional group (\( M = .04, SD = 1.02 \)) did not reach statistical difference, \( t(148) = .15, p = .88, r = .01 \). The two-tailed value of \( p = .88 \) was greater than .05, so it was concluded that there was no significant difference between the means of the two groups. Therefore, the null hypothesis was supported indicating that there was no significant difference between the reading achievement of KinderQuest students and traditional students in Grade 4 to Grade 6. Additionally, \( r = .01 \) indicated a small effect on the overall total variance.

Table 5.

\textit{Reading Achievement for KinderQuest and Traditional Groups, Grade 4 to 6}

\begin{tabular}{cccccccc}
\hline
 & \textit{N} & \textit{M} & (\textit{SD}) & \textit{SE} & Levene’s Test & \textit{t} & \textit{df} & \textit{p} \\
\hline
KinderQuest & 16 & -.01 & (.93) & .23 & & & & \\
Traditional & 134 & .04 & (1.02) & .09 & .93 & .15 & 148 & .88 \\
\hline
\end{tabular}

Research question 3 examined the short-term math achievement of the independent variables, KinderQuest and traditional students. The hypothesis stated that there would be no
significant difference between the math achievement of KinderQuest students and traditional students in Grade 1 to Grade 3. Table 6 was used to determine whether there was a significant difference in the achievement of these two cohorts. Using Levene’s test for equality, \( p = .35 \) was greater than .05, assumed homogeneity of variances were met, and the \( t \) statistic could be used. The KinderQuest group (\( M = -.20, SD = 1.18 \)) and the traditional group (\( M = .02, SD = .90 \)) did not reach statistical difference, \( t(145) = .94, p = .35, r = .08 \). The two-tailed value of \( p = .88 \) was greater than .05, so it was concluded that there was no significant difference between the means of the two groups. The two-tailed value of \( p = .35 \) was greater than .05, so it was concluded that there was no significant difference between the means of the two groups. Therefore, the null hypothesis was supported indicating that there was no significant difference between math achievement of KinderQuest students and traditional students in Grade 1 to Grade 3.

Additionally, \( r = .08 \) indicated a small effect size on the overall total variance.

Table 6.

<table>
<thead>
<tr>
<th></th>
<th>( N )</th>
<th>( M )</th>
<th>( (SD) )</th>
<th>( SE )</th>
<th>Levene’s Test</th>
<th>( t )</th>
<th>( df )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>KinderQuest</td>
<td>20</td>
<td>-.20</td>
<td>(1.18)</td>
<td>.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional</td>
<td>127</td>
<td>.02</td>
<td>(.90)</td>
<td>.08</td>
<td>.35</td>
<td>.94</td>
<td>145</td>
<td>.35</td>
</tr>
</tbody>
</table>

Research question 4 examined the long-term math achievement of the independent variables, KinderQuest and traditional students. The hypothesis stated that there would be no significant difference between the math achievement of KinderQuest students and traditional
students in Grade 4 to Grade 6. Table 7 was used to determine whether there was a significant difference in the achievement of these two cohorts. Using Levene’s test for equality, $p = .74$ was greater than .05, assumed homogeneity of variances were met, and the $t$ statistic could be used. The KinderQuest group ($M = .20, SD = .90$) and the traditional group ($M = .02, SD = 1.03$) did not reach statistical difference, $t(148) = -.67, p = .50, r = .05$. The two-tailed value of $p = .50$ was greater than .05, so it was concluded that there was no significant difference between the means of the two groups. Therefore the null hypothesis was supported that there was no significant difference between the math achievement of KinderQuest students and traditional students in Grade 4 to Grade 6. Additionally, $r = .05$ indicated a small effect size on the overall total variance.

Table 7.

Math Achievement for KinderQuest and Traditional Groups, Grade 4 to 6

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>$M$</th>
<th>(SD)</th>
<th>$SE$</th>
<th>Levene’s Test</th>
<th>$t$</th>
<th>$df$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>KinderQuest</td>
<td>16</td>
<td>.20</td>
<td>(.90)</td>
<td>.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional</td>
<td>134</td>
<td>.02</td>
<td>(1.03)</td>
<td>.09</td>
<td>.74</td>
<td>-.67</td>
<td>148</td>
<td>.50</td>
</tr>
</tbody>
</table>

Research question 5 examined the reading achievement of the independent variables, KinderQuest and retained students. The hypothesis stated that there would be no significant difference between the reading achievement of KinderQuest students and retained students in Grade 1 to Grade 6. Table 8 was used to determine whether there was a significant difference in the achievement of these two cohorts. Using Levene’s test for equality, $p = .56$ was greater than
.05, assumed homogeneity of variances were met, and the $t$ statistic could be used. The KinderQuest group ($M = -.20, SD = .92$) and the retained group ($M = -.28, SD = 1.16$) did not reach statistical difference, $t(59) = .28, p = .78, r = .04$. The two-tailed value of $p = .78$ was greater than .05, so it was concluded that there was no significant difference between the means of the two groups. Therefore, the null hypothesis was supported that there was no significant difference between the reading achievement of KinderQuest students and retained students in Grade 1 to Grade 6. Additionally, $r = .04$ indicated a small effect size on the overall total variance between intervention means.

Table 8.

Reading Achievement for KinderQuest and Retention Groups, Grade 1 to 6

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>$M$</th>
<th>$(SD)$</th>
<th>$SE$</th>
<th>Levene’s Test</th>
<th>$t$</th>
<th>$df$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>KinderQuest</td>
<td>36</td>
<td>-.20</td>
<td>(.92)</td>
<td>.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retention</td>
<td>25</td>
<td>-.28</td>
<td>(1.16)</td>
<td>.23</td>
<td>.56</td>
<td>.28</td>
<td>59</td>
<td>.78</td>
</tr>
</tbody>
</table>

Research question 6 examined the math achievement of the independent variables, KinderQuest and retained students. The hypothesis stated that there would be no significant difference between the math achievement of KinderQuest students and retained students in Grade 1 to Grade 6. Table 9 was used to determine whether there was a significant difference in the achievement of these two cohorts. Using Levene’s test for equality, $p = .67$ was greater than .05, assumed homogeneity of variances were met, and the $t$ statistic could be used. The KinderQuest group ($M = -.02, SD = 1.07$) and the retained group ($M = -.16, SD = 1.27$) did not
reach statistical difference, \( t(59) = .48, p = .63, r = .06 \). The two-tailed value of \( p = .63 \) was greater than .05, so it was concluded that there was no significant difference between the means of the two groups. Therefore, the null hypothesis was supported that there was no significant difference between the math achievement of KinderQuest students and retained students in Grade 1 to Grade 6. Additionally, \( r = .06 \) indicated a small effect size on the overall total variance in math scores between intervention groups.

Table 9.

*Math Achievement for KinderQuest and Retention Groups, Grade 1 to 6*

<table>
<thead>
<tr>
<th></th>
<th>( t )-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>( N ) ( M ) ((SD)) ( SE ) Levene’s Test</td>
<td>( t ) ( df ) ( p )</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>KinderQuest 36 ( -.02 ) ((1.07)) (.18)</td>
<td></td>
</tr>
<tr>
<td>Retention 25 ( -.16 ) ((1.27)) (.25) (.67) (.48) (59) (.63)</td>
<td></td>
</tr>
</tbody>
</table>

**Overall Results**

There were no statistically significant differences found between the reading or math achievement when comparing KinderQuest students to traditional students in the short-term or long-term. Additionally, there were no statistically significant differences between the types of intervention used, KinderQuest or retention, when comparing reading and math achievement.
Chapter 5

This chapter discussed the findings and implications of KinderQuest as a viable intervention. The program was designed to provide an extra year of instruction for kindergarten-aged students prior to entering kindergarten who did not have the basic foundational academic skills or maturity to be successful in the kindergarten setting. It was not a repeat of preschool or kindergarten, and it had its own specially designed curriculum to meet the needs of the students referred to the program. All students in the program attended kindergarten the following year. Some parents preferred enrollment of their child into KinderQuest instead of kindergarten for a multitude of reasons including late birthdays, academics, maturity, and other social reasons. The program was intended as a prevention program, rather than retention, by providing students early intervention to promote future school success.

This study showed that there was no significantly statistical difference in the reading and math achievement of KinderQuest students compared to traditional students and retained students. Considering that the most struggling students were referred for this program, or were ultimately retained, indicated that students repeating a grade were then able to perform at a level comparable to peers. With earlier research that showed that retention could be detrimental to students, it was promising to see that participants were actually performing similarly to those students who had not been retained and had consistently reached grade-level benchmarks. It could be assumed that these practices were closing the achievement gaps, which may not have been achievable without KinderQuest. This, however, would need a further study to prove this assumption.

School Entry Scores

It was assumed that KinderQuest students began at a lower achievement level than traditional students according to STAR Early Literacy scale scores shown in Table 1. A
comparison of all current kindergarten students showed the achievement levels that each cohort of students began. When those same students entered kindergarten the following year, scale scores had increased from 456.4 to 638.6. Retained students had school entry scores that increased from 395.7 to 670. Table 10 showed beginning of the year STAR literacy scale scores for the following year when KinderQuest and retained students began their repeated year of kindergarten. Both of these groups, KinderQuest and retained, began the following year of kindergarten performing on average above traditional students, who began school with a mean score of 507.1. The data showed students that had the extra year of intervention, either KinderQuest or retention, made measurable academic gains.

Table 10.

*STAR Early Literacy Scale Scores Following the Year of Intervention*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>Early Emergent</th>
<th>Late Emergent</th>
<th>Transitional</th>
<th>Probable</th>
</tr>
</thead>
<tbody>
<tr>
<td>KinderQuest</td>
<td>9</td>
<td>638.6</td>
<td>0%</td>
<td>66.7%</td>
<td>22.2%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Retained</td>
<td>3</td>
<td>670.0</td>
<td>0%</td>
<td>66.7%</td>
<td>33.3%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Relationship of Conclusions to Other Research**

Results of the study showed that students in the KinderQuest cohort performed at similar academic achievement levels in both reading and math to the traditional cohort. Using the T-test of Independent Means, there was no statistically significant difference in the two groups in reading or math achievement in the short-term or long-term. Although KinderQuest was a prevention program rather than a retention program, the results contradicted the earlier retention
research that showed retained students performed lower academically than similarly performing promoted students (Jimerson, 1999; McCoy & Reynolds, 1999).

When comparing the impact KinderQuest had on reading achievement in both the short-term and long-term as compared to the traditional model, no statistical difference was seen. Although no short-term statistical difference was seen, in Grade 1 to Grade 3 the reading achievement of the KinderQuest cohort was further from showing similar results to the traditional cohort during this time range. The most gains in achievement for the KinderQuest cohort were observed in reading in the long-term, and math in both the short-term and long-term. Results contradicted the research by Hong and Yu (2008) that showed when students were retained, academic gains were shown in the short-term, but faded within a few years.

Not only were there favorable outcomes found with the KinderQuest cohort, but the retention cohort also performed similarly to the traditional cohort which related to the more recent research studies on retention, showing academic gains were observed with retained students (Allen, Chen, Willson, & Huges, 2009; Hughes, Chen, Thoemmes, & Kwok, 2010). The two types of intervention showed no significant difference, which suggested academic gains were achieved in both reading and math achievement during the extra year of intervention, allowing students to perform similarly to traditional students.

As seen in Table 1 and Table 2, considerable growth was made in the year following the intervention year. These results showed that 71.4% of KinderQuest participants and 100% of retention participants advanced a performance level or higher, moving from early emergent readers to late emergent, transitional, or probable readers, during the year of intervention. This was consistent with research by Cannon and Lipscomb (2011) indicating early elementary grade retention improved student performance by at least one proficiency level.
The findings for KinderQuest were similar to those of transitional kindergartens. Like KinderQuest, transitional kindergartens allowed students two years to master what other students mastered in one year. Similar goals existed such as promoting school readiness by providing an additional year of early education. The American Institutes for Research (2015) showed that students that participated in transitional kindergartens had improved reading and math outcomes.

**Discussion/Inferences/Recommendation to the Client**

To assess the program, the following questions were to be answered. First, what truly needed to be assessed? There were many factors that could have been researched such as the parent perception of the program or the social emotional impact on the student. Did the student feel any negative stigma associated with retention or did the program remove that barrier? Did the extra year of intervention lead to greater gains in maturity, leading to positive social impacts?

This study, however, only investigated the impact of KinderQuest on reading and math achievement. This program increased reading and math achievement, and students began kindergarten at a higher performance level with an extra year of intervention, resulting in similar achievement levels to students in the traditional cohort throughout elementary school. Therefore, KinderQuest was an effective intervention measure in helping to improve the reading and math achievement of students at the start of their academic schooling. Further investigation could be researched to determine if students receiving additional services from other school supported programs such as Read to Achieve, Math Achievement Fund, and AmeriCorp could be contributing to the effectiveness of the intervention program. Furthermore, studies comparing and contrasting all of these programs including KinderQuest would help to determine which intervention program provided the greatest gains.

A recommendation for continuing the KinderQuest program was because it provided intervention for not only the most struggling few in the primary grades, as grants such as Read to
Achieve, but also was available to any student who was identified as needing additional intervention. While all identified students received intervention during afternoon labs through RTI, this extra year of full-day intervention may have provided the academic foundation for students that sometimes were thought to “fall through the cracks”. Many students did not perform low enough for remedial services, but they also struggled to keep up with grade level peers. Without KinderQuest, they may have not been provided the intensive support necessary to ensure future academic success.

Limitations of the Study

A limitation of this study was the impact of the 24% mobility rate of the school. Many students who participated in KinderQuest were no longer at the school to be included in the study. Of approximately 100 students who have been in KinderQuest over the past eight years, only 36 of them were included in the study, after the ESL, special education, and kindergarten students were removed, as well as students who had transferred from the school due to mobility.

The three cohorts, KinderQuest, traditional, and retained, were not considered to be balanced among ability. The traditional cohort had the lowest performing students removed at some point due to the probability of the struggling students being recommended for KinderQuest or eventually being retained. It would have been assumed that the retained cohort had the lowest performing of all groups since retention at the school was intended for the lowest achieving students who did not master grade-level standards; however since the mobility rate of the school was 24%, other factors skewed the results of that cohort. Students moved into the school that did not have KinderQuest as an option at their previous school, so parents had chosen to retain them. This caused the retention cohort to have students in the group that had been retained due to age, not academics. In one grade level, the highest performing student in the grade was in the retention cohort because the parents had decided to hold the student back in a grade level due to
maturity only. If the student had been at the KinderQuest school in kindergarten, the student would have most likely not been placed in the retention group. This, and other similar examples, resulted in some high performing students being in the retention cohort, which inflated grade equivalency means of the retention group.

Another population issue related to mobility was that there was no record of any retained students in Grade 6. With many families moving into and out of the school, it leaves one to question whether there were truly no grade retentions in that grade level or whether through transferring of school records, some information was not properly recorded.

A limitation could have existed with the KinderQuest program experiencing change during the past eight years which could have impacted the students in the study. The variance in teaching style, experience, and expertise of the two teachers who have been assigned as KinderQuest teachers could have been factors leading to a lack of consistency in the program. Also, while the class was created to keep classroom enrollment at 12 students, in 2011-2012 class membership increased to 15 students due to large enrollments in all kindergarten classes with increased needs for remediation. Additionally, throughout the years, the program moved from a self-contained classroom to a collaborative program working with kindergarten teachers to provide targeted, differentiated instruction to all kindergarten and KinderQuest students during afternoon labs. This change in modes of teaching was not just evident within the kindergarten setting, but was a similar transition seen in all grades kindergarten through Grade 6.

Another limitation was that the study analyzed the mean scores of the cohorts, rather than comparing matched ability students to determine which children would most benefit from this program. It was not possible to determine if KinderQuest made a significant impact on the reading and math achievement of a particular child, with a particular achievement level and
socio-economic level. The study did not indicate whether or not the program yielded greater results with a specific ability group with certain demographics; therefore, it was not determined which children should be referred to this program. A limitation was that there was no data indicating the achievement levels of the students if they had not had the intervention of KinderQuest.

**Recommendations for Further Research**

An area of future study would be to conduct a matched pairs test to compare similar ability students from similar backgrounds to see if the intervention program, KinderQuest, was more effective with certain populations. Some students that had been in the program were performing far above grade level benchmarks while others were still not at grade equivalency in reading and/or math. Therefore, it would be beneficial to determine if the program was effective, or ineffective, with students of particular demographics.

The KinderQuest program has only been in existence for the past eight years. Therefore, a longitudinal study could be conducted to determine if students continued to have academic success or if negative factors, as indicated by retention research, began to surface in later years. It was of particular interest to ensure that the students from low socio-economic background, who have little parent support, experienced future success in school leading to high school graduation. It was important to determine if the extra year of intervention, which placed them in an overage for age category, increased their chances of dropping out of school.

A qualitative study could be conducted by interviewing students and surveying parents and teachers in order to help understand the experiences of the student, and their family’s perceptions, based on the effects of the additional year of intervention, because research indicated students could be negatively impacted socio-emotionally by retention. Although KinderQuest was considered an intervention program rather than a retention program, it would
be beneficial to determine whether or not students suffered from similar negative impacts as retention students.
References


### KinderQuest Curriculum

#### Language Arts

<table>
<thead>
<tr>
<th>Task</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>Writes first name neatly</td>
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<tr>
<td>Identifies lowercase letters</td>
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</tr>
<tr>
<td>RFK1d</td>
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<tr>
<td>Identifies uppercase letters</td>
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<tr>
<td>RFK1d</td>
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<tr>
<td>Writes letters correctly</td>
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<tr>
<td>LK1a</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Identifies letter sounds</td>
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<tr>
<td>RFK3a</td>
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<tr>
<td>Writes letters for most consonant/vowel sounds</td>
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<tr>
<td>LK2c</td>
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<tr>
<td>Identify and pronounce sounds at the beginning, middle, &amp; end of CVC words</td>
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<tr>
<td>RFK2d</td>
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<tr>
<td>Count &amp; segment syllables</td>
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<tr>
<td>RFK2b</td>
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<tr>
<td>Spell simple words</td>
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<tr>
<td>LK2d</td>
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<tr>
<td>Identify rhyming words</td>
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<tr>
<td>RFK2a</td>
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<tr>
<td>Read basic sight words (1st 20 Fry Words)</td>
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<tr>
<td>RFK3c</td>
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<tr>
<td>Follow words from left to right, top to bottom, page to page</td>
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<tr>
<td>RFK1a</td>
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<tr>
<td>Understands words are separated by spaces</td>
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<tr>
<td>RFK1c</td>
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<tr>
<td>Capitalize first word of sentence and the word I</td>
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<tr>
<td>LK2a</td>
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<tr>
<td>Retell stories including details</td>
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<tr>
<td>RLK2</td>
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#### Math

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</thead>
<tbody>
<tr>
<td>Counts to 100 by 1’s (counts to</td>
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<tr>
<td>KCC1</td>
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<tr>
<td>Counts to 100 by 10’s (counts to</td>
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<tr>
<td>KCC1</td>
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<tr>
<td>Counts forward from numbers other than 1 (within 1-20)</td>
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<td>KCC2</td>
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<tr>
<td>Identifies numbers from 0-20</td>
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<td>KCC3</td>
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<tr>
<td>Counts pairing one number to each object</td>
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<td>KCC4a</td>
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<tr>
<td>Understands last number named tells how many objects there are</td>
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<td>KCC4b</td>
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<tr>
<td>Counts to determine how many objects there are</td>
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<tr>
<td>KCC5</td>
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<tr>
<td>Compares groups of objects and numbers (greater, less, equal)</td>
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<tr>
<td>KCC6 &amp; KCC7</td>
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<tr>
<td>Identifies 8 basic colors</td>
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<tr>
<td>KG1</td>
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<tr>
<td>Understands positional words</td>
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<tr>
<td>KG2</td>
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<tr>
<td>Identifies 2D shapes (circle, triangle, square, rectangle, hexagon)</td>
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<tr>
<td>KG2</td>
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<tr>
<td>Identifies 3D shapes (sphere, cone, pyramid, cylinder, cube, rect. prism)</td>
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<tr>
<td>KG2</td>
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<tr>
<td>Describe and compare objects’ measurable attributes (length, width, etc…)</td>
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<tr>
<td>KMD1 &amp; KMD2</td>
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<tr>
<td>Sort objects into categories and count objects in each category</td>
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<tr>
<td>KMD3</td>
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### Identify characters, settings, main events

**RLK3**

### Explain role of the author & illustrator

**KRL6 & KRI6**

### Identifies front cover, back cover, & title page

**KRI5**

<table>
<thead>
<tr>
<th>M = Mastery</th>
<th>NM = Near Mastery</th>
<th>R = Remediation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fine Motor Skills</strong></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Holds pencil/crayon correctly</td>
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<tr>
<td>Holds/cuts with scissors correctly</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>M = Mastery</th>
<th>NM = Near Mastery</th>
<th>R = Remediation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conduct…ARMOR Up!</strong></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td></td>
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<tr>
<td>Responsibility</td>
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<tr>
<td>Manners</td>
<td></td>
<td></td>
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<tr>
<td>Order</td>
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<tr>
<td>Respect</td>
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</table>
IRB Approval

TO: Robert Lyons
COEHS

FROM: Institutional Review Board
Jonathan Baskin, IRB Coordinator

DATE: January 9, 2017

RE: IRB # ODF 17-12

Determination: No Intervention/Interaction - Activity does not involve human subjects as defined in 45 CFR 46.102(f)

The MSU IRB has reviewed your student’s application entitled, The Impact of Kinderquest on Reading in Early and Intermediate Elementary Students. Based on the information supplied on this application, it has been determined that your student’s project does not involve activities and/or subjects that would require IRB review and oversight. Your IRB application will be kept on file in the IRB office for a period of 3 years.

Please note that there may be other Federal, State, or local laws and/or regulations that may apply to your project and any changes to the subjects, intent, or methodology of your project could change this determination. You are responsible for informing the IRB of any such changes so that an updated determination can be made. If you have any questions or require guidance, please contact the IRB Coordinator for assistance.

Thank you for providing information concerning your student’s project.
Ed. D. Student Biography

Stephanie Sullivan is a P-20 doctoral student in the College of Education and Human Services at Murray State University. She holds certifications for administration, instructional supervisor, and school superintendent. She is a principal at Central Elementary School in Graves County located in western Kentucky, where she has been since the school was established in 2004. Prior to her current role, she was principal at Lowes Elementary School from 2001-2004, guidance counselor at Graves County Middle School from 1998-2001, and high school math teacher at Graves County High School from 1990-1998. She was named Kentucky’s National Distinguished Principal by the National Association of Elementary School Principals in 2009 and the school that she leads has been nominated as a National Blue Ribbon School following three years of academic performance as a School of Distinction. Her interests include analyzing data to make informed instructional decisions through innovative ways, accelerating and remediating instruction to maximize student learning, and partnering with the university to assist aspiring teachers to be prepared for the classroom.
IMPACT OF KINDERQUEST ON ELEMENTARY STUDENTS