

An Examination of Student Achievement in a South Georgia 21st Century Community
Learning Center

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Rodney T. Green


Ed. S., South Carolina State University, 2010
M. Ed., Winthrop University, 2000
B. S., South Carolina State University, 1996

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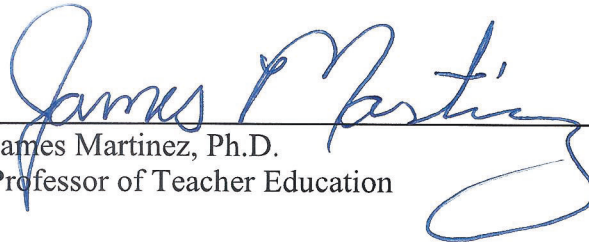
This dissertation, "An Examination of Student Achievement in a South Georgia 21st Century Community Learning Center" by Rodney T. Green, is approved by:

**Dissertation
Committee
Co-Chair and
Research Member**



Donald W. Leech, Ed.D.
Professor of Leadership, Technology, and Workforce
Development

**Dissertation
Committee
Co-Chair**



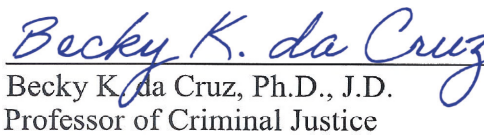
James Martinez, Ph.D.
Professor of Teacher Education

**Dissertation
Committee
Member**



John D. Lairsey, Ed.D.
Assistant Professor of Leadership, Technology, and
Workforce Development

**Associate Provost
for Graduate
Studies and
Research**



Becky K. da Cruz, Ph.D., J.D.
Professor of Criminal Justice

Defense Date

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ABSTRACT

The purpose of this study was to determine to what degree significant academic gains occurred in English/language arts and mathematics achievement for students who attended the after-school program compared to the students who did not participate in the after-school program. This study was significant in that it examined the impact of structured after-school programs on student participants' academic performance. Additionally, the study investigated if any significant academic gains occurred for students who participated in the after-school program.

This quantitative study used a causal-comparative research design. Based on multiple analyses, there were no statistically significant differences in the academic achievement of students who participated in the after-school program compared to students who did not participate in the after-school program. This achievement trend held for students on the English/Language arts and Mathematics End of Grade test. On the Georgia Milestones End of Grade test in English/language arts and mathematics, there were no statistically significant differences in the mean scale score for students who attended the after-school program for more than one academic year compared to students who only attended for one year.

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“He gives strength to the weary and increases the power of the weak. Even youths grow tired and weary, and young men stumble and fall; but those who hope in the Lord will renew their strength. They will soar on wings like eagles; they will run and not grow weary, they will walk and not be faint.”

Isaiah 40: 29-31

First, I want to give all glory and honor to God. God provided me with incredible strength when I was ready to give up.

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Finally, the encouragement I received from my family, close friends, and countless colleagues go without saying. Your confidence in me made me determined to continue and complete this journey, especially during the hard times. Thanks to each one of you.

DEDICATION

For my wife Leslie and sons Evan and Miles.

Never give up.

Chapter I

INTRODUCTION

Introduction

In 2002, President George W. Bush signed the reauthorization of the Elementary and Secondary Education Act (ESEA) of 1965. The reauthorization of ESEA became known as the No Child Left Behind Act (NCLB) of 2001 (United States Department of Education, 2003). The premise of the NCLB legislation was to ensure that all students demonstrate proficiency in reading and math no later than the 2013-2014 school year. The legislation was designed to establish that all schools and districts that received Title I funds met Adequate Yearly Progress (AYP) targets for the entire student population and the federally designated subgroups. The annual assessments used to determine the school's AYP status were left to each state educational agency.

A subsection of the reauthorized No Child Left Behind Act (NCLB) of 2001 included 21st Century Community Learning Center (21st CCLC) grant opportunities (United States Department of Education, 2003). Although the first 21st CCLC programs originated in 1998, the subsection in the reauthorization specifically designated financial support to support before- and after-school programs (Afterschool Alliance, 2013). Additionally, this subsection transferred control and the funding to the state level to target programs that served economically disadvantaged students. Each 21st CCLC program provider was required to develop programs that (1) helped students improve academic achievement; (2) addressed social programs such as drug and violence

prevention, the fine arts, technology integration, and other social development topics; and (3) introduced requisite educational development services that would place students on track for long-term success (United States Department of Education, 2003).

As the mandates of the No Child Left Behind Act of 2001 were enforced and the sanctions intensified for not reaching the designated benchmarks increased, unstated expectations were placed on teachers regarding academic priorities within the school day (Beckett et al., 2009). With a continued focus on school accountability and performance, school administrators sought to provide targeted support to students in reading and math. After-school programs offered an opportunity to identify students and provide individualized support beyond what was available during the traditional school day.

With the changing trends in the labor force, parents were tasked with finding suitable after-school environments for their children (Halpern, 1999). While schools were looking to find time beyond the traditional school day to provide additional academic support and enrichment to close the achievement gap between low achieving and high achieving students, parents needed a safe after-school environment that provided adequate supervision for children. A structured, after-school program provided the adequate supervision parents desired while allowing schools to provide additional academic support for lower-achieving students. Capizzano, Tout, and Adams (2000) estimated that approximately half of school-age students participated in a non-parental supervised after-school program when school was not in session, based on the 1997 National Survey of America's Families results.

The Arrowood County School System was awarded a five-year 21st Century Community Learning Center grant collaborating with a local Boys and Girls Club

(Arrowood County Schools, 2017). The program aimed to provide targeted assistance to an identified group of students by providing academic enrichment and tutoring assistance. The grant was intended to supplement instruction received from the traditional school day by supplying a series of additional services, programs, and activities. The supplemental services were offered after the traditional school day ended and one month beyond the end of the regular school year.

This study sought to explore the significance of the 21st Century Community Schools After-School program on student achievement in English/language arts and math as measured by the Georgia Milestones. The grant funded academic enrichment, youth development, and family engagement activities for approximately 130 students in grade six, seven, and eight attending an economically disadvantaged school (Arrowood County Schools, 2017). The students participated in 12 hours of after-school programming (Monday through Thursday) for 30 weeks during the traditional school year. Additionally, the students were eligible to participate in an additional 32 hours of instruction for four weeks during the summer. Student schedules were created, which allocated time for academic support and enrichment opportunities for each student participant.

This study aimed to determine if students who participated in the 21st Century Community Schools After-School Program (hereafter referred to as “the after-school program”) for at least one year outperformed students on the Georgia Milestones in math and English/language arts compared to those who did not participate in the after-school program. The study compared the students who regularly attended the after-school program at an economically disadvantaged middle school to those who did not participate

in a structured, formal, academically-based after-school program. The study analyzed student performance before the coronavirus pandemic of March 2020.

Statement of the Problem

An unsupervised environment posed several unintended dangers for school-aged students in the community (Bowman, 2001). Countless children were returning home from school to empty houses as the demands of the labor force required more parents to find work outside the home. Since more parents worked outside the home, their work hours often extended beyond the traditional school day hours. This created a challenge in which working parents looked to find an environment that provided their school-aged children a safe and supervised setting once the school day ended and until the parents could complete their workday.

Crawford (2011) conducted a meta-analysis to determine if after-school programs impacted math and reading performance. The research findings showed that after-school programs have an educationally significant impact on math and reading performance. This was an important finding as the school system searched for an innovative intervention to improve student academic outcomes in math and reading.

Purpose of Study

The purpose of this study was to determine to what degree significant academic gains occurred in English/language arts and math achievement for students who attended the after-school program compared to the students who did not participate in the after-school program. This study examined this relationship based on gender, grade level, socioeconomic status, and race.

The Afterschool Alliance (2009) stated that after-school programs are an integral part of the school day, providing a safe, structured learning environment beyond the dismissal bell of a traditional school day. As the demands of the labor force changed, many parents searched for a viable and safe after-school option for their children. Capizzano et al. (2000) estimated between four million and six million 12-year old students did not have adequate supervision outside of regular school hours. Increased criminal activity and the possibility of dependence on illicit substances increased for older youth left unsupervised. Wilgoren (2000) stated that the abuse of children and other juvenile crimes increases between 3 p.m. and 6 p.m. Afterschool programs curbed this statistic by providing a structured, supervised setting for children.

As student and school accountability demands increased, district leadership and policymakers searched for ways to maximize instructional time (Welsh, Russell, Williams, Reisner, & White, 2002). The after-school programs offered an opportunity for schools to deliver additional academic support in a safe environment and helped many full-time working parents to have a safe place for their children after the regular school day. The academic ability and after-school participation for economically disadvantaged students showed a positive correlation compared to middle-class students or other populations without economic diversity. Economically disadvantaged students benefitted from the academic interventions and the experiences afforded by the enrichment opportunities of a structured after-school program (Kane, 2004; United States Department of Education, 2003). Of all student participants, economically disadvantaged students experienced the most significant gains in academic performance when participating in after-school programs and regularly attending such programs.

Additionally, economically disadvantaged students attending at-risk schools acquired new knowledge from a structured after-school program at a higher rate (Malakoff, Underhill, & Zigler, 1998; Valencia, 2010). They grew personally from the additional support the programs provided. Before participation in an after-school program, at-risk students were found to hold relatively low expectations regarding their performance on innovative and thought-provoking tasks. Those same students had little to no motivation concerning intrinsic efforts and desire to pursue the tasks. The structured environment of an after-school program provided a place where students asked questions, explored, and experienced success in a non-threatening manner.

Prior research studies have examined the fidelity of implementation of specific instructional strategies. It was essential to know whether participating in a structured, academic after-school program significantly impacted students' overall academic achievement. Lester, Chow, and Melton (2020) concluded that based on the varying methodological rigor used, there was no explicit finding on the impact after-school programs made on secondary school students. This study aimed to investigate the significance of using the instructional system of an after-school program for a select group of students compared to the achievement of students who do not participate in a school-based, after-school program.

Significance of Study

This study was significant in that it examined the impact of structured after-school programs on student participants' academic performance. Additionally, the study investigated if any significant academic gains occurred for students who participated in the after-school program.

Many parents could not find suitable after-school supervision, so their children went home to an unsupervised, unstructured environment (Posner & Vandell, 1994). The hours following the end of the traditional school day were when many students engage in unproductive and risky behaviors. Schools were uniquely able to extend their safe, supervised environment while focusing on individual student weaknesses. Increasing the academic achievement of all students was critical to the success of any school and school system. Fortunately, researchers discovered that students who participated in after-school programs demonstrated higher levels of academic performance than students who did not participate in an academically based, after-school setting.

Research Questions

This study focused on the academic achievement of students who regularly attended an after-school program compared to those within the same school who did not. The study was guided by the following research questions (RQs):

RQ 1: To what degree, if any, was there a significant difference in the academic achievement of students who participated in the after-school program compared to the students who did not participate in the after-school program in English/language arts on the Georgia Milestones End of Grade test?

RQ 2: To what degree, if any, was there a significant difference in the academic achievement of students who participated in the after-school program compared to the students who did not participate in the after-school program in mathematics on the Georgia Milestones End of Grade test?

RQ 3: To what degree, if any, was there a significant difference for students who attended the after-school program for more than one academic year attaining higher

English/language arts scores compared to students who only attended for one year on the Georgia Milestones End of Grade test?

RQ 4: To what degree, if any, was there a significant difference for students who attended the after-school program for more than one academic year attaining higher math scores compared to students who only attended for one year on the Georgia Milestones End of Grade test?

Summary of Methodology

The Valdosta State University Institutional Review Board (IRB) (Appendix A) and the Superintendent of Schools of Arrowood County Schools approved the study. Polo Road Middle School was the only school in the school system that received and implemented the 21st Century Community Learning Center grant after-school program. Student demographic data, program-related participants, and archived Georgia Milestones End of Grade Test data were obtained from the school system's Coordinator of Testing.

A causal-comparative design was selected for this quantitative study to answer the research questions. This design was chosen because the participants were not provided with experimental instructional methods or "treatments." The treatment of an after-school program had occurred before the study (Fraenkel, Wallen, & Hyun, 2012). In education, causal-comparative design retroactively explores relationships between independent and dependent variables after implementing an intervention. The causal-comparative design consisted of the treatment group of all students in grades 6 – 8 who regularly participated in the after-school program offered by the school and the control

group of students who did not participate in the after-school program provided by the school.

The school staff and parents were instrumental in examining previous test scores, academic grades, and prior promotion status in identifying the treatment group's student participants for the after-school program. The researcher did not select the students in the treatment group.

The control group consisted of students who did not participate in the 21st Century Community Learning grant after-school program. The researcher did not select the students in the treatment group. A matching process allowed the researcher to form two similar groups on one or more dependent variables so that the variables do not confound the study of the causal relationship (Gall, Gall, & Borg, 2007). The researcher's control group consists of students who did not participate in the after-school program. There were more students in the control group than in the treatment group in the research study. Therefore, the matching process allowed the researcher to form two similar-sized groups. Through the data matching process, the research study results can be interpreted in a more meaningful manner

A variety of statistical tools were employed in this study. An independent means *t*-test was used to determine if there was a significant difference between the groups on the two groups' dependent variables (Gall et al., 2007; Patten & Newhart, 2017). The One-way Analysis of Variance (ANOVA) compared the groups' means to make inferences about the population means. Additionally, descriptive statistics will describe and summarize the data.

This study's independent variables were participation in the after-school program, student grade, race/ethnicity, and economically disadvantaged status. The dependent variable studied was student achievement measured by the Georgia Milestones End of Grade Test in English/language arts and math.

Conceptual Framework

This research study was based on whether a single additional instructional intervention improved student performance. This study examined whether a significant difference in academic achievement existed among students who participated in a school-based after-school program compared to students who did not participate in the after-school program offered by the school. Additionally, the study sought to determine what degree certain demographic variables had on student performance. Student participation in the after-school program was optional.

Increased student achievement in the core content areas of English/language arts, reading, and mathematics has become a campaign promise of the past few presidential elections. The core policies of the No Child Left Behind Act (NCLB) of 2001 focused on disaggregating and improving the performance of all students, student equity, and standards-based reform and school accountability (United States Department of Education, 2003). Race to the Top (RTTT), which was authorized under the American Recovery and Reinvestment Act of 2009 (ARRA), became the next competitive and bold reform initiative for elementary and secondary schools (American Recovery and Reinvestment Act of 2009, 2009). Its policies focused on college- and career-ready standards, using data systems to guide teaching and learning, evaluating and supporting teachers and school leaders, and turning around the lowest-performing schools. The

student-centered, personalized learning aspects of RTTT focused on raising student achievement while decreasing the achievement gap across student groups.

Educators and researchers often described the middle school years as the last opportunity to keep students academically engaged and on track for graduation with their cohort group of peers (Carnegie Council on Adolescent Development, 1989). During the middle school years, students are often exposed to foundational core content topics from which high school instruction was built. Many students participate in prerequisite career exploratory classes that often lead towards a focused career-based pathway in high school Career, Technical, and Agricultural Education Programs (CTAE).

Prior research studies have explored the achievement gaps among the genders (Reardon, Fahle, Kalogrides, Podolsky, & Zárate, 2019). Between 2008 and 2016, female students outperformed male students on English/language arts tests in grades 3 through 8. Their research found that the achievement gap was roughly one-quarter of a standard deviation. The achievement gap in math was smaller at approximately 0.03 standard deviation in favor of male students. This substantial gap was more significant than the effect size of most large-scale educational interventions.

Ricciardi and Winsler (2021) suggested that demographic factors (socioeconomic status, ethnicity, English language status) often played a minor role in advanced course enrollment only after controlling for school-entry skills and prior academic competence. They noted that prior academic competence, as expected, was strongly related to the likelihood of advanced course enrollment later in a student's academic career. The only exception to their finding was for Advanced Placement (AP) courses. This provides a fascinating glimpse into student achievement's role in enrolling in advanced classes.

Limitations

Multiple limitations were identified in this study. One limitation considered in this study is generalizability. Due to the limited number of students in the treatment group compared to the control group, the results of this study may not accurately represent the larger population. In addition to the limited number of students in the treatment group, only one school was used in the research study. Based on these two factors, caution should be used when generalizing the population.

Another limitation is implementation fidelity (Carroll et al., 2007). Due to the high number of high-quality academic teachers used in the after-school program, it is difficult to ensure that the intervention was delivered consistently without prior scripted protocols. Although professional learning and familiarity with the after-school program took place, after-school teachers relied on feedback from classroom colleagues to identify specific student weaknesses. After-school teachers used the information to create a personalized academic plan for each student.

The researcher did not manipulate the data used in the study or select the student participants in the treatment group. The data used in this analysis were obtained before the national closure of schools due to the COVID-19 pandemic. Therefore, future interpretations of these results must be relevant to the COVID-19 pandemic, associated learning disruptions, and varying access to instruction since March 2020.

A final limitation of the research study was the methodological foundation. The researcher used a causal-comparative design to answer the research questions. This design was selected because the treatment occurred before the start of the research study (Fraenkel et al., 2012). The researcher had no control over the student participants or the

intervention received. Another outcome of a causal-comparative study is the relationship between variables. Causation cannot fully be established due to the variables used in the research study (Fraenkel et al., 2012). Other variables may contribute more to the cause and effect of higher achievement scores than those analyzed in the current research study.

Definition of Terms

21st Century Community Learning Center. A community program providing opportunities for academic enrichment, offers an array of additional services, and gives families opportunities for active and meaningful engagement in their children's educational endeavors (United States Department of Education, 2003).

Academic achievement. Performance outcomes indicate whether students have mastered performance outcomes measured by state assessment (Georgia Department of Education, 2015-2016). For this study, the Georgia Milestones Assessment System End of Grade Test will be used to measure academic achievement.

After-school Program. A program provides academic support beyond the traditional school day and year (United States Department of Education, 2003).

At-risk Schools. Schools in which the student population consists of a high percentage of impoverished students and a high percentage of minority students. (Valencia, 2010)

Economically Disadvantaged (Socioeconomic status). Students eligible to receive free- or reduced-price meals at school (Governor's Office of Student Achievement, 2021). These students are identified based on parental response for financial information or reside in a home receiving government assistance.

Elementary and Secondary Education Act (ESEA). Refers to the legislation designed to ensure that the federal government provided state-level funding to promote equitable access to education for all students (United States, 1966).

Georgia Milestones. A state-mandated assessment is administered to students in elementary, middle, and high school in the four disciplines (language arts, mathematics, science, and social studies) to determine the extent of mastery and degree of readiness for the next level within the educational system (Georgia Department of Education, 2016).

No Child Left Behind (NCLB)/Adequate Yearly Progress (AYP). Refers to the accountability tools used to inform schools and the general public about the performance and proficiency of designated subgroups (Georgia Department of Education, 2016).

Regular Attendance. Refers to a student who attends the after-school program at least 30 days during the school year (Arrowood School District, 2017).

Organization of the Study

This research study was divided into five chapters. Chapter 1 provided an introduction to the study, the statement of the problem, the purpose of the study, the significance of the study, research questions, limitations of the study, and definition of terms. Chapter 2 provided a review of literature related to the study. Chapter 3 identified the participants within the study, the research design, the instrumentation and its reliability and validity, the data collection process, and the data analysis procedures. Chapter 4 presented the findings. This chapter lists the data analysis organization, the research questions, and data analysis. Implications, areas of further research, and conclusions are included in Chapter 5.

Chapter II

REVIEW OF LITERATURE

Introduction

Between elementary and high school, middle schools were overlooked by Federal and state legislation and policies (Andrews, Debray-Pelot, & Denmark, 2009). However, middle school served as the critical turning point for young adolescents regarding their prospects for an on-time graduation rate with their cohort of peers. With this focus, additional resources were being allocated to middle schools to support student learners during the day and beyond the traditional school day.

Parents and other community stakeholders supported increased funding to make additional academic programs a reality (Afterschool Alliance, 2013). One example of such programs, after-school programs, experienced an increase in numbers because of the additional funding. After-school programs have been an integral part of American history. Whereas after-school programs have increased in popularity over the last few years, the concept originated from a basic need. Its initial introduction meant to provide relief to working parents.

Middle Grades Education

Many reports and studies focused on the importance of understanding the unique academic development of adolescent students (Mertens, Caskey, & Flowers, 2017). Educators placed a lot of thought and research into designing a schooling experience that met the needs of adolescent students. They recognized the significance that transitions

play in a student's life. Being mindful of the transition from one grade level to the next, educators designed an educational experience that would provided a change from elementary experiences to having a student prepared for the demands of high school.

More publications addressed the need for a transition level before students reach high school (Mertens et al., 2017). One of the first junior high schools was established in Indiana in 1896 (Weilbacher, 2019). The term junior high school was created to provide a necessary academic experience and to ease the transition from childhood to adolescence. The school housed seventh grade and eighth grade students. The students were taught in a departmentalized manner, similar to their high school peers. The students enrolled in elective courses like carpentry, sewing, other practical arts courses, and foreign language.

Gruhn and Douglass (1956) noted that it did not take long for the junior high school concept to gain momentum. By 1910, the junior high school reform movement was underway. School districts around the nation assigned students to elementary school for six years. Once students transitioned from elementary school, they were enrolled in a junior high school for three years. After junior high school, students enrolled in high school for three years.

The junior high school concept caught on quickly by the 1920s (Weilbacher, 2019). Fewer than 1,000 junior high schools served grades 7-8 or 7-9 in the early 1900s. That growth continued until over 7,000 junior high schools in the United States in the 1920s. That growth was due, in part, to the praise received and the involvement of social efficiency advocates and child development advocates played in shaping the design of the junior high school concept, furthermore advancing the movement.

Many junior high schools operated as small high schools (Weilbacher, 2019). For the junior high schools to meet the developmental needs of young adolescent students, a list of functions for junior high schools was developed. Noar (1953) noted that in 1947 two psychologists posited that junior high schools of the middle 1940s were expected to provide “integration, exploration, guidance, differentiation, socialization, and articulation” (p. 4). Weilbacher (2019) emphasized that if schools focused on those six functions, the teacher’s role changed from one who disseminated information to one who facilitated learning.

However, it did not take educators and other scholars long to realize the junior high school concept was unsuccessful (Mertens et al., 2017). By the middle of the century, it was noted that the newly created junior high school concept was woefully inadequate. Critics pointed to the fact that the new transitional school level did not address the unique characteristics of the needs of young adolescents. By the 1960s, publications focused on the need for a new type of school. The middle school concept was initiated to meet the needs of young adolescent students more effectively.

In the 1960s, the term middle school emerged as an alternative to the junior high school name (Weilbacher, 2019). It was a deliberate focus to reject the notion that the institution was a lesser version of a high school. Additionally, proponents of the middle school model had other issues to address that were fueled by psychological research and the political climate at the time (Alexander, 1984).

As children matured earlier, schools shifted their grade configuration to a grade 6-8 arrangement (Weilbacher, 2019). That was not the only organizational change that emerged from the shift to the middle school concept. More middle schools designed

curricula that promoted innovative practices such as interdisciplinary organization, blocks of instructional time, individualized instruction, and teacher guidance plans (Alexander, 1984). This notion differed from the high school concept in which teachers were organized by departments and often taught in isolation.

In 1998, the Georgia Department of Education conducted a statewide evaluation of its middle-grade education program (Georgia Department of Education, 1998). Its purpose was to determine the middle school concept's contribution to attaining Georgia's educational goals. The program evaluation relied on student achievement data and other relevant information routinely collected by the Georgia Department of Education. Additionally, surveys, focus groups, and on-site observations were used to gather additional data to evaluate the program's effectiveness.

The program evaluation found that a quarter of middle schools in the sample implemented the educational structures and instructional practices that Alexander first evidenced in 1984 (Georgia Department of Education, 1998). A core academic block was provided that assured that instructional practices met the needs of students, and teachers took full advantage of the time allotted to them. In schools where interdisciplinary teams were implemented and more significant support for community involvement in school governance was evident, student gains in both reading and math were significantly higher. The report also made an exciting discovery as it relates to school climate. In schools with an accomplishment-oriented culture, students believed they had a more positive relationship with teachers. As a result, student gains were noted in both reading and math.

Historical Context of After-School Programs

After-school programs were created to meet the needs of newly immigrated families to the United States (Bodilly & Beckett, 2005). Philanthropic settlement houses assisted immigrants with little wealth and limited English language proficiency. Charitable donations were used to staff and provide the immigrants with vital social and educational services. In addition to teaching English skills, the settlement house offered essential health-care services and limited food and clothing services.

The needs of the settlement houses changed as our country's educational aspirations came into focus (Bodilly & Beckett, 2005). Around the 1940s, Bodilly and Beckett (2005) cited two significant changes that occurred in American history that directly impacted the operations of the settlement houses. First, states implemented restrictive child labor laws that prohibited the employment of young children. Second, as child-labor laws were going into effect, states encouraged and sometimes mandated school attendance through the elementary grades.

As child-labor laws took effect and the impact of mandated school attendance was being implemented, it caused settlement houses to further examine their purpose in the communities they served (Bodilly & Beckett, 2005). The philanthropic community shifted its focus from providing essential services to new immigrants to addressing the needs of the new working class of citizens. With more adults and fewer children in the workforce, the philanthropic community provided child-care "for the working-class poor for non-school hours" while many of their parents were still working (p. 13). The child-care provisions were typically community-based in a church or local storefront (Halpern,

2004). The centers were designed as a place of refuge for children and were used to keep children safe from the risks in the streets.

Over time, the centers' mission changed as the community's needs changed (Bodilly & Beckett, 2005). The centers continued to provide a safe place for children to congregate after school, and the centers continued to provide primary health screenings. Still, others saw the centers as an opportunity to provide basic tutoring services to the youth while instilling societal norms and values in the newly arrived immigrants.

As the United States entered World War II, its implications impacted the well-being of after-school programs (Bodilly & Beckett, 2005). As male family members left home to fight in the war and women entered the workforce to support war efforts, the 'latch-key' child phenomenon was exposed. During this time, after-school programs were tasked with taking on the challenge of providing child-care duties by keeping children occupied while their parents were supporting the war efforts.

After World War II, after-school programs were forced to rethink their mission (Bodilly & Beckett, 2005). As the residential dynamics of the inner-city urban communities changed, the focus of after-school programs changed. Inner-city communities had a reputation of being a place where generational poverty settled. As a result of generational poverty, increased drug abuse and increased violent crimes were associated with the communities. These societal concerns caused the changes related to after-school programs. Inner-city residents discovered the unintended consequences of not having structured, supervised activities in the community (Ascher, 2006). Due to the lack of supervision, many citizens observed risky behaviors and violent crimes that generally took place within the first three to four hours following school dismissal.

The last decades of the twentieth century ushered in a new wave of reform and innovation in the after-school era (Blau & Currie, 2003). As more women with school-aged children joined the labor market, the demands for child-care services grew. Blau and Currie (2003) noted that low-income families chose to work and chose lower-cost child-care options. Initially, national, state, and local officials did not meet the demands of providing child-care programs with low-income families in mind (Bodilly & Beckett, 2005). During this time, many of the child services options were fee-based, and many children of the working-class poor did not have the financial resources to find and secure the same type of after-school care the more well-to-do class purchased.

Academic Achievement Impacts of After-School Programs

Schools and school systems continued to seek ways to leverage out-of-school time to improve student achievement (O'Dennell, 2014). Families sought to connect their children with an after-school, weekend, and summer programs that provided academic support, promoted social engagement, and addressed non-academic barriers to student learning. After-school programs filled that void for over 8.5 million students in 2009 (Afterschool Alliance, 2013). Locally designed after-school programs allowed students to grow and learn, kept children safe, and supported working families.

Creating an engaging, motivating, and inspiring learning experience for program participants proved to be a challenge for some after-school program providers (Hall, Yohalem, Tolman, & Wilson, 2003). It was a challenge for some program providers to find ways to counteract the adverse effects of poverty. Many program providers developed engaging environments based on the youth development principles that aided and assisted children in overcoming academic and social barriers in their communities.

Barr, Birmingham, Fornal, Klein, and Piha (2006) found positive effects on the study's academic achievement, social skills, and behavioral outcomes. Furthermore, they suggested that certain factors must be evident for a program to be considered high-quality.

Most after-school programs were locally designed to improve students' academic performance by closing achievement gaps (Pierce, Auger, & Vandell, 2013). Pierce, Auger, and Vandell (2013) noted that student gains in math were directly related to the student's participation in after-school programs. Vandell, Reisner, and Pierce (2007) indicated that high-quality after-school programs resulted in higher academic achievement results for student participants. It was noted that elementary and middle school students from low-income backgrounds who regularly participated showed significant gains in math achievement (Vandell, Reisner, & Pierce, 2007).

In addition to closing the achievement gap between the low-achieving students and their high-achieving peers, researchers noticed that specific subgroup academic performance improved (Lauer et al., 2006). Lauer et al. (2006) noted a positive and significant result for students in danger of failing reading and math. A significant effect on reading achievement was observed for elementary and high school students. A positive and considerable gain was noted for middle and high school students in math.

Overall gains in math were noted due to regular, frequent participation in an after-school program (Vandell et al., 2007). An evaluation of an after-school program serving 3,000 students who qualified for free and reduced meals found that consistent, regular participation improved math scores. In addition to the improvements in math, the researchers noted improved work habits and decreased discipline referrals. Vandell et

al. (2007) indicated that over two years, students who regularly attended a quality academic after-school program showed gains of up to 20 percentiles in the first year and an increase of 12 percentiles in the second year in math achievement. These results were compared to their peers who did not participate in an academic after-school program.

An early evaluation of the 21st Century Community Learning Centers conducted by the United States Department of Education did not find results consistent with the results of other researchers (Vandel et al., 2007). The researchers noted that there was no effect on student classroom performance. When after-school participants were compared to the control group, the after-school program participants showed improvement in math grades. However, those results did not transfer over to other content areas.

The Importance of Regular Participation

Apsler (2009) noted that there were various ways that researchers tracked participation and attendance. Many researchers did not address the complexities regarding what it meant to participate in an after-school program. Apsler stated that most program evaluations followed attendance by the number of days the student spent any amount of time in the program. For example, a student who was present for the attendance and left was counted in most program evaluations just as the student who was present and engaged in the activities for the day.

Limited studies directly related regular participation and attendance to higher achievement scores (Duffett, Johnson, Farkas, Kung, & Ott, 2004). Duffett, Johnson, Farkas, Kung, and Ott (2004) stated that providers must determine the factors that prevented students from participating in after-school programs. Parents were vital to the success of any program, and the parents needed to find value in the program to encourage

their children's participation. Based on their research, program providers considered factors such as timing, location, transportation options, and programming needs, to name a few.

Researchers agreed that regular attendance in an academic after-school program was a critical step in meeting the intended outcomes of the after-school program (Durlak, Weissberg, & Pachan, 2010). Regular student participation provided students with more time on task. Durlak, Weissberg, and Pachan (2010) saw an exciting trend associated with regular academic after-school attendance. In his meta-analysis of 68 after-school programs, students who participated in an after-school educational program saw an increase in their school-day attendance compared to students who did not participate in an academic after-school program. Durlak et al. (2010) cautioned that attendance is only one aspect of participation that determines the outcome. The researchers strongly encouraged researchers to investigate participant engagement during session activities.

When examining the impact of an after-school program, attendance was often one of the indicators reviewed (Black, Doolittle, Zhu, Unterman, & Grossman, 2008). Specific factors needed to be in place to garner increased participation to contribute to academic gains. Black, Doolittle, Zhu, Unterman, and Grossman (2008) randomly assigned students to a less structured after-school program or an enhanced academic after-school program that provided math and reading instruction. The enhanced program provided tutoring and incentives to increase student attendance. The researchers discovered that the students in the enhanced program attended more days. Program incentives, positive reinforcement, or special privileges were designed to improve attendance and student achievement.

Hurd and Deutsch (2017) wrote that despite the after-school programs' best attempts, specific interventions did not reach all student participants due to the very relaxed attendance policies observed. It was deemed that academic after-school programs had potential. Social-emotional interventions were just one example of interventions that were not fully implemented due to irregular attendance patterns of the participants. However, they noted that attendance in isolation was not the only factor that impacted the social-emotional outcomes. Sporadic attendance by the participants tended to affect the researcher's ability to measure program effects confidently.

Student Engagement

A group of students who appeared to be busy during the instructional time does not always mean that the students were engaged and on task (Kumar, 1991). Kumar's (1991) meta-analysis defined engagement as adequate time within the allotted class students actively participated in the learning. He gave examples of engaging activities, including answering questions, taking notes, and participating in discussions. The overall effect size of engagement in Kumar's research was $d = 1.09$.

Hattie (2009) analyzed the effect size and findings of over 800 different meta-analyses. Since 1991, multiple researchers noticed the impact engagement has on student achievement. In his meta-analysis findings, concentration/engagement had an effect size of $d = 0.48$. He described that these factors or specific actions should accelerate students' learning. Meaningful student engagement consistently gave a student at least one year of academic growth.

Student engagement was essential in developing a quality after-school program (Vandell et al., 2007). As a result of the engaging activities developed for students in an

after-school program, researchers have noticed that it also influences student behavior in the classroom during the traditional school day. Vandell et al. (2007) conducted a study that followed approximately 3,000 students who qualified for free and reduced meals. In the study, the students represented participants in eight states, students from both elementary and middle school environments, and students from both urban and rural settings. The researchers observed that students who participated in a structured after-school program demonstrated an improvement in classroom work habits and task stamina.

Carefully designed academic after-school programs had a way to boost student engagement in a way that was seen in and out of the school (Westwood Research & Statistical Services, 2017). Parents, teachers, and principals agreed that academic after-school programs increased student engagement in different aspects of the student's life. Seventy-five percent of the parents surveyed agreed that North Dakota's Community Learning Centers program improved their children's attitude toward school. The program evaluation showed two important trends from the perspective of teachers. First, the teachers observed two out of three students who regularly participated in the after-school program were more successful in finishing their homework. Second, 60% of the students increased their level of participation in class. Principals concurred with the parents and teachers at a higher level as they felt students' attitudes and motivation to learn increased due to being engaged.

In a separate engagement study, Martin, Martin, Gibson, and Wilkins (2007) noted behavior modifications in the program participants in their research. The after-school program evaluation focused on monitoring 33 students at-risk for failure from an

alternative school setting. The student participants in this study were either suspended or expelled from school, absent more than 40 days from school, accumulated at least 20 discipline referrals, were at least two grade levels behind, and lived at or below the federal guidelines for poverty. The interventions provided to the group were tutoring, group counseling, and social activities. The researchers noted that after two years, the group's basic skill levels improved, discipline referrals decreased, and no students were expelled or suspended.

Research proved that student engagement correlates directly with academic achievement and other outcomes of after-school programs. Akhavan, Emery, Shea, and Taha-Resnick (2017) also noted that caring adults who went above and beyond had a way of making program participants feel special. In return, that translated to student success and positive academic achievement. The relationship of a caring adult kept participants focused and in tune with the daily activities of the program.

Quality After-School Programs

Program quality, or the extent to which programs implemented key quality practices, was found to have a moderate effect on after-school programming (Lester, Chow, & Melton, 2020). Until recently, there was no common understanding of program quality. After-school programs were designed with the premise of improving predefined outcomes. Researchers continue to reference the work conducted by Joseph Durlack in the early 2000s.

Durlak and Weissberg (2007) conducted a meta-analysis of 73 after-school programs to review the effects of an after-school program to define factors of a quality after-school program. The program effects were grouped into one of three broad areas

for examination: School Performance, Social Behaviors, and Attitudes and Beliefs.

Including no fewer than 20 studies in each category, researchers found positive effects in every category except one subcategory of school performance. It was the subcategory related to school attendance.

Finding a positive effect based on a predetermined set of outcomes in their initial analysis, Durlak and Weissberg (2007) then grouped the studies based on the S. A. F. E. (sequenced, active, focused, and explicit) features. The data analyzed showed that on average, after-school programs with the S. A. F. E. design feature positively affected every outcome except school attendance. The cluster of after-school programs without the S. A. F. E. design did not affect any outcome. It was highlighted in the research that neither cluster (S. A. F. E. design and the non-S.A.F.E. design) had an impact on school attendance. This research provided much needed guidance on defining quality after-school programs.

In 2003, the Forum for Youth Investment reviewed 13 statements on youth program quality (Granger, Durlak, Yohalem, & Reisner, 2007). Later in 2007, they released a review of nine instruments to measure youth program quality. Each of the instruments relied on observing the operations of the program on a daily basis. Core concepts were identified, including the staff and youth interactions, assessing social norms, physical and psychological safety, opportunities for skill-building, and the routines and structure of the program. For each core concept, a clear definition or indication of effective practice was provided to ensure the quality of the concept.

Granger, Durlak, Yohalem, and Reisner (2007) stated that there were similarities between the instrument developed by the Forum for Youth Investment and the research

completed by Durlak and Weissberg. There was agreement that Durlak and Weissberg's active, focused, and explicit features were traits that could be observed and captured by the Forum for Youth Investment's observation instruments. Granger et al. (2007) noted that the sequenced feature identified in the Durlak and Weissberg's research did not align with the observation instruments provided by the Forum for Youth Investment. Durlak and Weissberg desired to use a sequential set of activities that moved logically. Observational tools from The Forum for Youth Investment emphasized allowing individual students to have choices in the programming and not necessarily to follow a predetermined sequence of events.

Program quality practices supported after-school programs' academic achievement and social skill development (Pierce, Bolt, & Vandell, 2010). The findings made by Pierce, Bolt, and Vandell (2010) suggested that designing, developing, and implementing a high-quality program is an intervention in itself. However, as studies continue to examine program quality, it is important to tease out the impact of this intervention compared to other lower-quality interventions.

Social-Emotional Well-Being

Whether it was by design or coincidental, after-school programs provided an opportunity in which students' social-emotional well-being was strengthened (Hurd and Deutsch, 2017). The after-school program providers were not confined to the academic limitations of the traditional school day. Many after-school program providers were able to develop broader developmental goals, and they focused on social-emotional skills to a greater extent than most traditional schools.

Connections with the program's staff shape participants' experiences, and those relationships were the pathway through which after-school programs affected social-emotional learning (Pierce et al., 2010). After-school programs were in a prime position to promote social-emotional learning competencies. Many after-school programs focus on building strong relationships among the program participants and staff (Granger, 2010). They offered a unique opportunity to form the type of relationships with adults that enhanced social-emotional competencies. Experienced adult staff were essential to effective after-school programs targeting social-emotional learning competencies.

Giving program participants a level of independence, an opportunity to make individual choices, and providing the appropriate level of supervision and structure were just a few ways adults can foster a collaborative environment for social-emotional characteristics to flourish (Vandell, Larson, Mahoney, & Watts, 2015). Multiple criteria were considered when designing effective staff practices for promoting social-emotional learning. Furthermore, Eccles and Gootman (2002) suggested eight components to consider when fostering a positive developmental environment: (1) physical and psychological safety, (2) appropriate structure, (3) opportunities to belong, (4) positive social norms, (5) support for efficacy and mattering, (6) opportunities for skill-building, (7) integration of family, school, and community efforts, and (8) nurturance and support. Many of the components considered were integrated with after-school programming, ensuring a well-rounded program was designed.

After-school programs could encompass all personal and social competencies that make up social-emotional learning (Hurd & Deutsch, 2017). The goals of most after-school programs were broader than just focusing on academics. However, it was not

realistic to expect after-school programs to address all of the social-emotional needs of a school community. One significant barrier was that participation in an after-school program was not mandatory. Another factor included the sporadic attendance rates of the student participants and the high turnover rate of staff. Hurd and Deutsch (2017) stated that combination alone affects the quality of the program and negatively impacts program effects.

In the meta-analysis conducted by Durlak et al. (2010), they found that after-school programs had a largely positive and statistically significant impact on the participants. Improvements were noted in multiple areas, including self-perception, positive social behaviors, and school performance. It was also pointed out that reductions occurred in problematic behavior areas. Positive trends were noted in programs that followed the S. A. F. E. design. It was likewise pointed out that after-school programs located in a community setting were vital in promoting the personal and social well-being of the program participants.

Hurd and Deutsch (2017) examined multiple programs that assessed social-emotional skills and competencies. They found minor varying outcomes based on the type of research study completed in the evaluation. Their examination revealed similar growth in positive social behavior indicators and reductions in delinquency and other negative problem behavior areas. Although they noted positive outcomes from correlational studies, they observed fewer positive outcomes in experimental studies they examined.

Historically Underserved Students

When students failed to meet the desired proficiency levels in school, the No Child Left Behind Act of 2001 provided a provision that stated that students were eligible to receive supplemental educational services (United States Department of Education, 2003). Under this provision, the services provided to students were evidence-based and effective in raising student achievement, and the services must occur beyond the traditional school day.

Traditionally, many after-school programs were developed around the needs of children of low-income families (Lauer et al., 2006). Many of these children lived in less safe areas than their middle-income peers. There was a greater need to provide additional support to the children and their families. Researchers argued that the need for after-school and other instructional extension programs was not totally due to academic deficiencies. Instead, Lauer et al., (2006) noted the programs were born from a “perceived failure of societal institutions, particularly the family and the school, to fulfill their responsibilities to all children” (p. 277).

Slavin and Madden (1989) identified a student at risk of failing as one who had (1) low student performance on formative and summative assessments or (2) exhibited characteristics of lower student achievement and school dropout, including low socioeconomic status, racial or ethnic minority, a member of a single-parent household, a mother with a low educational attainment level, or a student who has limited proficiency in English. Slavin and Madden (1989) noted that most supplemental programs provided to students at-risk for failure are used to remediate what has been lost rather than being of a preventive nature. Their research showed that remedial types of programs show little

evidence of effectiveness. Programs that showed convincing evidence to improve achievement were intensive programs. The ideal programs were designed as preventative and remedial based on the student's needs.

Lauer et al. (2006) conducted a meta-analysis using 35 studies. The researcher used 30 studies to examine the effect of after-school programs on reading achievement and 22 studies to explore the impact of after-school programs on math achievement. The researchers sought to determine if after-school programs were effective in assisting at-risk students in improving achievement in reading and math. Their findings showed an overall significant positive effect in that after-school programs improved the reading and math achievement of at-risk students.

Although these findings supported the meta-analytic results conducted by Cooper, Charlton, Valentine, and Borman (2000), they contradicted the conclusions of another significant research study. In 2003, the United States Department of Education conducted an evaluation of its 21st Century Community Learning Center's first year of operation. It was noted in the evaluation report that there were no statistically significant effects of after-school programs on reading achievement and math achievement (United States Department of Education, 2003).

Slavin and Madden (1989) noted that effective programs use one-on-one tutoring or individually adapted computer-assisted instruction to assist students in reaching higher levels of reading achievement. Lauer et al. (2006) found a similar trend in their study. After-school programs that provided individual tutoring to students showed positive reading improvements. Tutoring at-risk students during the school day was one of the most notable findings from the meta-analysis.

In an evaluation study, James-Burdumy et al. (2005) noticed that participation affected specific at-risk populations. Findings from the subgroup analysis showed that black students academic performance improved and that those same students had fewer disciplinary referrals. Additionally, the impact on math achievement was evident for Hispanic students.

21st Century Community Learning Center Program

Connell and Gambone (1999) stated that after-school programs were responsible for many academic and social indicators. The researchers specifically identified student relationship building, adequate participation rates, building skills in a specific area, and involvement of the community as critical indicators to consider when planning and implementing after-school programs. After-school programs were essential to meeting many students' academic needs. There has been an increasing body of research and program evaluations on the benefits of after-school programs.

The purpose of 21st Century Community Learning Center (21st CCLC) Programs was to establish or expand community learning centers with academic enrichment to complement the student's traditional academic program (United States Department of Education, 2003). The centers offered families of the students literacy and related educational development opportunities. The centers were located in the traditional school setting (elementary or secondary school) or a similar facility. The centers provide a range of high-quality services to support student learning, such as tutoring, mentoring, academic enrichment, and community service opportunities. Additionally, the centers helped working parents by providing a safe environment for students beyond the traditional school day or when school was not in session.

Authorized in Title IV, Part B, of the Elementary and Secondary Education Act (ESEA), as amended by the No Child Left Behind Act of 2001, the law was specific to the purposes of 21st CCLC Programs (United States Department of Education, 2003). The programs were required to provide enrichment opportunities, including tutorial assistance to help students meet state and local performance standards in a core academic subject. Additionally, the intentional design of the programs had a broad array of youth development activities that reinforced and complemented what was being taught during the traditional school day. Programs were also required to offer family engagement activities in literacy and other educational-related topics.

Changes occurred as the 21st CCLC Programs have continued to evolve (United States Department of Education, 2003). One change transferred the administration of the program from the Federal to the State level. With this change, the program adhered to the requirements written in the federal law, especially regarding the location of community learning centers. The program particularly attempted to target high-poverty areas and areas where low-performing schools were located. The Georgia Department of Education (2016) identified high poverty for its application as 40% or more eligible students receiving free and reduced-price meals. Additionally, competitive priority points were awarded for programs proposing to serve participants that attended a school designated as an Opportunity, Focus, or Priority School due to not meeting its state-defined academic targets.

Based on the responses from 80% of the 21st CCLC subgrantees, modest increases were noticed on the Georgia Milestones Assessment System's English/Language Arts End of Grade test and Mathematics End of Grade test (Georgia Department of Education,

2016). In FY 16, 18% of regularly attending students scored at the proficient learner level or higher on the English/Language Arts End of Grade test. That was an increase of three percentage points higher than FY 15. Math performance showed a similar result. In FY 16, 20% of regularly attending students scored at the proficient learner level or higher on the GMAS mathematics test. That was an increase of four percentage points higher than FY 15.

Evaluation of After-School Programs

Various aspects of after-school programming were conducted during the last several years (Afterschool Alliance, 2013). Student attendance, staffing goals, and program implementation were just a few of the data points some evaluations seek to assess. Program evaluators sought to determine the program's effect on the children served. Regardless of the type of program evaluation conducted, the reports provided valuable information to after-school providers and policymakers in determining aspects critical for accomplishing program goals.

Lauer et al. (2006) discussed the difficulty of evaluating the effectiveness of the after-school program. Most research and evaluation reports included vague references to interventions that were used without measuring the degree to which the intervention was implemented. However, it has not limited the amount of evaluation research that has taken place in recent years. As the social and academic pressures have increased, the demands for after-school programs to provide evidence-based results have also increased.

A means to provide evidence of an after-school impact included the use of standardized achievement test scores (Halpern, 2004). Although many after-school programs provide a dual responsibility of having both a social influence and academic

influence in the lives of children, the use of standardized tests was commonplace in comparing academic ability and program effectiveness. The collection and the convenient comparison for academic skills in future years were easier to understand, especially among different groups of students.

James-Burdumy et al. (2005) completed a report that synthesized the findings from multiple national after-school evaluations. They grouped their research findings into two broad categories: implementation findings and impact findings. The study noted that there was wide variability in the implementation of activities. This was consistent with the intent of many program guidelines that program design is decided upon by the needs of local officials. The results of the impact findings noted little to no difference between the after-school participants and the control group in homework assistance. Additionally, it was pointed out that the program had mixed impacts on developmental outcomes. The developmental outcomes included personal and social development instruction taught in the programs.

Summary

The middle school years are poised to be turbulent for most young adolescents as they go through psychological changes and academic challenges (Weilbacher, 2019). This is generally the time when most students develop an increasingly hostile attitude towards school in general. Effective after-school programs were implemented to address the academic deficiencies and instill the norms and values of the communities they served. Student engagement and regular attendance are necessary if the program meets its intended goals.

In addition to addressing the academic needs of the community, most after-school programs addressed other school climate needs. This is also when most students exhibit a decrease in motivation and student misbehaviors begin to increase (Mertens et al., 2017). Many adolescents can overcome the challenges posed during the middle school years. Others struggle with the constant battle of balancing academic, social, and emotional needs during this period of their lives.

Chapter III

METHODOLOGY

Introduction

This chapter includes explanations of the quantitative methods used in this research study. This study aimed to determine the effects of an after-school program on student achievement. The study examined to what degree a significant difference exists between students who regularly attended an academic-based after-school program after the traditional school day and their academically-similar peers who did not participate in an academic-based after-school program. This research study utilized a quantitative methodology design to answer the research questions through data collection and analysis (Mertler & Vannatta, 2013; Creswell, 2014).

Multiple *t*-tests and an one-way analysis of variance (ANOVA) were used to determine the relationship between English/language arts and math achievement on the Georgia Milestones End of Grade Assessment. The study examined the achievement assessment scores of the treatment and control groups. The treatment group consisted of students who regularly attended a middle school in which an academic after-school program operated. The control group consisted of academically similar peers who did not participate in the after-school program at the same middle school.

Research Questions

This study focused on the academic achievement of students who regularly attended an after-school program compared to those within the same school who did not. The study was guided by the following research questions (RQs):

RQ 1: To what degree, if any, was there a significant difference in the academic achievement of students who participated in the after-school program compared to the students who did not participate in the after-school program in English/language arts on the Georgia Milestones End of Grade test?

RQ 2: To what degree, if any, was there a significant difference in the academic achievement of students who participated in the after-school program compared to the students who did not participate in the after-school program in mathematics on the Georgia Milestones End of Grade test?

RQ 3: To what degree, if any, was there a significant difference for students who attended the after-school program for more than one academic year attaining higher English/language arts scores compared to students who only attended for one year on the Georgia Milestones End of Grade test?

RQ 4: To what degree, if any, was there a significant difference for students who attended the after-school program for more than one academic year attaining higher math scores compared to students who only attended for one year on the Georgia Milestones End of Grade test?

Research Design

A causal-comparative design was selected for this quantitative study to answer the research questions. This design was chosen because the participants were not provided

with experimental instructional methods or “treatments.” The treatment of an after-school program had occurred prior to the study (Fraenkel et al., 2012). In education, causal-comparative design retroactively explores relationships between independent and dependent variables after an intervention has been applied. The causal-comparative design consisted of the treatment group of all students in grades 6 – 8 who regularly participated in the after-school program offered by the school and the control group of students who did not participate in the after-school program provided by the school.

This study endeavored to determine if a relationship existed between students who participated in the after-school program compared to students who did not participate in the after-school program. Specifically, the treatment of the after-school program was the additional academic tutoring provided to the treatment group of students. In contrast, the comparison group did not receive the extra academic tutoring. The independent variable, participation in an after-school program, has already occurred. Group membership was predetermined at the time of the research study, and archived student performance data was used in the statistical interpretation.

Participants

This study took place in a rural middle school in South Georgia. All sixth, seventh, and eighth grade students attending the school represented the population for this study. The primary participants for the research study were students who attended the after-school program during the 2017-2018 and 2018-2019 school years. Students who did not participate in the school-based after-school program were the comparison group for this research study.

During the 2017-2018 school year, Polo Road Middle School had a student enrollment of 828 students. The school has 67% of its students identified as economically disadvantaged (students who received free or reduced meals), 16% receiving supplemental support for a learning disability, and 5% receiving English language supplemental services. Table 1 displays the 2017-2018 school year student enrollments by student gender and student race for each grade level.

Table 1

Polo Road Middle School Enrollment: 2017-2018 School Year

Grade	Female	Male	Asian	Black	Hispanic	Indian	Multi	White
6	131	147	2	70	35	0	12	159
7	118	141	3	60	27	0	11	158
8	146	145	1	63	41	1	5	180

The target population of the 21 CCLC grant included 130 students in grades 6 – 8 at Polo Road Middle School (Arrowood County Schools, 2017). In the grant application, the evaluation metric was created to measure the effectiveness of students who participated in the program for 30 or more days. Although regular student attendance was encouraged, on average, approximately 90 students attended the after-school program a sufficient number of days to be included in the after-school program evaluation reports.

In research studies, random selection provided a safeguard against attributing effects to the independent variable (Myers, Well, & Lorch, 2010). Similarly, researchers had the option of selecting the subjects of studies in a way to match specific attributes. Through data matching, the variability on the independent variable was removed. Gall,

Gall, and Borg (2007) noted that data matching procedures often create more problems than they solve. Sometimes the researcher cannot find suitable matches for some members of the characteristic-present sample. They caution researchers to select the most important variable or variables on which to match.

In this research study, the researcher matched the program participants with non-participants. This research study used the student grade level, student demographic data, and student achievement metrics to identify an academically similar group of non-participants. The researcher chose an equivalent number of non-participant students for the research study.

Instrumentation

The Georgia Milestones assessments were criterion-referenced assessments that provided performance information in four performance levels, depicting students' mastery of state standards in grades 3 – 8 and specific courses at the high school level (Georgia Department of Education, 2019). The purpose of the Georgia Milestones assessments was to measure how well students acquired the knowledge and skills. The assessment results provided to students, teachers, parents, and other stakeholders ensured a consistent and coherent signal of student preparedness for success at the next level regardless of the subject and grade of the test participant. The assessments were fair to all students, including students with disabilities and English language learners.

The Georgia Milestones assessments were first administered during the 2014-2015 school year (Georgia Department of Education, 2019). Since its inception, one main test administration was held during the spring of each school year for the End of Grade test. The End of Grade test was administered to students in grades 3 – 8. Scale

scores were provided for each test, and one of four achievement levels was assigned depending on the scale score. The four achievement levels were Beginning Learning, Developing Learner, Proficient Learner, or Distinguished Learner.

Georgia Milestones assessment scores were reported as scale scores and assigned an achievement level. Each test had its scale score cut score depending on the subject and grade level.

Table 2

End of Grade Scale Score Ranges

Subject	Grade	Beginning Learner Cut Score (L1)	Developing Learner Cut Score (L2)	Proficient Learner Cut Score (L3)	Distinguished Learner Cut Score (L4)
English/ Language Arts	Grade 6	<475	475	525	599
	Grade 7	<475	475	525	592
	Grade 8	<475	475	525	581
Mathematics	Grade 6	<475	475	525	580
	Grade 7	<475	475	525	580
	Grade 8	<475	475	525	579

However, all stakeholders consistently and meaningfully interpret the test results by the achievement level designations. Students were deemed to have met mastery for the current subject or grade level if they earned a scale score corresponding to a Proficient Learner achievement level descriptor.

The Georgia Milestones Assessment System was designed to be administered to students primarily in an electronic format (Georgia Department of Education, 2019). Each main administration of the Georgia Milestones includes two forms administered randomly online. The assessment item types included multiple-choice items in all grades and subjects, technology-enhanced items in all grades and subjects, constructed-response

items in all grades and subjects, and an extended writing task in response to reading passages in English/language arts.

Assessment reliability was important for test designers. A reliable assessment produced similar scores for the same group of students when repeatedly taken (Georgia Department of Education, 2019). The reliability of an assessment excludes testing fatigue or prior memory of the test. Cronbach's alpha reliability coefficient was commonly used to determine assessment reliability (Cronbach, 1951). For items measuring an underlying, one-dimensional trait, coefficient values of 0.90 or higher are considered excellent. The reliability coefficient for each Georgia Milestones assessment used in the research study was at or above 0.90 (Georgia Department of Education, 2019). The only exception was the seventh grade English/Language Arts Form B test which had a coefficient value of 0.89. This suggested that the reliability of the test was sufficient for its intended purpose.

Equally important for test designers was the validity of the assessment. The purpose of test score validation was to validate interpretations of the test scores for particular purposes or use (Georgia Department of Education, 2019). The ongoing process of test score validation did not yield a quantifiable score. Instead, every assessment aspect, from test design to making inferences on the test results provided evidence to support whether the assessment was valid. The Georgia Department of Education and the test vendor maintained a laser-like approach. They focused on collecting evidence that supported the validity of the Georgia Milestones assessment from development to reporting scores.

Independent Variables and Dependent Variables

The research questions posed by this research study will utilize variables that have a cause-and-effect type of relationship. Through this causal-comparative research design, the researcher seeks to find the degree of significance among certain variables (Gall et al., 2007). One feature of a causal-comparative research design is using independent variables that are measured in the form of categories. The categories can be in the form of a nominal scale or an ordinal scale.

The independent variables in the causal-comparative study were at the nominal scale. The most important independent variable in the research study was student participation in the after-school program. Students were able to participate in the after-school program, or they could decline to participate in the after-school program. The students were eligible to participate in the after-school program for one year or multiple years. Additional independent variables included student gender, student race, student grade level, and student socioeconomic status.

The dependent variable in the causal-comparative study was student achievement on the spring Georgia Milestones End of Grade test. Student achievement was examined for the test's English/language arts and mathematics portions.

Data Collections and Analysis

For the after-school program evaluation conducted in this research study, archived after-school participant attendance records for 2018 and 2019 were needed. Additionally, archived Spring 2017, Spring 2018, and Spring 2019 End of Grade test scores were obtained. The Arrowood County Schools Superintendent and the Institutional Review Board at Valdosta State University (Appendix A) approved the research. Arrowood

County Schools provided the researcher with a data file containing student participants in the after-school program and a separate data file that had all students enrolled in the school. The school system redacted student names to maintain student confidentiality. At the conclusion of the data study, all collected data was securely held and accessible only to the researcher for a minimum of three years. At the end of the required time, collected data is destroyed.

Fields included in the data file were student identification number, student gender, student socioeconomic status, and student race for all students who attended the school. Fields included in a separate data file were student identification numbers and the number of days the student attended the after-school program. The researcher could identify and match students between the files using the student identification number. Once the matching was completed, the student identification number provided by the district was deleted and replaced with a random code generated by the researcher.

The researcher used a matching procedure to equate the group of after-school program participants and after-school program non-participants (Gall at al., 2007). Without the matching process, any observed difference between achievement scores could be attributed to the fact that many students opted not to participate in the after-school program rather than differences in gender, race, grade, and socioeconomic status. Two disadvantages of matching were including and matching the subjects using the most important variables and finding suitable matches for members of the treatment group. Additionally, the prior year's achievement data was used to ensure academically similar students were matched when applicable.

Once the student participants in the after-school program were matched with non-participants, all student-level data needed for a comprehensive data analysis was loaded into a separate Excel spreadsheet. The data analysis spreadsheet was uploaded into the Statistical Package for the Social Sciences (SPSS) program (IBM Corporation, 2019).

In SPSS, the researcher used a coding system to identify specific variables. In identifying participation in the after-school program, the researcher assigned a 0 to non-participants and a 1 to program participants. The researcher assigned 2 to female students and 3 to male students. Student race was coded 5 for Black students, 6 for Hispanic students, 8 for Multi-Racial students, and 9 for White students. Socioeconomic status was coded 0 for students who did not receive free- or reduced-price meals at school and 1 for students who received free- and reduced-price meals at school. Student grade levels were coded in the following manner: a 6 was used for Grade 6 students, a 7 was used for Grade 7 students, and an 8 was used for Grade 8 students.

A variety of statistical tools were employed in this study. An independent means *t*-test was used to determine if there was a significant difference between the groups on the two groups' dependent variables. The One-way Analysis of Variance (ANOVA) was used to compare the groups' means to make inferences about the population means. Additionally, descriptive statistics will be used to describe and summarize data.

Descriptive statistics will be used to describe participants' demographic and achievement data. These data included student participation in the after-school program, the number of days the student attended the after-school program, End of Grade test scores in English/language arts and mathematics, student grade level, student gender, student socioeconomic status, and student race.

The *t*-test allowed the researcher to compare the means of the two groups of students (Mertler & Vannatta, 2013; Creswell, 2014). The analysis of variance (ANOVA) allowed the researcher to determine the proportion of variability attributed to each of several components.

For RQ1 and RQ2, a one-way analysis of variance (ANOVA) was used to compare the means of the samples or groups to make inferences about the population means (Mertler & Vannatta, 2013; Creswell, 2014). The ANOVA was used to help the researcher determine the significance among the groups that vary on a single independent variable. This statistical analysis was used because only one independent variable was on two or more groups. The groups must be independent of each other. The ANOVA requires a single dependent variable and a single independent variable.

If there is an effect of our independent variable in the populations, we hope that the effect is evident in the smaller sample from within the population (Myers et al., 2010). This error of variance does not always occur. A well-designed and conducted research study will establish circumstances in which identifying the effect of the independent variable is highly probable. “The detection probability is the concept of statistical power: *Power* is the probability of detecting an effect of an independent variable in an experiment when an effect exists in the population” (p. 14). Several strategies were available to minimize error variance when conducting a research study.

For RQ3 and RQ4, an independent means *t*-test was used to determine a significant difference between the group means on the dependent variable of the two groups (Mertler & Vannatta, 2013; Creswell, 2014). This statistical procedure was conducted considering the statistical assumptions for the *t*-test for independent means:

normality, homogeneity, and independence of observations. The student participants were predetermined based on whether they participated in the school's after-school program or did not participate in the school-based after-school program. Violations of the statistical assumptions would render the statistical results meaningless.

Threats to Internal and External Validity

Patten and Newhart (2017) and Creswell (2014) raised awareness regarding several threats to research validity that may signal concerns regarding interpreting the outcome of the data analysis. In the research study, one major internal threat existed. Student scheduling was an issue that was out of the student's control and the researcher's control. Students were randomly placed in classes during the traditional school day. The after-school program participants and the non-participants had no control over teacher assignments during the school day. The placement of students during the school day in stronger or weaker academic teacher classes may have impacted the achievement scores more than whether the student participated in the school-based after-school program.

External validity threats occur when researchers make inaccurate conclusions and attempt to apply those findings to other situations (Creswell, 2014; Patten and Newhart, 2017). Based on the results, it was difficult to make generalizations about the larger population with confidence due to the behaviors of a smaller sample size. In this case, the researcher was able to identify two threats to external validity. External threats can skew generalization conclusions.

The selection of the after-school and non-participation groups was not random. It could be interpreted that the two groups were not initially the same in all respects related to this research study. Prior academic and personal information was unknown about the

student participants and the non-participants. At the least, we had a subset of students who did not participate in the after-school program offered by the school. However, it was not unreasonable to consider that the non-participant students may have received tutorial assistance from another person or agency. It was difficult for the researcher to examine the impact of this unknown variable.

A significant external threat to this research study was time. This research study used archival achievement data collected during the 2017-2018 school year. Researchers from Northwest Evaluation Association (NWEA) used the results from the MAP Growth test administered during the school closures in Spring 2020 compared to prior years (Sawchuk & Sparks, 2020). The NWEA researchers noted no difference in reading gains. However, the researchers noted a five to ten percentile point decrease in math. Teachers were tasked with addressing the unfinished learning students experienced during the 2019-2020 school year while ensuring that each student received adequate exposure to the current grade-level content standards. Therefore, the findings of this study should only be interpreted in the context of student learning before the COVID-19 pandemic.

Ethical Considerations

Archival data were used in the research study. The risk to the participants was minimal due to the focus on whether student participation in an after-school program produced higher achievement compared to the students who did not participate in the after-school program. The researcher used pseudonyms for the school system and the individual school in the study. Permission was obtained from the Valdosta State University Institutional Review Board (Appendix A) and the Arrowood County Board of

Education Superintendent. Once permission to use the school system's data was obtained, safeguards were put in place to protect the data and maintain confidentiality.

Summary

This research study included the research design, participants, the instrument, and the statistical procedures used. Chapter 3 described the research methodology used during the research study. The threats to validity were also discussed. Chapter 4 contains the response to each research question and a thorough explanation of the data analysis used to answer each research question. A summary of the research study, including implications and future research, is provided in Chapter 5.

Chapter IV

RESULTS AND INTERPRETATION OF FINDINGS

Introduction

The purpose of this study was to determine to what degree significant academic gains occurred in English/language arts and math achievement for students who attended the after-school program compared to the students who did not participate in the after-school program. This study examined the relationship based on gender, grade level, socioeconomic status, and race. The study also examined the significance, if any, of students' participation in the after-school program for one year compared to involvement in the after-school program for multiple years.

The Georgia Milestones assessments were criterion-referenced assessments that provided performance information in four performance levels, depicting students' mastery of state standards in grades 3 – 8 and specific courses at the high school level (Georgia Department of Education, 2019). The data were analyzed using the Statistical Package for Social Sciences (SPSS) software. The data were matched with student participation in the after-school program.

The data collection protocols outlined in Chapter 3 were used to obtain and conduct the following statistical analyses. This chapter provides the quantitative data analysis procedures for each research question. By addressing each research question, descriptive data, relevant statistical assumptions, and statistical results of each analysis are provided.

Participant Description

The after-school program at Polo Road Middle School first operated during the 2017-2018 school year. The program was designed to accommodate students for a minimum of 12 hours per week for 120 days during the school year and 32 hours per week for 16 days during the summer (Arrowood School District, 2017). The program was in session four days a week. Students were included in the sample if they attended the program for more than 30 days during the school year.

The sample group consisted of 177 students that participated in the after-school program during the school year. Individual students were removed from the data analysis if a summative test other than the End of Grade test was taken. Additionally, students belonging to racial subgroups with fewer than 15 students enrolled in the school were deleted from the analysis to protect student confidentiality.

Data Analysis and Findings Instrumentation

Research Question 1

RQ 1: To what degree, if any, was there a significant difference in the academic achievement of students who participated in the after-school program compared to the students who did not participate in the after-school program in English/language arts on the Georgia Milestones End of Grade test?

Descriptive statistics and the ANOVA were utilized to explore differences between students who participated in the after-school program and students who did not participate in the after-school program. The students who did not participate in the after-school program had a mean scale score of 494.48 ($SD = 44.88$). In contrast, students who participated in the after-school program had a mean scale score of 491.88 ($SD = 45.20$).

Table 3 presents descriptive statistics on the two groups' English/Language Arts End of Grade scale scores.

Table 3

Descriptives for the English/Language Arts End of Grade Scale Score by Participant Participation

Variables	Minimum	Maximum	<i>N</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Non-Participant	376	625	165	494.48	44.88	-0.04	0.12
Participant	392	613	165	491.88	45.20	0.14	-0.10

An ANOVA was used to determine if there was a significant difference between non-participants and participants of the after-school program. Assumptions for the ANOVA include interval-level data, normal distribution, homogeneity of variance, and independence of observations. Statistical considerations were missing data and outliers. There was no missing data, but two outliers were identified (see Figure 1). Outliers were not removed for this analysis because the scale scores were normally distributed as assessed by the Kolmogorov-Smirnov (KS) test.

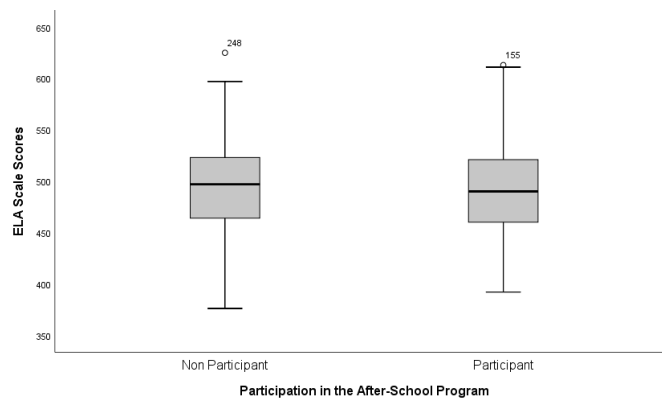


Figure 1. Boxplot of mean scale scores of non-participants and participants on the English/Language Arts End of Grade test.

Data were on the interval level, and independence of observations was assumed. Normality was assessed by examining histograms, Q-Q plots, skewness and kurtosis values (within the range of ± 1), and the Kolmogorov-Smirnov (KS) test. English/language arts scale scores were normally distributed for the participants and the non-participants, as assessed by Kolmogorov-Smirnov (KS) test ($p = 0.200$). There was homogeneity of variances, as assessed by Levene's test for equality of variances ($p = 0.882$). Equal variances are present in the scale scores, and there was no violation of the assumption of homogeneity of variances.

Due to the homogeneity of variances, the interpretation of the standard one-way ANOVA and its significance was possible. The ANOVA results revealed no significant difference in the mean English/language arts scale scores for the non-participants and participants of the after-school program, $F(1, 328) = 0.276, p = 0.600$. This translates to no statistically significant differences between the group means. The effect size (partial $\eta^2 = 0.001$) suggested a small practical significance between non-participants and participants

The first research question in this study sought to determine to what degree significant differences existed among non-participants and participants of the after-school program on the English/Language Arts End of Grade test. After determining that no statistically significant differences were found between the mean scale score of the non-participants and participants of the after-school program, the researcher sought to determine to what degree, if any, was there a significant difference in the dependent variable based on various independent variables. A separate one-way ANOVA was conducted to examine the significance between the English/language arts scale scores

and the grade level, race, gender, and socioeconomic status of students that participated in the after-school program.

For the grade level analysis, a normal distribution was assessed and confirmed by examining, Q-Q plots, skewness and kurtosis values (within the range of ± 1), and the Kolmogorov-Smirnov (KS) test. Equal variances are not present in the scale scores as the homogeneity of variances was violated, as assessed by Levene's test for equality of variances ($p = 0.002$). Since the homogeneity of variances violated, the standard one-way ANOVA cannot be used. A modified version of the ANOVA, the Welch ANOVA, was used. The mean scale score of after-school participants was statistically significant for the grade levels, Welch's $F(2, 104.330) = 4.884, p = 0.009$. Games-Howell's post hoc analysis revealed that the 8th grade students' mean scale score was statistically significant ($p < 0.05$) compared to the 7th grade students' mean scale score. Table 4 shows each grade level's group size, mean scale score, and standard deviation.

Table 4

Descriptives for the After-School Participants in English/Language Arts End of Grade Scale Score: Grade Level

Variables	<i>N</i>	<i>M</i>	<i>SD</i>
Grade 6	62	488.45	53.881
Grade 7	46	481.33	39.772
Grade 8	57	504.12	35.949

Normality was assessed for the students' race analysis using the Kolmogorov-Smirnov (KS) test. The mean scale score and standard deviation for each racial subgroup included in the analysis are located in Table 5. The scale scores for Black, Hispanic, and White students were normally distributed. The scale scores for Multi-Racial students were not normally distributed. There was homogeneity of variances in the scale scores, as assessed by Levene's test for equality of variances ($p = 0.801$). The ANOVA results

revealed no significant difference in the mean scale score for Black, Hispanic, Multi-Racial, and White students, $F(3, 161) = 0.182, p = 0.908$. This translates to no statistically significant difference between the group means.

Table 5

Descriptives for the After-School Participants in English/Language Arts End of Grade Scale Score: Student Race

Variables	<i>N</i>	<i>M</i>	<i>SD</i>
Black	79	489.38	47.468
Hispanic	19	492.74	42.362
Multi-Racial	9	498.22	41.937
White	58	494.02	44.285

The Kolmogorov-Smirnov (KS) test was used to confirm the normality of the mean scale score of student participants based on gender. As noted in Table 6, 76 female students and 89 male students participated in the after-school program. The mean scale score and standard deviation of each group are listed. The scale scores contained four outliers the researcher kept in the data analysis. None of the outliers were identified as extreme points in which they were not more than three box lengths away from the edge of the boxplot. Levene's test for equality variances ($p = 0.465$) yielded a not statistically significant difference among the variances based on the mean. However, the ANOVA results revealed a significant difference between the group means of female participants and male participants, $F(1, 163) = 6.306, p = 0.013$.

Table 6

Descriptives for the After-School Participants in English/Language Arts End of Grade Scale Score: Student Gender

Variables	<i>N</i>	<i>M</i>	<i>SD</i>
Female	76	501.29	42.465
Male	89	483.84	46.137

Finally, the scale scores of the English/Language Arts End of Grade test were examined to determine if a student’s socioeconomic status had a significant difference in achievement. Table 7 lists the descriptive statistics for each group. Normality was assessed using the Kolmogorov-Smirnov (KS) test. The normality for the students who were not economically disadvantaged ($p = 0.179$) and those who were economically disadvantaged was not statistically significant. Therefore, a normal distribution existed. The homogeneity of variance based on the means of the two groups ($p = 0.521$) was not statistically significant. The results of the ANOVA revealed that there was not a significant difference in the mean scale scores for the students who were not economically disadvantaged and the economically disadvantaged student participants of the after-school program, $F(1, 163) = 1.381, p = 0.242$. This translates to no statistically significant differences between the group means.

Table 7

Descriptives for the After-School Participants in English/Language Arts End of Grade Scale Score: Socioeconomic Status

Variables	<i>N</i>	<i>M</i>	<i>SD</i>
Not Economically Disadvantaged	20	503.00	41.857
Economically Disadvantaged	145	490.34	45.563

Research Question 2

RQ 2: To what degree, if any, was there a significant difference in the academic achievement of students who participated in the after-school program compared to the students who did not participate in the after-school program in mathematics on the Georgia Milestones End of Grade test?

Descriptive statistics and the ANOVA were utilized to explore differences between students who participated in the after-school program and students who did not

participate in the after-school program. The students who did not participate in the after-school program had a mean scale score of 509.49 ($SD = 35.823$). In contrast, students who participated in the after-school program had a mean scale score of 509.28 ($SD = 37.932$). Table 8 presents descriptive statistics on mathematics scale scores for the two groups.

Table 8

Descriptives for the Mathematics End of Grade Scale Score by Participant Participation

Variables	Minimum	Maximum	<i>N</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Non-Participant	431	596	164	509.49	35.823	0.148	-0.502
Participant	425	637	163	509.28	37.932	0.379	0.755

An ANOVA was used to determine if there was a significant difference between non-participants and participants of the after-school program. Assumptions for the ANOVA include interval-level data, normal distribution, homogeneity of variance, and independence of observations. Statistical considerations are missing data and outliers. There was no missing data, but five outliers were identified (see Figure 2). Outliers were not removed for this analysis because the scale scores were normally distributed as assessed by the Kolmogorov-Smirnov (KS) test.

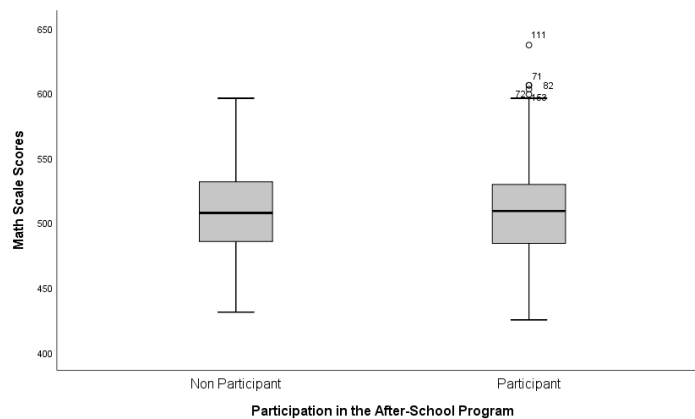


Figure 2. Boxplot of mean Mathematics End of Grade scale scores of non-participants and participants.

Data were on the interval level, and independence of observations was assumed. Normality was assessed by examining histograms, Q-Q plots, skewness and kurtosis values (within the range of ± 1), and the Kolmogorov-Smirnov (KS) test. Mathematics scale scores were normally distributed for the participants and the non-participants, as assessed by Kolmogorov-Smirnov (KS) test ($p = 0.200$). There was homogeneity of variances, as assessed by Levene's test for equality of variances ($p = 0.924$). Equal variances were present in the scale scores, and there was no violation of the assumption of homogeneity of variances.

Due to the homogeneity of variances, the interpretation of the standard one-way ANOVA and its significance is possible. The results of the ANOVA revealed that there was not a significant difference in the mean mathematics scale scores for the non-participants and participants of the after-school program, $F(1, 325) = 0.003, p = 0.959$. This translates to no statistically significant differences between the group means. The effect size (partial $\eta^2 = 0.000$) suggested a small practical significance between non-participants and participants

The second research question in this study sought to determine to what degree significant differences existed among non-participants and participants of the after-school program on the mathematics test. After determining that no statistically significant differences were found between the mean scale score of the non-participants and participants of the after-school program, the researcher sought to determine to what degree, if any, was there a significant difference in the dependent variable based on various independent variables. A separate one-way ANOVA was conducted to examine

the significance between the mathematics scale scores and the grade level, race, gender, and socioeconomic status of students that participated in the after-school program.

For the grade level analysis, normality was assessed by examining, Q-Q plots, skewness, and kurtosis values (within the range of ± 1), and the Kolmogorov-Smirnov (KS) test. Equal variances were not present in the scale scores as the homogeneity of variances was not violated, as assessed by Levene’s test for equality of variances ($p = 0.497$). Since there was no violation of the homogeneity of variances, the standard one-way ANOVA can be used. The mean scale score of after-school participants was not statistically significant among the grade levels, $F(2, 160) = 2.612, p = 0.077$. This translates to no statistically significant difference in the mean scale score among the three grade levels. Table 9 outlines the student enrollment, the mean scale score, and the standard deviation for each grade level.

Table 9

Descriptives for the After-School Participants in Mathematics End of Grade Scale Score: Grade Level

Variables	<i>N</i>	<i>M</i>	<i>SD</i>
Grade 6	62	507.71	38.425
Grade 7	46	501.07	40.059
Grade 8	55	517.93	34.278

Table 10 outlines the student counts, mean scale score, and the standard deviation of the math scale scores. Normality was assessed for the student race analysis using the Kolmogorov-Smirnov (KS) test. The scale scores for Black, Hispanic, Multi-Racial, and White students were normally distributed. Two outliers were identified for Black students with scale scores above the boxplot but not extreme outliers. Similarly, one outlier was identified for Hispanic students below the boxplot. There was homogeneity

of variances in the scale scores, as assessed by Levene’s test for equality of variances ($p = 0.180$). The ANOVA results revealed no significant difference in the mean scale score for Black, Hispanic, Multi-Racial, and White students, $F(3, 159) = 1.009, p = 0.391$.

This translates to no statistically significant difference between the group means on the math test.

Table 10

Descriptives for the After-School Participants in Mathematics End of Grade Scale Score: Student Race

Variables	<i>N</i>	<i>M</i>	<i>SD</i>
Black	77	504.47	39.898
Hispanic	19	510.16	25.561
Multi-Racial	9	522.67	46.575
White	58	513.31	37.145

The Kolmogorov-Smirnov (KS) test was used to confirm the normality of the mean scale score of student participants based on gender. Table 11 shows that 74 female students and 89 male students participated in the after-school program. The scale scores contained six outliers the researcher kept in the data analysis. None of the outliers were identified as extreme points in that the data points were not more than three box lengths away from the edge of the boxplot. Levene’s test for equality variances ($p = 0.039$) yielded a not statistically significant difference among the variances based on the mean. Additionally, the ANOVA results revealed no significant difference between the group means of female participants and male participants, $F(1, 161) = 1.694, p = 0.195$.

Table 11

Descriptives for the After-School Participants in Mathematics End of Grade Scale Score: Student Gender

Variables	<i>N</i>	<i>M</i>	<i>SD</i>
Female	74	513.51	32.700
Male	89	505.76	41.644

Finally, the scale scores of the mathematics test were examined to determine if a student’s socioeconomic status had a significant difference in achievement. Table 12 lists the descriptive statistics for each group. Normality was assessed using the Kolmogorov-Smirnov (KS) test. Normality was not met ($p = 0.018$) for students who were not economically disadvantaged. Normality was met ($p = 0.200$) for the economically disadvantaged student participants, which denoted a normal distribution. The homogeneity of variance based on the means of the two groups ($p = 0.838$) was not statistically significant. The results of the ANOVA revealed that there was not a significant difference in the mean scale scores for the students who were not economically disadvantaged and the economically disadvantaged student participants of the after-school program, $F(1, 161) = 3.453, p = 0.065$. This translates to no statistically significant differences between the group means.

Table 12

Descriptives for the After-School Participants in Mathematics End of Grade Scale Score: Socioeconomic Status

Variables	<i>N</i>	<i>M</i>	<i>SD</i>
Not Economically Disadvantaged	19	524.37	39.448
Economically Disadvantaged	144	507.29	37.416

Research Question 3

RQ 3: To what degree, if any, was there a significant difference for students who attended the after-school program for more than one academic year attaining higher English/language arts scores compared to students who only attended for one year on the Georgia Milestones End of Grade Test?

This statistical analysis required that we examine two variables: years of participation in the after-school program and the English/language arts scale score on the Georgia Milestones End of Grade Test. Sixty-two students participated in the after-school program for only one year. The mean scale score for this group on the English/Language Arts Georgia Milestones End of Grade Test was 499.47. The scale score for this group ranged from a minimum score of 416 to a maximum score of 613. The standard deviation for this group was 43.365.

Twenty-nine students participated in the after-school program for more than one year. The mean scale score for this group on the English/Language Arts Georgia Milestones End of Grade Test was 482.34. The scale score for this group ranged from a minimum score of 396 to a maximum score of 565. The standard deviation for this group was 46.488.

Table 13

Descriptives for the English/Language Arts End of Grade Scale Score by Participant Participation

Variables	Minimum	Maximum	<i>N</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Single Year	416	613	62	499.47	43.365	0.358	-0.315
Multiple Years	396	565	29	482.34	46.488	-0.113	-0.901

The independent means *t*-test was used to examine if a significant difference existed between the number of years a student participated in the after-school program

and the mean scale score on the English/Language Arts Georgia Milestones End of Grade Test. This test was selected to compare the average scale score between the two groups of students on the English/Language Arts Georgia Milestones End of Grade Test. Specific statistical considerations and assumptions must be satisfied to use this parametric test.

Missing data values and outliers are among the statistical considerations when using an independent means *t*-test. Based on the analysis, ninety-one independent samples were included. Sixty-two scale scores were attributed to students who participated in the after-school program for one year, and 29 scale scores were attributed to the students who participated in the after-school program for two years. The data set was filtered based on the student participation rate. The data set did not contain outliers at the lower or the highest scale score ranges.

In addition to the statistical considerations, the independent means *t*-test examined certain assumptions. The statistical assumptions took into account the following: the measurement level of variables, normality, homogeneity of variance, and independence of observations. The participation rate of student students in the after-school program was a nominal level variable, and the scale score on the English/Language Arts Georgia Milestones End of Grade Test was an interval level variable. The skewness values for single-year and multiple-year participants were 0.358 and -0.113, respectively. The kurtosis values on the English/Language Arts Georgia Milestones End of Grade Test for single-year and multiple-year participants were -0.315 and -0.901, respectively. Since both the skewness values and kurtosis values were between -1 and 1, this implied that a normal distribution existed. Using Levene's Test for Equality of Variances, $F = 0.445, p$

= 0.506 was not significant at an alpha level of 0.05. Therefore, this indicated the variance was homogeneous between the two groups. The observations were independent because the participation in the after-school program for a single year or multiple years and the mean scale score on the English/Language Arts Georgia Milestones End of Grade Test did not impact each other.

There was not a significant difference in the English/Language Arts Georgia Milestones End of Grade Test mean scale score between the two student groups. Students who attended the after-school program for only one year ($M = 499.47$, $SD = 43.37$) mean scale score was higher than students who attended the after-school program for two years ($M = 482.34$, $SD = 46.49$), $t(89) = 1.715$, $p = 0.090$. Cohen's effect size value ($d = 1.716$) suggested a high practical significance.

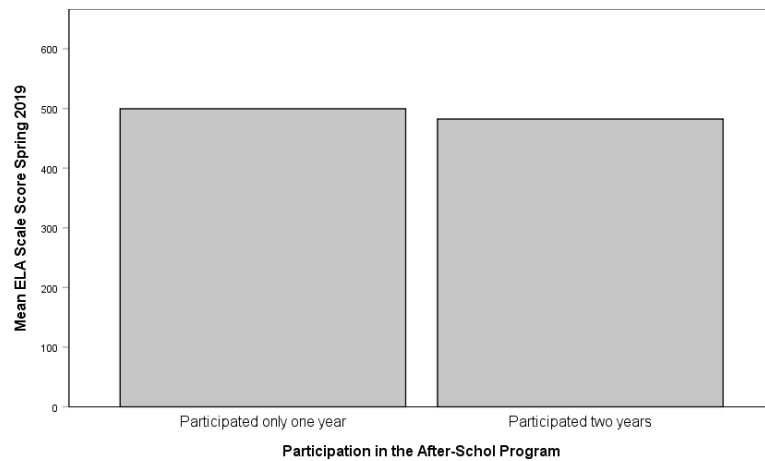


Figure 3. This bar chart shows the mean English/Language Arts End of Grade scale score for students who participated in the after-school program for one year and students who participated in the after-school program for two years.

Research Question 4

RQ 4: To what degree, if any, was there a significant difference for students who attended the after-school program for more than one academic year attaining higher math scores compared to students who only attended for one year on the Georgia Milestones End of Grade test?

This statistical analysis requires that we examine two variables: years of participation in the after-school program and the mathematics scale score on the Georgia Milestones End of Grade Test. Sixty-two students participated in the after-school program for only one year. The mean scale score for this group on the Mathematics Georgia Milestones End of Grade Test was 514.77. The scale score for this group ranged from a minimum score of 425 to a maximum score of 637. The standard deviation for this group was 40.629.

Twenty-nine students participated in the after-school program for more than one year. The mean scale score for this group on the Mathematics Georgia Milestones End of Grade Test was 504.28. The scale score for this group ranged from a minimum score of 425 to a maximum score of 572. The standard deviation for this group was 40.104.

Table 14

Descriptives for the Math End of Grade Scale Score by Participant Participation

Variables	Minimum	Maximum	<i>N</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Single Year	425	637	62	514.77	40.629	0.562	0.770
Multiple Years	425	572	29	504.28	40.104	-0.353	-0.264

The independent means *t*-test was used to examine if a significant difference existed between the number of years a student participated in the after-school program

and the mean scale score on the Mathematics Georgia Milestones End of Grade Test. This test was selected to compare the average scale score between the two groups of students on the Mathematics Georgia Milestones End of Grade Test. Specific statistical considerations and assumptions must be satisfied to use this parametric test.

Statistical considerations take into account missing data values and outliers. Based on the analysis, 91 independent samples were included. Sixty-two scale scores were attributed to students who participated in the after-school program for one year, and 29 scale scores were attributed to the students who participated in the after-school program for two years. The data set was filtered based on the student participation rate. The data set did not contain outliers below the outlier lower scale score range or above the outlier highest scale score range.

In addition to the statistical considerations, the independent means *t*-test examined certain assumptions. The statistical assumptions took into account the following: the measurement level of variables, normality, homogeneity of variance, and independence of observations. The participation rate of student students in the after-school program was a nominal level variable, and the scale score on the Mathematics Georgia Milestones End of Grade Test was an interval level variable. The skewness values for single-year and multiple-year participants were 0.562 and -0.353, respectively. The kurtosis values on the Mathematics Georgia Milestones End of Grade Test for single-year and multiple-year participants were 0.770 and -0.264, respectively. Since both the skewness values and kurtosis values were between -1 and 1, this implied that a normal distribution exists. Using Levene's Test for Equality of Variances, $F = 0.058$, $p = 0.810$ was not significant at an alpha level of 0.05. Therefore, this indicates the variance was homogeneous

between the two groups. The observations were independent because the participation in the after-school program for a single year or multiple years and the mean scale score on the Mathematics Georgia Milestones End of Grade Test did not impact each other.

There was not a significant difference in the Mathematics Georgia Milestones End of Grade Test mean scale score between the two student groups. Students who attended the after-school program for only one year ($M = 514.77$, $SD = 400.63$) mean scale score was higher than students who attended the after-school program for two years ($M = 504.28$, $SD = 40.10$), $t(89) = 1.153$, $p = 0.252$. Cohen's effect size value ($d = 1.152$) suggested a high practical significance.

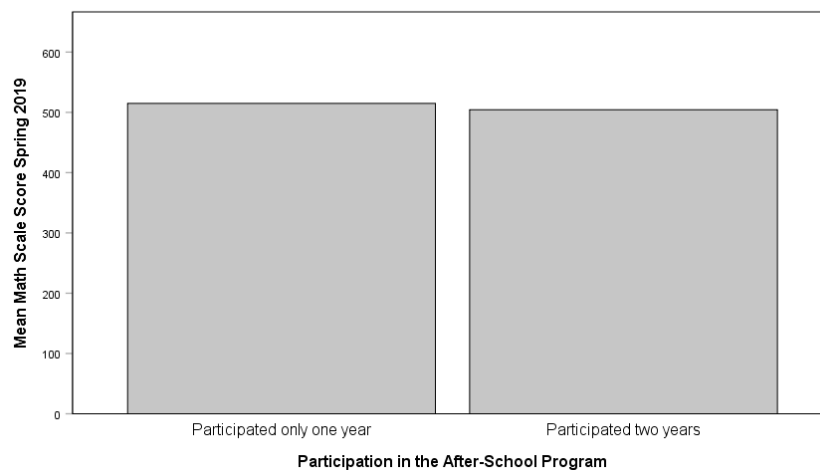


Figure 4. This bar chart shows the mean Mathematics End of Grade scale score for students who participated in the after-school program for one year and students who participated in the after-school program for two years.

Summary

Data analysis and findings of the research study were presented in Chapter 4. There was not a statistically significant difference in the academic achievement of students who participated in the after-school program compared to students who did not

participate in the after-school program on the English/language arts test. Additionally, there was no statistically significant difference between the two groups in math.

The researcher analyzed the data set by additional independent variables and discovered two significant findings. A statistically significant difference was noted between 7th grade student performance and 8th grade student performance on the English/language arts test. Additionally, there was a statistically significant difference in the mean scale scores between female students and male students on the English/language arts test.

Finally, no statistically significant differences were noted based on whether a student participated in the after-school program for one year or two years. That held true for the English/language arts and mathematics tests. Chapter 5 will provide a summary, implications, and a conclusion to the research study.

Chapter V

SUMMARY AND DISCUSSION

The No Child Left Behind Act (NCLB) of 2001 was signed into law to ensure that all students demonstrate yearly math and reading progress no later than the 2013-2014 school year (United States Department of Education, 2003). Additionally, NCLB focused on disaggregating student performance by federally identified subgroups. Subsequently, the school was responsible for ensuring that each subgroup within its student enrollment met the state educational agency's adequate yearly progress benchmarks.

A subsection of the No Child Left Behind Act (NCLB) of 2001 called the 21st Century Community Learning Center (21st CCLC) grants provided financial support for before- and after-school academic programs (Afterschool Alliance, 2013; United States Department of Education, 2003). The NCLB legislation transferred the administration of the grants to the state educational agencies, but the funds still had specific distribution criteria. Not only were the funds available for programs that served economically disadvantaged students, but the program providers were also required to follow specific criteria. The program providers had to develop programs that would help improve academic achievement, address social concerns, and introduce services that would ensure long-term student success.

Afterschool Alliance (2013) reported that parents and community stakeholders supported the need to provide additional funding for after-school programs. After-school programs have increased in popularity over the last few years, especially at the

elementary and middle school levels. Implementing high-quality after-school programs was seen as a means to provide additional academic support to students. The concept originated from filling a fundamental need of newly immigrated families and working parents (Bodilly & Beckett, 2005).

This causal-comparative study aimed to determine to what degree significant academic gains occurred in English/language arts and math achievement for students who attended the after-school program compared to those who did not participate in the after-school program. This study examined the relationship based on gender, grade level, socioeconomic status, and race. The study also examined the significance, if any, of students' participation in the after-school program for one year compared to involvement in the after-school program for multiple years.

This study focused on the academic achievement of students who regularly attended an after-school program compared to those within the same school who did not. The study was guided by the following research questions (RQs):

RQ 1: To what degree, if any, was there a significant difference in the academic achievement of students who participated in the after-school program compared to the students who did not participate in the after-school program in English/language arts on the Georgia Milestones End of Grade test?

RQ 2: To what degree, if any, was there a significant difference in the academic achievement of students who participated in the after-school program compared to the students who did not participate in the after-school program in mathematics on the Georgia Milestones End of Grade test?

RQ 3: To what degree, if any, was there a significant difference for students who attended the after-school program for more than one academic year attaining higher English/language arts scores compared to students who only attended for one year on the Georgia Milestones End of Grade test?

RQ 4: To what degree, if any, was there a significant difference for students who attended the after-school program for more than one academic year attaining higher math scores compared to students who only attended for one year on the Georgia Milestones End of Grade test?

Summary of Related Literature

Prior reports and studies focused on the importance of understanding the academic development of adolescent students (Mertens et al., 2017). Adolescent students' educational needs were unmet as they transitioned from childhood to adulthood. Multiple studies noted the importance of designing an academic program that parallels adolescent students' unique human growth needs. It was vital to create an experience that transitioned students from elementary school while preparing students for the rigors of high school.

Mertens, Caskey, and Flowers (2017) noted the need for a transitional level for students before enrolling in high school. The newly created junior high school model attempted to meet adolescent students' academic and personal development needs. The first junior high schools housed grades seven and eight and provided core educational content in a departmentalized manner, similar to high schools (Weilbacher, 2019).

By the early 1900s, the junior high school concept was the latest educational reform movement (Gruhn and Douglass, 1956). Towns and communities earmarked

additional resources for the reform initiative that fueled its growth. Child development advocates were essential in expanding the junior high school model (Weilbacher, 2019). Although they were operating as a small high school, a list of crucial functions was created to meet adolescent learners' development and academic needs. As a result of the six essential functions, the teacher's role in student learning shifted from disseminating information to actively facilitating learning.

In the 1960s, the focus and the terminology of the junior high school concept shifted to middle school (Weilbacher, 2019). This name change was a deliberate act to dispel the notion that these schools were a lesser version of a high school. Additional organizational changes included introducing interdisciplinary integration of content, academic blocks of instructional time, individualized instruction, and teacher guidance plans (Alexander, 1984). These organizational components proved to be a drastic shift from the original junior high school concept. However, additional services were needed to meet all adolescent learners' needs.

In the same manner, middle schools were designed to meet a specific learning need; after-school programs followed that exact need-based origin. After-school programs were initially designed to meet the needs of newly immigrated who lived in settlement houses (Bodilly & Beckett, 2005). However, as our country evolved and the needs of the families changed, the settlement houses took a more active role in meeting the educational needs of new immigrants. Soon after World War II, as more women were working because men were fighting in the war, the settlement houses provided child-care duties while their mothers were working.

Towards the end of the twentieth century, more women joined the workforce, and the need to find a reliable and safe place for their children grew. As a result of more women in the workforce, it ushered in a new wave of reform and innovation for after-school programs (Blau & Currie, 2003). The demand for low-cost child care services began to increase. Most state and local resources could not keep up with the need to provide cost-effective child care options for working families (Bodilly & Beckett, 2005).

As working families searched for secure, reliable, and cost-effective places for their children after school, many schools sought ways to improve student achievement. Locally designed after-school programs provided opportunities for students to learn, kept students safe and engaged, and supported the needs of families that worked (Afterschool Alliance, 2013). Over 8.5 million students participated in an after-school program in 2009.

Pierce et al., (2013) found that most after-school programs were designed to close an achievement gap. Vandell et al. (2007) discovered that low-income elementary and middle school students showed significant growth in math achievement. Gains in math were noted and directly correlated to student participation in after-school programs. Research by Vandell et al. (2007) established a correlation between high-quality after-school programs and higher academic achievement results for student participants. High-quality programs often had strict participation requirements in place.

Apsler (2009) analyzed the ways researchers tracked program participation. Most after-school programs reported participation by the number of days a student was present any amount of time. Program engagement did not factor into participation rates. In the meta-analysis by Durlak et al. (2010), an exciting trend was noted with after-school

attendance. Durlak et al. (2010) indicated that students who participated in an after-school educational program increased their school-day attendance. The researchers strongly encouraged investigating student engagement during the program's activities.

Measuring engagement was a challenge for after-school program evaluators. Kumar (1991) found that a group of students who appeared busy may not always be engaged in the activities. Kumar defined engagement as students actively participating in the learning by answering questions, taking notes, and participating in class discussions. Hattie (2009) also analyzed the effect size and findings of engagement's impact on student achievement. In his meta-analysis, concentration/engagement had an effect size of $d = 0.48$.

Meaningful student engagement was a by-product of a high-quality program. Durlack and Weissberg (2007) found a positive effect based on a predetermined set of high-quality outcomes in their initial analysis. In 2003, the Forum for Youth Investment reviewed youth program quality statements (Granger et al., 2007). For each core concept, a clear definition was provided to ensure consistency.

The social development component provided an advantage to after-school programs compared to the traditional school day. Pierce et al. (2010) found that program quality practices supported the academic achievement and the social development of after-school programs. Hurd and Deutsch (2017) pointed out that after-school programs could develop broader developmental goals as they focused on students' social-emotional well-being to a greater extent than most traditional schools.

An increasing quantity of research described the benefits of after-school programs. Connell and Gambone (1999) found that after-school programs were

responsible for various academic and social indicators. They noted that after-school programs were essential in helping students meet the academic expectations established during the traditional school day.

The United States Department of Education's (2003) primary purpose of 21st Century Community Learning Center (21st CCLC) Programs was to establish or expand community learning centers with academic enrichment to complement the schools' traditional educational programs. The program was designed to allow local program providers resources to make available opportunities for academic enrichment, youth development activities, and family engagement activities. The after-school programs attempted to target high-poverty areas and where low-performing schools were located.

The current study aimed to determine to what degree significant academic gains occurred in English/language arts and math achievement for students who regularly attended a middle school-level 21st Century Community Learning Center after-school program. Most Federal and state legislative issues overlooked the academic performance of middle school-aged students (Andrews, et al., 2009). The additional funds provided by the 21st Century Community Learning Center grants provided resources to provide additional support to adolescent students beyond the traditional school day.

Overview of the Methodology

This causal-comparative research study focused on a treatment group of students and the control group of students. A matching process was used on the dependent variables to form two similar-sized groups. The treatment in the study is the after-school program that occurred before the start of the study (Fraenkel et al., 2012).

This research study sought to determine if a relationship existed between students who participated in the after-school program compared to students who did not participate in the after-school program. The statistical analyses used archival achievement data matched with after-school program participant data. Group membership was predetermined at the time of the research study. This research study aimed to add to the limited body of work, given that most program evaluations do not focus on statistical significance in interpreting results.

The participants attended a Title I middle school in South Georgia. The middle school implemented an after-school program targeting approximately 16% of its total student population. The after-school program was designed to operate for 30 weeks during the school year and four weeks during the summer.

Archived Georgia Milestones End of Grade Test scores were used in the research study. The Georgia Milestones is a criterion-referenced test administered annually to students in grades 3 – 8 (Georgia Department of Education, 2019). The Georgia Milestones was designed to signal student preparation for success at the next level. The assessment was fair and accessible to all students, including students with disabilities and English language learners.

Once approval was obtained from the Valdosta State University Institutional Review Board and school system officials, the researcher obtained the program participants list and achievement data. The researcher identified the independent and dependent variables and completed the matching process on the dependent variables. Descriptive statistics, *t*-tests, and one-way ANOVA analyses were conducted to

determine the significance. Additional studies were conducted based on student gender, student race, student grade level, and student socioeconomic status.

Summary of Findings

This study took place in a rural middle school in South Georgia. Eight hundred twenty-eight sixth, seventh, and eighth grade students attended the school. Roughly 175 students met the after-school program's attendance requirements during the 2017-2018 and 2018-2019 school years. However, due to subgroup size, the lack of prior test scores, and participation in a different assessment, only 165 after-school program students were included in the following analyses. The primary participants for the research study were students who attended the after-school program during the 2017-2018 and 2018-2019 school years. One hundred sixty-five students who did not participate in the school-based after-school program were the comparison group for this research study.

Research Question 1: To what degree, if any, was there a significant difference in the academic achievement of students who participated in the after-school program compared to the students who did not participate in the after-school program in English/language arts on the Georgia Milestones End of Grade test?

The ANOVA results revealed no statistically significant difference in the mean English/language arts scale scores for the two student group. This finding translates to no statistically significant differences between the non-participants and participants of the after-school program, $F(1, 328) = 0.276, p = 0.600$. The effect size, partial $\eta^2 = 0.001$, suggested a minor practical significance between non-participants and participants.

The researcher sought to determine to what degree there was a significant difference in the dependent variable based on various independent variables. Additional

one-way ANOVA calculations were conducted based on students' grade level, race, gender, and socioeconomic status. Although there were no statistically significance based on student race ($F(3, 161) = 0.182, p = 0.908$) and between socioeconomic groups ($F(1, 163) = 1.381, p = 0.242$), statistically significant findings were noted based on student grade level and student gender.

The mean scale score of after-school participants was statistically significant for the grade levels, Welch's $F(2, 104.330) = 4.884, p = 0.009$. Games-Howell's post hoc analysis revealed that the 8th grade students' mean scale score was statistically significant, $p < 0.05$, compared to the 7th grade students' mean scale score. In addition to the significance of English/language arts scores based on two grade levels, the analysis did find a statistically significant difference based on student gender. The results of the one-way ANOVA of student gender revealed a statistically significant difference between the group means of female participants and male participants, $F(1, 163) = 6.306, p = 0.013$.

Research Question 2: To what degree, if any, was there a significant difference in the academic achievement of students who participated in the after-school program compared to those who did not participate in the after-school program in mathematics on the Georgia Milestones End of Grade test?

The results of the ANOVA revealed that there was not a statistically significant difference in the mean mathematics scale scores for the two student group means. This finding translates to no statistically significant differences between the non-participants and participants of the after-school program, $F(1, 325) = 0.003, p = 0.959$. The effect

size, partial $\eta^2 = 0.000$, suggested a small practical significance between non-participants and participants.

The researcher sought to determine to what degree, if any, was there a significant difference in the dependent variable based on various independent variables.

Additionally, separate one-way ANOVA calculations were conducted based on the grade level, race, gender, and socioeconomic status for students. There were no statistically significant differences based on student grade level ($F(2, 160) = 2.612, p = 0.077$), student race ($F(3, 159) = 1.009, p = 0.391$), student gender ($F(1, 161) = 1.694, p = 0.195$), and socioeconomic groups ($F(1, 161) = 3.453, p = 0.065$).

Research Question 3: Was there a significant difference for students who attended the 21st Century Community Learning Center after-school program for more than one academic year attaining higher English/language arts scores than students who only attended for one year?

There was not a statistically significant difference in the English/Language Arts Georgia Milestones End of Grade Test mean scale score between the two student groups. Students who attended the after-school program for a single year had a mean scale score higher than students who attended the after-school program for multiple years. The t -test results, $t(89) = 1.715, p = 0.090$, proved no statistically significant difference between the two groups. Cohen's effect size value ($d = 1.716$) suggested a high practical significance.

Research Question 4: Was there a significant difference for students who attended the 21st Century Community Learning Center after-school program for more than one academic year attaining higher mathematics scale scores than students who only attended for one year?

There was not a significant difference in the Mathematics Georgia Milestones End of Grade Test mean scale score between the two student groups. Students who attended the after-school program for a single year had a mean scale score higher than students who attended the after-school program for multiple years ($M = 504.28$, $SD = 40.10$). The t -test results, $t(89) = 1.153$, $p = 0.252$, proved no statistically significant difference between the two groups. Cohen's effect size value ($d = 1.152$) suggested a high practical significance.

Discussion

The fundamental purpose of the 21st Century Community Learning Program was to develop a comprehensive support system for students to ensure positive outcomes. The program examined in this study aimed to assist students in thinking about future career preparation and college readiness (Arrowood County Schools, 2017). With the aid of classroom teachers, school support staff, and parents, the school carefully identified students who would benefit from the academic assistance, enrichment, and cultural support the program was designed to offer. This study specifically focused on determining the significance of the academic assistance provided to the program participants compared to the students who did not participate in the program during the traditional school year.

The after-school program was designed to serve students who were struggling academically and needed additional remediation assistance in areas such as study skills, homework help, and test preparation to stay on track, be promoted, and graduate on time. This research study attempted to evaluate the after-school program's overall effectiveness

using the students' English/Language Arts and Mathematics End of Grade test scale scores.

The study's findings show no statistically significant differences in the mean scale scores between the two groups of students. The students who participated in the after-school program had an average mean scale score of fewer than 3 points below the program non-participants on the English/Language Arts End of Grade test. Vandell et al. (2007) found that low-income students showed significant growth in math achievement. Although this research study did not examine the growth of any individual subject, the findings noted that the mean scale score of students who participated in the after-school program was only 0.21 point lower than non-participants.

Pierce et al. (2013) noted student gains in math are directly related to the student's participation in an after-school program. However, based on the analyses conducted at this school. The study did not examine individual scale score comparisons with the prior year's assessments. Additionally, the researcher found that the after-school program did not make a statistically significant difference based on average scale scores in math. So it is unclear to pinpoint if the after-school program or another academic intervention was most impactful on student scale scores.

The additional data analysis showed two factors in which statistically significant results occurred within the scale scores. There were statistically significant findings among seventh grade English/language arts and eighth grade students. The outcomes also showed a statistically significant finding between female and male students on the English/language arts test. Reardon, Fahle, Kalogrides, Podolsky, and Zárate (2019) noted the achievement gap between genders on the English/language arts test. For nearly

10 years, it was well documented that female students outperformed their male counterparts on the middle school English/language arts test.

Although the appearance of closely aligned scale scores is present, given the statistical analysis completed, it was noted that the scale scores were not statistically significant in English/language arts and mathematics. The lack of statistical significance resulted from analyzing two years of achievement scores for the after-school program. These findings are not similar to the conclusion of Lauer et al. (2006) that noted that students who participated in an after-school program showed positive and significant results. Lauer et al. (2006) results were valid, particularly for students in danger of failing reading and math.

The impact of longevity in an after-school program was analyzed to its effects on student achievement. Pierce et al. (2013) noted that locally designed after-school programs improve program participants' academic performance. However, prior relationships and engagement must be addressed uniquely to capture and create the foundation for future successes in after-school programs (Granger, 2010). This research study does not measure student motivation and engagement through achievement test scale scores. Student motivation and engagement impact the results of achievement scores (Westwood Research & Statistical Services, 2017). It is assumed that a direct correlation exists between motivation and achievement and between engagement and achievement.

Hurd and Deutsch (2017) cautioned not to correlate an individual student's attendance with higher achievement in after-school programs. In other words, just because a student attends an after-school program more does not equate to higher

achievement. A separate analysis was conducted to determine a statistically significant difference for students who attended the after-school program for more than one academic year. The study found that in both English/language arts and mathematics, students who participated in the after-school program for multiple years scored lower than students who attended the after-school program for only a single year. The research findings did not show a statistically significant difference in English/language arts and mathematics scale scores..

Limitations

Multiple limitations are present in this research study. Generalizability is the most significant limitation presented in this study. The analyses found in this study would provide helpful insight into other settings with comparable demographics to the school and school system used in this research study. Statistical evidence showed that participation in the after-school program may not have caused increased achievement scores in every instance. A few examples cited in the research study did provide statistical significance in demonstrating no relationship between participating in the after-school program and student achievement.

Another limitation of the research study must consider the student participants. Although the groups lacked randomization for the researcher, school officials had an established profile of an ideal candidate for the after-school program. The program's target audience was students who were not performing to grade-level standards. Therefore, for most students, an achievement gap existed upon enrollment into the after-school program.

A final limitation of the research study was the methodological foundation. The researcher used a causal-comparative design to answer the research questions. This design was selected because the treatment occurred before the start of the research study (Fraenkel et al., 2012). The researcher had no control over the student participants or the intervention received. Another outcome of a causal-comparative study is the relationship between variables. Causation cannot fully be established due to the variables used in the research study (Fraenkel et al., 2012). Other variables may contribute more to the cause and effect of higher achievement scores than those analyzed in the current research study.

Recommendations for Further Research

The results from this research study provide a foundation for recommendations for future studies.

It would be interesting to understand the impact of a daily after-school program on the achievement level of students with disabilities and English learners. Future research studies should include information on other demographic variables, such as Special Education status and English Learner status. Both groups of students have related federal law protections regarding access to the general education curriculum in the least restrictive environment.

This research sought to determine the significance in two areas of the Georgia Milestones End of Grade Test. Another recommendation for a future study would include a qualitative component that would measure the engagement and motivation of students, staff, and parents. Engagement and motivation are components of quality after-school programs that should be integrated into all instructional activities. An area closely related

to engagement and motivation that should be measured is the program's impact on dropout prevention.

Additionally a qualitative study examining parent, student and teacher perceptions of the program's effectiveness may inform continuous program improvement. The study could include the needs of parents and students. This would allow the researcher to go beyond the one-day snapshot of a high stakes summative assessment and consider the affective indicators which are equal important to sustain after-school programs.

Before the COVID-19 pandemic, schools were responsible for overall student achievement and student growth as measured by student growth percentiles. Student growth percentiles measure an individual student's growth relative to academically similar students. During the matching process in the research study, the researcher matched most student participants to a non-participant based on grade, race, gender, and socioeconomic status. A future research study could monitor the student growth percentiles of students who participated in the after-school program against other academically similar peers.

A final recommendation for a future study is to examine the findings of this research study and determine if they still hold following the learning loss associated with COVID-19. Many schools provided virtual instruction a year or two following the March 2020 school shutdown. Additionally, those schools that were in session face-to-face still dealt with the effects of student and staff quarantines associated with COVID-19.

Conclusion

School administrators continue to find ways to provide targeted assistance to groups of students struggling to meet grade-level standards. The increased sanctions due to school accountability lend themselves to requiring administrators to think of innovative ways to meet the needs of the students they serve. Locally designed after-school programs provide students with additional academic support, enrichment, and cultural experiences for long-term growth and maturity (Afterschool Alliance, 2013; Pierce et al., 2013).

The changes in the workforce have required both parents to find employment outside of the home. These shifts in the labor trends make it necessary for parents to find a safe environment that provides adequate support and supervision at the end of the traditional school day (Halpern, 1999). Parents rely on the neighborhood programs to provide adequate adult supervision on days when school is not in session. The need to provide a safe place for children while parents work fueled the demand for after-school programs.

This study aimed to determine if middle school students who participated in the 21st Century Community Schools After-School Program outperformed after-school non-participants on the End of Grade assessments in English/language arts and mathematics. The study compared various student demographics such as race, gender, grade level, and socioeconomic status. Additionally, the study investigated whether students who attended the after-school program for more than one year earned a higher mean scale score in English/language arts and mathematics than students who only participated in the after-school program for one year.

Before completing the data analysis, after-school program participants were matched with academically-similar peers from the prior year. The students were matched based on prior achievement, grade level, race, gender, and socioeconomic status. The matching process created two similar groups to analyze. Program participants who could not be matched with a non-participant were excluded from the analyses.

The current study found no statistically significant difference in English/language arts mean scale scores and mathematics mean scale scores among students who participated in the after-school program and students who did not participate in the after-school program. Further analysis found no statistically significant differences in English/language arts scale scores based on race and socioeconomic status. Also, there were no statistically significant differences in mathematics scale scores based on race, gender, grade, and socioeconomic status. There were no statistically significant differences in English/language arts and mathematics scale scores for students who attended the after-school program for multiple years compared to students who attended the after-school program for only one year.

Only two factors significantly differed in English/language arts mean scale scores. Students in the seventh grade had a lower mean scale score than students in the eighth grade. Also, male students had a lower mean scale score than female students. Again, this finding is consistent with research regarding female student achievement compared to male student achievement in reading and language arts (Reardon et al., 2019).

Overall, the results of the current study found that the 21st Century Community Learning After-School Program showed no statistically significant impact on the academic success of its student participants. However, there were two variables, gender

and grade level, on the English/language arts test where a statistically significant impact was noted. The results found in this study should in no way suggest that the after-school program did not have a positive effect and a positive influence on the lives of the students served.

This study only focused on one aspect of the after-school program regarding student achievement. Other factors and indicators should be considered to determine the after-school program's success. Additional factors may include staff training and parental input in the organization and operation of the program. Student motivation and engagement should be examined to determine their role in student success related to the after-school program.

This study sought to determine statistical significance measured by student achievement scores. Although statistical significance was not found for achievement scores, this may not be completely indicative of the success of the after school program. There may have been other additional benefits for students who participated in the program. Student motivation, student engagement, student discipline, and the after-school's program effect on dropout prevention may impact the overall success of students who participated in this type of program. School leaders should continue to examine the fidelity of implementation of after-school programs, provide continuous professional development for program staff, explore effective after-school program learning models, and monitor the social and academic success of participants.

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APPENDIX A

Valdosta State University Institutional Review Board Protocol Exemption Report



**Institutional Review Board (IRB)
For the Protection of Human Research Participants**

PROTOCOL EXEMPTION REPORT

Protocol Number: [REDACTED]

Responsible Researcher(s): Rodney T. Green

Supervising Faculty: Dr. Donald Leech

Project Title: *An Examination of Student Achievement in a South Georgia 21st Century Community Learning Center.*

INSTITUTIONAL REVIEW BOARD DETERMINATION:

This research protocol is **exempt** from Institutional Review Board (IRB) oversight under 45 CFR 46.101(b) of the federal regulations **category 1**. If the nature of the research changes such that exemption criteria no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research study.

ADDITIONAL COMMENTS:

- *Upon completion of the research study, all collected data (e.g. data set, name lists, email lists, etc.) must be securely maintained and accessible only by the researcher(s) for a minimum of 3 years. At the end of the required time, collected data must be permanently destroyed.*
- *Pseudonym lists and corresponding name lists must be kept in separate, secure files.*

If this box is checked, please submit any documents you revise to the IRB Administrator at irb@valdosta.edu to ensure an updated record of your exemption.

Elizabeth Ann Olphie *04.25.2022*
Elizabeth Ann Olphie, IRB Administrator

*Thank you for submitting an IRB application.
Please direct questions to irb@valdosta.edu or 229-253-2947.*

Revised: 06.02.16