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Supplemental Education Services Regarding Standardized Literacy and Mathematics Proficiency of At-Risk Students

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This is to certify that the doctoral study by

Anthony Riscica

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Walden University
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Abstract

Supplemental Education Services Regarding Standardized Literacy and Mathematics Proficiency of At-Risk Students

by

Anthony Riscica

MA, Manhattan School of Music, 1976

BS, Manhattan School of Music, 1975

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

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October 2021

Abstract

At-risk high school students had low literacy and mathematics proficiency state test scores for the past 6 consecutive years in one suburban public school district in the Northern United States. In 2016, school administrators implemented supplemental education services (SES) to help these students to improve their performance on state tests. The purpose of this quasi-experimental research study was to examine if there was a statistically significant difference in literacy and mathematics state test scores before and after the implementation of SES into the curriculum. The theoretical foundation was Vygotsky's social development theory, which posits students make connections between the teaching environment and their experiences. With a convenience sample $n = 227$ at-risk high school students in Grades 10 and 11 from one suburban public school district, a comparison of 1,362 archived matched literacy and mathematics state scores before and after the implementation of SES was used to determine if there is a statistically significant change using a *t* test. After the implementation of SES, there was a statistically significant increase in the ELA and mathematics state test scores of at-risk students at the research site. The findings of this study may assist high school administrators to continue to use SES to assist at-risk students to reach proficiency on state tests. A positive social change includes the recommendation to continue to use SES at the research site for at-risk students to increase their state test scores in ELA and mathematics for these students to graduate from school and to enroll in postsecondary education, including trade schools and entering the workforce.

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Dedication

I dedicate this doctoral study to my family for having the faith in me to complete this academic journey even with many obstacles and challenges through the years. To my parents Frances and Andy for their guidance and love from above. To my loving wife Janie whose continuous support and questioning of my progress kept me on track. Most of all for my wife's love and for the endless hours she sat alone on the couch. I loved every one of her surprise visits as I sat at my desk with coffee, tea, or a candy bar or two along with a kiss made those lonely times writing alone in my office bearable which rejuvenated my progress with every visit. To my three children, my oldest daughter Janine a loving mother and daughter and the other educator and administrator in my family who often shares her passion for education and the progress of all children with a keen focus on those with special needs and the concerns surrounding their challenges and triumphs. I am very proud of you. My son Anthony who at times is a reflection of myself many years ago as a professional musician who recently graduated with his master's degree from NYU and now assisting young and old with his talent and compassion as a music therapist in NYC and as a percussionist with Blue Man Group. To my baby girl Amanda, a loving mommy who can ask questions that no one else can get to and make sure you know the truth. Her love for me as her dad makes me proud and gets to that little piece of my heart that is clear of any stents and for saving my life. And of course, my three handsome grandsons Patrick (Pal), Vincent (Magoo), and baby Anthony (Partner), thinking of you kids always brings a smile to my face and a rush to my heart of a very special love only a grandparent can feel.

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Chapter 1: Introduction to the Study

According to a senior district administrator at one suburban public school district located in Northern United States, as a means of helping at-risk high school students to meet state requirements for English language arts (ELA) and mathematics, school administrators implemented supplemental education services (SES) into the curriculum in 2016. Additionally, the senior district administrator said that at the research site school, administrators implemented SES for at-risk high school students to improve their proficiency in ELA and mathematics. Prior to the implementation of SES, ELA and mathematics teachers participated in professional development (PD) in the summer of 2016 with SES providers for 2 weeks between 9:00 am and 1:00 pm on how to integrate SES into the curriculum to help at-risk students after school hours to improve their proficiency in ELA and mathematics. The problem was that the change in ELA and mathematics state scores had not been examined since the implementation of SES in 2016. The findings of this study can be used by high school administrators to continue to use SES to assist at-risk students to reach proficiency on state tests.

The United States federal government mandated that school districts demonstrate annual adequate academic achievement demonstrating growth and proficiency for all students in ELA and mathematics in addition to increased graduation rates (Lee, 2016; Maier et al., 2017; Martin et al., 2016). the United States federal government also mandated that states identify school districts that do not demonstrate improved student achievement as measured by the state and as a result a school district could have significant sanctions including when parents are offered the options of school choice or

SES. The local state department of education (LSDOE) reported in 2019 that school districts have the option of reorganizing school staff and administration and closing underperforming schools (see Gorman, 2015). In response to state assessments and federal requirements, many school administrators such as school principals, district supervisors, and directors implement SES to provide students with additional instructional opportunities to improve their achievement to reach proficiency in literacy and mathematics state scores (Walker, 2016**)**. School principals implement SES to focus on students' academic achievement for students to meet school district and state requirements (Reschly & Christenson, 2019). The United States federal government increased the amount of funding to assist school districts with implementing SES (Reschly & Christenson, 2019). In 2019, federal education legislation required states to use standardized assessment data to identify students who did not meet grade-level expectations in ELA literacy and mathematics.

To prevent federal and state-mandated consequences of accountability, school districts implement SES as a form of remediation for students deemed at-risk of not increasing proficiency on state mandated assessments for graduation (Godwin et al., 2016). At-risk students are not meeting the requirements for college and career readiness (Mirpuri & Jimenez, 2019). According to the United States Department of Education (USDOE, 2019), SES is an educational intervention and form of remediation used by school districts to assist students in increasing their proficiency in ELA and mathematics.

Ongoing interest in SES has gained momentum possibly because of the additional instructional opportunities for low-performing schools across the United States

(McMurrer et al., 2015). SES is used to address federal requirements for school improvements and the ability to support students in ELA and mathematics to enhance students' academic success (Mirpuri & Jimenez, 2019; Moffitt, 2016). SES is used in ELA and mathematics as tutoring for small-group instructional (Cohen et al., 2019). SES includes extra time for instruction beyond the regular school day (Mirpuri & Jimenez, 2019). SES offers additional instructional time to students after the regular school day (Midkiff & Cohen-Vogel, 2015). McMurrer et al. (2015) explained that SES focuses primarily on students identified at risk who do not meet the required state scores and benchmarks of academic proficiency in ELA and mathematics.

Students benefit by participating in SES based on the opportunity to spend more time-on-task either in small-group instruction or individually (Godwin et al., 2016). Time-on-task is crucial to instructional success and has been found to be a significant indicator of students' academic achievement across all grade levels (Godwin et al., 2016). SES is research-based instructional support containing teaching strategies for students to increase their academic performance. Thus, Traill (2017) explained that students who enroll in programs beyond the school day that strategically incorporate evidence-based practice showed significant improvement in grades and state test scores.

Background

At the research site, at-risk high school students had low literacy and mathematics proficiency state test scores for 6 consecutive years in one suburban public high school within one school district in the Northern United States, which was the research site. The student population of the high school was approximately 1,000 high school students.

According to the LSDOE website, in 2019, all students at the research study site were required to take the state proficiency tests in ELA and mathematics that were annual state-mandated assessments and pre-requisite for graduation. Students who scored below proficiency were students identified as at risk. These at-risk students, as stated on the local school district website, had been placed in SES to help them to meet state required proficiency standards. According to 2019 board of education meeting minutes on the district website, school district administrators at this site decided to assist high school at-risk students by offering SES as an intervention in the academic year 2016. The district website showed that the objective of the administration and the local board of education was to assist all students in increasing their proficiency in ELA and mathematics with a focus on at-risk students to participate in SES after school hours. SES was made available at the research site to provide at-risk students with the academic support to reach successful academic growth and achievement.

According to 2016 board of education meeting minutes from the accountability office of the local school district, all at-risk students were placed in SES in 2016. In this study, I collected archived ELA and mathematics state test scores for 3 consecutive academic years before the implementation of the SES and 3 consecutive academic years after the implementation of the SES. The archived state test scores in the aforementioned academic subjects represent the same at-risk students whose state test scores in ELA and mathematics were below proficiency levels.

Problem Statement

The research problem was that at-risk students had been scoring below proficiency in ELA and mathematics for the past 6 consecutive academic years. The state proficiency percentages for ELA and mathematics for at-risk students are shown in Table 1. According to the local school district website in 2019, at-risk students participated in SES to help them improve their proficiency in ELA and mathematics starting in 2016.

Table 1

Percentages of At-Risk Students in ELA and Mathematics States Tests

	2013	2014	2015	2016	2017	2018
ELA	70.78%	70.51%	68.17%	68.02%	71.53%	71.95%
Mathematics	68.78%	67.99%	66.11%	66.05%	69.78%	70.35%

Note. Data retrieved from the LSDOE website in 2019.

Purpose of the Study

The purpose of this quasi-experimental research study was to examine the differences in the state scores of at-risk students in ELA and mathematics before and after the implementation of SES into the curriculum (before SES implementation in 2013 – 2015 and after SES implementation in 2016 – 2018). I examined the statistically significant difference of the mean state scores of at-risk students 3 years before and 3 years after the implementation of SES. The dependent variable of this study was the archived ELA and mathematics state scores. The independent variable was the implementation of SES. A comparison of matched ELA and mathematics state scores before and after the implementation of SES was conducted to determine if there was a

statistically significant difference in the state scores using a *t* test for the testing years of 2013 – 2015 before the implementation of SES and 2016 – 2018 after the implementation of SES

Research Questions and Hypotheses

This research study was guided by the following research questions:

Research Question 1 (RQ1): What are the differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

Null Hypothesis ($H_0$1): There are no statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

Alternative Hypothesis (H_a1): There are statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

Research Question 2 (RQ2): What are the differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

Null Hypothesis ($H_0$2): There are no statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

Alternative Hypothesis (H_a2): There are statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

Archived ELA and mathematics state scores were the dependent variable. The independent variable was SES implementation. A comparison of matched ELA and mathematics state scores before (2013 – 2015) and after (2016 – 2018) SES was used to determine if there was a statistically significant difference in the mean state scores using *t* test.

Theoretical Foundation

The theoretical foundation for this study was Vygotsky's social development theory (SDT) where at-risk students make connections between the teaching environment and the use of SES to improve their proficiency in ELA and mathematics local state scores. At the research site, teachers who taught SES classes used SDT to create student-centered learning where students make connections between the teaching environment and their experiences to construct new knowledge. Also, teachers who taught SES classes such as ELA and mathematics curriculum used specific strategies to teach at-risk students by using Vygotsky's (1978) zone of proximal development (ZPD). SES teachers used ZDP to create a learning environment of social interaction through modeling, coaching, and scaffolding for students to improve their knowledge by sharing experiences and learning (see Bandura, 2008). SES teachers used strategies to create meaningful opportunities for learning for at-risk students to relate what they have learned to their

experiences because students set goals, read independently or in small groups, and share and support their peers about different texts (see Bandura, 2008).

Nature of the Study

According to LSDOE in 2019, the research site was one suburban public school district. The student population was approximately 1,000 students of whom 56.1% were European American, 35.5% were African American, 7% were Hispanic, 1.1% were Asian/Pacific Islander, and 0.3% were Native American/Alaskan. Each school had an academic review team headed by principals and assistant principals responsible for ELA and mathematics outcomes. At the research site, there were 256 Grade 9 students, 251 Grade 10 students, 245 Grade 11 students, and 237 Grade 12 students. Approximately 227 were at-risk because of their state test scores in ELA and mathematics. The archived state test scores in ELA and mathematics were from 227 at-risk high school students who participated in SES after school hours.

The use of the online sample size calculator created by Creative Research Systems (2020), with a sample size of 225 students would be acceptable with a 95% confidence level and a confidence interval of .05 (see Appendix). The sample for this research study was 227 high school students. According to the local board of education, in the year 2016, LSDOE recommended the implementation of SES to assist at-risk students to improve their academic performance on the state-mandated standardized assessments required for graduation. Students who participated in SES did not demonstrate proficiency in ELA and mathematics prior to their participation in SES. For example, a state test score between 200 and 250 is the proficient level, a score between

250 and 300 is advanced proficient level, and any student score below 200 is not proficient (McCahill, 2015). Students are determined to be at-risk if they score between 180 and 210 on the local state assessments in ELA and mathematics (McCahill, 2015). At-risk students were placed in SES by the school administration.

Definitions of Key Terms

At-risk students: Disengaged students who demonstrate behaviors that indicate increased potential of academic failure and dropping out of high school (Steinberg & Quinn, 2017). At-risk students may have low scores on standardized tests, poor school attendance, and disciplinary problems, as well as family issues, such as low income and domestic violence (Steinberg & Quinn, 2017).

Extended learning time (ELT): ELT programs are designed to provide additional time to at-risk students for instruction in ELA literacy and mathematics to support academic success (Farbman, 2015). ELT is the lengthening of the school day, school week or school year for all students in a given school to focus on core academic learning and enrichment activities to enhance student success. ELT is designed to assist students by affording additional learning time beyond the traditional school day with the intent of increasing academic achievement and test scores (DiGiacomo et al., 2016).

Every Student Succeeds Act (ESSA): The focus of 2015 ESSA is on statewide assessments used to measure students' progress with outcomes shared with all educational stakeholders. ESSA affords states with the ability to create their own evidence-based interventions as a tool to assist with student achievement and success (USDOE, 2019).

Supplemental educational services (SES): Support services available to students free of charges for individual or small group tutoring after school hours, on weekends, and during summer months (USDOE, 2019). SES helps students in ELA and mathematics in the form of individual and small-group instruction (USDOE, 2019).

Assumptions

All research includes assumptions that the researcher believes to be true. According to Leedy and Ormrod (2019), "Assumptions are so basic that, without them, the research problem itself could not exist" (p. 62). For example, a research assumption is that an identified sample represents the population that will yield the information necessary for the study (Creswell & Creswell, 2017).

In this study, I assumed that the local school district's guidance department provided me with accurate archived state test scores in ELA and mathematics of at-risk students. I assumed that school administrators used state test scores to identify at-risk students. I also assumed that at-risk students participated in SES and that their teachers were state-certified in ELA and mathematics. My assumptions were that the ELA and mathematics teachers were trained to use SES to: (a) integrate the state curriculum for ELA and mathematics during SES, (b) cover the curriculum, and (c) help students to improve their proficiency in ELA and mathematics local state test scores. Another assumption was that students in SES classes were in cohorts with students who had similar ELA and mathematics levels.

Scope and Delimitations

The scope of this research was the state test scores from one school district for at-risk students who participated in ELA and mathematics state tests before and after the implementation of SES. This study was delimited by the experiences of the ELA and mathematics teachers who integrated SES into the curriculum. School administrators developed the class lists of at-risk students and implemented SES. Thus, random sampling was not possible for the purpose of this study.

Limitations

Acknowledging study limitations demonstrates the researcher's understanding of the various factors that could affect the generalizability and application of a study's findings. Limitations are potential weaknesses in a study (see Jager et al., 2017). A limitation of this study was the use of archived state scores of at-risk students. The findings may not be generalizable to a larger population (see Jager et al., 2017).

Significance

The findings of this study may be used by high school administrators to continue to implement SES to assist at-risk students to reach proficiency on state tests. School district administrators can use the findings to make decisions to allocate human and capital resources to continue to integrate SES into the curriculum in all schools. The results of this study can be used by district and school administrators to make decisions regarding SES implementation for at-risk students. The findings of this study may be useful to educators when implementing SES to improve the overall student performance in ELA and mathematics. A positive social change includes a recommendation to use

SES for at-risk students to increase their state test scores in literacy and mathematics for these students to graduate from school and to enroll in postsecondary education, including trade schools and entering the workforce.

Summary

At the research site, at-risk high school students had low literacy and mathematics proficiency state scores for 6 consecutive years in one suburban public school district in the Northern United States. In 2016, school administrators implemented SES to help these students to improve their performance on state tests. SES was integrated into the ELA and mathematics curriculum in 2016, at the research site, to help students improve their proficiency in these subjects. The purpose of this quasi-experimental research study was to examine if there was a statistically significant difference in both literacy and mathematics state scores before and after the implementation of SES into the curriculum. The theoretical foundation was Vygotsky's SDT, which posits students make connections between the teaching environment and their experiences. In Chapter 2, I present the review of the literature on SES. In Chapter 3, I present the methodology, and data collection and analysis. In Chapter 4, I present the findings. In Chapter 5, I conclude the study with a discussion of the findings, an interpretation of the findings, implications of the findings for social change, and recommendations for future research.

Chapter 2: Literature Review

At the research site, at-risk high school students had low literacy and mathematics proficiency state scores between 2013 and 2018 in one suburban public school district located in Northern United States. In 2016 school administrators implemented SES to help these students to improve their proficiency on state tests. The purpose of this quasi-experimental research study was to examine if there was a statistically significant difference in literacy and mathematics state test scores before and after the implementation of SES into the curriculum. Before-school programs and after-school programs are extended learning opportunities for students (McCombs et al., 2020). Programs have been implemented to assist students with supportive learning programs (Fluke, 2018). These programs affect ELA and mathematics state test scores (Yue et al., 2018). Large gains in ELA and mathematics occurred in schools where students received more instruction (Heinrich et al., 2014). In this literature review, I present the literature search strategy, names of databases used to retrieve peer-reviewed articles, the theoretical foundation, and literature review related to key concepts.

Literature Search Strategy

I used the Walden University Library to access online databases regarding SES. The databases were ProQuest, EBSCO, Education Resource Information Center (ERIC), and SAGE Publications. I selected peer-reviewed articles from each database regarding ELT/SES and the effects of SES on at-risk students. The search topics related to the various aspects of time and learning drawing from early research from the early 1900's through 2018 with current literature reviewed between 2015 and 2021. Governmental

information both on the state and federal level are used extensively to define practices, requirements, and funding for supplemental programs. The use of both older and current research from journals, researchers, and organizations demonstrates the methodology, strategies, and knowledge of successful programs and pedagogy.

In this chapter, I review the literature on the theoretical foundation that guides this study and federal educational funding and accountability. I also include in this chapter a review of topics related to ELT/SES such as: (a) ELT, (b) SES, (c) ELT/SES eligibility, (d) the effects of ELT/SES on student achievement, (e) individualized and small-group instruction, (f) state assessments, and (g) at-risk students. Specific key terms I used for this review included: *ELT/SES, at-risk students, federal education acts regarding ELT/SES, No Child Left Behind* (*NCLB), student achievement, ELT, SES, ELA, mathematics, at-risk students, high school students, SES, after-school programs, teaching strategies for at-risk students, state assessments and at-risk students,* and *school principals and at-risk students*.

Theoretical Foundation

Adults have a strong influence on children's cognitive abilities and development as they convey their culture's intellectual means and thoughts that children begin to internalize at a young age (Vygotsky, 1978). Infants are born with basic skills related to elementary mental functions such as attention, sensation, and memory that are shaped and developed with social interaction with family including older children (Vygotsky, 1978). Vygotsky's (1978) SDT and ZPD were the theoretical foundation for this research study. Vygotsky (1978) posited that learning would occur when students are provided with a

supportive learning environment and when students take an active role in their learning process.

At the research site, senior district school administrators expected SES teachers to deliver the same curriculum to at-risk students in the SES program. According to the senior administrator at the research site, course materials in ELA and mathematics were provided to all literacy and mathematics teachers who taught SES courses to help these students to increase their proficiency. Specifically, according to the senior administrator at the research site, at-risk students are supported with opportunities to develop literacy and mathematics skills by the same literacy and mathematics teachers who deliver the same course content to at-risk students who attended SES classes. According to the senior administrator at the research site, district SES courses were designed based on Vygotsky's (1978) SDT. Based on the school district's decision to apply SDT in SES courses, I assumed that SES classes were associated with at-risk students' capacity to improve their proficiency in literacy and mathematics. This assumption along with the tenets of SDT guided the research questions.

SDT is used by SES teachers to help at-risk students to increase proficiency in ELA and mathematics local state test scores by making connections between the teaching SES environment and the curriculum of SES. Teachers who are teaching at-risk students in the SES classes apply SDT to help students to improve their proficiency in both ELA and mathematics by using specific teaching strategies to help students to make connections between what they already know from previous ELA and mathematics classes to learn new literacy and mathematics concepts. For example, ELA and

mathematics teachers who teach curriculum to at-risk students during their SES classes apply SDT to their teaching practices for these students to learn new concepts by creating student-centered learning environment. The focus of applying SDT is on at-risk students to make connections between the SES teaching environment and their previous experiences in both ELA and mathematics to construct new knowledge.

Vygotsky's SDT is based on children's development as a socially embedded process as they acquire their cultural values and problem-solving strategies through collaborative interactions with others who are more knowledgeable such as parents and teachers (Roosevelt, 2008; Vygotsky, 1978). The most important learning by the child occurs through social interaction with a skillful tutor. The tutor may give verbal instructions or model specific steps that Vygotsky (1978) referred to as cooperative or collaborative dialogue (Campbell, 2008; Roosevelt, 2008). In turn the child absorbs the instructions and directions provided by the tutor and begins to implement their understanding to guide their performance. Vygotsky (1978) believed that children are curious and want to be involved in their learning and discoveries, and it is their social surroundings that contribute to their overall development. Overall, Vygotsky's SDT is grounded on the belief that the child's social environment greatly influences their beliefs and how they think in addition to what they think about (Campbell, 2008; Roosevelt, 2008).

Another area related to Vygotsky's SDT is what is called the ZPD, which relates to the difference between what a child can achieve independently and what a child can achieve with the support and guidance of a partner who is already skilled in a specific

area (Vygotsky, 1978). According to Vygotsky (1978), “The importance of cultural and social context for learning. Cognitive development stems from social interactions from guided learning within the ZPD as children and their partner's co-construct knowledge” (p. 1). However, it is important that only a small amount of assistance is needed if teaching in the correct ZDP.

Vygotsky (1978) developed ZPD to account for the learning potential of children. Vygotsky defined the ZPD as “the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peer” (p. 86). ZPD was understood by Vygotsky to describe the current or actual level of development of the learner and the next level attainable through the use of mediating semiotic and environmental tools and capable adult or peer facilitation (Roosevelt, 2008). The idea is that individuals learn best when working together with others during joint collaboration, and it is through such collaborative endeavors with more skilled persons that learners learn and internalize new concepts, psychological tools, and skills (Roosevelt, 2008). Though the concept of ZPD, teachers design instruction and analyze learning of students (Cherry, 2018). Roosevelt (2008) holds that the main goal of education from Vygotskian perspective is to keep learners in their own ZPDs as often as possible by giving them interesting and culturally meaningful learning and problem-solving tasks that are slightly more difficult than what they do alone, such that they will need to work together either with another, more competent peer or with a teacher or adult to finish the task. The idea is that after completing the task jointly, the

learner will likely be able to complete the same task individually next time, and through that process, the learner's ZPD for that particular task will have been raised (Campbell, 2008). SES teachers who teach ELA and mathematics curriculum use Vygotsky's (1978) ZPD and specific teaching strategies to teach at-risk students. ZPD is implemented by SES teachers to create a learning environment of social interaction. Specifically, SES teachers use ZPD to teach a lesson through modeling by illustrating new concepts in mathematics and literacy to at-risk students. These teachers use coaching to help at-risk students understand the curriculum through role playing in literacy and students helping each other to learn mathematics. These teachers also use scaffolding for students to discover new ideas and apply knowledge to master the mathematics and literacy curriculum. According to Bandura (2008), through modeling, coaching, and scaffolding students can learn techniques to improve their knowledge. For example, when SES teachers use modeling, coaching, and scaffolding and encourage students to share experiences then learning is improved (see Bandura, 2008). ELA and mathematics teachers teaching SES classes can use SDT by applying ZPD to create meaningful opportunities for learning literacy and mathematics. When teachers use ZPD, at-risk students can relate what they have learned in previous literacy and mathematics classes and learn new concepts. Thus, at-risk students' prior learning experiences can help these students by setting specific learning goals. For example, in literacy SES classes, at-risk students can read independently or in small groups, and can help their peers by sharing ideas and knowledge. By using this strategy, at-risk students can support their peers about literacy texts (Bandura, 2008).

SES teachers use SDT to create student-centered learning where at-risk students are supported by making connections between the teaching environment and their experiences to construct new knowledge in literacy and mathematics. SES teachers are helping at-risk students to: (a) participate in class discussions, (b) compare their views of literacy and mathematics text, (c) learn from others, and (d) reflect on what these students have learned. For instance, teachers of SES mathematics and literacy classes use specific strategies to synthesize sources on their reading level by asking higher order thinking questions. SES teachers encourage at-risk students to take ownership of their learning and to develop lifelong literacy and mathematics skills.

Teachers of SES classes can help at-risk students to read to decode and to comprehend literacy or mathematics text to develop cognitive skills. SES teachers also help students to become active participants in the reading process. For example, literacy teachers use the SES curriculum and apply specific teaching strategies to teach at-risk students above their current reading ability levels by applying Vygotsky's ZPD. Specifically, SES teachers use modeling, coaching, and scaffolding for at-risk students to improve their knowledge by sharing experiences and learning. SES literacy teachers facilitate the development of cognitive skills by focusing on these teaching strategies where at-risk students are: (a) reading informational text in literacy and mathematics, (b) gathering an understanding of literacy text and mathematical formulas, and (c) using dialogue among peers to help their peers. Thus, SES teachers use SDT to help at-risk students to make connections between the teaching environment and the use of SES curriculum to improve their proficiency in literacy and mathematics.

In conclusion, SES classes are designed based on Vygotsky's SDT. Students who take SES classes are helped by their teachers to build confidence as readers, writers, listeners, and speakers of the knowledge they acquire from understanding the given material at their own pace. SES teachers provide a supportive learning environment to improve students' comprehension through targeted reading, higher order questioning, dialogue, and reflection. SES teachers create meaningful opportunities for learning for at-risk students to relate what they learned to their experiences because these students are taught to set goals, to read independently or in small groups, to share ideas, and to support their peers in the classroom.

Federal Educational Funding and Accountability

Federal Education Acts

The federal government inserted its authority into the education realm in 1965 with the passing of the Elementary and Secondary Education Act (ESEA: Bishop, 2015; Sharp, 2016). The purpose of the 1965 ESEA was to provide federal funding for school districts to implement programs to benefit economically-disadvantaged students to increase their academic abilities of these students (Bishop, 2015). ESEA also provided a way to increase equality in education across the nation and a process to hold school administrators accountable for students' progress. Through its successive reauthorizations by the United States Congress, the purpose of ESEA has remained consistent: to highlight the education inequities among disadvantaged students and their peers (Kim, 2016).

Accountability

The NCLB Act of 2001 was the first reauthorization of ESEA that mandated district and school accountability for students who did not meet state-specific proficiency on annual assessments (Goldhaber & Özek, 2019; Meens & Howe, 2015). The objective of the revision of ESEA in 2001and the enforcement of the accountability provision was to ensure a fair and equal opportunity to achieve educational proficiency on mandated state assessments for students (Haynes, 2015). NCLB mandated assessments for various grade levels in public schools received the most attention (Gross & Hill, 2016). School administrators and teachers assess all students in ELA literacy and mathematics annually by using standardized tests (Gross & Hill, 2016). Administrators and teachers must assess students once a year in science in Grades 3 to 8, and again at the high school level in Grades 10-12 (Gross & Hill, 2016).

An additional requirement for all states, districts, and schools included publicly reporting assessment statistics for all aggregated and disaggregated student subgroups, some of which are listed in the quote above, over 10 students for states, districts, and schools (Schulte & Stevens, 2015). States should ensure all students were testing at a proficient level on state assessments (Gross & Hill, 2016). Resident students in schools that accepted federal Title I funding and did not meet proficiency targets for 2 consecutive years had the choice to enroll in a different school within their own school district if one was available for transfer (Sharp, 2016). According to the LSDOE report in 2019, students in schools who failed to reach proficiency for 3 consecutive years in a row or more received free SES and students had the choice to enroll in a different school

inside or outside their own district. Additionally, schools that continued to not meet proficiency targets for more than 3 consecutive years were subject to corrective measures determined by each state, including the replacement of instructional staff and school administration. Like previous performance-based accountability systems, NCLB culpability rested on multiple premises including: (a) concise terminology and growth targets for preferred outcomes, which includes incentives for students and schools attaining high academic achievement and sanction-based indicators for students and schools in need of improvement; (b) early identification of schools not meeting their improvement targets to indicate the need for assistance and intervention; (c) increased communication of performance information for educators, parents, and other stakeholders to make educationally appropriate decisions of best practice to assist students; and (d) targeted school and district assistance and consequences to ensure school improvement (Sharp, 2016).

Advocates of NCLB argued that accountability measures help to identify specific areas where students and schools need to show improvement and enables all stakeholders to work in collaboration to improve specifically identified areas (Palmisano, 2014). Palmisano (2014) pointed to the fact that supporters agree testing places accountability on states, districts, and schools ensuring all students, including those in subgroups, receive the proper resources and assistance needed for academic success. Regoli (2015) explained that advocates of NCLB passed in 2001 support the higher qualifications required for teachers, and the opportunity for parents to choose another school for their child if their current school is not reaching proficiency. The expectation for NCLB that

was passed in 2001 was that these additional modifications would enable students to have a chance to receive a quality education and that education in general would improve in areas that previously fell behind (Palmisano, 2014). Although failing schools and districts could possibly have a reduction in aid, they were first given the opportunity to offer financial assistance to students not meeting proficiency (Regoli, 2015). The main objective of NCLB was to narrow the achievement gap (Regoli, 2015).

Opponents of NCLB argued that standardized testing is a flawed method of gauging student learning and accountability because it causes teachers to teach to the test with the security of their jobs and their school's funding hinging on student test scores (Palmisano, 2014). In prior research, psychologists and social scientists found that students learn in different ways using different learning styles and varying intelligence stating that some are visual learners and others are kinesthetic learners (Hendrick, 2017a, 2017b; Regoli, 2015). Regoli (2015) explained that there was a belief that teachers would only be teaching towards the test instead of teaching the students the importance and objective of learning.

Literature Review Related to Key Concepts and Variables

Benefits of ELT After-School Programs

After-school programs such as ELT/SES became popular to increase academic achievement for students in elementary through high school during the 1980s (Cassidy et al., 2016). The primary reasons for these programs include preventing negative outcomes for at-risk students and affording them with an opportunity to support academic achievement, keep students away from crime, and increase attendance and positive

engagement within the school (Kremer et al., 2015; Simonton, 2016). These programs have gained significant popularity with an increased demand for both federal and private funding over the last 2 decades (Kremer et al., 2015).The After School Alliance (2009) expanded after school programs for students by supporting the 21st Century Community Learning Centers agenda, which is the only federally funded after school program (Schwanenflugel & Tomporowski, 2017). This program is available through application to communities, cities, and public and private schools or as a consortium of any of these entities (Schwanenflugel & Tomporowski, 2017). Schwanenflugel and Tomporowski (2017) also explained that once applicants receive approval, they must design a program that includes input from parents, school personnel, and other local youth organizations.

Most teachers reported that a multitude of strategies are needed to meet the needs of students (Meador, 2020). The Legislative Finance Committee (2016) found, “Most school districts are not conducting comprehensive quality time analyses to create a culture that values time-on-task” (p. 3) and also added that more time by itself will not increase students’ academic achievement. ELT/SES have been used to increase academic achievement in public schools (Farbman, 2015). Both, at-risk and non-risk students, were found to increase achievement and attain higher course grades as the quantity of ELT and SES instructional time increased (Yue et al., 2018). Farbman (2015) pointed to the fact that ELT/SES can be beneficial to their overall educational mission and for an opportunity to enhance the teaching and learning process.

ELT/SES Programs

Before-school programs and after-school programs are extended learning opportunities for students in K-12 with programs available in group settings or in some cases individualized instruction (McCombs et al., 2020). These programs occur prior to the scheduled school day or after the regular school day and are run by the school and its educators or an outside state-approved provider at the school as a means to offer SES and enhance academic achievement (McCombs et al., 2020). Before-school programs and after-school programs offer ELT/SES and enhance academic achievement with the objective of aiding students to meet specific standards and reach success in school by supporting and supplementing student learning. State approved outside providers are responsible for the overall operation and development of these programs created to assist students identified by the school and district. These programs are often supported by using a combination of financial sources including grants, and in some cases, some type of payment from parents (McCombs et al., 2020). McCombs et al. (2020) acknowledged the fact that programs created to support at-risk students are largely supported by public funding. There are times when involvement by community organizations and charitable programs have implemented these supplemental opportunities to assist children in the community with supportive learning programs (McCombs et al., 2020). Programs have been implemented to assist students with supportive learning programs (Fluke, 2018). McCombs et al. showed that SES supports students' academic success. Walker (2016) shared the fact that several schools in multiple studies showed both pros and cons based on the amount of time ELT/SES is offered.

The Legislative Finance Committee (2016) suggested that enhancing the time used in ELT/SES requires opportunities for teacher collaboration on tutorial methods to assist students in academic subjects (Haynes, 2015). McMurrer et al. (2015) suggested that teacher professional development, planning time, and collaboration are often prioritized over the practice of ELT/SES. High school students who participate in afterschool programs remain engaged in school and demonstrate increased attendance, problem solving skills, and increased scores on standardized testing (Marek et al., 2016). Students who regularly participate in afterschool programs have higher expectations for themselves and are more optimistic about their educational performance and future as young adults (Deutsch et al., 2017; Rinehart & Yamashiro, 2017). Successful afterschool programs use innovative strategies to attract and engage students in their education (Sparks, 2018). These strategies include offering programs that give students the ability to socialize and share common interests with other students in addition to offering support in English language arts literacy and mathematics (National League of Cities, 2020). The National League of Cities (2020) also suggested that programs are designed to prepare students to enter the workforce or continue their education after high school. While many after-school teachers across the country work to tailor their programs to students or to align to local curriculum the collection and review of data including students' academic state scores can prepare teachers with information to customize instructional strategies for students’ needs (Sparks, 2018).

National Conference of State Legislators showed that students who attend quality ELT/SES demonstrate positive educational outcomes, including social and emotional

skills (Fischer, 2019). Fischer (2019) also reported that high school students who have regular attendance in these programs narrow achievement gaps, have higher graduation rates, and reduced participation in risky behavior in and out of school. Afterschool programs have grown substantially in the past 25 years (Deutsch et al., 2017). The ELT/SES programs provide growth in academic development by strengthening critical thinking skills and creating additional opportunities for student engagement beyond the traditional school day (Fischer, 2019).

Benefits of ELT

Kremer et al. (2015), Fischer (2019), McCombs et al. (2020), and the National League of Cities (2020) reported that ELT/SES do demonstrate positive academic outcomes that have shown student academic growth for those who participate in these programs which include: (a) greater academic confidence, (b) improved test scores, and (c) higher graduation rates. The Science of Learning and Development Alliance in collaboration with Moroney (2019) explained that research on afterschool programs facilitate the learning and development of students (Moroney, 2019). Afterschool programs also provide educators with the supports necessary to create and sustain developmentally supportive environments for increasing student academic achievement and growth (Moroney, 2019). Moroney stated that afterschool support programs can engage students in quality ELT/SES instruction as and guidance especially for at-risk youth in high school. The need for regular participation must take place as required with ongoing communication with staff and parents' students will not be able to increase their academic performance.

ELT/SES has a positive effect on ELA and mathematics (Kistner et al., 2017). Students demonstrated positive growth after the implementation of ELT (Kistner et al., 2017). For students experiencing poor academic performance such as at-risk students, ELT/SES may be an effective means in supporting them to achieve academic proficiency (Kistner et al., 2017). Research in the area of ELT/SES indicated that using additional time results in improved student performance and provides additional support for those who are economically disadvantaged as they lag their more affluent peers (Farbman, 2015).

Supplemental Education Services

According to the Washington State Department of Education (2016), SES are a key component of NCLB. NCLB also provided provisions for school choice as another option for families in a failing school. SES are support programs operating after school hours for students attending Title I schools. The objective of SES is to offer services for at-risk students in the areas of ELA and mathematics to improve performance and raise scores on annual state-mandated assessments (Washington State Department of Education, 2016). SES provides additional instruction for students who do not reach a proficient score of at least 200 on state tests and prepares them with the knowledge and skills to reach proficiency. Students must reach proficiency on the state assessment in the areas of ELA and mathematics to meet graduation requirements At-risk students, with the intention to not only assist them academically, but also to increase the overall scores for districts and schools receive.

SES providers may reach out to students and schools to recruit for their programs (Brown, 2016). Yearly evaluations of providers are based on performance, quality, and effectiveness (Brown, 2016). Additional research verifies that most schools measure providers based on rubrics where providers must show documentation of program quality and effectiveness (Brown, 2016).

A review of urban school districts and the effects of SES on student state test scores is relevant to this study (Coyne et al., 2018). According to the LSDOE in 2019, there were approximately 56,000 public schools across the country that used Title I funds for programs to assist at-risk students including supplemental academic improvement opportunities to meet state standards in core academic subjects. After-school can be used to assist with school curriculum.

The LSDOE reported in 2019 that Title I programs in that same school year served more than 26 million children including 58% in Grades K-5, 21% in Grades 6-8, 19% in Grades 9-12, 2% in preschool, and the rest to assist ungraded students. Additionally, according to LSDOE in 2019, schools with 40% or more enrollment of students from low-income families are eligible to use Title I funds to operate schoolwide programs that serve all children in the school to raise the achievement of the lowest-achieving students. As required, SES tutoring services increased for low-income families continuously through the last decade (Buchanan et al., 2019). Many diverse organizations began to offer services with varying rates, curriculums, and tutoring session length (Buchanan et al., 2019).

SES funding is based on each district's Title I allocation, which is determined by the district's free and reduced lunch applications and divided equally among all students identified as economically disadvantaged and eligible for Title I services (USDOE, 2019). Current funding for SES is within the range of $600 to $1,900 per student, which school districts pay to providers offering SES services to their students (Buchanan et al., 2019). Continued research in SES would identify programs that are effective in helping high school students reach proficiency on standardized tests and increase overall academic achievement. Additional work could analyze and determine program quality, performance, and effectiveness since school districts are responsible for the cost of the providers and use up to 20% of Title I funding to support SES programs (Buchanan et al., 2019).

SES Programs

According to the LSDOE in 2019, SES providers must focus on six characteristics of high-quality programs. The six characteristics are: (a) consistent and ongoing instruction, (b) small-groups of 10:1 and smaller, (c) curriculum that is content rich and pertinent to current schoolwork, (d) varied instructional style inclusive of differentiated instruction, (e) independent and group-work targeted on specific skills, and (f) positive relationships among instructors, students, and peers. In addition to these requirements, teachers must receive continuous support and constructive evaluations from their administrators (Buchanan et al., 2019). There have been many areas to consider including the fact that schools are given the challenge to create organized programs that incorporate the collaboration of the community and meet the accountability set forth by federal and

state guidelines for sharing transparency, oversight and positive results in meeting the needs of students (Bingham & Burch, 2017).

To account for the SES provider requirements, Heinrich et al. (2014) developed a standardized observation tool in 2010 to collect information on instructional materials, teaching methods, and the overall impact of different formats and resources. Resources include staffing, curriculum, and the observed level of student engagement (Heinrich et al., 2014; Simonton, 2016). Observations using Heinrich et al.'s tool showed that in 56 SES programs, most instruction is reflected in the form of teacher-directed whole group instruction (Alvarez-Bell et al., 2017). Additional observation reports showed that few instructors had the proper training and the expertise to support students, and that the curriculum and instructional practices did not meet the challenges and needs of students, even if the SES provider did not decline participation of these subgroups. The positive information from these observations showed that instructors were engaged with students in small groups and provided constructive criticism.

SES Attendance and Participation

Little is known regarding the number of eligible students that are not participating in available SES programs offered throughout the United States (Yue et al., 2018). Thirty-two community school districts in New York City showed SES program completion rates ranging between 6% and 61% (Ashby, 2006). A consistent and positive predictor of SES participation is previous participation in the program (Yue et al., 2018). High school students' participation and attendance rates in SES is much lower than that of elementary and middle school students (Yue et al., 2018). SES faced many challenges

including implementation problems (Partelow et al., 2018). SES used most of the funding available through Title I funds, creating a shortfall for other important programs available under Title I (Partelow et al., 2018). The objective of SES is to increase student academic achievement (McCombs et al., 2020). SES providers must create a curriculum and offer content, which aligns with each state's specific learning standards to offer services within that state (Hendrick, 2017a, 2017b).

SES providers do have flexibility in how they design and deliver their instruction, including individual instruction, small-group instruction, technology-based instruction, and online instruction (Chou et al., 2019). The requirements are that instruction must be reflective of scientifically-based research, designed to support student learning and increase academic achievement, and aligned with instruction that takes place during the regular school day (Chou et al., 2019). Eligibility for SES is based on the number of low-income students enrolled in the free and reduced lunch program, which also determines if a school is eligible for Title I funds (USDOE, 2019). SES is available to students attending Title I schools that are in their second year of school improvement and following a corrective action plan to receive SES (USDOE, 2019). Students eligible for services are at-risk students (Yue et al., 2018).

ELT/SES and Student Achievement

Current research indicates mixed results regarding the effects of ELT/SES programs on student state test scores from elementary school through high school (Brown, 2016). Researchers have reported a statistically significant positive effect on ELA and mathematics state test scores (Yue et al., 2018). Researchers shared information

on the limitations of ELT/SES programs, exposing low participation rates and limited services provided for special education students and English language learners (Ander et al., 2016; Bingham & Burch, 2017). The strategies used for ELT/SES vary from school to school and provider to provider and are taking place beyond the school day (Roberts, 2016). The effectiveness of ELT/SES programs depends on the strategies, the types of activities taking place, the resources and communication styles, the methods used to foster relationships between students and educators (Marchetti et al., 2016; Roberts, 2016).

The task of measuring the overall effectiveness of ELT/SES and the efficacy of providers has been challenging for administrators including student performance and school state tests scores data (Bingham & Burch, 2017). According to the LSDOE in 2019, program eligibility is determined by the same data used to determine eligibility for free and reduced lunch programs. The number of hours a student participated in ELT/SES before attributing increased student achievement in their ELA and mathematics scores is used to determine the added value of each additional hour of attendance (Jacob et al., 2015). Larger districts use more advanced evaluation procedures to measure the effects of their programs. Research between 2006 and 2008 identified large gains in ELA and mathematics for students receiving 40 hours and more instruction (Heinrich et al., 2014).

Individualized and Small-group Instruction

Although little research exists on best practices specific to ELT/SES, Morrison et al. (2019) stated that effective high-quality academic programs consist of the following:

- Continued and uninterrupted instruction

- Small student-to-teacher ratio of 10:1 and smaller
- A curriculum that contains in-depth content, differentiated instruction, inclusive of multiple learning styles, and aligned to the regular school-day
- Instructional delivery that focuses on skill development, is engaging and varied to meet the needs of all students independently and collectively
- An environment that fosters supportive and positive relationships between tutors, students, and peers
- Teachers/tutors with content knowledge and pedagogical knowledge offering ongoing support along with meaningful evaluations by administrators including positive and negative feedback.

At-Risk Students

The term at-risk is used by educators and researchers to identify students who do not succeed in the traditional educational programs and schools (Toldson, 2019). The factors to identify at-risk students are often either unknown or beyond the control of the student, caregiver, or educational provider (Toldson, 2019). In 2019, LSDOE reported that at-risk students are identified as students who are approved as eligible for free and reduced meals based on family income. The LSDOE also stated that other factors can and often include students from single parent families, students with failing academic backgrounds, those who are frequently late and absent to school, and students repeating grade and subject levels. At-risk students at the high school level can also demonstrate some or all of the following: failure to achieve academically from as far back as second to fourth grade, have low self-esteem, are not engaged in their school and community,

increased absenteeism, and create friendships and relationships with other lower-achieving students and participate in nonhealthy negative behaviors (Oreopoulos et al., 2017) .

At-risk high school students have limited and no interest in extracurricular activities including athletics and often attend school as their only social outlet (Oreopoulos et al., 2017). There is a specific need to review and search for proven interventions that help at-risk students who consistently perform below their peers on standardized state-mandated assessments (Alessandri et al., 2017; Heppen et al., 2017). Policymakers should invest in ELT/SES for a return of positive outcomes in areas with limited resources (Miksic, 2020; St. Clair & Stone, 2016).

At-Risk Students, Achievement, and ELT/SES

Some students thrive in high school and others face challenges on an almost daily basis (Dupéré et al., 2018). Challenges usually include attendance, behavioral, and academic challenges that students find difficult to overcome without adult intervention (Dupéré et al., 2018). In education, challenged students are at-risk demonstrating disengagement and signs of dropping out of school (Dupéré et al., 2018). Students identified as at risk rarely apply themselves in courses beyond lower level, basic courses required for graduation. At-risk students usually demonstrate low achievement (Matheson, 2015).

Extensive research conducted over 3 decades has primarily focused on how students oversee their learning process and motivation to continue to achieve their expected goals identified as Self-Regulated Learning [SRL] (Matheson, 2015). SRL adds

direction and motivation to academic success (White & DiBenedetto, 2018). The SRL process takes place before any given task and again, after the task is complete in the form of self-reflection (White & DiBenedetto, 2018). Indicators showed that the process of SRL is missing in students who are as at-risk which keeps them from making strides in academic achievement (White & DiBenedetto, 2018).

Differentiated instruction is a strategy used by many educators to address various levels of students' needs and multiple individual learning styles (Aftab, 2015). Differentiated instruction accommodates the needs of all students in the learning process and creates an inclusive environment within each school (Aftab, 2015). Differentiated instruction does not address the low self-esteem that is commonly associated with at-risk students and often is an important factor in poor academic performance (Goddard et al., 2015).

At-risk students tend to be less interested and engaged in school, which often leads to dropping out at higher rates than those students with stable and secure family attachments (Herbers et al., 2017). At-risk students experience problems at school (Cutuli, 2018). Cutuli also explained that at-risk students show higher levels of not meeting proficiency in state scores. The low socioeconomic backgrounds of at-risk students directly correlate to student academic learning gaps (Cutuli, 2018). Cutuli (2018) demonstrated a specific need to identify and implement interventions that help at-risk children who perform below their peers on standardized state-mandated assessments (Michelmore & Dynarski, 2016). Policymakers should acknowledge that the investment

made in ELT/SES is returning positive outcomes for at-risk students (Partelow et al., 2018).

As a means of addressing the multiple challenges that high school at-risk students face, many interventions have been developed including ELT/SES (Deutsch et al., 2017). These programs increase learning time beyond the instruction that students receive during the regular scheduled school day (Bingham & Burch, 2017; Jez & Wassmer, 2015). There is growing evidence that ELT/SES programs assist students with academic achievement (Bingham & Burch, 2017). ELT/SES programs have shown a small but statistically significant effect on student academic achievement including state-mandated tests scores (Bingham & Burch, 2017).

In ELT/SES programs, literacy instruction is delivered by certified teachers and there is a statistically significant positive effect on literacy achievement (Kolbe & O'Reilly, 2017). Haynes (2015) wrote, “Five studies reported that math instruction by certified teachers occurred and found a statistically significant positive effect on math achievement. However, the effects were small” (p. 1). Experiential instruction and giving students hands-on learning and group work yielded positive effects on students’ skills and their self-esteem leading to their overall development (Kolbe & O'Reilly, 2017). The students who benefited most from ELT/SES programs were those who were not performing on grade level and performing below standards particularly true in ELA and mathematics (Kolbe & O'Reilly, 2017).

According to Wagner et al. (2016), academic instruction in ELT/SES programs must be parallel to the instruction taking place during the regular school day for ELT/SES

programs to improve student achievement. ELT/SES programs and schools must share a vision and objective for assisting students on their journey to academic achievement and success in a collaborative manner that is beneficial to the students who need assistance and to the school as an educational community (Wagner et al., 2016). Interventions enable students to share their strengths and learn from each other (Wagner et al., 2016).

According to Maykel and Bray (2020), "Most school-aged youth experience a considerable amount of stress from academic pressures, relationships, and extracurricular commitments" (p. 3). There is a significant negative effect of stressful state on an individual's mental state and wellbeing (Maykel & Bray, 2020). A stressful state can create a negative feeling in the daily lives of students creating a negative day-to-day existence with an effect on their ability to function in and out of school (Maykel & Bray, 2020). Sleek (2017) shared that daily stress also has a negative effect on the human body at the cellular level leading to susceptibility of various illnesses and the potential to advance premature aging. The following strategies create a supportive learning environment that consists of: (a) creating innovative strategies for instruction within the classroom, (b) working with families facing difficulties and implementing transitional supports for students moving in and out of schools, (c) building connections with families to enhance the school community by inviting them to more informative meetings designed to build more parent and teacher relationships based on multiple activities from general assistance to presentations that are relative to them and their children, (d) implementing and sustaining relationships with the overall community to assist with school programs, (e) creating a safe learning environment including social and emotional

support agencies, that may take a proactive approach to behavior issues and multiple awareness programs, and (f) developing connections to outside agencies for areas of assistance including social and emotional support agencies, and access to financial opportunities (Sleek, 2017).

Extended Learning Time

ELT is described as programs offered outside the regularly scheduled school day including before and after school hours as well as during summer breaks (Biddle & Mette, 2016). Farbman (2015) explained that the time students spend actively engaged in the learning process is a strong indicator of student achievement. Increased learning time programs had a statistically significant and substantially important positive effect on the literacy achievement of students performing below academic standards (Haynes, 2015). Haynes also shared that ELT programs for students in suburban school districts had a significant, positive affect in ELA and a small, positive affect in mathematics in rural environments. Farbman found a moderately positive correlation between student performance and time in the classroom.

Mandated SES

Walker (2016) found that schools that offered additional classroom time had higher achievement scores compared to those schools offering a more traditional school schedule. School districts implement ELT/SES throughout the United States (Gewertz, 2019). The educational goal is to increase academic achievement for students who show deficiencies in subjects that each state has selected to include in their assessments (USDOE, 2019). There is no research-based correlation found among ELT, the mandated

implementation of SES, and raised achievement on standardized tests (Gewertz, 2019). The National Commission on Excellence in Education compels schools to adopt rigorous and measurable standards (Gewertz, 2019). States are required to have rigorous standards for ELA, mathematics, and science and students must have the knowledge and skills they need for college and career readiness (Lee, 2017).

The federal government continues to mandate to address student achievement to increase the time students spend learning in the classroom and allows states to design curriculum, choose books and materials and what topics are taught under each subject area (Lee, 2017). Federal funding such as "School Improvement Grants or SIG and Race to the Top" (Farbman, 2015, p. 2) support supplemental learning time for students in order to have a positive impact on student and overall student achievement. ELT is also part of SES, Title I Services, and 21st Century Learning Community Centers (Kolbe & O'Reilly, 2017). School districts may continue offering individual tutoring as an intervention for those students who fail to meet proficiency and as support for other low performing students (USDOE, 2019).

Intervention Services

Intervention services are additional instructional opportunities for eligible students aligned with state standards, which provide academic support during the regular school day (Partelow et al., 2018). Supplemental services may include tutoring, remediation, and SES based on the instructional content that is consistent within districts and its schools. Lopez and Rivera (2015) stated, "Participation in these programs can result in lower dropout rates and better academic performance including better grades and

test scores" (p. 3). As an intervention service, SES programs provide additional academic assistance for those students enrolled in Title I schools and identified as eligible for services (St. Clair & Stone, 2016).

Froiland and Worrell (2017) believed that many school districts expand partnerships with external organizations to increase student learning opportunities outside of the normal school day. Public funding subsidizes these collaborative relationships with external organizations even though they may use private programming (Allu, 2018). The Learning Policy Institute and the National Education Policy Center have described that these community and private organizations have a positive effect, demonstrating gains and improvements in areas of student attendance, academic achievement including high school graduation rates, and reducing the racial and economic achievement gaps (Maier et al., 2017).

According to research by the Institute of Education Sciences (2011) and Schauble (2015), slightly fewer than 700,000 students participated in SES in 2008. In 2010, there were more than 300,000 providers approved for supplemental services across the United States (Brown, 2016). Although ELT and extending the school day is a particularly effective means to support student learning for students not meeting proficiency (Cattaneo et al., 2017), there is evidence that how time is spent is also a key factor in defining outcomes of ELT (McBride et al., 2016). There is limited research on the overall effectiveness of ELT/SES as an intervention and how it relates to state-mandated assessment scores for high school students in ELA and mathematics (Duncan & Murnane, 2016). Students who participate in SES may show increased academic

assessment scores (Duncan & Murnane, 2016). There must be a minimum threshold of instructional time when determining measurable effects on student achievement using only test scores. States should create curriculum promoting college and career readiness for all students in place of imposing mandatory interventions (Lee, 2016).

Policymakers focus on the use and implementation of ELT/SES as a means of improving student academic performance, in ELA and mathematics and attendance (Biag & Castrechini, 2016). With the increased demand on student performance, additional time-on-task assists underachieving students meet the requirements of federal, state, and local mandates is necessary (McMurrer et al., 2015). Dyer (2015) explained that active participation in the classroom and time on task can support student achievement across all grade levels and subject areas. Schools offer SES in the form of aligned and integrated afterschool and summer programs that extend student learning time (Maier et al., 2017). Although ELT delivered as SES is a familiar strategy used by districts and schools to raise student achievement and standardized test scores, more research is needed to examine ELT/SES and its effect on standardized test scores in suburban high schools (Farbman, 2015).

Standardized Test Scores

ELA and mathematics interventions can increase student achievement (Biddle & Mette, 2016). School leaders use ELT/SES to give students extra time and practice academic skills to meet the ongoing demands mandated by policymakers (Farbman, 2015). The research is minimal, limited, and contradictory on the positive effects of

ELT/SES and how it relates to student performance in the content areas of ELA and mathematics for underperforming, at-risk high school students (Roda, 2017).

Researchers from the American Institutes of Research in conjunction with representatives from the Boston Public Schools found that there is a positive effect after reviewing the ELT programs over the first 2 years of implementation (Kistner et al., 2017). The American Institutes of Research also explained that there are positive outcomes for students in ELA and mathematics. Academic growth and higher performance results on content-based assessments must become a primary focus to have a positive effect on suburban high school students who are not proficient according to standardized assessments.

Training on SES

SES should focus on how to implement the SES curriculum (Darling-Hammond et al., 2020; Shakman et al., 2017). To achieve this goal, teachers teaching in SES programs should be receiving training (Schwartz et al., 2018). Garcia et al. (2020) stated that educators benefit from coaching to help students increase state test scores. Schwartz et al. (2018) said that training on high-quality afterschool programs could help students to increase state test scores by at least 12 percentile points. Schueler et al. (2017) wrote that students who participate in SES could receive instruction to increase their state test scores. Schueler et al. wrote that implementing interventions could have significant improvement in the graduation rates of students because students would pass state tests and meet the criteria for graduation. Teachers who teach in SES should provide additional instruction time to students to master the curriculum (Schueler et al., 2017).

Schueler et al. reported that SES programs are used for students to attend classes after school hours to improve their proficiency.

According to Schwartz et al. (2018), the most effective programs use standard-aligned curricula, supplemented with district-developed lessons and activities. According to Schwartz et al., SES should be designed to focus on individualized and high-quality curriculum. Davis and Fullerton (2016) said that afterschool programs should use new media technologies to promote out-of-school learning among high school students by focusing on connecting learning to school contexts. Dougherty (2015) suggested that school district administrators should be seeking funding to improve their student outcomes. School leaders need funding to support curriculum programs such as SES (Dougherty, 2015). According to Vance et al. (2021), school leaders should be seeking funding to implement expanded learning to provide training and technical assistance to local systems and programs such as SES. School districts could receive educational programs together with training and technical assistance to help students graduate from school (Vance et al., 2021). According to the Association of California School Administrators (ACSA; 2020), school leaders should consider expanded learning programs for students.

Summary and Conclusions

In the educational environment standardized, state-mandated testing scores represent not only student scores and achievement but also teacher performance, and are used to determine if teachers are meeting specific targets for student educational proficiency. ELT/SES programs are used as an intervention to help student increase their

state test scores as a school-based intervention for at-risk high school students in ELA and mathematics is an important tool for educators to assist and support at-risk students beyond the regular school day (Deutsch et al., 2017; Lester et al., 2020). Even with the high volume of information collected from state-mandated reports on student achievement there is still a limited number of studies on the effects of ELT/SES on student achievement (Bingham & Burch, 2017). Available research studies contain conflicting results, some which share various levels of growth, and others that show stagnated results with no effect on state test scores and no reduction in the achievement gap (McCombs et al., 2020; Walker, 2016). In Chapter 3, I provide an explanation of the methodology, data collection process, and analysis.

Chapter 3: Research Method

In this chapter, I present the research methodology. I describe the role of the researcher, sampling, sampling procedures, data collection, and data analysis. The purpose of this quasi-experimental research study was to examine if there was statistically significant difference in both literacy and mathematics state test scores before and after the implementation of SES into the curriculum. School district administrators and educators implement strategies to increase student academic performance goals. However, a significant number of schools and districts do not achieve these goals (Duncan & Murnane, 2016). According to the American Institutes for Research, "Increased learning time programs had a statistically significant and substantially important positive effect on the literacy achievement of students performing below standards" (Haynes, 2015, p. 2), which indicates that programs that provide tutoring and other supplemental support such as ELT can be a useful in addressing students' academic achievement. ELT/SES programs have positive effects on math achievement for students in various urban and rural environments. However, there has been little research-based correlation found among ELT/SES, the mandated implementation of SES, closing the achievement gap, and raised achievement on standardized test scores.

Research Design and Rationale

Researchers use quantitative designs to explain the relationships among variables by using quantitative data (Creswell & Creswell, 2017). For this quantitative research, I did not use experimental design because I did not examine the effect or impact of an approach under strict and controlled environment (see Creswell & Creswell, 2017). I used

a non-experimental design to examine the relationship among variables without manipulating the variables (see Shuttleworth, 2008). I did not select a qualitative research approach because the focus of this study was not on examining experiences or perceptions of the participants regarding SES. The quantitative approach was necessary to answer the research questions. A quasi-experimental research study approach was appropriate for this study because I had dependent and independent variables. Archived ELA and mathematics local state test scores were the dependent variable. The independent variable was the years before and after the implementation of SES. Archived state test scores in ELA and mathematics were collected such as matched state scores of students who attended classes, at the research site, between 2013 and 2015 before the implementation of SES and matched state scores of students who attended classes at the research site between 2016 and 2018 after the implementation of SES. State test scores are quantitative data. With a convenience sample of 227 at-risk high school students in Grades 10 and 11 from one suburban public school district, a comparison of 1,362 archived matched ELA and mathematics state test scores before and after the implementation of SES were used to determine if there was a statistically significant change. I examined if there was a significant difference in ELA and mathematics state test scores using a *t* test. A comparison of matched ELA and mathematics local state test scores before and after SES was used to determine if there was a significant change for the testing years of 2013 – 2018.

Role of the Researcher

In this research, I was a novice researcher and collected archived ELA and mathematics local state test scores for at-risk students who attended SES. I had neither an association with the SES implementation nor with the placement of students in SES. All archived state test scores were collected without student identifiers. I was a senior school district administrator for over 20 years. I was a school teacher for over 10 years. As a novice researcher, I established a good working relationship with senior district administrators at the research site who provided the archived state scores after I obtained Institutional Review Board (IRB) approval from both Walden University and the research site.

Methodology

I used a quasi-experimental design. I also collected archived state test scores in ELA and mathematics. In 2016, the DOE recommended the implementation of SES programs to assist at-risk students and improve their academic performance on the state-mandated standardized assessments required for graduation. The local school district implemented SES in 2016 and made it available to at-risk high school students. The provision of support mandated in ELA and mathematics through SES was available to students after school hours. Students who attended SES were those with low state tests scores for not meeting proficiency level in ELA and mathematics. A state test score between 200 and 250 is the proficient level (McCahill, 2015). A score between 250 and 300 is advanced proficient level (McCahill, 2015). Any student score below 200 is not

proficient (McCahill, 2015). Students are determined to be at-risk if they score between 180 and 210 on the local state assessments in ELA and mathematics (McCahill, 2015).

Sampling and Sampling Procedures

The research site was one suburban public school district. According to the LSDOE, in the year 2016 the student population was approximately 1,000 students of whom 56.1% were European American, 35.5% were African American, 7% were Hispanic, 1.1% were Asian/Pacific Islander, and Native American/Alaskan were 0.3%. Each school was headed by principals and assistant principals responsible for ELA and mathematics outcomes. At the research site, there were 256 Grade 9 students, 251 Grade 10 students, 245 Grade 11 students, and 237 Grade 12 students. There were 227 students in Grades 9 and 10 who were considered at-risk because of their state test scores in ELA and mathematics.

The use of the online sample size calculator created by Creative Research Systems (2020), indicated that a sample size of 225 students was acceptable with a 95% confidence level and a confidence interval of .05. The archived state scores in ELA and mathematics were from 227 at-risk high school students from one suburban public school district who participated in SES after school hours. These students were placed in SES program by the school principal in consultation with the guidance counselors, and the input from the school district's child study team such as psychologists, social workers, and other consultants. The state test scores of these students were matched for the years 2013, 2014, 2015, 2016, 2017, and 2018. Thus, a convenience sample of n = 227 at-risk students was used for a comparison of 1,362 state test scores, which is 6 years times 227

students, archived matched ELA and mathematics state tests scores before and after the implementation of SES.

Procedures for Recruitment, Participation, and Data Collection

I obtained IRB approval from Walden University and the research site. I collected archived state tests scores. I did not include in the findings neither the names of the students nor the name of the school district or local state students' IDs. I will keep all archived state test scores in a secure desk in my home office for 5 years.

Treatment

The treatment was SES, which was implemented at the research site in the year 2016 prior to this study. SES was used for students to be in classes with a student-teacher ratio of 1:6. This low student-teacher ratio afforded teachers the time for more individualized instruction and increased student response time. During SES, students developed skills through introduction, guided practice, kinesthetic, and collaborative instruction. Individualized ELA provides time for group discussion and verbal and written interpretation. In addition to teacher instruction, students used online programs such as Study Island and Plato for independent practice and additional skill development. Thus, the treatment was the SES implementation, which was used by ELA and mathematics teachers to support at-risk students for these students to improve their proficiency in those academic subjects. Students who complete SES participate in the state tests in ELA and mathematics.

Archived Data

The archived scores were the state standardized ELA and mathematics state test scores used to measure student academic competencies. According to the LSDOE website in 2019, the state measures of student achievement in ELA and mathematics are conducted in each students' junior year of high school and is a requirement for high school graduation. The state measures are used to identify what students should understand and have knowledge of, and are used to examine performance tasks and procedures that students should be able to do at the end of various benchmark years.

I requested the archived state test scores for the 2013 – 2018 school years in person by meeting with the administrator responsible for research. The district administrator at the research site had the original copies of ELA and mathematics state scores from DOE. The selection criteria for the scores included: (a) matched state test scores of students who attended classes at the research site between 2013 and 2015 before the implementation of SES, (b) matched state test scores of students who attended classes at the research site between 2016 and 2018 after the implementation of SES, (c) matched students participated in state testing in ELA and mathematics between 2013 and 2018, and (d) those who attended SES were taught the same ELA and mathematics curriculum by the same teachers who attended SES training. Each score is represented by three digits.

The state tests scores are stored on my personal computer, which is password protected. All data will be destroyed after 5 years. For each testing year between 2013 and 2018, archived ELA and mathematics scores were analyzed for matched students

who participated in SES using SPSS 24.0 with the level of significance set at $p < .05$ and a confidence level at 95% ($a = .05$).

Instrumentation and Materials

Information about the ELA and mathematics tests was reported on the LSDOE website in 2019. The state test scores in ELA and mathematics are criteria-referenced tests designed to measure students' achievement. State testing includes multiple-choice questions to assess the achievement of students by assessing standards and objectives for mastery. The ELA and mathematics tests consist of questions and each question receives one point for a correct answer. The numerical data for state tests scores are continuous because these scores are between two numbers such as 0 and 900.

According to the LSDOE in 2019, the total number of points individual students accrue constitutes the raw score. The final scale scores result from converted raw scores. The state shares the final scale scores and reports all scores to each school district for every school in ELA and mathematics. The scale scores are the students' calculated final scores. The averaged raters' scores determine the final score for each open-ended question. The students' scores on the multiple-choice and open-ended questions are combined toward the students' final scores in ELA and mathematics. The state test scores on each section of the test range from 100 to 300 and the minimum passing score is 200. To pass the state tests, a student must obtain a score of 200 on each section.

The LSDOE website also provided information about the validity and reliability of the tests. Testing service has established the content validity for the ELA and mathematics test sections by revising test items if necessary and then having specialists

review the questions. Once reviewed, test items are field tested, and evaluators determine eligibility for normal testing conditions. Field-tests ensure validity with Cronbach's alpha between .83 and .88. Reliability of local tests is ensured by aligning the content area being assessed with test items to measure student performance in accordance to the curriculum standards and learning objectives.

This research study was guided by the following research questions:

RQ1: What are the differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

$H_0$1: There are no statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

H_a1: There are statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

Research Question 2 (RQ2): What are the differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

Null Hypothesis ($H_0$2): There are no statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

Alternative Hypothesis (H_a2): There are statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

Archived ELA and mathematics state scores were the dependent variable. The independent variable was SES implementation. A comparison of matched ELA and mathematics state scores before (2013 – 2015) and after (2016 – 2018) SES was used to determine if there was a statistically significant difference in the mean state scores using *t* test.

Data Analysis

The state tests scores were entered into an Excel spreadsheet and then uploaded them to SPSS 24.0. I examined if there was a significant difference in ELA and mathematics state test scores using a *t* test. The overall descriptive statistics such as maximum, minimum, mean, and standard deviation were calculated (see Niles, 2018). Archived state test scores were averaged before the testing years of 2013 – 2015 and after the testing years of 2016 – 2018. I examined if the ELA and mathematics state test scores increased after the implementation of SES and by how many points. Specifically, I examined if there was a significant difference in ELA and mathematics state test scores using a *t* test. A *t* test was used to evaluate whether the means of state test scores in ELA and mathematics for the years of SES implementation such as 2016 – 2018 differed significantly or not from the means of state test scores when SES was not implemented between 2013 and 2015 with a 95% confidence interval.

The *t test* is an appropriate statistical method for this study (see Gravetter & Wallnau, 2014). The *t test* is used to compare means between two and more groups, respectively (Johnson & Christensen, 2019). The *t test* , a parametric test appropriate for interval and ratio data, assumes that the data sampled are normally distributed, has homogeneity of variance, and has independence (Gravetter & Wallnau, 2014). These assumptions were tested prior to running the *t test* and the statistical analysis were adjusted if any of these assumptions were violated. The results of the assumption testing are reported in Chapter 4. Through nonparametric tests, scores are ranked and measured on a scale of 1 to 10 and only data that were nominal or ordinal are included (Gravetter & Wallnau, 2014).

Threats to Validity

Validity and Reliability of the Instrument

The LSDOE tested the state tests scores by using subject matter experts in the literacy and mathematics high school curriculum. The experts provided the LSDOE with results and comments. The experts' feedback was reviewed by officials of the LSDOE to establish the collection of valid results. Based on the feedback from the experts, LSDOE evaluators reviewed the state test items, conducted field tests, and determined the state testing conditions. Thus, the LSDOE testing service has established the content validity for the ELA and mathematics test sections by revising state test items and by having specialists review state test contents.

LSDOE developed, administered, and reported state test scores. The state tests in high school ELA and mathematics are designed to address the subject of validity based

on a technical report prepared by LSDOE. In this technical report, LSDOE reported the validity and reliability of the state tests administered to high school students upon a course completion. The validity of the local state test scores is based on the alignment of the state test assessments. According to LSDOE officials, the field-tests had Cronbach's alpha between .83 and .88. According to LSDOE officials, reliability of the high school literacy and mathematics state tests was ensured by aligning the content area being assessed with test items that measure student performance in accordance to the curriculum standards and learning objectives. The reliability coefficients are given in the technical report of LSDOE and are available at the research site and are based on Cronbach's coefficient alpha measure of internal consistency.

ELA and mathematics state tests are used to assess math, science, social studies, and ELA. ELA and mathematics state tests are the instrument for this study. ELA and mathematics state tests were administered to all students in each academic year at the research site by the school administrators and the teachers. ELA and mathematics state tests scores were collected, compiled, and scored by LSDOE testing service and a summary was given to the district administrator at the research site. The reliability and validity of ELA and mathematics state tests measures have been documented by LSDOE. Thus, LSDOE conducts quality control checks of high school ELA and mathematics state tests and sends the school districts their results. School districts also receive summaries and a report of all student populations from LSDOE Also, the LSDOE conducts the reliability of the state tests by using statistical methods. In conclusion, the validity of the

state tests in high school ELA and mathematics were established by LSDOE officials as qualified, professional content specialists wrote all test items.

Internal and External Validity of Study

Internal and external validity are concepts that reflect whether the results of a study are trustworthy and meaningful. Internal validity reflects the trustworthiness of the relation between the treatment and the outcome of a study such as cause and effect (Yin, 2018). Also, internal validity helps researchers to decide if a treatment provided is the reason for the outcome as well as the dependability of the process and how precisely it was performed (Yin, 2018). Finally, internal validity is a way to consider the confidence level of the study and whether I avoided anything that can make the findings questionable. External validity refers to how general the findings are and if they can be applied to other research sites and settings (Yin, 2018) such as similar groups, including people and situations and times (Creswell & Creswell, 2017). While internal validity relates to how well a study is conducted (e.g., its structure), external validity relates to how applicable the findings are to the real world (Yin, 2018). Both internal and external validity are factors that should be considered prior to designing and implementing a study as both are needed to measure whether the results of the study have meaning (Yin, 2018).

Internal validity of the research design could not be guaranteed because the independent variable was not manipulated (see Yin, 2018). Because at-risk students at the research study were exposed to other variables that existed prior to this study that were out of my control, it is not possible as a novice researcher to be 100% sure that the independent variable in this study caused a change in the dependent variable.

Additionally, there were validity threats with the chosen quasi-experimental research design because I compared the outcomes of current student achievement with past student achievement. I did not control for changes in the SES teaching or teachers, changes in administration, pedagogy, curriculum changes, issues with student behaviors, or how the state tests were administered including any disruptions due to unanticipated events. Thus, a quasi-experimental approach creates the possibility of more internal threats than a true experiment (Yin, 2018)

Ethical Procedures

I received IRB approval from both Walden University (IRB No. 04-30-21-0039755) and the research site. I followed Walden University's IRB guidelines to protect the anonymity of the at-risk students who participated in state assessments in ELA and mathematics. I collected from the research site the state test scores of students who met the selection criteria. I will keep all archived state test scores for 5 years in a secure place. No identifiable information about the participants are presented in the findings. I protected the participants' anonymity and accurately represented their archived state test scores. There were no personal biases because I did not meet with students for interviews and did not collect the scores because the administrator responsible for research at the research sire provided me with the state test scores only for those students who met the selection criteria without using any identifiable information. I believe that the findings may be generalized to other similar school districts offering SES to at-risk students.

Summary

In Chapter 3, I discussed the research methodology used for this study. I used archived state test scores. In this chapter, I described the details of the research design, and data collection and analysis. In Chapter 4, I provide the results of the data analysis.

Chapter 4: Results

In this chapter, I present the data collection and analysis, and the findings of this quasi-experimental study. The research site was one suburban public school district located in the Northern United States. At the research site, the student population was approximately 1,000 students of whom 256 were Grade 9 students, 251 were Grade 10 students, 245 were Grade 11 students, and 237 were Grade 12 students. The sample was 227 students who were at-risk because of their state test scores in ELA and mathematics. These at-risk high school students had low literacy and mathematics proficiency state test scores for the past 6 consecutive years (2013, 2014, 2015, 2016, 2017, and 2018). In 2016 school administrators implemented SES to help at-risk students to improve their proficiency on state tests. The purpose of this quasi-experimental research was to examine if there was a statistically significant difference in ELA and mathematics state test scores before and after the implementation of SES into the curriculum. This research study was guided by the following research questions:

RQ1: What are the differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

$H_0$1: There are no statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

H_a1: There are statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

RQ2: What are the differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

$H_0 2$: There are no statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

$H_a 2$: There are statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

Archived ELA and mathematics state test scores were the dependent variable. I compared matched ELA and mathematics state test scores before and after SES to determine if there was a statistically significant difference in the mean state test scores using a *t* test. Specifically**,** 2013 – 2015 were the academic years before the implementation of SES and 2016 – 2018 were the academic years after the implementation of SES. Thus, the archived state test scores in ELA and mathematics were from 227 at-risk high school students who participated in SES after school hours.

Treatment

A state test score in ELA and mathematics below 200 is not proficient. At the research site, students who scored between 180 and 210 on the local state assessments in

ELA and mathematics were at-risk students. SES was implemented at the research site in 2016 prior to this study to help at-risk students to increase proficiency in ELA and mathematics. The treatment was SES, which was used for at-risk students to be in ELA and mathematics classes after school hours. ELA and mathematics teachers taught the same curriculum to all students at the research site. The SES program, which was offered after school hours had a student-teacher ratio of 1:6. This low student-teacher ratio was used for teachers to allocate more individualized instruction to at-risk students. During SES, students were assisted to develop ELA and mathematics skills through introduction, guided practice, kinesthetic, and collaborative instruction. Thus, SES individualized ELA and mathematics instruction was designed for at-risk students to be taught by ELA and mathematics teachers after school hours for teachers to provide additional time for group discussions and verbal and written interpretations. In addition to teacher instruction, at-risk students used online programs such as Study Island and Plato for independent practice and additional ELA and mathematics skill development. Thus, the treatment was the SES implementation, which was used by ELA and mathematics teachers to support at-risk students for these students to improve their proficiency in ELA and mathematics.

Data Collection

Organization of Data

I requested the archived state test scores for the 2013 – 2018 school years in person by meeting with the administrator responsible for research upon IRB approval from Walden University (# 04-30-21-0039755). The district administrator at the research site had the original copies of ELA and mathematics state test scores from LSDOE. This

district administrator who is responsible for research at the research site used these participant selection criteria: (a) matched state test scores of at-risk students who attended classes at the research site between 2013 and 2015 before the implementation of SES, (b) matched state test scores of at-risk students who attended classes at the research site between 2016 and 2018 after the implementation of SES, (c) matched at-risk students participated in state testing in ELA and mathematics between 2013 and 2018, and (d) students who attended SES and were taught the same ELA and mathematics curriculum by the same teachers who also attended SES training. Based on the participant selection criteria, the same district administrator at the research site responsible for research provided me with the state test scores of at-risk students who participated in SES after school hours. The archived state tests scores that I collected did not include the names of the at-risk students or the name of the school district, names of high schools, or at-risk students' IDs at the district or state level.

The archived state test scores that I collected for this study were the state standardized ELA and mathematics state test scores used to measure student academic competencies. Only archived state test scores were collected. The state tests scores are stored on my personal computer, which is password protected and will be kept in a secure desk in my home office for 5 years. All data will be destroyed after 5 years. I matched the state test scores for the years 2013, 2014, 2015, 2016, 2017, and 2018. Thus, I used a convenience sample of 227 at-risk students for a comparison of 1,362 state test scores (6 years multiplied by 227 students), archived matched ELA and mathematics state tests scores before and after the implementation of SES. I entered these archived matched

ELA and mathematics state tests scores into an Excel spreadsheet for the testing years of 2013, 2014, 2015, 2016, 2017, and 2018. I uploaded data for each testing year to SPSS 24.0.

Description of Participants

As a means of helping at-risk high school students at the research site to meet state requirements for ELA and mathematics, school administrators implemented SES into the curriculum in 2016. ELA and mathematics teachers participated in PD in the summer of 2016 with SES providers on how to integrate SES into the curriculum to help at-risk students after school hours to improve their proficiency in ELA and mathematics. SES was implemented to help at-risk high school students to improve their proficiency in ELA and mathematics. Thus, SES was made available at the research site to at-risk students.

The participants in this study were at-risk students. ELA and mathematics state test scores represent the same at-risk students whose state test scores in ELA and mathematics were below proficiency levels. The participants were required to take ELA and mathematics state tests and were taught by the same ELA and mathematics teachers the same curriculum. The participants in this study were identified as at-risk students by the school administrators because of their low ELA and mathematics state test scores. Thus, for this study, I considered the participants as a single group because they attended the school where SES was implemented.

Instrumentation and Materials

ELA and mathematics state tests are used to assess math and reading/language arts. The instrument for this study was ELA and mathematics state test scores. ELA and mathematics state tests were administered to all students at the research site by the school administrators. ELA and mathematics state tests were collected, compiled, and scored by LSDOE testing providers.

Field-tests ensured the validity of ELA and mathematics state tests with Cronbach's alpha between .83 and .88 (USDOE, 2019). The reliability of ELA and mathematics state tests was ensured by aligning the content area being assessed with test items to measure student performance in accordance with the curriculum standards and learning objectives (USDOE, 2019). LSDOE provided all school districts in the state the ELA and mathematics state test scores. The reliability and validity of ELA and mathematics state test measures have been documented by LSDOE.

LSDOE reported in 2019 that ELA and mathematics state test scores are criteria-referenced tests designed to measure students' achievement. These state tests consist of questions and each question receives one point for a correct answer. The numerical data for state tests scores are continuous meaning between 0 and 300. The final scale scores result from converted raw scores. The state test scores on each section of the test range from 100 to 300 and the minimum passing score is 200. According to LSDOE, to pass the state tests, a student must obtain a score of 200 on each section. Thus, the instrument for this study was archived ELA and mathematics state test scores.

Results

Upon IRB approval, I received from the research site administrator all state test scores for at-risk students who met the selection criteria. I entered into an Excel spreadsheet all ELA and mathematics state test scores. I also uploaded to SPSS 24.0 the same ELA and mathematics state test scores. For each at-risk student, I assigned a unique number to each set of archived ELA and mathematics state test scores. I did not receive students' state IDs to ensure the identities of the participants were protected. I collected archived ELA and mathematics state test scores before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018. I used ELA and mathematics state test scores to examine the statistically significant difference of the mean state scores of at-risk students 3 years before and 3 years after the implementation of SES.

The dependent variable of this study was the archived ELA and mathematics state test scores. The independent variable was the implementation of SES in 2016. I conducted a comparison of matched ELA and mathematics state test scores before and after SES to determine if there was a statistically significant difference in the mean state test scores using a *t* test. For each testing year between 2013 and 2018, archived ELA and mathematics scores were analyzed for matched at-risk students who participated in SES using SPSS 24.0 with the level of significance set at $p < .05$ and a confidence level at 95%.

Research Question 1

The first research question was:

RQ1: What are the differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

$H_0$1: There are no statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

H_a1: There are statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

Descriptive Statistics for ELA Data

The overall mean scores and general descriptive statistics for the ELA data are shown in Table 2. In the academic year 2013 before the implementation of SES, the minimum ELA state test score was 170, the maximum ELA state test score was 727, *M* = 221.54, and *SD* = 73.90. In the academic year 2014, the minimum ELA state test score was 158, the maximum ELA state test score was 688, *M* = 197.84, and *SD* = 70.02. In the academic year 2015, the minimum ELA state test score was 153, the maximum ELA state test score was 349, *M* = 179.33, and *SD* = 65.25.

In the academic year 2016, the minimum ELA state test score was 169, the maximum ELA state test score was 643, *M* = 217.64, and *SD* = 74.12. In the academic year 2017, the minimum ELA state test score was 198, the maximum ELA state test score was 667, *M* = 257.88, and *SD* = 79.98. In the academic year 2018, the minimum ELA

state test score was 239, the maximum ELA state test score was 798, *M* = 310.97, and *SD* = 96.77.

Table 2

Descriptive Statistics for ELA Across 6 Years

Year	Minimum	Maximum	*M*	*SD*
2013	170	727	221.54	73.90
2014	158	688	197.84	70.02
2015	153	349	179.33	65.25
2016	169	643	217.31	74.12
2017	198	667	257.88	79.98
2018	239	798	310.97	96.77

Assumption Testing for ELA Data

Prior to the *t*-test analyses I assessed four assumptions. The variable from which the mean was calculated was the ELA dependent variable, which was a continuous measure, representing an interval. The SES independent variable was a pair of two conditions that the data represented. The first condition was the years 2013 and 2015 before the implementation of SES and the second condition was the years 2016 and 2018 after the implementation of SES. I used SPSS and alpha level of 0.05 for the Shapiro-Wilk test, which was used as a numerical means of assessing data normality to examine the dependent variable, which was a continuous variable. The null hypothesis for the Shapiro-Wilk test was that the ELA state test scores were normally distributed. The Shapiro-Wilk test revealed that final ELA grades of students were normally distributed (Shapiro-Wilk = 0.92 and $p = .617$ before SES was implemented and Shapiro-Wilk = 0.92 and $p = .621$ after SES was implemented). Thus, the Shapiro-Wilk test was not statistically significant before and after SES was implemented. Based on the Shapiro-

Wilk of normality, the difference score in the dependent variable between the two conditions was normally distributed in the population of at-risk students at the research site.

The difference score in the dependent variable between the two conditions was independent of each other. The significance level reflects the normal curve distribution of mean differences of all possible outcomes (Creswell & Creswell, 2017). Each state test score was numeric between a minimum and a maximum value as set forth by LSDOE. Archived ELA state test scores for matched at-risk students who participated in SES were the dependent variable. The numerical data for ELA state tests scores were continuous because these scores were between two numbers such as 0 and 900. The independent variable was the implementation of SES in 2016. The independent variable was a pair of two conditions that the data represent. The first set of numeric data were for the testing years 2013 and 2015. The second set of numeric data were for the testing years 2016 and 2018. The difference archived ELA state test scores in the dependent variable between the two conditions were normally distributed in the population of at-risk students at the research site. Archived ELA state test scores before SES implementation did not have dependency or relationship to archived ELA state test scores after SES implementation.

Data were also analyzed for skewness and kurtosis. In SPSS, skewness and kurtosis are considered acceptable between -2 and +2 for normal distribution (Creswell & Creswell, 2017). Scores for 2013 – 2015 were positively skewed and scores for 2016 – 2018 were negatively skewed (Table 3).

Table 3

ELA State Test Scores in 2013 – 2018

	N	Min	Max	*M*	*SD*	Skewness	Kurtosis
2013 – 2015	227	153	727	199.81	69.96	0.79	-0.63
2016 – 2018	227	169	798	262.41	83.67	-0.65	-0.81

T-test Results for ELA Data

Next, I averaged the data between before the testing years of 2016 – 2018 and after the testing years of 2016 – 2018 (Table 3). The minimum and maximum of ELA state test scores for the years 2013 to 2015 before the implementation of SES were calculated (Table 3). The minimum and maximum of ELA state test scores for the years 2016 to 2018 after the implementation of SES were calculated. A paired sample *t* test is a statistical procedure that researchers use to determine whether the mean difference between two sets of observations is zero (Creswell & Creswell, 2017). For example, in a paired sample *t* test, a researcher can measure the performance of a sample of employees before and after completing a program and analyze the differences using a paired sample *t* test (see Creswell & Creswell, 2017). Thus, a paired-samples *t* test was conducted to evaluate whether the means of ELA state test scores for 3 years (2013 – 2015) before the implementation of SES differed significantly or not from the means of ELA state test scores for 3 years (2016 – 2018) after the implementation of SES.

The *t* test value was $t\ (227) = 35.31$, $p = .002$. The results indicated that the mean ELA state test scores for 3 years (2016 – 2018) after the implementation of SES ($M = 262.41$, $SD = 83.67$) was significantly greater than the mean of ELA state test scores for 3

years (2015-2016) before the implementation of SES (M = 199.81, SD = 69.96) as shown in Table 3. The mean of ELA state test scores for the years 2013 to 2015 before the implementation of SES was M = 199.81. The mean of ELA state test scores for the years 2016 to 2018 after the implementation of SES was M = 262.41 (Table 3). Thus, ELA state test scores increased after the implementation of SES by 62.6 points. After the implementation of SES, there was a statistically significant increase in the ELA state test scores of at-risk students at the research site. The null hypothesis was rejected that there were no statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018. In conclusion, a significant improvement in ELA state test scores of at-risk students occurred after the implementation of SES.

Research Question 2

The second research question was:

RQ2: What are the differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

$H_0$2: There are no statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

H_a2: There are statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

Descriptive Statistics for Mathematics Data

Archived mathematics state test scores were the dependent variable. A comparison of matched mathematics state test scores before and after SES was used to determine if there was a statistically significant difference in the mean state test scores using a *t* test. Specifically**,** 2013 – 2015 were the academic years before the implementation of SES and 2016 – 2018 were the academic years after the implementation of SES. Thus, the archived state test scores in mathematics were from 227 at-risk high school students who participated in SES after school hours. Thus, at-risk students who completed SES and participated in the local state tests in mathematics were the participants of this study. I averaged all mathematics state test scores between before the testing years of 2013 – 2015 and after the testing years of 2016 – 2018 (Table 4). Descriptive statistics were calculated using SPSS 24.0. The overall descriptive statistics are shown in Table 4. The descriptive statistics were calculated for the years 2013, 2014, 2015, 2016, 2017, and 2018.

Table 4

Descriptive Statistics for Mathematics Across 6 Years

Year	Minimum	Maximum	*M*	*SD*
2013	165	707	211.62	77.88
2014	153	666	192.11	75.44
2015	147	339	176.18	62.68
2016	176	623	223.44	78.54
2017	205	678	252.17	78.70
2018	234	792	309.91	94.43

In the academic year 2013, the minimum mathematics state test score was 165, the maximum mathematics state test score was 707, $M = 211.62$, and $SD = 77.88$. In the

academic year 2014, the minimum mathematics state test score was 153, the maximum mathematics state test score was 666, *M* = 192.11, and *SD* = 75.44. In the academic year 2015, the minimum mathematics state test score was 147, the maximum mathematics state test score was 339, *M* = 176.18, and *SD* = 62.68.

In the academic year 2016, the minimum mathematics state test score was 176, the maximum mathematics state test score was 623, *M* = 223.44, and *SD* = 78.54. In the academic year 2017, the minimum mathematics state test score was 205, the maximum mathematics state test score was 678, *M* = 252.17, and *SD* = 78.70. In the academic year 2018, the minimum mathematics state test score was 234, the maximum mathematics state test score was 792, *M* = 309.91, and *SD* = 94.43. The overall mean scores and general descriptive statistics are shown in Table 4.

Assumption Testing for Mathematics Data

Prior to the *t*-test analyses I assessed four assumptions. The variable from which the mean was calculated was the mathematics dependent variable, which was a continuous measure, representing an interval. The SES independent variable was a pair of two conditions that the data represented such the first condition was the years 2013 and 2015 before the implementation of SES and the second condition was the years 2016 and 2018 after the implementation of SES.

I used SPSS and alpha level of 0.05 for the Shapiro-Wilk test, which was used as a numerical means of assessing data normality to examine the dependent variable, which was a continuous variable. The null hypothesis for the Shapiro-Wilk test was that the mathematics state test scores were normally distributed. The Shapiro-Wilk test revealed

that final mathematics grades of students were normally distributed (Shapiro-Wilk = 0.93 and p = .619 before SES was implemented and Shapiro-Wilk = 0.93 and p = .623 after SES was implemented). Thus, the Shapiro-Wilk test was not statistically significant before and after SES was implemented. Based on the Shapiro-Wilk of normality, the difference score in the dependent variable between the two conditions was normally distributed in the population of at-risk students at the research site. The difference score in the dependent variable between the two conditions was independent of each other.

The significance level reflects the normal curve distribution of mean differences of all possible outcomes (Creswell & Creswell, 2017). Each state test score was numeric between a minimum and a maximum value as set forth by LSDOE. Archived mathematics state test scores for matched at-risk students who participated in SES were the dependent variable. The numerical data for mathematics state tests scores were continuous because these scores were between two numbers such as 0 and 900. The independent variable was the implementation of SES in 2016. The independent variable was a pair of two conditions that the data represent. The first set of numeric data were for the testing years 2013 and 2015. The second set of numeric data were for the testing years 2016 and 2018. The difference archived mathematics state test scores in the dependent variable between the two conditions were normally distributed in the population of at-risk students at the research site. Archived mathematics state test scores before SES implementation did not have dependency or relationship to archived mathematics state test scores after SES implementation. Data were also analyzed for skewness and kurtosis. In SPSS, skewness and kurtosis are considered acceptable

between -2 and +2 for normal distribution. Scores for 2013 – 2015 were positively skewed and scores for 2016 – 2018 were negatively skewed (Table 5).

Table 5

Mathematics State Test Scores in 2013 – 2018

	N	Min	Max	*M*	*SD*	Skewness	Kurtosis
2013 – 2015	227	155	721	196.12	69.81	0.77	-0.68
2016 – 2018	227	205	793	260.61	78.33	-0.66	-0.78

T test Results for Mathematics Data

Next, the data were averaged between before the testing years of 2016 – 2018 and after the testing years of 2016 – 2018 (Table 5). The minimum and maximum of mathematics state test scores for the years 2013 to 2015 before the implementation of SES were calculated (Table 5). Also, the minimum and maximum of mathematics state test scores for the years 2016 to 2018 after the implementation of SES were calculated (Table 5).

A paired-samples *t* test was conducted to evaluate whether the means of mathematics state test scores for 3 years (2013 – 2015) before the implementation of SES differed significantly or not from the means of mathematics state test scores for 3 years (2016 – 2018) after the implementation of SES. The *t* test value was $t\ (227) = 39.53$, $p = .004$. The results indicated that the mean mathematics state test scores for 3 years (2016 – 2018) after the implementation of SES ($M = 260.61$, $SD = 78.33$) was significantly greater than the mean of mathematics state test scores for 3 years (2015-2016) before the implementation of SES ($M = 196.12$, $SD = 69.81$) as shown in Table 5. The mean of

mathematics state test scores for the years 2013 to 2015 before the implementation of SES was M = 196.12. The mean of mathematics state test scores for the years 2016 to 2018 after the implementation of SES was M = 260.61 (Table 5). Thus, mathematics state test scores increased after the implementation of SES by 64.5 points. After the implementation of SES, there was a statistically significant increase in the mathematics state test scores of at-risk students at the research site. The null hypothesis was rejected that there were no statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018. In conclusion, a significant improvement in mathematics state test scores of at-risk students occurred after the implementation of SES.

Summary

I averaged all ELA and mathematics state test scores between before the testing years of 2013 – 2015 and after the testing years of 2016 – 2018. Descriptive statistics were calculated using SPSS 24.0. A paired-samples t test was conducted to evaluate whether the means of ELA state test scores for 3 years (2013 – 2015) before the implementation of SES differed significantly or not from the means of ELA state test scores for 3 years (2016 – 2018) after the implementation of SES. The t test value was t (227) = 35.31, p = .002. The results indicated that ELA state test scores increased after the implementation of SES by 62.6 points. The null hypothesis was rejected that there were no statistically significant differences in the mean ELA state test scores of at-risk

students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

I averaged all mathematics state test scores between before the testing years of 2013 – 2015 and after the testing years of 2016 – 2018. Descriptive statistics were calculated using SPSS 24.0. A paired-samples *t* test was conducted to evaluate whether the means of mathematics state test scores for 3 years (2013 – 2015) before the implementation of SES differed significantly or not from the means of mathematics state test scores for 3 years (2016 – 2018) after the implementation of SES. The *t* test value was $t(227) = 39.53$, $p = .004$. The results indicated that mathematics state test scores increased after the implementation of SES by 64.5 points. After the implementation of SES, there was a statistically significant increase in the mathematics state test scores of at-risk students at the research site. The null hypothesis was rejected that there were no statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018. In Chapter 5, I present a discussion of the findings, conclusions, and recommendations. Reflections and the conclusion are presented.

Chapter 5: Discussion, Conclusions, and Recommendations

The research site was one suburban public school district located in the Northern United States. According to the LSDOE website, at the research site, the student population was approximately 1,000 students of whom 56.1% were European American, 35.5% were African American, 7% were Hispanic, 1.1% were Asian/Pacific Islander, and 0.3% were Native American/Alaskan. There were 256 Grade 9 students, 251 Grade 10 students, 245 Grade 11 students, and 237 Grade 12 students. The number of at-risk students was 227 because of their state test scores in ELA and mathematics. The research problem was that at-risk students had been scoring below proficiency in ELA and mathematics for the past 6 consecutive academic years. According to the LSDOE website in 2019, at-risk students participated in SES to help them improve their proficiency in ELA and mathematics starting in 2016. The purpose of this quasi-experimental research study was to examine the differences in the state scores of at-risk students in ELA and mathematics before and after the implementation of SES into the curriculum. I examined the statistically significant difference of the mean state scores of at-risk students 3 years before and 3 years after the implementation of SES. The dependent variable of this study was the archived ELA and mathematics state scores. The independent variable was the implementation of SES. A comparison of matched ELA and mathematics state scores before and after the implementation of SES was conducted to determine if there was a statistically significant difference in the state scores using a *t* test for the testing years of 2013 – 2015 before the implementation of SES and 2016 – 2018 after the implementation of SES.

This research study was guided by the following research questions:

RQ1: What are the differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

$H_0$1: There are no statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

H_a1: There are statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

RQ2: What are the differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

$H_0$2: There are no statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

H_a2: There are statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018?

Archived ELA and mathematics state scores were the dependent variable. The independent variable was SES implementation. A comparison of matched ELA and mathematics state scores before (2013 – 2015) and after (2016 – 2018) SES was used to

determine if there was a statistically significant difference in the mean state scores using *t* test. The treatment was SES, which was used for at-risk students to be in ELA and mathematics classes after school hours. The sample was *n* = 227 ELA and mathematics state test scores for at-risk students.

I averaged all ELA and mathematics state test scores between before the testing years of 2013 – 2015 and after the testing years of 2016 – 2018. Descriptive statistics were calculated using SPSS 24.0. The results indicated that ELA state test scores significantly increased after the implementation of SES by 62.6 points, t (227) = 35.31, p = .002. The null hypothesis was rejected that there were no statistically significant differences in the mean ELA state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018. I averaged all mathematics state test scores between before the testing years of 2013 – 2015 and after the testing years of 2016 – 2018. The results indicated that mathematics state test scores increased after the implementation of SES by 64.5 points, t (227) = 39.53, p = .004 (see Table 5). The null hypothesis was rejected that there were no statistically significant differences in the mean mathematics state test scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

Interpretation of the Findings

ELA state test scores increased after the implementation of SES by 62.6 points. After the implementation of SES, there was a statistically significant increase in the ELA state test scores of at-risk students at the research site. The mathematics state test scores

increased after the implementation of SES by 64.5 points. After the implementation of SES, there was a statistically significant increase in the mathematics state test scores of at-risk students at the research site. SES appeared to help at-risk students at the research site to improve their proficiency in both ELA and mathematics state test scores. The results of this study aligned with researchers who have shown that an additional amount of instructional time in the classroom or after school hours can be beneficial to students in all academic subjects and grade levels.

ELA and mathematics state test scores increased after the implementation of SES. The findings provide evidence that SES programs are effective because the ELA and mathematics teachers at the research site participated in pre-service training on SES curriculum. Preservice and ongoing training of ELA and mathematics teachers proved to be beneficial to the at-risk students at the research site because ELA and mathematics state test scores increased after the implementation of SES. According to researchers, SES should focus on how to implement the SES curriculum (Darling-Hammond et al., 2020; Shakman et al., 2017). Teachers teaching in SES programs are receiving training (Schwartz et al., 2018).

ELA and mathematics teachers at the research site had ongoing training, which was one-to-one coaching at the research site. During the ongoing training, these teachers received guidance on differentiating instruction for at-risk students to improve their proficiency in ELA and mathematics. The findings of this research align with the recommendations of Garcia et al. (2020) who stated that educators benefit from 1:1 coaching. ELA and mathematics teachers at the research had ongoing training to learn

how SES offered after-school hours could be applied as a high-quality SES program to increase at-risk students' state test scores by at least five percentile points. The findings of this research align with the recommendations of Schwartz et al. (2018) who reported that high-quality afterschool programs could help students to increase state test scores by at least 12 percentile points. The findings of this research also align with the Schueler et al.'s (2017) recommendations that students benefit from participation in SES instruction and practice. The at-risk students at the research site participated in SES classes and received instruction in ELA and mathematics after school hours to increase their state test scores. ELA and mathematics state test scores increased after the implementation of SES providing a statistical evidence that SES has a positive effect on state tests. Thus, the findings of this study aligned with Schueler et al. (2017), Schwartz et al. (2018), Davis and Fullerton (2016), Dougherty (2015), Vance et al. (2021), and Williams (2019).

Furthermore, the findings provide evidence that SES had a positive effect on ELA and mathematics state test scores given that the at-risk students who participated in SES at the research site increased their proficiency in ELA and mathematics as measured by ELA and mathematics state tests. SES was implemented at the research site as an intervention program to help at-risk students at the research site to pass state tests and graduate from high school. The findings of this research align with Schueler et al. (2017), who wrote that implementing interventions could have significant improvement in the graduation rates of students. At-risk students participated in SES at the research site after school hours and received additional instructional time by the same teachers who taught the ELA and mathematics curriculum during school hours. These students increased their

state scores after the implementation of SES. Teachers who use SES provide additional instruction to students either during the school day or after school, and depending on the local union contract, SES can be offered as a summer program (Schueler et al., 2017). The findings of this research align with Schueler et al. (2017) who wrote that SES programs are used for students to attend classes after school hours to improve their proficiency.

The most effective programs use standard-aligned curricula, supplemented with district-developed lessons and activities (Schwartz et al., 2018). ELA and mathematics teachers at the research site participated in pre-service training and had ongoing training on how to use standard-aligned curricula and to develop lessons and activities to supplement instruction in the SES program for at risk students. ELA and mathematics teachers applied knowledge from the training and taught at-risk students standard-aligned curricula. The findings provide evidence that ELA and mathematics teachers applied knowledge from the SES training who taught standard-aligned curricula to at-risk students at the research site who in turn increased their ELA and mathematics state scores after the implementation of SES.

SES is designed to focus on individualized and high-quality curriculum (Schwartz et al., 2018). ELA and mathematics teachers at the research site were trained on individualized and high-quality curriculum for the SES program. ELA and mathematics teachers applied knowledge of individualized and high-quality curriculum to teach at-risk students. The findings provide evidence that ELA and mathematics teachers taught individualized and high-quality curriculum to at-risk students at the research site who

participated in SES and increased their ELA and mathematics state scores after the implementation of SES.

Davis and Fullerton (2016) explored the efforts of one network of afterschool programs. Specifically, such afterschool programs leverage new media technologies to promote out-of-school learning among high school students. The focus of the program was on connecting learning to school contexts (Davis & Fullerton, 2016). Davis and Fullerton suggested that such program should be used in schools to help students learn the curriculum. The findings of my study provide evidence that SES had an effect on state tests of at-risk students because the ELA and mathematics teachers at the research site used media technologies to promote out-of-school learning among at-risk high school students. The findings provide evidence that at-risk students at the research site who participated in SES increased their ELA and mathematics state scores after the implementation of SES.

According to Dougherty (2015), school districts seeking to improve their adolescent literacy outcomes face resource constraints. Budget cuts necessitate that school leaders find ways to leverage existing resources. School leaders need to find solutions to fund curriculum programs in short timeframes (Dougherty, 2015). A method used for improving student outcomes is increased learning time, especially in the tested areas of ELA and mathematics (Dougherty, 2015). According to Dougherty, there is mixed evidence as to whether increasing learning time overall or in specific subject areas can produce favorable effects on student outcomes. Dougherty stated that after school programs offer a “double dose” of instruction in subject areas most notably reading and

mathematics (para. 2). According to Dougherty, increased exposure to algebra instruction and favorable-ability groupings can have positive short-term impacts on a student's academic performance. Furthermore, increased exposure to instruction can have positive longer-run impacts on high-school graduation. According to the LSDOE, district administrators at the research site applied for additional state and federal grants to increased learning time to improve student outcomes. Through funding, ELA and mathematics teachers participated in SES training. After the implementation of SES, at-risk students at the research site were offered increased learning time after school hours. The findings provide evidence that increased learning time after school hours helped these students improve their proficiency in ELA and mathematics.

According to Vance et al. (2021), statewide education organizations such as the ACSA and the California Collaborative for Educational Excellence included in their reopening guidance an emphasis on school and expanded learning partnerships. For example, through the statewide system of support for expanded learning, school districts should create partnerships with county offices of education and expanded learning intermediaries to provide training and technical assistance to local systems and programs (Vance et al., 2021). For instance, school districts could receive via partnerships educational programs together with training and technical assistance to help students graduate from school (Vance et al., 2021). Similar to Vance's et al. (2021) conclusions, district administrators at the research site searched for support for expanded learning intermediaries to provide training on SES. Through funding for SES for training of ELA and mathematics teachers, at-risk students were assisted to increase their proficiency and

graduate from high school. At-risk students at the research site were offered expanded learning after school hours. The findings provide evidence that expanded learning helped these students improve their proficiency in ELA and mathematics as measured by state tests.

The ACSA (2020) reported that school leaders should have reopening planning after COVID-19 pandemic. School leaders should consider expanded learning programs for students (Darling-Hammond et al., 2020). For instance, students who participate in expanded learning programs attend an average of 3.5 to 17 more days of school per year than do their peers who do not attend expanded learning programs. The attendance differences are especially found in Grades 9 through 12 (Williams, 2019). Faced with COVID-19, school leaders should encourage coordination across schools and expanded learning systems in response to school closures (ACSA, 2020). Following the start of the pandemic, the state of California requested publicly funded expanded learning providers to partner with schools to support students during the school day, in contrast to only operating after school-day instruction ended (ACSA, 2020). The state's reopening schools task force highlighted the investment and support for expanded learning from the governor, the president of the State Board of Education, and the superintendent of public instruction (ACSA, 2020). According to ACSA, California's subsequent reopening guidance described how expanded learning programs can support different models of learning. Similar to ACSA's and Williams' (2019) conclusions, district administrators at the research site received support for expanded learning intermediaries to provide training on SES. ELA and mathematics teachers continued their ongoing SES training

during COVID-19. At-risk students at the research site continue to be offered SES using Zoom as an online learning platform. The findings of this research provide evidence that SES programs are effective for at-risk students to improve their proficiency ELA and mathematics on state tests. The findings of this study are that there is a positive relationship between SES and ELA and mathematics local state tests. Specifically, there were statistically significant differences in the mean ELA and mathematics state scores of at-risk students before the implementation of SES in 2013 – 2015 and after the implementation of SES in 2016 – 2018.

Vygotsky's (1978) SDT was the theoretical foundation for this research study. Vygotsky posited that learning would occur when students are provided with a supportive learning environment and when students take an active role in their learning process. Vygotsky developed ZPD to account for the learning potential of children. An individual learns best when working together with others during joint collaboration (Roosevelt, 2008). Though the concept of ZPD, teachers design instruction and analyze learning of students (Campbell, 2008). According to the senior administrator at the research site, at-risk students were supported with opportunities to develop ELA and mathematics skills by the same literacy and mathematics teachers who delivered the same course content to at-risk students who attended SES classes. According to the senior administrator at the research site, district SES courses were designed based on Vygotsky's SDT. SDT was used by SES teachers to help at-risk students to increase proficiency in ELA and mathematics local state test scores by using specific teaching strategies to teach these students. Thus, SDT and ZPD were implemented by SES teachers to create a learning

environment of social interaction in SES classes. Thus, the findings provide evidence that SES was effective at the research site because the ELA and mathematics teachers participated in training and helped at-risk students increase their proficiency in ELA and mathematics.

Limitations of the Study

Archived ELA and mathematics state test scores limited this quantitative research study. Another limitation was the tracking of ELA and mathematics state test scores of matched at-risk students in Grades 9 – 12. A third limitation was that a comparison of ELA and mathematics state test scores of students who experienced SES and those who did not.

Recommendations

The research site was a suburban public school district located in the Northern United States. As a means of helping at-risk high school students to meet state requirements for ELA and mathematics, school administrators implemented SES into the curriculum in 2016, which is supplemental education services offered after school hours. Based on the findings, after the implementation of SES, there was a statistically significant increase in the ELA and mathematics state test scores of at-risk students at the research site. The senior school district administrators should continue to implement SES at the research site for at-risk high school students to improve their proficiency in ELA and mathematics. Furthermore, senior school district administrators should continue to provide funding for PD for ELA and mathematics teachers with SES providers to improve their teaching pedagogies. By integrating SES into the curriculum, senior school

district administrators can continue to support at-risk students after school hours to improve their proficiency in ELA and mathematics. The findings of this study can assist high school administrators to continue to use SES to assist at-risk students to reach proficiency on state tests.

The United States federal government mandated that school districts demonstrate proficiency for all students in ELA and mathematics (Lee, 2016; Maier et al., 2017; Martin et al., 2016). According to the LSDOE website in 2019, SES is an educational intervention and form of remediation used by school districts to assist students in increasing their proficiency in ELA and mathematics. School principals, district supervisors, and directors should implement SES for students to reach proficiency in literacy and mathematics state scores (Walker, 2016**)**. School principals should implement SES for students to meet school district and state requirements (Reschly & Christenson, 2019). Given that the United States federal government increased funding to assist school districts with implementing SES (Reschly & Christenson, 2019), school leaders at the research site should continue to implement SES because at-risk students are not meeting the requirements for college and career readiness (Mirpuri & Jimenez, 2019). SES is used to address federal requirements for school improvements and the ability to support students in ELA and mathematics to enhance students' academic success (Mirpuri & Jimenez, 2019). SES includes extra time for instruction beyond the regular school day (Mirpuri & Jimenez, 2019). SES strategically incorporate evidence-based teaching practices that have showed significant improvement in grades and state test scores (Traill, 2017).

The results of this research showed that the ELA and mathematics state test scores increased since the implementation of SES. The results may be helpful to ELA and mathematics teachers and school administrators. I recommend to the school and district administrators to form a committee to include the SES trained ELA and mathematics teachers to develop a policy for the training, review, and implementation of SES. This policy on SES should encourage ELA and mathematics to continue their PD on SES to help students to improve their proficiency in ELA and mathematics. I also recommend the evaluation of SES at the research site by school and district administrators and ELA and mathematics teachers to ensure that school goals regarding at-risk students are met.

Further study should include interviews with school and district administrators and ELA and mathematics teachers to explore their perceptions and experiences regarding the implementation of SES. Also, further study should examine the implementation of SES for all high school at-risk students at the research site. Further researchers should examine archived state test scores in other academic subjects that could be offered in SES classes after school hours. Researchers may wish to examine ELA and mathematics state test scores of all at-risk students in Grades 9-12 who will participate in SES online because of COVID-19 and compare the scores to regular students. Researchers may also wish to examine ELA and mathematics state test scores of students who experienced SES and those who did not.

Implications

The results of this study revealed that the use of SES as an intervention program can contribute to the success of ELA and mathematics at-risk students at the research site.

With positive SES experiences in ELA and mathematics, at-risk high school students are more likely to be successful in state tests. The implementation of SES as a quality intervention program could have implications for all high school students because the results of this research showed that the ELA and mathematics state test scores increased since the implementation of SES. The findings can be used by local businesses to sponsor SES intervention programs to prepare students to enter the workforce or higher education. A positive social change includes the recommendation to continue to use SES at the research site for at-risk students to increase their state test scores in ELA and mathematics for these students to graduate from school and to enroll in postsecondary education, including trade schools and entering the workforce.

The findings of this study can be used by high school administrators to decide to continue to use SES at the research site to help at-risk students to reach proficiency on state tests. School district administrators can use the findings of this study to continue to search for funding of SES for all teachers to receive training on how to integrate SES into the entire curricula in all schools for the benefit of all students. A positive social change includes the recommendation to continue to use SES at the research site for at-risk students to increase their state test scores in ELA and mathematics for these students to graduate from school and to enroll in postsecondary education, including trade schools and entering the workforce.

Reflections

I am a novice researcher. I learned how to collect and analyze quantitative state test scores in ELA and mathematics by using a *t* test. I also learned about research

limitations and statistical analyses. I had a positive learning experience by conducting this quantitative quasi-experimental research. My passion to help at-risk high school students helped me to understand data analysis to find ways to help school and district administrators to improve the ELA and mathematics skills of at-risk high school students. I developed research skills as a doctoral student. I explored how SES helped at-risk high school students at the research site. By conducting this research, I grew professionally as an educator who cares about at-risk high school students.

Conclusion

I presented the conclusions and recommendations of this quasi-experimental research. The sample was a single group of 227 at-risk high school students. After the implementation of SES, there was a statistically significant increase in the ELA state test scores of at-risk students at the research site. Also, after the implementation of SES, there was a statistically significant increase in the mathematics state test scores of at-risk students at the research site. Thus, SES appeared to help at-risk students at the research site to improve their proficiency in both ELA and mathematics state test scores. A positive social change includes the continuation of SES to help at-risk students increase their state test scores in literacy and mathematics to graduate from school and to enroll in postsecondary education, including trade schools and entering the workforce.

The senior school district administrators should: (a) continue to implement SES at the research site for at-risk high school students to improve their proficiency in ELA and mathematics, (b) provide funding for PD for ELA and mathematics teachers with SES providers to improve their teaching pedagogies, and (c) support at-risk students after

school hours to improve their proficiency in ELA and mathematics. School principals, district supervisors, and directors should implement SES for at-risk high school students to reach proficiency in ELA and mathematics state scores. School and district administrators should implement SES for all high school students at the research site who need to improve proficiency in ELA and mathematics.

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Appendix: G Power Results