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Causal Comparative Study: The Effect of School Scheduling and Academic Outcomes of Economically Disadvantaged Students

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Causal Comparative Study: The Effect of School Scheduling and Academic Outcomes of Economically Disadvantaged Students

by

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ABSTRACT

This study was designed to investigate if a statistical variance exists between traditional and A/B block school scheduling, and the effect on economically disadvantaged student achievement on the English I and Algebra I End-of-Course STAAR state-mandated exam, from 2015-2018. In response to studies illuminating the achievement gap, educational leaders in Texas implemented block scheduling in order to improve student outcomes among high school students. However, to date, published research studies yield mixed results of the effectiveness block scheduling has made on student achievement. The findings are expected to help to fill the gap in published literature, which focuses on the effect of block scheduling on the academic outcomes of high school students in the state of Texas. The results of this study suggested that there is a statistical significance in the performance of economically disadvantaged students on traditional and A/B block school schedules.

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students “remember you can accomplish this too”. To my dissertation committee Dr. Pauline Sampson, Dr. Robbie Steward, and Dr. Janet Tarelio, my deepest gratitude and appreciation for your investment in me and challenging me to be a better scholar-practitioner. I appreciate your patience and support. I pledge to extend your educational legacy in practice and to disrupt the status quo, for as long as God gives me breath.

DEDICATION

This body of work is dedicated to my Father L.H Brannon, who raised me as a single parent despite financial hardship and not having the opportunity to complete his formal education, he encouraged me to stay in school and to maximize my educational opportunities. I could not have been blessed with a better father. As a first-generation college student, this accomplishment is a precipitous shift for the trajectory for my family. Thank you to all my mentors, friends, and colleagues that supported and lifted me through this beautiful struggle. Lastly, this study is dedicated to the educators who are challenging the status quo and the construct of politics to spark an awakening and meaningful change for students who are growing up as I did, “at-risk” and economically disadvantaged and predicted to not be successful.

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CHAPTER I

Introduction to the Study

Introduction

The educational outcomes in the United States of America is verified as a problem in ranking comparisons to other countries. However, the construct is actually that education outcomes are linked to life outcomes and personal and national economic stability. If we cannot educate our populace properly to lead to more successful outcomes, then we lose standing internationally and will experience a nation-wide increase in a populace that is less able to be prepared for the world of work and personal economic independence. The implications are so dire that research has found that outcomes may be generational: children who live in poverty tend to become parents who live in poverty (Capotosto & Kim, 2016; Fletcher, Grimley, Greenwood, & Parkhill, 2013; Xiao, Chatterjee & Kim, 2014). As educators it is our moral imperative to employ proven research-based initiatives to enhance academic proficiency and outcomes for the nation's children.

The United States of America's ability to compete globally depends upon how well it educates its citizens (Kera, Aud, & Johnson, 2014). However, even after decades of federal and state educational reform, the academic achievement of most high school

students in this country lag behind that of their peers from other developed nations (National Center for Education Statistics (NCES, 2017). For example, the Organsation of Economic Cooperation and Development (OECD) administers the Programme for International Student Assessments (PISA) every three years to 15-year-olds from 72 nations (NCES, 2017; OECD, 2016).

The PISA is a system of international assessments that focus on key concepts taught in science, mathematics, and reading and is administered to determine how well students can apply the information they've learned both inside and outside of the school setting (NCES, 2017; OCED, 2016). According to data reported by the NCES (2017), in 2015, approximately 29 million 15-year-olds from around the world completed the PISA. Results from the assessment indicated that of the 72 countries represented, the United States ranked 35th in mathematics and 24th in reading (NCES, 2017; OCED, 2016). The rankings for the United States' were significantly lower than those for other developed countries such as China, Japan, Canada, Russia, and the United Kingdom (NCES, 2017). In addition, data reported by the NCES (2018) indicate that 63% of America's high school students were not proficient in reading and 75% are not proficient in mathematics.

In a survey of 12th grade students in the USA, the NCES (2018) reported data from the National Assessment of Educational Progress (NAEP), which measures the content that students' ability to apply from various subject areas (NCES, 2018). Data from the NAEP reading and math assessments indicated that among the nation's 12th grade students, only 37% were proficient or advanced in reading, and read at or below grade level (NCES, 2018a). Further, only 25% of America's 12th grade students were

proficient or above in mathematics (NCES, 2018b). Overall, America's high school students' inability to demonstrate proficiency in reading and mathematics is a serious national problem (Kera et al., 2014).

Background of the Problem

Educational leaders are consistenly exploring ways to become more efficient with the use of instructional time by significant changes occurring in high school schedules. School leaders are enticed by the concept of block scheduling, which is currently in practice by approximately 30 percent of Americas' secondary schools (Rettig, 2019). According to an article published by the School Supertintendents Association (AASA), research now is emerging about the impact of the two most common alternative high school scheduling models. Numerous factors have generated changes in seconday school scheduling, for instance, state mandated course credits required for graduation. In schools with a traditional six- or seven-period day, this left little room in schedules for fine arts or vocational education electives. While about one in three high schools today operate some form of block schedule, in some states the number is much higher. In states such as Virginia and North Carolina, more than two-thirds of the high schools use alternative schedules. (Rettig, 2019). In 2015, the PEW Research Center published a study which ranked the United States below the OECD average, results revealed that the U.S ranked 37th in math and 24th in reading. Perhaps school schedule types played a role in academic perforamce of U.S students.

This study investigated school schedule types, A/B block, an academic schedule, whereby high school students take four classes for longer, for a span of 90 minutes

(Pester, 2018). Some researchers contended that block scheduling is a method for optimizing teaching and learning, which may ultimately improve students' academic outcomes in reading and in mathematics (Akyuz, Dixon, & Stephan, 2013; Smith, 2017; Stephan, 2013). The primary purpose for implementing block scheduling was to maximize instructional time in order to increase student's performance in all subject areas (Harris, 2014; Marquez, 2016; Scott, 2017). Block scheduling is defined as an academic schedule whereby high school students take fewer classes for longer periods of time (Childers, 2018; Marquez, 2016; Pester, 2018). For example, instead of taking seven classes for 55 minutes each day, a student might rotate four classes for 90-minutes every other day (Harris, 2014).

Some researchers favored block scheduling for a number of reasons. For instance, Thibodeux (2015) asserted that block scheduling allows for more in-depth teacher planning and permits more time for individualized instruction and longer cooperative learning activities. Additionally, students have more time to process content and to collaborate with their peers (Rettig, & Canady, 2019; Sisson, & Sisson, 2015). Put simply, participating in block scheduling allowed teachers to more effectively use their time for greater instruction, more in-depth learning, and for increasing students' time on tasks (Hurst, Wallace, & Nixon, 2013; Rettig, & Canady, 2019; Thibodeux, 2015).

To the contrary, some researchers argued that longer periods revert into increased lecturing, which may cause students to become bored and disengaged due to the over saturation of content (Banicky, 2012; Early, Rogge, & Deci, 2014; Kenny, 2003). Some researchers were also concerned that when students, who engage in block scheduling,

miss a day from school, they actually miss the equivalent of two or more days of instruction (Anderson, & Walker, 2015; Freeman, 2014; Khodayari, & Pourrahimian, 2015; Queen, 2002). Emperical studies argued that with block scheduling, all content must be covered in a matter of weeks during a quarter instead of over the course of a semester, which last several months (Marquez, 2016; Queen, 2002; Ramsey, 2016; Thibodeaux, 2015). Covering a large amount of content over a brief period of time is especially difficult for students and teachers who are involved in Advanced Placement courses (Queen, 2002; Saavedra-Rosas, Jeivez, Amaya, & Morales, 2016).

Nevertheless, block scheduling has become a part of major educational reform efforts to improve students' academic outcomes. Currently, approximately 30% of all high schools in the United States and 5% of all high schools in the state of Texas have adopted block scheduling as a strategy for improving student performance (Rettig, 2019).

This study specifically compared the English I EOC exam scores and Algebra I EOC exam scores of students who attend four high schools with similar demographics, two which adopted block scheduling and two that used traditional scheduling, which is defined as students taking six to eight classes each day, during which teachers provide instruction and educational activities from 45 to 55 minutes (Dance, 2015) for the 2015-2016, 2016-2017, and 2017-2018 academic years.

Problem Statement

In the state of Texas, high school students take the State of Texas Assessments of Academic Readiness (STAAR). The purpose of the STAAR is to measure the extent to which students have learned and are able to apply the content and the benchmarks

defined in the state-mandated curriculum standards, called the Texas Essential Knowledge and Skills (TEKS) (Texas Education Agency, 2019). Data reported by the Texas Education Agency (2017) indicated that significant percentages of students who attend high schools in the districts across the state of Texas failed to demonstrate mastery of the knowledge and skills tested on the TEKS in English I and in Algebra I. The data indicated that in 2017, 55% of the high school students performed at or above grade level on the English I STAAR (Texas Education Agency, 2017).

The percentage of students who demonstrated mastery of the English I content tested on the STAAR was nine percentage points less than the number of students who demonstrated mastery of the knowledge and skills tested on the TEKS in English I across the state (Texas Education Agency, 2017). The Texas Education Agency (2017) reported that the same year, while 80% of students performed at or above grade level on the Algebra I STAAR, 20% did not. The percentage of students who demonstrated mastery of the Algebra I content tested on the STAAR was three percentage points less than the number of students who demonstrated mastery of the knowledge and skills tested on the TEKS in Algebra I across the state (Texas Education Agency, 2017).

Additionally, the state had an attendance rate of 94.9%, which is only .9% below that of the state average and a dropout rate of 1.8%, which is .2% below that for the state average (Texas Education Agency, 2017). However, about 5% of students in the district dropout of high school each year (Texas Education Agency, 2017).

The Texas Education Agency (1999) reported that block scheduling was first implemented within high schools in districts in 1999. The purpose of the districts'

implementation was to: (1) reduce fragmentation of instruction by creating sufficient time to immerse students in the learning experience and cover material in more depth; (2) allow flexibility for varied and creative forms of instruction; (3) facilitate individualized instruction to help make learning more personally relevant and accommodate different learning styles and speeds; (4) improve the quality of instruction and learning with manageable workloads; and (5) minimize the loss of instructional time and discipline problems that occurred as students moved from one class or location to another (Texas Education Agency, 1999).

While the Texas Education Agency (1999) published an initial report of the effect of block scheduling on the academic achievement for students who attend high schools across the state, the variables of the study examined performance of Texas Assesment of Academic Skills (TAAS) at the middle school level, attendance rate, graduation rates, grades, discipline, and school climate. At the high school level SAT/ACT and advanced placement courses were the focus. Currently, absent from the literature are recent studies which focus on the effect of block scheduling on English I and Algebra I End-of-Course scores for students who attend high school in one district. The problems that this research study addressed are the significant percentages of students in one school district in the state of Texas who: (1) failed to demonstrate proficiency of the TEKS academic standards tested on the STAAR EOC in English I;

(2) failed to demonstrate proficiency of the TEKS academic standards tested on the STAAR EOC in Algebra I; (3) to determine if there is a difference between educational outcomes that may be realted to block scheduling and traditional scheduling.

Purpose Statement

The effect of block scheduling on student outcomes was the focus of this study. Block scheduling, which is an alternative method to traditional scheduling, involves the restructuring of class periods from traditional 55-minutes of instruction per subject per day to classes which last from 60 to 120 minutes per day for fewer days per week (Baker, 2014; Pester, 2018). In addition to having fewer students per class period, block scheduling allows teachers to have more time for planning differentiated instruction in order to provide strategies which accommodate students' varied rates of learning and their multiple learning styles (Baker, Joireman, Clay, & Abbott, 2009; Childers, 2018; Scott, 2017).

Research has shown that block scheduling may positively effect students' academic performance in reading and in math as well as in other subject areas and studies have noted benefits. (Freeman, 2014; Pester, 2018; Scott, 2017); studies indicated increased science performance a rise positive school climate, an increase of possible credits earned by students to fulfill graduation requirements and reduced disciplinary incidents; of which appeal to school district decision makers. However, the results from other studies do not validate block scheduling as significant for improving student achievement in standardized test, but instead suggest scheduling type does influence more factors of student outcomes.

The purpose of this proposed study was to determine if there was a statistically significant difference in the English I End-Of-Course (EOC) Test Scores, the Algebra I EOC Test Scores, of students in the state of Texas, who participated in block scheduling

to that of students who participated in traditional scheduling during the academic years of 2015-2016, 2016-2017, and 2017-2018.

Research Questions

The research questions that guided this study included:

RQ1. In a high school located in Texas, for 2015-2016, 2016-2017, and 2017-2018 academic years, was there a statistically significant difference between the STAAR EOC English I scores of economically disadvantaged students who participated in traditional scheduling in comparison to the STAAR EOC English I scores of non-economically disadvantaged students who participated in A/B block scheduling?

RQ2. In a high school located in Texas, for 2015-2016, 2016-2017, and 2017-2018 academic years, was there a statistically significant difference between the STAAR EOC Algebra I scores of economically disadvantaged students who participated in traditional scheduling in comparison to STAAR EOC English I scores of non-economically disadvantaged students who participated in A/B block scheduling?

A students' ability to demonstrate proficiency in reading and mathematics during their high school years is a major predictor of the economic security that he or she will experience as an adult (Chiu & Chow, 2015; Kern, McLoughlin, & Graber, 2016). Furthermore, students' proficiency in reading and in mathematics are linked to their future earnings in the workplace and to their overall quality of life (Pourcin, Cole, & Sprenger-Charolles, 2014). For example, researchers asserted that as adults, high school students who demonstrate proficiency in reading and in math, earn at least $7,750 more each year than their classmates who do not demonstrate proficiency in reading and in

math (Capotosto & Kim, 2016; Xiao, Chatterjee & Kim, 2014). In comparison, students who are not proficient in reading and in math are four times less likely to graduate high school and six times less likely if they are from low-socioeconomic backgrounds (Capotosto & Kim, 2016; Fletcher, Grimley, Greenwood, & Parkhill, 2013).

Individuals who are considered illiterate cannot perform simple day-to-day tasks such as create personal budgets, follow recipes, understand the directions of a medical prescription, surf the Internet, or even complete a job application (Prins & Monnat, 2015; Yamashita & Kunkel, 2015). Consequently, American tax payers provide more than $225 billion each year in unemployment benefits and about $238 billion for health care for uninsured Americans (Yamashita & Kunkel, 2015). Kern, McLoughlin, and Graber (2016) agreed that students who do not read on grade level by the time they reach high school are 63 times more likely to be incarcerated as adults. Illiteracy in America is problematic for both individuals and for the nation's economy alike (Kern, McLoughlin, & Graber, 2016; Hietajärvi, Tuominen-Soini, Hakkarainen, Salmela-Aro, & Lonka, 2015). Although students' proficiency in reading and in math are predictors of their future livelihood, in the United States, 32 million adults, or 21 percent of the nation's adult population cannot read at or above a fifth-grade level and are therefore considered to be illiterate (Snow & Matthews, 2016; Yamashita & Kunkel, 2015).

Significance of the Research

This study was significant for a number of reasons. First, this study was significant because educators in the district must find ways to improve the academic outcomes of students who do not pass the English I End- of Course STAAR and the

Algebra I End-of-Course STAAR. Second, this study was significant because it will inform district and state administrators about the academic performance of high school students who participate in block scheduling compared to high school students who participate in traditional scheduling. Finally, this study was significant because it will contribute to the gap in published literature, which focuses on the effect of traditional and A/B block scheduling and impact academic achievement of economically disadvantaged students on the English and Algebra I End-of-Course STAAR state mandated exams in four major surban high schools Texas.

Definitions

This section provides conceptual definitions of key words that are used throughout the study. In this research, the following terms are defined:

Achievement gap

The difference in the performance between each economically disadvantaged student group in comparison to non- economically disadvantaged school and the statewide or highest achieving student group in reading/language arts and mathematics (U.S Department of Education, 2012).

Economically disadvantaged student

Members of low-socioeconomic households that meet eligibility guidelines for free or reduced lunch meals under the National School Lunch program. Low-income and economically disadvantaged are used interchangeabley under the Title 1 federal funded program to target high poverty schools with low achievement (U.S Department of Education, 2012).

High School

A secondary school composed maninly of grades 9-12 in the study sample (Snow, 2016).

Organization for Economic Co-operation and Development (OECD).

The OECD is a group of 34 democratic governments and over 70 non-member economies that promote economic growth, prosperity, and sustainable development around the world (U.S. Mission to the Organization for Economic Cooperation and Development, 2019).

Public Education Information Management System (PEIMS)

Encompasses all data requested and received by TEA about public education, including student demographic and academic performance, personnel, financial, and organizational information (TEA, 2019).

Programme for International Student Assessments (PISA)

A system of international assessments that focus on key concepts taught in science, mathematics, and reading and is administered to determine how well students can apply the information they've learned both inside and outside of the school setting (NCES, 2017).

Block scheduling

An academic schedule whereby high school students take four classes for longer for a span of 90-111 minutes (Pester, 2018).

State of Texas Assessments of Academic Readiness (STAAR)

A state-wide summative assessment administered to students in grades K-12 to measure the extent to which students have learned and are able to apply the content and the benchmarks defined in the state-mandated curriculum standards, called the Texas Essential Knowledge and Skills (TEKS) (Texas Education Agency, 2019).

Texas Essential Knowledge and Skills (TEKS)

State standards for what K-12 students in Texas should know and be able to do (Texas Education Agency, 2019).

Traditional scheduling

The most widely used form of scheduling in the U.S. is the single-period daily schedule. Under this schedule, students attend six, seven, or eight classes each day throughout the school year from 45- 55 minutes (Dance, 2015; TEA, 1999)

University Interscholastic League (**UIL**)

The organization that creates rules for and administers almost all athletic, musical, and academic contests for public primary and secondary schools in the U.S. state of Texas. It is the largest organization of its type in the world (UIL, 2014).

Assumptions

This study made the following assumptions:

1. Each student was taught the TEKS content while participating in English I and Algebra I;
2. Data collected from the STAAR English I End-of-Course (EOC) Test Scores, the STAAR Algebra I EOC Test Scores, for the 2015-2016, 2016-2017, and

2017-2018 academic years from the Texas Education Agency, 2019 are valid and accurate;

3. The students' STAAR English I End-of-Course (EOC) Test Scores, the STAAR Algebra I EOC Test Scores are a true reflection of their mastery of the TEKS standards.
4. Differences in the STAAR English I End-of-Course Test Scores and the Algebra I End-of-Course Test Scores, for the 2015-2016, 2016-2017, and 2017-2018 academic years can be attributed primarly to students' participation on non-participation in A/B block scheduling.

Limitations

One limitation for this study was the differences in students' STAAR English I End-Of-Course (EOC) Test Scores, the STAAR Algebra I EOC Test Scores, for the 2015-2016, 2016-2017, and 2017-2018 will be solely attributed to students' participation and non-participation in block scheduling.

Delimitations

The study was restricted to four high schools located in one district in Texas. The findings from this study are limited to the data collected for students from only four high schools in the district where the research took place. Another delimitation was that the scores used to determine the effect of A/B block scheduling and comparisons used a campus comparison group that may not represent the entire population of students in the district. Also, the study was delimited to one school district and the findings may not be generalized to all other school districts in Texas.

Organization of the Study

Chapter I presented an introduction to the proposed study. Included in the introduction was information relevant to American students' OECD rankings in math and in science and 12th grade students' NAEP reading and math scores. Next, the introduction for the study focused on block scheduling as a possible method for improving student outcomes. The topic of the study and the purpose of the study were presented next. The topic of the study was the effect of block scheduling on student outcomes. The purpose was to determine if there was a statistically significant difference in the English I End-Of-Course (EOC) test scores, the Algebra I EOC test scores, of students in the state of Texas, who participated in block scheduling to that of students who participated in traditional scheduling. The problem on which the research study focused was the students in a Texas school district who fail to demonstrate proficiency of the TEKS academic standards tested on the STAAR EOC in English I and on the STAAR EOC in Algebra I. Two research questions that guided the study were presented. As well, the significance of the study was discussed, followed by the researcher's assumptions and limitations and delimitations.

Chapter II presentes an in-depth review of relevant literature related to block scheduling. Chapter III presents a discussion of the research design and methods that will be used in the study.

CHAPTER II

Review of Literature

Introduction

Block scheduling involves extending class periods beyond the traditional minutes per class session (Harris, 2014; Pester, 2018). Although results from several studies have proven a positive correlation between block scheduling and improved student outcomes, the effect of block scheduling on the English I EOC scores, the Algebra I EOC scores, economically disadvantaged students in the state of Texas have not been studied extensively. Therefore, the purpose of this study was to determine if there is a statistically significant difference in the English I End-Of-Course (EOC) Test Scores, the Algebra I EOC Test Scores, of economically disadvantaged students in the state of Texas, who participated in block scheduling to that of students who participated in traditional scheduling. This chapter presents the conceptual framework for the study, the literature on the history of block scheduling, the differences and similarities between block and traditional scheduling, and the results from studies that exclusively focused on the academic outcomes of students who participated in block scheduling.

Conceptual Framework

Vygotsky's (1978) Theory of Constructivism serves as the conceptual framework for this study. Constructivism is a learning theory that explains how individuals obtain

and apply knowledge. The constructivism theory suggests that individuals acquire and understand information based upon their experiences. Constructivism focuses on both the student's and the community's role in cognitive development and can be applied toward various racial, ethnic, socioeconomic, and gender groups. Vygotsky specifically noted that " . . . learning is a necessary and universal aspect of the process of developing culturally organized, specifically human psychological function" (1978, p. 90).

The theory of constructivism was appropriate for this study because it proposes that individuals who are in leadership positions have the responsibility to structure learning so that teacher instruction and student learning are optimized through extended time, curriculum integration, and problem-based learning (Akyuz et al., 2013; Alleman & Holly, 2013; Martin & Loomis, 2013). The constructivism theory also relates to this research because instructional techniques such as allowing teacher and student relationships to strengthen and creating learning communities are advocated by proponents of block scheduling (Alleman & Holly, 2013; Martin & Loomis, 2013). Further, the theory proposes that administrators examine how school schedules effect the needs of both students and teachers. Constructivism also helps to explain teachers' need for extended planning and preparation so that they can choose strategies that help students construct meaning from the curriculum and gain a higher-level of understanding.

Economically Disadvantaged Student Performance

The Elementary and Secondary Education Act (Elementary and Secondary Education Act [ESEA], 1965 was signed into law by President Lyndon B. Jonson. The objective of ESEA was to improve the quality of elementary and secondary education by

providing grants to school districts serving low-income students, scholarships, grants for library and textbooks, and created special education centers. The law has been subject of debate in Congress since its establishment and has been amended frequently (Thomas & Brady, 2005) According to Danziger and Haveman, 1983 after President Lyndon B. Johnson was elected, federal funding was decreased for several educational and social program geared toward the low-income students.

The results from *A Nation at Risk* implied that schools in the United States were failing our nation's children, as a result, political leaders explored ways to measure the academic performance of schools. The Title I amendment of 1988 began the mandates for school accountability by requiring states to document academic achievement of economically disadvantaged students (Thomas & Brady, 2005). To support the claim that public schools were failing from *A Nation at Risk*, in 1990 Admiral James Watkins enlisted the Sandia Laboratories to conduct data computations to substantiate the claim that American public schools were failing. Results from the *Sandia Report* inferred that student achievement in America improved, instead of declined (Ansary, 2007). President Bill Clinton enacted legislation entitled Improving American's School 1994, which aimed to hold schools accountable for improved student achievement. In 2002, President George W. Bush charged congress to implement, No Child Left Behind (NCLB, 2002), which illuminated achievement gaps among the economically disadvantaged students in comparison to their cohorts. These findings instituted rigorous measures for accountability in reading and mathematics for public schools and resounded the call to action to close the achievement gap for low-income students. In 2015, President Barack

Obama signed into law, Every Student Succeeds Act (ESSA, 2015), which took an alternate approach to close the achievement gap which required schools to measure the academic growth of economically disadvantaged students.

Studies that have investigated and measured both racial and social class composition of schools determined that race imposed a separate influence that is independent of socioeconomic status (Caldas & Bankston, 1997), therefore this study examined the socioeconomic status and the role it plays in student achievement since race encompasses more factors for student outcomes. A study conducted by (McLoyd, 1998) determined that persistent poverty affects student achievement exponentially and students in poverty are more 2-3% higher risk of being classified as special education or being retained. According to (Battle & Lewis, 2002), socioeconomic status held true of being the greatest predictor of student achievement and is a stronger predictor than race. Sirin, (2005), conducted a meta-analysis of 74 studies between 1990-2000, that upheld this claim, and agreed that socioeconomic status is a greater risk factor for student achievement.

Sirin (2005) also stated that family socioeconomic status sets the can indirectly set the trajectory of student achievement because social capital is the foundation for students' success in school. Additionally, several studies indicated that the classification of socioeconomic status supported the argument that non-economically disadvantaged students consistently outperformed economically disadvantaged students (Ladd, 2012).

Over the span of decades, studies have well documented the achievement gap and educational leaders have been charged with implementing processes to improve student

achievement when considering the academic achievement disparity in socioeconomic status (Ladd, 2012). This study examined the role of school scheduling traditional and A/B block for considerations of how schedule type factors into student achievement.

History of Block Scheduling

Merritt (2014) wrote that block scheduling originated in the 1950s with precursor block-time and flexible/modular schedules and later resurged in the late 1980s, and has been used more extensively since the 1990s. Block scheduling has been utilized predominantly in departmentalized secondary school settings, especially high schools, and to a lesser extent in elementary self-contained classrooms. The chief common feature of the different types and variations of block-schedule designs is that class periods extend beyond the relatively short 40- to 50-minute class periods of the traditional Carnegie schedule (Cantu, 2002).

According to Merritt (2014), block scheduling is an alternative time scheduling arrangement used in U.S. public schools in which students take classes in extended and more flexible periods of time called "blocks." The block scheduling model reorganizes the school day and instructional time into longer periods that are double, triple, or more in length, typically 90 to 120 minutes. Classes and subjects that are offered and taught in different time blocks can vary or alternate from day to day, week to week, semester to semester, and year to year (Merritt, 2014). There are many variations of the main block schedule types, and schools may use a mixture of schedule types simultaneously; which are determined by stake holder preceptions and cost in terms of additional teaching units, and more opportunites to earn credits toward graduation (TEA, 1999).

In addition, block scheduling was developed to overcome the rigidity, of learning time from class to class, inadequacies of more instructional time for deeper learning to occur, and limitations inherent to the relatively short 40- to 50-minute class periods that have characterized the use of the traditional Carnegie scheduling, which measures the credit for completion of a one year course in high schools (Cantu, 2002) across the U.S. for many decades. Although block scheduling has also existed for decades, experimentation with the design began in earnest in the 1990s and has continued since then in U.S. schools. A few high schools and junior high schools in the 1950s used what might be called a precursor form of block scheduling in which a single teacher taught multiple subjects known as "block-time (core) programs" or "unified studies" during class periods of two to three standard-lengths duration. Trump (1959) is credited with originating block scheduling in something closer to its modern forms with his so-called flexible/modular scheduling design (Merritt, 2014).

Since the United States National Commission on Excellence in Education published *A Nation at Risk* in 1983, policy makers, researchers, and educators alike sought to find more effective strategies to improve America's education systems. One of the commission's criticisms addressed in *A Nation at Risk* was students' time on tasks National Commission of Excellence in Education, 1983). By 1992, 4 % of high schools in the United States had adopted block scheduling (Kosanovic, 1992). In response to the commision's report, in 1994 the United States National Education Commission on Time and Learning published a report entitled, *Prisoners of Time* that also listed concerns regarding the poor use of instructional minutes (National Education Commission on Time

and Learning, 1994). In the report, the commission encouraged schools to implement block scheduling as an effective and appropriate way for teachers to more actively engage students in instruction (Kee, 2011). As a result, by 1995 over 40% of high schools in America had implemented block scheduling (Hackman, 1995). And by 1996, almost 50 % of all high schools in America had implemented block scheduling (Roth, 1997) to date rughly 30% of secondary school still use a form of block scheduling (Rettig, 2019).

In 1996, the Texas Education Agency required all high schools in the state to adopt one of five forms of block scheduling: (1) alternate day or A/B block scheduling; (2) modified A/B block scheduling; (3) accelerated or 4 X 4 block scheduling; (4) a reconfigured school year; or (5) intensive block scheduling (Texas Education Agency. 1996). The Texas Education Agency (1999) defined A/B block scheduling as the extension of six to eight classes, which meet alternative days for the entire school years. Modified A/B block schedule was defined as either one or two periods that meet every day, in much the same way as a traditional schedule. With Accelerated block scheduling, the standard 180-day school year was divided into two 90-day semesters. Each semester, students attended four 90-minute classes daily. A reconfigured school year combined longer academic terms with shorter terms and included enrichment and remediation activities. Students who participated in intensive block scheduling received concentrated content in a small cluster of related subjects through a series of shorter terms for an entire school year. As a result of the Texas Education Agency's mandate, by the end of the 1996-1997 academic year, approximately 34 % of high schools in Texas had adopted A/B

block scheduling; 9% had adopted 4 x 4 block scheduling; and 2 % had adopted some other form of block scheduling.

In 1999, the Texas Education Agency published a report that revealed the effect of various types of block scheduling on student outcomes when considering performance om Texas Assessment of Academic Skills in middle school reading and math, advanced placement course participation and SAT/ACT. The report indicated that attendance, not block scheduling, was the variable that most consistently influenced student performance. Findings from the report also noted that students who participated in six-period a day block scheduling had the lowest average attendance rate while students who participated in modified A/B block schedules had the highest average attendance rate.

Further findings indicated that variables such as school size, student body characteristics, staff characteristics, and student attendance rates, played a significant role in determining whether or not block scheduling has a positive effect on subject area test scores, SAT/ACT performance, and dropout rates. According to the Texas Education Agency (1999), how effectively students and teachers engage in the teaching-learning process matter more than the particular length of the class periods. As a result of the findings from the study, the Texas Education Agency (1999) warranted future research on block scheduling.

Traditional vs. Block Scheduling

Traditional scheduling.

Traditional scheduling was the most used type of scheduling until the 1990s when block scheduling became popular (Comer, 2012; Ford, 2015). With traditional

scheduling, students take six to eight classes each day, during which teachers provide instruction and educational activities from 45 to 55 minutes (Dance, 2015). Traditional scheduling focuses on one subject each class period, which is taught the full school year. At the end of the academic year, students who successfully complete a class earn a Carnegie unit, which counts towards their graduation requirements (Comer, 2012; Dance, 2015; Ford, 2015).

Rettig and Canady (2019) reported that high schools began to move away from traditional scheduling in the 1960s and 1970s and transitioned to open classrooms. During this era, the government became more education oriented as congress increased federal aid to education. Also, during this time period, schools began to move toward flexible scheduling. The purpose of flexible scheduling was to pace and personalize instruction. During flexible scheduling, each class lasted for about 30 minutes and met for two times each day. Supporters of the flexible scheduling championed the idea of increased instructional time. However, due to problems with noise and discipline, schools began to transition away from flexible scheduling. And by the 1980s, this method was eliminated and block scheduling emerged.

Block scheduling.

Block scheduling surfaced in order to address the issues related to the use of instructional time that was listed in *A Nation at Risk* and in *Prisoners of Time* such as inadequate planning and staff development time during the school day, and averaging 5.6 hours of instructional time for students as attributing factord to student performance. There are three major types of block scheduling: (1) 4 X 4; accelerated semester schedule

(2) Alternate Day; or A/B block; which provides more time over two academic semesters for all classes and (3) Hybrid Scheduling that combines traditional and block attributes (Comer, 2012; Ford, 2015; Veal, & Schreiber, 1999). The 4 X 4 model of block scheduling encompasses four classes per day. Students who participate in the 4 X 4 model take the equivalent of four year-long classes in one semester. Also, teachers provide instruction for only three of the periods and plan for ninety minutes each day. The 4 X 4 model reduces student enrollment per class by 25%. The 4 X 4 model is also advantageous because it allows students who fail a course to repeat it during the same academic year, without having to wait until the following year. The students whose scores were represented in this study, participated in the 4 X 4 Block Scheduling Model during the 2015-2016, 2016-2017, and 2017-2018 academic years.

The second major type of block scheduling is the Alternate Day Model. The Alternate Day Model is also referred to as the 8-block or A/B plan. Students who engage in the Alternate Day Model take eight ninety-minute classes each day for six days. Over the span of an entire academic year, students alternate between four classes that meet on Day A and four classes that meet on Day B. Unlike teachers involved in the 4 X 4 Model, teachers who participate in the Alternative Day Model do not have extended planning periods each day. Instead, they have planning time only at the end of Day A. In addition, teachers who participate in the Alternate Day Model teach the same number of students, as they would under traditional scheduling, but benefit from having extended class periods (Veal, & Schreiber, 1999).

The third major type of block scheduling is the Hybrid Model. Hybrid scheduling combines aspects of traditional scheduling with aspects of block scheduling. Hybrid scheduling, which is tailored to fit the needs of individual students, often blends face-to-face learning with on-line learning. In some high schools, students who participate in hybrid scheduling are not divided by grade level (Veal, & Schreiber, 1999). While initially students are given a schedule to follow, later they are responsible for deciding how they will organize their school days. Hybrid scheduling allows for more flexibility of students' time, but it can be challenging for personnel, who are responsible for organizing and tracking each student (Veal, & Schreiber, 1999). Despite the type of scheduling used, appropriate professional development and support must be provided for teachers, who have the responsibility for making sure that all students demonstrate proficiency in all subject areas (Veal, & Schreiber, 1999).

Researchers reported other types of block scheduling. For example, Rapoff (2016) reported that a dropped schedule is a type whereby one class on each day was dropped from the schedule. This schedule contained six periods in a day of approximately one hour. In this schedule, each day is different, and classes do not occur at the same time each day, which is the main difference between a dropped schedule and a traditional schedule (Rapoff, 2016).

A modified block schedule is a combination of a traditional and a block schedule. Students attend all classes in both a traditional and a block format (Westerburg, 2017). This model provides opportunities regular opportunities for extended class periods for in-depth learning time. Teachers see all of their students in a day at least once a week;

however, but are not limited to the number of students that teachers work with or the amount of courses that a student take. Westerburg (2017) reported that a trimester schedule offers three distinct sessions during a school year. In one model, students focus on two core classes for one-third of the year then shift to another core for each of the other sessions in the year. A trimester schedule is used for credit recovery opportunities as well as to provide remediation for skills that students might be lacking. This method focuses on five daily courses for 12 weeks and repeating this cycle three times. Some classes are taken for one trimester, others for two, and others for three.

The Effect of Block Scheduling on Student Achievement

Since the No Child Left Behind Act of 2002 was signed into law by former President George W. Bush, and the Every Student Succeeds Act was signed into law by President Obama in 2015, states have been held increasingly accountable for student performance and growth on standardized assessments (Davidson, Reback, Rockoff, & Schwartz, 2015). While the No Child Left Behind Act of 2002 focused solely on improving student academic achievement in reading and mathematics, the Every Student Succeeds Act required each school district to adopt a plan for improving all educational components that effect student outcomes (Baker, 2014; Cobo, 2013). Although there is published research which compares the effect of block scheduling and traditional scheduling on standardized assessments, there is a paucity of published research that examines a possible statistically significant difference between the English I End-Of-Course (EOC) Test Scores, the Algebra I EOC Test Scores, economically disadvantaged students in the state of Texas, who participated in block scheduling to that of students

who participated in traditional scheduling. One related study is that conducted by Smith (2017).

Smith (2017) examined the relationship between scheduling and the Algebra I EOC assessment scores of students, who attended two high schools in one district in South Carolina. The students participated in 4 X 4 block scheduling from 2011-2014 and A/B scheduling from 2014-2016. During the study, Smith (2017) examined Algebra I EOC exam scores from the three years each school was on a 4 X 4 block schedule and for the years each school employed an A/B block schedule. South Carolina Algebra I EOC exam scores for first-time ninth grade students from these high schools were collected and analyzed. Descriptive statistics were used to report sample sizes, means, as well as standard deviations for each of the independent variables. Descriptive statistics were also reported for data from 2011-2016 regarding gender, ethnicity, and socioeconomic status. A regression analysis was conducted to compare and analyze the mean differences of Algebra I EOC exam scores of students on 4 X 4 block schedules and A/B block schedules. In addition, a regression analysis was conducted in order to assess the relationship between Algebra I EOC scores and two types of block schedules 4 X 4 block and A/B block scheduling.

The results from the study conducted by Smith (2017) indicated that students who participated in block scheduling had a slightly higher overall mean score on the Algebra I EOC than those who participated in 4 X 4 scheduling. The study by Scott (2017) also examined the effect of block scheduling on students' math performance.

Scott (2017) conducted a quasi-causal-comparative, ex-post facto study in order to determine if block scheduling improved students' performance in math. The study, which was conducted in Nebraska, compared the Nebraska State Assessment Math assessment scores of students, who participated in block scheduling and who participated in traditional scheduling. The sample consisted of 128 students, who were divided into two independent groups. Four research questions guided the study: (1) What are the differences in the academic performance in mathematics, as measured by the state assessment evaluation scores of students in block scheduling compared to students in traditional scheduling?; (2) What are the differences in the academic performance in mathematics, as measured by the state assessment evaluation scores, of students of different subgroups in mathematics in a block schedule compared to traditional scheduling?; (3) What are the differences in the academic performance in mathematics, as measured by the state assessment evaluation scores, between students that have free and reduced lunch in block scheduling compared to traditional scheduling and students that have non-free and reduced lunch in block scheduling compared to traditional scheduling?; and (4)What are the differences in the academic performance in mathematics, as measured by the state assessment evaluation scores, of students between males in block scheduling and males in traditional scheduling; and of students between females in block scheduling and females in traditional scheduling?

The scores from the Scott 2017 study were analyzed by conducting independent sample *t*-tests to determine if there were differences in the math scores. Results from the *t*-tests indicated that there were no significant differences found in the students' math

scores for each type of scheduling and did not influence students' mathematical achievement regardless of gender, race, and free or reduced lunch status. As a result of the study, Scott (2017) recommended that further studies be conducted which focus on the effect of block scheduling on student achievement. Similar to the results of the study conducted by Scott (2017), who found that block scheduling had no statistically significant effect on student achievement, are the results from the study conducted by Marquez (2016).

Marquez (2016) conducted a quantitative study to determine if traditional, block, modified block, or flexible-modular scheduling had an effect on students' reading, mathematics, science, and socials studies End-of Course STAAR scores during the 2014-2015 academic year. In order to carry out the purpose of the study, Marquez (2016) collected data from 43 school districts and 143 public high schools in the state of Texas. The data consisted of the scores from the students' STAAR EOC reading, mathematics, science, and social studies assessments, which served as the dependent variables for the study. The type of scheduling served as the independent variables.

To analyze the data, Marquez (2016) used descriptive statistics, a Shapiro-Wilk test, and a non-parametric ANOVA to compare the means of the independent groups. Findings indicated no statistically significant difference between traditional, block and modified block schedules and the STAAR EOC reading, mathematics, science, and socials studies EOC scores. As a result of the findings from the study, Marquez (2016) suggested that future research include stakeholders' perceptions for successful schedule implementation from a qualitative perspective.

Traditional Schedule Significant Findings

Childers (2018) conducted a quantitative ex-post facto study to determine the effectiveness of block scheduling on students' EOC tests and on state standardized tests. The scores used in the study were representative of 1, 474 students in the state of Georgia, who were enrolled in English I, Math I, Biology, and Physical Science between the academic years of 2009 and 2012. There were 1,400 ninth grade students who took English I; 1, 283 ninth grade students who took Math I; 1, 270 student who took Biology; and 674 students who took Physical Science. The high schools represented in the study had either implemented 4 X 4, A/B, mixed block, or traditional period scheduling. Data were analyzed using an ANOVA to determine if a statistically significant difference existed between a particular type of block scheduling and students' scores. The dependent variable was the students' EOC and standardized tests scores. The independent variables were the types of block scheduling: 4 X 4 block, A/B block, mixed A/B block, and seven-period block.

Results from the study by Childers (2018) indicated that the type of block scheduling in which the students engaged did not influence their performance, except for in math. Similar to the results of the study by Childers (2018), are the findings from the study by Ramsey (2016), which also indicated that block scheduling does not effect students' math performance. Ramsey (2016) examined Algebra I EOC scores of 786 students from 166 high schools in South Carolina. The students represented in the study took Algebra I between 2010-2015 academic years and participated in one of three forms of scheduling, either traditional, block, or alternate block. The assessments used in the

study were a ninth grade Colorado grade-level exam and the ACT in English and mathematics. Two research questions guided the study: (1) What is the relationship between instructional time in the form of block and traditional period scheduling and Algebra I EOC over the 2010-2015 academic years?; and (2) What is the effect of scheduling on the Algebra I EOC test scores and the demographic covariables of ethnicity, socioeconomics, gender, and special services for the individual 2010-2015 academic years?

Ramsey (2016) analyzed the data using a non-experimental quantitative research methodology with a factorial analysis of variance (ANOVA) to determine the significance. Results from the analysis indicated higher mean scores for students who participated in block scheduling during the 2010-2011 and 2011-2012 school years. The findings also indicated higher mean scores for students who participated in traditional scheduling during the 2013-2015 school years. Additional findings indicated that there was no statistically significant difference in the mean for the 2010-2015 school years by gender. However, socio-economic status and special services were found to be significant in each academic year and race was found to be significant in 2011-2012 and 2014-2015.

As a result of the study, Ramsey (2016) recommended that future studies on block scheduling consider socioeconomic status and special services and that race should be examined more closely. Similar to the study conducted by Ramsey (2016) is the study conducted by Watkins (2017) who also examined the effect of block scheduling on students' EOC test scores.

Watkins (2017) conducted a quantitative correlational research approach to determine if 4 X 4 block and A/B block scheduling had an effect on the Georgia Milestones History EOC test scores of African American students and economically disadvantaged students. The EOC scores were representative of students from 163 high schools located Atlanta. Watkins (2017) used linear regression analyses one-way ANOVAs to examine the data that were collected during the study. Results from the study indicated that traditional scheduling more so than 4 X 4 block and A/B block scheduling had a more positive effect of the scores. Also, 4 X 4 block scheduling led to statistically significantly higher EOC scores than did A/B block scheduling. At the end of the study, (2017) suggested that future studies focus on how other variables such as poverty, race, and scheduling effect the academic performance of those students who attend high schools in urban and rural locales.

Freeman (2014) analyzed the differences between traditional schedules and block schedules on Algebra I, English EOCS, and Biology EOCS scores, attendance rates, graduation rates, and college and career readiness rates at high schools in Indiana. Data used in the study were from the 2012-2013 school year. The population consisted of 452 high schools. The sample included 202 high schools, 101 used traditional scheduling and 101 used block scheduling. Results indicated a significant negative correlation between the socioeconomic status and the six dependent variables. ANCOVAs revealed socioeconomic status was statistically significant on all six dependent variables. College and career readiness rate was the only dependent variable that had statistically significant

results and suggested that scheduling type had no significant effect on the students EOC scores, attendance rates, or graduation rates.

Pester (2018) investigated the relationship of scheduling on high school grades, and into college. Pester (2018) specifically examined the relationship between the high school scheduling plan experienced by 203 first-year college students and their responses surveys which focused on grade point averages, test anxiety, academic and test competence, study strategies, and time management. Results of the study led researchers to conclude that test anxiety, academic competence and time management each have a statistically significant relationship with high school schedule, and in each case those participants coming from a block schedule in high school were doing more poorly than those students coming from a traditional high school schedule. These results of this 2018 study further implied that experiencing a block schedule in high school may result in poorer academic performance in those areas.

McRae (2018) explored the differences in academic achievement on the Maryland High School Assessment in English Reading/Writing between student status English language learners (ELLs and non-ELLs) and the block schedule model (Traditional-block or A/B-block). The Maryland State Department of Education's website provided quantitative data for16 high schools from two of the state's largest urban school districts. Descriptive and inferential results revealed that student status had the highest mean difference and statistical significance. A 2 X 2 factorial analysis of variance revealed that the interactions between student status and block schedule model did not have a significant impact on academic achievement; however, data also revealed that the

traditional-block schedule model yielded higher academic achievement for ELLs and non-ELLs. Further analysis of the data suggested the need to provide all teachers with training in second language acquisition strategies and to re-examine the use of the traditional-block schedule model in high schools.

Kosek (2018) conducted a non-experimental, cross-sectional, correlational study to examine the possible influence of mathematical-instructional minutes on academic achievement as measured by the 2014 New Jersey Assessment of Skills and Knowledge 6, 7, and 8 mathematics scores. The variable of interest, mathematical-instructional minutes, was obtained via survey from all schools in New Jersey that educated students in Grades 6–8. The survey data were then matched with each responding school's New Jersey School Performance Report metrics. The unit of analysis was school's data run through multiple hierarchical regression models to determine the statistical significance and influence, if any, of mathematical-instructional minutes on NJ ASK 6–8 mathematics scores. The variable of interest, mathematical-instructional minutes, was not a significant predictor of student achievement for the NJ ASK Grades 6 and Grade 7. Mathematical-instructional minutes was a significant predictor of student achievement in Grade 8, accounting for 1.17% of the variance in total Proficient/Advanced Proficient math scores on the Grade 8 NJ ASK.

The results of the NJ study demonstrated that the percentage of economically disadvantaged students was the strongest predictor of student achievement, accounting for roughly 36%–65% of the explained variance in mathematics achievement. Percentage of students with a disability was also found to be a significant predictor of student

achievement in Grades 6 and Grades 7. Additionally, percentage of students taking Algebra was a significant predictor of student achievement in Grade 8.

Williams (2017) aimed to determine the effect block scheduling had on (a) student academic achievement, discipline, and attendance, and (b) administrator, teacher, and student perceptions. The 2017 study compared 2009– 2010 data from a high school utilizing the A/B block schedule (90 minutes-long class time) and a high school under a traditional schedule, in one suburban school district. The study, which used mixed methods design, yielded the following conclusions: (1) students experienced higher reading scores on the A/B block schedule than the traditional schedule; (2) students experienced higher math scores under the traditional schedule than the A/B block schedule; (3) attendance rates decreased for students under the A/B block schedule and increased for students under the traditional schedule; and (4) discipline referrals decreased at a higher rate for students under the traditional schedule than students under the A/B block schedule. The administrator, teacher, and student perceptions contributed to the following qualitative findings for the study: (1) block scheduling fosters extended learning sessions when properly planned; (2) with fewer transitions discipline issues decreased; (3) attendance schedule was thought to be difficult at first, but attainable, and alleviated any feelings of being rushed.

Perceptions of Block Scheduling.

The findings through the literature review of research conducted revealed that block scheduling was mainly used in high schools and universities and that it impacted student achievement, discipline, attendance, and student-teacher relationships. Cheryl and

O'Connell (1997) examined rural high school students' perceptions of block scheduling. The questions in the Cheryl and O'Connell study examined changes in teachers' instructional methods, changes in student-teacher relationships, in homework, classroom atmosphere, and in their attendance. During the third year of a block scheduling program, juniors and seniors, who had experienced both traditional and block schedules, completed surveys that asked for their perceptions of scheduling and its effects on them before and after block scheduling. Students also gave their opinions about the benefits and problems of block scheduling. Results indicated that students saw little difference in amounts of homework.

Participants of the Cheryl and O'Connell's 1997 study considered the longer classes boring because there were no breaks. They saw a slight increase in class discussions and group projects in block scheduled classes. Students considered teachers responsive to their academic needs both before and after block scheduling. They reported traditionally scheduled classes were more chaotic than block scheduled classes. Block scheduling also influenced students' decisions to attend school because it increased the amount of material covered each day. Students felt more stress in school after implementation of block scheduling. Overall, students supported block scheduling.

Calvery, Sheets, and Bell (2018) compared student perceptions of the block schedule with those of the traditional seven periods in high school. The study described a public school that voted to implement a modified three-block schedule containing two traditional periods. The participants in the study were 200 high school students, all of whom were switched from a traditional 7-period format to a block schedule. Data

collected from surveys were used to compare students' perceptions on various areas related to block scheduling practices. The surveys consisted of 12 Likert-scaled questions focusing on attitudes and perceptions. The results indicated that the students did not significantly favor the use of block scheduling. It was also recommended that school administrators should carefully study implementation and evaluation policies when initiating block scheduling.

McCoy (2018) examined the effects of block scheduling in one rural public high school with a case study utilizing interviews with students, teachers, and administrative personnel. Results from the 2018 study revealed that block scheduling helped students feel more empowered about learning, and teachers reported more empowerment in their instructional role. More assigned homework was being completed, and teachers indicated satisfaction about the demands on their time. Findings indicate that block scheduling basically benefited all students equally, regardless of ability level, attitude toward school, and degree of school success (McCoy, 2018).

Stader and DeSpain (2017) compared block scheduling to traditional schedules in small high schools (schools with fewer than 500 students in grades 9 to 12) through school administrator and teacher perceptions' of the effects of block scheduling on student achievement, school climate, and teacher methodology. The results of this 2017 study indicated that teachers and administrators generally believed block scheduling improved student achievement. Educators perceived an improvement in the quality of student work, depth of subject matter covered, student retention of material, and an increase in enrollment in advanced courses. However, when teachers were divided by

subject area, math/science teachers did not necessarily agree with this general assessment. Overall, the study found that block scheduling improved the teacher-student relationship, stimulated changes in teacher methodology, and improved school climate.

Peterson, Schmidt, Flottmeyer and Weincke (2014) analyzed the implementation of block scheduling in a suburban middle school in Minnesota, and its perceived effectiveness as a catalyst for change. The 2014 study presented several advantages of the block schedule suggesting that this type of scheduling system promotes academic achievement, increases creative approaches to instruction, and improves school climate. In this study teachers wanted to have 89 minutes-long lessons for an in-depth analysis of a subject.

Trenta and Newman (2014) conducted a longitudinal study to examine a controversial block-scheduling program in a small, mid-western city. Findings were based on "hard" data only, for example, grade point averages and attendance. Data were collected on 500 students with from zero to three years in the program. The findings were supportive of the block-scheduling program.

In another study, Corley (2003) explored student perceptions of, and attitudes about block scheduling after the fourth year of implementation. The sample included 255 students. According to results, students "agreed" (4 on the scale) on 8 of the first 11 items as being benefits of block scheduling: more total learning time, more time to learn concepts better, more opportunities to work with other students, more individual help from teachers, the ability to finish homework in class more often, better grades, more time to prepare for tests, and liking for the schedule.

Todd (2008) examined the perceptions of selected Atlanta public middle and high school teachers' perceptions regarding block scheduling and whether achievement data for selected Atlanta public middle and high schools differed when comparing to those schools during the time frame that block scheduling was in place and after block scheduling was discontinued. The findings of this study revealed that middle and high school teachers favored the block schedule over the traditional schedule. Nevertheless, only middle school achievement improved significantly under a traditional schedule.

In summary, there are a number of studies that do not provide a basis for the implementation of block scheduling for the purpose of impacting student academic improvement. In contrast there are a number of qualitative studies that verify the likeability of the block scheduling model for both students and teachers for the promotion of planning time for teachers, improved grades by providing more opportuites for students to complete assignments in class with the support of the teacher.

Advantages and disadvantages of block scheduling.

A brief review of the literature indicates that there are advantages and disadvantages of block scheduling. For example, block scheduling provides extra planning time for teachers and more opportunities for students to collaborate with their peers. However, block scheduling may also result in student disengagement and an oversaturation of information. Nevertheless, most school districts in the United States adhere to some type of block scheduling. However, the literature which focused on the effect of block scheduling on student achievement are mixed. Ramsey (2016) and Smith (2017) agreed that block scheduling positively impacts Algebra I EOC scores. Scott

(2017) also found that block scheduling positively influenced students' mathematical achievement. However, Childers (2018) and Marquez (2016) agreed that block scheduling does not impact student academic outcomes. Missing from the past five years of published literature were research studies, which examined the effect of block scheduling on high school attendance and graduation rates.

The literature by Trinkle (2014) stated that teachers believe that they demonstrated improved job performance because they had time to plan lessons more effectively on block scheduling. Due to the lighter student load on a 4 X 4 block, teachers indicated that they had time for more individualized instruction. With fewer papers and projects to grade, they stated they could assess students' progress more accurately Trinkle (2014) also contended that teachers perceived that they have better relationships with students and fewer discipline problems on a block schedule. Administrators, like teachers, reported more in-depth coverage of the curriculum as an advantage of block scheduling. They identified an increased number of students who took accelerated classes and made the honor roll and cited decreased failing grades, disciplinary problems, student absences, and dropouts which they credited to block scheduling.

Principals, according to Trinkle (2014) also indicated that they had increased flexibility in scheduling by having students enroll in eight classes per year as opposed to six or seven classes on a traditional schedule. According to principals, the key for successful implementation of block scheduling was administrative leadership and the provision of professional development. They were confident that clear goals were identified prior to the implementation of block scheduling and that evaluation and

adjustments occurred as needed. Administrators were generally perceived that block scheduling contributed to student achievement.

Mamon (2012) examined the perceptions of public secondary school teachers regarding block scheduling and to identify the perceived advantages and disadvantages of using the block schedule in three secondary schools in one suburban school system in Georgia. Perceptions of teachers were collected through a 23-item survey and three focus group discussions. This 2012 study concluded that secondary teachers' perceptions of block scheduling were generally favorable. As stated by McCoy (2018), time problems in schools have caused educators to look at alternatives to the traditional scheduling and the use of time has been a focus for change in the educational system on education reform (Trenta & Newman, 2014). When the research on block scheduling was examined, time was found to be the major reason behind adoption of block scheduling in Turkey.

Imbimbo and Gilkes (2009) also discussed the advantages and disadvantages of block scheduling. The researchers wrote that block scheduling is beneficial because students learn at different rates. Block scheduling can help teachers accommodate their students' differences and ultimately, can lead to higher student achievement. Imbimbo and Gilkes (2009) also suggest that increased learning time leads to more in-depth learning and higher student and teacher morale. Block scheduling encouraged the use of innovative teaching methods and a greater variety of instructional strategies that address multiple learning styles and has been to promote closer relationships between teachers and their students. Moreover, students who participate in block scheduling made greater

academic gains and had fewer discipline problems than students in schools using traditional schedules.

Additional benefits of block scheduling noted by Imbimbo and Gilkes (2009) were higher GPAs, lower failure rates, lower dropout rates, higher college enrollment rates and slightly higher SAT scores. However, the researchers warned that block scheduling is only effective as part of a larger effort to reform pedagogy, curriculum, and assessment. In fact, if a block scheduling program was implemented poorly, or without re-thinking other aspects of instruction, it can have no effect or even a negative effect on student performance. And that in order to be effective, block scheduling required ongoing professional development and more collaborative planning time for teachers. Imbimbo and Gilkes (2009) also wrote that teachers under block scheduling are able to cover less information under block scheduling, but in exchange the students are able to learn about a subject and process what they learn on a deeper level.

As it relates to the disadvantages of block scheduling, Imbimbo and Gilkes (2009) stated that teachers are often concerned about how to adjust their curriculum to focus on the most important material while still adhering to state or district standards. Block scheduling also required teachers to change their classroom techniques so that students who have attention spans that last for about 50-minute lecture were able to maintain focus for a full 90 minutes. The researchers also noted that with block scheduling, teachers should adjust their assessments to match the curriculum and pedagogy that is used in the block scheduling format. Also, with this method, changes in curricula, teaching practice and assessment required large amounts of planning time and professional training.

Other issues to consider were that districts may need to negotiate block scheduling demands with the teachers' contracts, since teachers may be asked to teach more hours on some days and less on others. Districts may also need to create a plan for working with substitute teachers, who are likely to have little experience handling a longer class period. Moreover, districts may need to implement different student attendance policies because if a student misses a few days within a block schedule, it is as if he or she has missed over a week of instruction. Similarly, block scheduling can be problematic for students who transfer to and from schools, especially if the student transfers during the middle of a semester (Merritt, 2017).

Merritt (2017) wrote about the advantages and disadvantage of block scheduling. According to Merritt (2017), some advantages of block scheduling were increased student achievement, improved morale among faculty, and improved student and parent satisfaction. Additionally, block scheduling offered increased instructional time, flexibility for the use of instructional time, and increased time on task, emphasis on content, and allows for a more relaxed pace of instruction. Block scheduling also was beneficial for students who required additional time and had been found to result in less stress for both teachers and students and fewer discipline problems. This method has also proven to assist with the transition of elementary school students as they moved to departmentalized structural environment of middle and high schools (Merritt, 2017).

Moreover, block scheduling reduced the number of classes students were required to take on a daily basis, permits students to take more classes during an academic year, and helps students to meet graduation requirements faster and better prepares them for

college classes (Merritt, 2017). Other advantages of block scheduling was that it lessens the frequency of class changes, which results in fewer disruptions; students had fewer homework assignments with the increased interdisciplinary team-teaching approach and was beneficial for classes that incorporated laboratories (Merritt, 2017).

Merritt (2017) also reported on the disadvantages of block scheduling. Merritt (2017) wrote that block scheduling reduced the amount of time between students and teachers, and required more careful planning and greater preparation. Students typically spent less face-to-face time with their teachers during a course, and when students were absent for a single block-scheduled class, they missed two or more classes of a traditional schedule and had more time to make up. There were difficulties with balancing discontinuous scheduling that may be counterproductive for students who are challenged by more stringent instruction, which may cause low-achieving students to struggle. Also, maintaining student retention of content knowledge, their attention and time on task, and their interest and motivation was problematic with the discontinuity commonly attributed to the use of block scheduling. Block scheduling can also create problems and conflicts with extracurricular programs and can cause students to experience a decreased level of skill or performance since they meet fewer times during the week.

Rettig (2019) reviewed over 100 case studies, dissertations and reports on block scheduling and suggested that roughly 30 percent of the nation’s high schools use some form of block scheduling. Research now is emerging about the effect of the two most common alternative high school scheduling models (Rettig, 2019).

Rettig (2019) also contended that the majority of teachers, administrators, students and parents are favorable to block scheduling. However, some teachers reported feeling greater stress until they learn how to plan for and teach in an extended block of time, but eventually both teachers and students report school becomes less stressful. In addition, the number of discipline referrals reduced by 25 to 50 percent. Teacher and student attendance improved and the number of class tardies were reduced. Rettig (2019) also reported that many students experience difficulty recovering from class absences. However, there are some indications that, under block scheduling, more motivated students had fewer absences.

Rettig (2019) stated evidence showed that students' grades improve and the number of students on the honor roll increased. Some evidence suggested that both improvements were greater in 4 X 4 schools than in A/B schools. Additionally, he reported that block scheduling had a positive effect on students' Algebra I, English I, Biology, U.S. history and a Social Studies end-of-course test scores. The researcher also noted that teachers and parents were more positive toward block scheduling when they were involved in the decision-making process. An exception to improved outcomes related to block scheduling was foreign language. In both the A/B and 4 X4 plans, foreign language classes were challenging because teachers had difficulty covering the equivalent of two classes of material during a double-length period.

A Paradigm Shift in Instructional Best Practices.

Queen (2002) offered best teaching practices for educators who participate in block scheduling. But first, Queen (2002) informed us about inappropriate methods for providing instruction during block scheduling. For example, the researcher stated that some teachers tend to lecture for the full 90 minutes, which bored students and led to behavior problems and ultimately had a negative return, since student attention spans cannot be sustained for longer than about 15 minutes. So in this case, you're "covering" a lot of material, but students aren't learning it. (2002) also states that some teachers lecture for half the period, then gave students the second half to complete homework, which was ineffective because students were actually learning only half the material over the course of a semester or year. Teachers should provide a brief, lecture occasionally, but not abandon it entirely.

The following best practices were offered by Queen (2002) for providing instruction during block scheduling. First, he suggested that teachers plan so that their lessons were planned in 15 to 20-minute chunks so that activities changed continuously from the beginning to the end of the class. Second, the researcher suggested that teachers over plan so that students were always on task. Next, Queen (2002) suggested that teachers use pacing guides. Pacing guides were used to map out when standards and benchmarks were to be covered over the semester or over the year.

Queen (2002) offered five structures that teachers could use depending on their students' needs. The first structure was called the classic. The classic refers to a ten-minute anticipatory set to build students' interest, to connect students' background

knowledge to the content that will be discussed, and to bring concepts out of students' long-term memory or to set the stage for learning. Then, teachers should provide direct instruction for 15 to 20 minutes. During direct instruction, teacher may offer direct instruction, provide a small lecture, perform a demonstration, show a video, have students read text or do an interactive online lesson. Next, during the classic approach, students should be provided with about 30 min to apply content, which can be done in the form of individual practice, reciprocal learning, or group work. Afterwards, teachers should allot 15 to 20 minutes for assessing the content or skills, followed perhaps by re-teaching for students who need remediation and an extension activity for students who met the standard. The 10 minutes of the block should include an opportunity for reflection or other kind of wrap-up closure in order to reemphasize the value of the lesson.

Queen (2002) referenced the use of the workshop model with students. During the workshop, students spend the majority of time working on their own projects. The class period might start with a brief 10-minute mini-lesson, and ideally ends with some kind of a wrap-up, sharing, or reflection time. Meanwhile, the teacher circulates the classroom, conferencing with students as needed. The lab structure focuses on one activity that takes up the majority of the class period. The big activity might be a simulations or role-plays, a debate, a project-based learning activity, a virtual field trip lab, or sketch noting which entails setting aside a class period so that students can create notes on a given topic.

The performance structure starts with an introduction and ends with a reflection or wrap-up. At the end of an instructional period using the performance structure, students should create a final product which they present to their classmate or visitors. The block

should include sharing and celebrating students' work, which may include speeches, galleries, digital projects, skits, or poetry readings. The final structure offered by Queen (2002), called the variety pack, includes days when students experience a mixture of fast-paced activities that includes reviews of previously learned content, drill and practice, or fun enrichment activities. During the variety pack structure, the teacher may rotate activities that can be set up as learning centers, or the whole class may participate together in a series of smaller activities such as skills practice, flashcards, practices, watching a short video clip, independent reading, journal writing, a philosophical debate, or group work with the teacher.

Summary

Chapter II provided a discussion of Vygotsky's (1978) Theory of Constructivism, which will serve as the conceptual framework for the proposed research study. As well, a detailed review of the literature provided a synthesis of relevant research literature related to the history of block scheduling, a comparison between traditional and block scheduling, and the effect of block scheduling on student achievement. Chapter II also included literature about the effect of block scheduling on student achievement, perceptions of block scheduling and some advantages and disadvantages of block scheduling. The chapter ended with information about best instructional practices for teachers who use a block scheduling model. The research yielded mixed results about schedule types and student achievement, so this study aimed to clarify the role of school scheduling and the effect on economically disadvantaged student acheiviment.

CHAPTER III

Methodology

Introduction

A quantitative research methodology was used to carry out the purpose of this study which was to determine if there was a statistically significant difference in the English I End-Of-Course (EOC) scores, the Algebra I EOC scores, of high school economically disadvantaged students in the state of Texas, who participated in block scheduling to that of students who participated in traditional scheduling. A quantitative research approach is used when the researcher wishes to quantify and compare variables and test hypotheses (Cleary, Horsfall, & Hayter, 2014). A quantitative methodology allowed the researcher to collect and evaluate numerical data associated with the students' English I and Algebra I EOC scores for the academic years of 2015-2016, 2016-2017, and 2017-2018 for A/B block scheduling and traditional scheduling. A quantitative research methodology also allowed the researcher to either accept or reject each hypothesis.

Schedule Types

This study examined traditional schedule (see figure 1) and A/B block schedule (see figure 2), and the role of scheduling on economically disadvantaged student achievement on the English 1 and Algebra I End-of-Course STAAR state mandated exams over the span of three academic years.

Figure 1: Sample of a Traditional School Schedule

The most widely used form of scheduling in the U.S. is the single-period daily schedule. Under this schedule, students attend six, seven, or eight classes each day throughout the school year from 45- 55 minutes (TEA, 1999 & Dance, 2015)

Traditional Single-Period Schedule					
Day	M	T	W	TH	F
PERIOD	1	1	1	1	1
	2	2	2	2	2
	3	3	3	3	3
	4	4	4	4	4
	5	5	5	5	5
	6	6	6	6	6
	7	7	7	7	7
	8	8	8	8	8

Source: Texas Education Agency Policy Research (TEA, 1999)

Figure 2: Sample of an A/B block school schedule

An academic schedule whereby high school students take four classes for longer for a span of 90-111 minutes (Pester, 2018).

Basic A/B Block Schedule							
DAY		M A	T B	W A	TH B	F A	M B
PERIOD	BLOCK I	1	2	1	2	1	2
		1	2	1	2	1	2
	BLOCK II	3	4	3	4	3	4
		3	4	3	4	3	4
	BLOCK III	5	6	5	6	5	6
		5	6	5	6	5	6

Source: Texas Education Agency Policy Research (TEA, 1999)

Overview

The effect of block scheduling on student outcomes has been a major topic in education reform (Akyuz et al., 2013; Smith, 2017). The purpose of this proposed study was to determine if there was a statistically significant difference in the English I End-Of-Course (EOC) Test Scores, the Algebra I EOC Test Scores, of students in the state of Texas, who participated in block scheduling to that of students who participated in traditional scheduling during the academic years of 2015-2016, 2016-2017, and 2017-2018.

Research Design

The current study utilized a causal comparative research design. A causal comparative research design is also referred to as an ex post facto research design (Bakker & van Eerde, 2015; McCusker & Gunaydin, 2015). A causal comparative design is used when groups are formed prior to the study (Bakker & van Eerde, 2015; McCusker & Gunaydin, 2015). A causal comparative design is also used when no manipulation of variables will take place during the study because the measurement of the dependent variable occurred prior to the study.

In this quantitative research study, the variables were based on the characteristic of which class schedule the EOC was administered, A/B block scheduling or the traditional period. The independent variables were the type of scheduling, traditional or A/B block. The dependent variables are the English I EOC scores, the Algebra I EOC scores. With the ex post facto causal comparative design, the researcher was able to determine if and to what extent the independent variables impacted the dependent variables. Additionally, when conducting causal comparative research designs, participants are not randomly selected.

Additionally, as previously collected data are analyzed with a purpose other than that for which they were initially collected, this study was a secondary analysis, or a research study employing archival data or records. The secondary analysis allowed for the examination of significant questions without the time-consuming task of generating the data.

A choice between research methods is based on a set of decisions about the questions to answer and the practicality of gathering the kind of data that will answer those questions. A causal comparative research design allows for the examination as to whether a specific class schedule is more conducive to student academic achievement on state-mandated standardized tests. This design was most appropriate for this study because there were no control over the variables and can only report what happened through an examination of the means for the scores for each year's schedule. Rather than make before and after comparisons as in experimental design, a causal comparative research design allowed for the comparison of groups after the introduction of some condition and the groups as to the condition's possible effect.

Research Questions and Hypotheses

The following questions and hypotheses guided the study:

RQ1. In a high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years, was there a statistically significant difference between the STAAR EOC English I scores of economically disadvantaged students who participated in traditional scheduling in comparison to the STAAR EOC English I scores of non-economically disadvantaged students who participated in A/B block scheduling?

H_0 There is no statistically significant difference between the STAAR EOC English I scores of economically disadvantaged students who participated in traditional scheduling in comparison to the STAAR EOC English I scores of non-economically disadvantaged students who participated in A/B block scheduling in

a high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years.

H_1 There is a statistically significant difference between the STAAR EOC English I scores of economically disadvantaged students who participated in traditional scheduling to non-economically disadvantaged students those who participated in A/B block scheduling in a high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years.

RQ2. In a high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years, was there a statistically significant difference between the STAAR EOC Algebra I scores of economically disadvantaged students who participated in traditional scheduling in comparison to the STAAR EOC Algebra I scores of non-economically disadvantaged students who participated in A/B block scheduling?

H_0 There is no statistically significant difference between STAAR EOC Algebra I scores of economically disadvantaged students who participated in traditional scheduling in comparison to non-economically disadvantaged students who participated in A/B block scheduling in a high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years.

H_1 There is a statistically significant difference between the STAAR EOC Algebra I scores of economically disadvantaged students who participated in traditional scheduling in comparison to those who participated in A/B block scheduling in a

high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years.

Population and Sample

This study included four different high schools with similar demographics categorized by the Texas Education Agency comparison group from all comprehensive high schools located in the state of Texas, with the economically disadvantaged student population range of 64.9%-72%, utilizing the Texas Education Agency's comparison groups, which groups campus by student enrollment, economically disadvantage population and student mobility rate. After utilizing the Texas Education Agency's campus comparison group, the researcher identified four Texas high schools, that had consistently maintained the same schedule traditional or A/B block for the three consecutive years of this study with the use of the Google search engine. Neither the names of the high schools or the school district selected for this study were identifiable in the dissertation. Instead, the four high schools were assigned pseudonyms. This study was based on archival data of high school 9th grade students in the state of Texas. Instead, scores that were representative of students were used.

The data used during the study were selected from the population of high school students in the state of Texas who either: (1) were enrolled as first-time ninth graders; (2) who took the English I EOC test; and/or (3) took the Algebra I EOC test between the years of 2015 and 2018 (see Appendix E). The sample for the study was selected from the population of students from four high schools in one district who

met the aforementioned criteria. A statistical analysis was conducted employing techniques from the independent sample *t*-test to compare mean scale scores by schedule types and socioeconomic status, followed by *One-way* analysis of variance (ANOVA), to compare mean scale scores between the four campuses. The scores used in the study were not associated with the identities of the sample of high school students in any way.

Data Collection

The researcher fulfilled the National Instutue of Health certification (see Appendix A), which signifies that the researcher is qualified and protected human research participants. After the Stephen F. Austin State University's Institutional Review Board (IRB) case number AY2020-1021 was approved the researcher's dissertation proposal (see Appendix B). Next the researcher requested data through a public information request (see Appendix C) from the Texas Education Agency (TEA), to gather data from the four slected major suburban high schools in Texas. The Public Education Information Management System (PEIMS) database archives information on student demographics, academic performance, and student attendance and course completion rates. The researcher gained access to the English I, Algebra I, and economically disadvantaged rates from 2015 and 2018 for the four high schools that were represented in the study. All archival data are accessible to the public, for the 2015-2016, 2016-2017, and 2017-2018 academic years by way of public information request to the Texas Education Agency (TEA).

Data Analysis

Once the data were collected it was entered into Microsoft Excel spreadsheets and coded by the researcher. The data were then transferred to Statistical Package for the Social Science (SPSS) for further analysis. Descriptive statistics were used to analyze information about the sample size, means, and standard deviations. The descriptive statistics and analysis results are presented in tables and an analysis was conducted to examine the role between traditional and A/B block scheduling and the impact on economically disadvantaged students on the English I and Algebra I End-of-Course STAAR state mandated exams, from 2015-2016, 2016-2017 and 2017 -2018. Inferential statistics techniques were employed using an independent sample *t*-test to compare two groups schedule types and sociecoomic status and a *one-way* between subjects ANOVA to compare the academic performace between the four major suburban high school campuses. During the course of this study, all data were stored in a locked file cabinet at the researcher's home. All data collected will be shredded three years after completion of this study.

Summary

Chapter III presented a discussion of the research design, research questions and hypotheses, sample population, data collection and data analysis methods. Four research questions were examined with six hypotheses tested. The population and sample for the quantitative study did not include human subjects, but used scores representative of students who meet the criteria for this study. An independent samples *t*-test and ANOVA analysis using Statistical Package for the Social Science (SPSS) were utilized to conduct

statistical quantitative analysis. The researcher used a quantitative ex facto research design to answer the questions and to test the hypotheses. Descriptive statistics were used to collect information about the sample size, means, and standard deviations. After the results and findings of the study were reported, the researcher made recommendations for further study.

CHAPTER IV

FINDINGS

Results and Analysis of Data

The effect of scheduling on student outcomes was the focus of this study. Block scheduling, which is an alternative method to traditional scheduling, involves the restructuring of class periods from traditional 55 minutes of instruction per subject per day to classes which last from 60 to 120 minutes per day for fewer days per week (Baker, 2014 & Pester, 2018). Research has shown that block scheduling may positively affect students' academic performance in reading and in math as well as in other subject areas (Freeman, 2014; Pester, 2018 & Scott, 2017). However, Smith (2017) did not validate block scheduling as significant for improving student achievement, but instead suggested scheduling type does influence student outcomes.

This causal-comparative study focused on two student groups by socioeconomic status to examine the relationship between traditional; A/B block scheduling and the effect on student outcomes on four major suburban high schools in Texas. Every Student Succeeds Act (ESSA) required each school district to adopt a plan for improving all educational components that affect student academic outcomes (Baker, 2014 & Cobo, 2013). Although there was published literature which compared the effect of block scheduling and traditional scheduling on standardized assessments, there was minimal

published research that examined the relationship of possible statistical significant differences between English I End-of-Course (EOC) and Algebra I EOC assessment scores, and its effect based on students socioeconomic status and the relationship on school scheduling.

Administered reading and mathematics assessments for End-of-Course STAAR state mandated exams were used to determine the academic achievement for students included in the sample. The analysis used two of the three required state assessments for 9th grade students, specifically the first administration scores of ninth grade English I and Algebra I End-of-Course assessments. Any student who was administered an alternative or modified version of the English I or Algebra I End-of-Course STAAR for the three years included in the study were excluded from the sample because their data did not meet the criteria to be included in the study.

This study used archival student assessment data from the Texas Education Agency (TEA) Public Education Information Management System (PEIMS), and Texas Academic Performance Reports (TAPR) for three consecutive years between 2015-2016, 2016-2017, and 2017-2018. The two of the four high school campuses selected for this study used a traditional school schedule in which students attend class for 55 minutes or less each day or A/B block in which students attend four classes every other day for 90 minutes (Queen, 2002). The four Texas comprehensive high schools selected for this study were classified as Title I schools. The U.S Department of Education defines Title I as the largest federally funded educational program. The program provides additional funding to school districts to assist schools with the highest student concentrations in

poverty to meet school educational goals and state academic accountability. A designation of Title I is determined by the number of students that qualify for free or reduced lunch based on household income (U.S Department of Education, 2012).

Table 1 represents the overall campus enrollment for the 2015-2016 school year and reports the percentage of student enrollment by socioeconomic status of each campus selected for this study accompanied by the type of schedule that each campus follows.

Table 1

Enrollment by Socioeconomic Status for 2015-2016 School Year

Campus	Schedule Type	*N*	Non-Economically Disadvantaged	Percentage	Economically Disadvantaged	Percentage
1	Traditional	2654	932	35.1	1722	64.9
2	Traditional	2463	725	29.4	1738	70.6
3	Block	2843	811	28.5	2032	71.5
4	Block	3674	826	22.5	2848	77.5

Source: 2015-2016 Texas Academic Performance Report

Campus 1 included in this study is located ten miles from downtown Fort Worth, TX. The district is classified by Texas Education Agency (TEA), as major suburban, the University Interscholastic League (UIL) categorized Campus 1 as a 6A campus by student enrollment, according to the Texas Public Education Information Management

System (PEIMS), which encompasses all student demographic data requested by TEA, the student enrollment was 2,640 students and 69.2% of the total student population was economically disadvantaged. In 2018, Campus 1 earned an academic rating of 81 out of 100. Campus 2 selected for this study is located 13 miles from downtown Dallas, TX. The district is classified by TEA as a major suburban, the University Interscholastic League (UIL) categorized Campus 2 as a 6A campus by student enrollment, and in 2017-2018 school year Campus 2 earned an academic rating of 83 out of 100.

Table 2 represents the overall campus enrollment for the 2016-2017 school year and reports the percentage of student enrollment by socioeconomic status of each campus selected for this study each campus accompanied by the type of schedule that each campus follows.

Table 2

Enrollment by Socioeconomic Status for 2016-2017 School Year

Campus	Schedule Type	*N*	Non-Economically Disadvantaged	Percentage	Economically Disadvantaged	Percentage
1	Traditional	2624	852	32.5	1722	67.5
2	Traditional	2503	709	28.3	1794	71.7
3	Block	2816	773	27.5	2043	72.5
4	Block	3704	871	23.5	2833	76.5

Source: 2016-2017 Texas Academic Performance Report

In 2018, Texas Public Education Information Management System (PEIMS), which encompassed all student demographic data requested by TEA, reported student enrollment 2,478 students, and 69% of the total student population was economically disadvantaged. Campus 3 identified for this study is located 12 miles from downtown Dallas, TX. The district is classified by TEA as major suburban, the University Interscholastic League (UIL) categorized Campus 3 as a 6A campus by student enrollment, and in 2017-2018 school year, Campus 3 earned an academic rating of 80 out of 100. In 2018 the Texas Public Education Information Management System, which encompassed all student demographic data requested by TEA, the student enrollment was 2,805 students and 71.1% of the total student population was economically disadvantaged. Campus 4 that was included for this study is located 20 miles from downtown San Antonio, TX. The district is classified by TEA as major suburban, the University Interscholastic League (UIL) categorized Campus 4 as a 6A campus by student enrollment, campus by student enrollment, and in 2017-2018 school year Campus 4 earned an academic rating of 81 out of 100. According to the Texas Public Education Information Management System, which encompasses all student demographic data requested by TEA, the student enrollment was 2,374 students and 72% of the total student population was economically disadvantaged.

Table 3 represents the overall campus enrollment for the 2017-2018 school year and reports the percentage of student enrollment by socioeconomic status of each campus selected for this study each campus accompanied by the type of schedule that each campus follows.

Table 3

Enrollment by Socioeconomic Status for 2017-2018 School Year

Campus	Schedule Type	*N*	Non-Economically Disadvantaged	Percentage	Economically Disadvantaged	Percentage
1	Traditional	2640	814	30.8	1826	69.2
2	Traditional	2478	767	31.0	1711	69.0
3	Block	2805	810	28.9	1995	71.1
4	Block	2374	664	28.0	1710	72.0

Source: 2017-2018 Texas Academic Performance Report

The total number of students included in the sample size from each high school varied from year to year. However, this study included sufficient data collected for three academic school years to establish a sample size large enough to meet the statistical requirements. Data analysis was conducted based on socioeconomic status, campus and schedule type.

Research Questions and Hypothesis

The following questions and hypotheses guided the study:

RQ1. In a high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years, was there a statistically significant difference between the STAAR EOC English I scores of economically disadvantaged students who participated in traditional scheduling in comparison to the STAAR EOC English I

scores of non-economically disadvantaged students who participated in A/B block scheduling?

H_0 There is no statistically significant difference between the STAAR EOC English I scores of economically disadvantaged students who participated in traditional scheduling in comparison to the STAAR EOC English I scores of non-economically disadvantaged students who participated in A/B block scheduling in a high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years.

H_1 There is a statistically significant difference between the STAAR EOC English I scores of economically disadvantaged students who participated in traditional scheduling to non-economically disadvantaged students those who participated in A/B block scheduling in a high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years.

RQ2. In a high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years, was there a statistically significant difference between the STAAR EOC Algebra I scores of economically disadvantaged students who participated in traditional scheduling in comparison to the STAAR EOC Algebra I scores of non-economically disadvantaged students who participated in A/B block scheduling?

H_0 There is no statistically significant difference between STAAR EOC Algebra I scores of economically disadvantaged students who participated in traditional scheduling in comparison to non-economically disadvantaged students who

participated in A/B block scheduling in a high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years.

H_1 There is a statistically significant difference between the STAAR EOC Algebra I scores of economically disadvantaged students who participated in traditional scheduling in comparison to those who participated in A/B block scheduling in a high school located in Texas, for the 2015-2016, 2016-2017, and 2017-2018 academic years.

Data Analysis

For RQ1 and RQ 2, IBM Statistical Package for the Social Science (SPSS) version 25 (IBM Corp, 2017), was utilized by the researcher to conduct an independent samples *t*-test and *One-way* analysis of variance (ANOVA). Schedule types of traditional schedule and A/B block schedule and student socioeconomic status were the variables treated for independent samples *t*-test, mean scale scores groups were then compared. Descriptive statistics were applied to summarize the measure of central tendency and variability Popham and Sirontnik (1992) of English I and Algebra I End- of-Course scale scores for 2015-2016, 2016-2017, and 2017-18.

One-way analysis of variance (ANOVA) procedures were implemented to compare mean scale scores campus between and within four campus groups, this technique allowed the researcher to determine level of statistical significance and generalize to a larger population (Gay & Mill, 2012; Popham & Sirotnik, 1992).

When determining the mean scale scores for English I and Algebra I End-of-Course state mandated exams the researcher referenced score conversion tables created

by Texas Education Agency (TEA) . Scale scores allowed direct comparison of achievement among student groups. The State Assessments of Academic Readiness (STAAR) has three performance levels for rating to evaluate student achievement and academic readiness. When students' scale scores are rated as did not meet grade level; it is stated that students are unlikely to succeed in the next grade level without significant targeted academic intervention; approaches grade level suggest students are likely to succeed in the next grade level with targeted intervention and support; meets grade level as stipulates that students have a high likelihood of success in the next grade level and may need short-term, targeted academic intervention. Masters grade level was defined as students having demonstrated that they are expected to succeed in the next grade level with little to no academic intervention (TEA, 2017).

Acheivement scale scores for English I and Algebra I End-of Course STAAR exams set by the Texas Education Agency (TEA), were suited for this investigation because scale scores are used to measure student achievement relative to passing or proficiency standards established by the Texas Education Agency (TEA). Frequencies account for the number of times each value of a variable occurs (Gay & Mills, 2012). Frequencies yielded demographic information on race and ethnicity, and socioeconomic status categorized by schedule type and occurrences for each campus.

Hypothesis Testing

Independent samples *t*-test procedures were employed to analyze student mean scale scores for both English I and Algebra I End-of-Course state mandated assessments by student socioeconomic status derived from campus schedule type; *t*-test was an

appropriate statistical analysis for this study since it is used to determine statistical significance between the mean averages of two groups (Popham & Sirotnik, 1992).

Techniques for Levene's Test for Equality of Variances were implemented to verify level of significance. For this study, *p* value or (α) were set at ≤ .05, to meet the educational standard. When interpreting the variance for significance, if the significance value (significance) is greater than ≥ .05, no significant difference is found. However, when significance values are reported less than ≤ .05, it is deemed significant. The stability of confidence interval was set at 95% to account for accuracy of the true mean of the population sample (Gay & Mills, 2012).

One-way analysis of variance (ANOVA) is a parametric test of significance used to determine whether scores from two or more groups are significantly different at a selected probability level (Gay & Mills, 2012). Procedures for *one-way* analysis of variance (ANOVA) were suited for this study because the researcher investigated the statistical significance of English I and Algebra I End-of-Course STAAR assessments scale scores, between and within campuses four high school groups. Tukey *post hoc* tests were utilized to determine the statistical significant effect for all four campuses.

Effect sizes are categorized into three groups by variance, d = .10 or small will account 1% of total variance, d =.20 medium or 9%, and d = .80 large or 25% and measure the strength between variables (Field, 2002). Cohen's *d* effect size calculations are required since independent samples *t-test* procedures were conducted, to investigate the effect of school scheduling based on the socioeconomic status of students and the impact on academic achievement. Techniques to determine the effect size Cohen's *d*,

required the researcher to compute cross tabulations of mean (*M),* standard deviations *(SD)* and sample size (n) to determine effect size. Findings from Cohen's *d* statistical treatment illuminated the difference between two group means (Salkind, 2010). Cohen's *f* was used when determining the effect size after a *one-way* analysis of variance (ANOVA) was conducted. Effect sizes are categorized into three groups by variance, *d* = .10 or small will account 1% of total variance, *d* =.25 medium or 9%, and *d* = .40 large or 25% and measure the strength between variables (Field, 2002).

Presenting of Findings

End-of Course English I STAAR. This study analyzed data from four high major suburban public independent high schools located in the state of Texas. In the 2015-2016 school year, the overall sample size included 2,997 students in 9th grade who participated in the English I End-of-Course STAAR state-mandated exam; of which 655 or 21.9% students were identified by the state of Texas as non-economically disadvantaged and 2,342 or 78.1% economically disadvantaged. Participants from Campus 1 accounted for 709 or 23.7% of the students. Campus 2 consisted of 573 participants and accounted for 19.1%, which is the smallest portion of the sample size. Campus 3 represented 733 or 24.5% of the overall sample size. Finally, Campus 4 had a total of 982 participants or 32.8%, which is the campus with the highest student population of the overall sample size.

The demographic breakdown for this sample consisted of 288 or 9.6% African American of the overall sample size; 2,259 or 75.4% Hispanic students, which is the largest student group; 353 or 11.8% White students, which accounted for the second-

largest student group in the sample size; 66 or 2.2% were Asian students. The smallest student group included combined ethnic groups, two or more races, American Indian and Pacific Islander, which accounted for 20 or .7% students. Additionally, data revealed 1,282 or 42.8% of students were on a traditional school schedule and 1,715 or 57.2% of students were on the A/B block schedule.

For RQ1 independent *t-test* procedures were employed to analyze data English I End-of-Course STAAR assessment data for 2015-2016, 2016-2017 and 2017-2018, based on schedule type and socioeconomic status, which included non-economically and economically disadvantaged students. In 2015-2016 analysis of data indicated students that were on a traditional school schedule had a lower mean scaled score of 3862.31; versus a higher reported mean scale score for students that participated in the A/B block schedule averaging 3863.88.

Table 4 depicts an analysis of 2016 English I End-of-Course STAAR EOC based on traditional and A/B block schedules. Data represents the scale scores of students on a traditional school schedule were lower $p = < 0.05$ than the students on the block schedule. The analysis reported $n = 1282$ for the campuses on traditional schedule, which represents 42.8% of the sample size and an *M* score of 3862.31. The campuses on block schedule had an *n* of 2997; which represents 57.2% of the sample size with an *M* scale score of 3863.88.

Table 4

English I 2016 End-of-Course STAAR Scores by Schedule Type

Schedule Type	*n*	*%*	*M*	*SD*
Traditional	1282	42.8	3862.31*	.431
Block	1715	57.2	3863.88	.398
Total	2997	100.0		

**Note: Indicates statistically significant lower score p= <0.05*

Table 5 represents data analysis, based on non-economically disadvantaged and economically disadvantaged students from the English I 2016 End-of-Course STAAR results. Data indicated the scale scores of non- economically disadvantaged students were higher than economically disadvantaged students. The analysis reported *n* = 655 for non-economically disadvantaged students; which represents 21.9% of the sample size and an *M* scale score of 3961.06. The economically disadvantaged students had an *n* of 2342; which represents 78.1% of the sample size with an *M* scale score of 3835.84 and the *n* total =2997.

Table 5

English I 2016 End-of-Course STAAR Scores Results by Economic Status

Socioeconomic Status	*n*	*%*	*M*	*SD*
Non-Economically Disadvantaged	655	21.9	3961.06	481.22
Economically Disadvantaged	2342	78.1	3835.84	438.22
Total	2997	100.0		

Table 6 yielded an analysis of 2017 English I End-of-Course STAAR EOC based on traditional and A/B block schedules. Data illustrated the scale scores of students on a traditional school schedule were higher than the students on the block schedule. The analysis reported *n* =1252 for the campuses on traditional schedule; which represents 44.1% of the sample size and an *M* scale score of 3844.85. The campuses on block schedule had an *n* of 1589; which represents 55.9% of the sample size with an *M* scale score of 3881.20 and the *n* =2841.

Table 6

English I 2017 End-of-Course STAAR Scores by Schedule Type

Schedule Type	*n*	*%*	*M*	*SD*
Traditional	1252	44.1	3844.85*	.442
Block	1589	55.9	3881.20	.396
Total	2841	100.0		

**Note: Indicates statistically significant lower score p= <0.05*

Table 7 represents data analysis, based on non-economically disadvantaged and economically disadvantaged students from the English I 2017 End-of-Course STAAR results. Data indicated the scale scores of non-economically disadvantaged students were higher than economically disadvantaged students. The analysis reported *n* = 642 for non-economically disadvantaged students; which represents 22.6% of the sample size and an *M* scale score of 3962.33. The economically disadvantaged students had an *n* of 2199; which represents 77.4% of the sample size with an *M* scale score of 3836.82 and the *n* =2841.

Table 7

English I 2017 End-of-Course STAAR Scores Results by Economic Status

Socioeconomic Status	*n*	*%*	*M*	*SD*
Non-Economically Disadvantaged	642	22.6	3962.33	486.47
Economically Disadvantaged	2199	77.4	3836.82*	454.18
Total	2841	100.0		

**Note: Indicates statistically significant lower score p= <0.05*

Table 8 reports an analysis of 2018 English I End-of-Course STAAR EOC based on traditional and A/B block schedules. Data reported the scale scores of students on a traditional school schedule were higher than the students on the block schedule. The analysis reported *n* =1311 for the campuses on traditional schedule; which represented 56.2% of the sample size and an *M* scale score of 3922.14. The campuses on block

schedule had an *n* of 1023; which represents 43.3% of the sample size with an *M* scale score of 3859.27 and the *n* =2234.

Table 8

English I 2018 End-of-Course STAAR Scores by Schedule Type

Schedule Type	*n*	*%*	*M*	*SD*
Traditional	1311	56.2	3922.14	.433
Block	1023	43.3	3859.27	.426
Total	2334	100.0		

Table 9 presents data analysis, based on non-economically disadvantaged and economically disadvantaged students from the English I 2018 End-of-Course STAAR results. Data reported the scale scores of non- economically disadvantaged students were higher than economically disadvantaged students. The analysis reported *n* = 570 for non-economically disadvantaged students; which represents 24.4% of the sample size and an *M* score of 4007.33. The economically disadvantaged students had an *n* of 1764; which represents 75.6% of the sample size with an *M* scale score of 3858.15. The *n* is 2841.

Table 9

English I 2018 End-of-Course STAAR Scores Results by Economic Status

Socioeconomic Status	*n*	*%*	*M*	*SD*
Non-Economically Disadvantaged	570	24.4	4007.33	469.17
Economically Disadvantaged	1764	75.6	3858.15*	443.75
Total	2841	100.0		

**Note: Indicate statistically lower score p= <0.05*

End of Course Algebra I STAAR. In the 2015-2016 school year, the overall sample size included 2,231 students in 9th grade who participated in the Algebra I End-of-Course STAAR state-mandated exam; of which 448 or 20.1% of students were identified by the state of Texas as non-economically disadvantaged and 1,783 or 79.9% economically disadvantaged. Participants from Campus 1 accounted for 581 or 26.0% of the students. Campus 2 consisted of 409 participants and accounted for 18.3% which is the smallest portion of the sample size. Campus 3 represented 615 or 27.6% of the overall sample size. Finally, campus 4 had a total of 626 participants or 28.1%, which is the campus with the highest student population of the sample size.

The demographic breakdown for this sample consisted of 248 or 11.1% African American; of the overall sample size; 1,652 or 74.0% Hispanic students, which was the largest student group; 274 or 12.3% White students, which accounted for the second-largest student group in the sample size; 30 or 1.3% are Asian students. The smallest

student group included combined ethnic groups, two or more races, American Indian and Pacific Islander; which was 27 or 1.2%. Additionally, data revealed 990 or 44.4% of students were on a traditional school schedule and 1,241 or 55.6% of students were on the A/B block schedule.

In 2016-2017, 2,078 students in 9th grade participated in the Algebra I End-of-Course STAAR mandated exam; which is a decrease of 153 or 6.6% less than the 2015-2016 school year. Of the 2,078 students, 437 or 21.0% were identified by the state of Texas as non- economically disadvantaged and 1,1641 or 79.0% economically disadvantaged. In comparison to the 2015-2016 school year, there was a difference of 11 or 2.5% of non-economically disadvantaged students and 142 or 8.0% economically disadvantaged students. In 2017-2018, 1,656 students in the 9th grade participated in the Algebra I End-of-Course STAAR mandated exam: which was a decrease of 422 or 20.3% less than the 2016-2017 school year. Of the 1,656 students, 346 or 20.9% were identified by the state of Texas as non-economically disadvantaged and 1,310 or 79.1% economically disadvantaged.

For RQ2 independent *t*-test procedures were employed to analyze data Algebra I End-of-Course STAAR assessment data for 2015-2016, 2016-2017, and 2017-2018, based on schedule type and socioeconomic status, which included non-economically and economically disadvantaged students. The 2015-2016 analysis of data indicated students that were on a traditional school schedule had a higher mean scaled score of 3740.81; versus a higher reported mean scale score for students that participated in the A/B block schedule averaging 3718.02.

Table 10 depicts an analysis of 2016 Algebra I End-of-Course STAAR EOC based on traditional and A/B block schedules. Data illustrated the scale scores of students on a traditional school schedule were higher than the students on the block schedule. The analysis reported *n* =990 for the campuses on traditional schedule; which represents 44.4% of the sample size and an *M* scale score of 3740.81. The campuses on block schedule had an *n* of 1241; which represents 55.6% of the sample size with an *M* scale score of 3718.02 and the *n* =2231.

Table 10

Algebra 1 2016 End-of-Course STAAR Scores by Schedule Type

Schedule Type	*n*	*%*	*M*	*SD*
Traditional	990	44.4	3740.81	.423
Block	1241	55.6	3718.02*	.381
Total	2231	100.0		

**Note: Indicates statistically significantly lower p= <0.05*

Table 11 represents data analysis, based on non-economically disadvantaged and economically disadvantaged students from the Algebra I 2016 End-of-Course STAAR results. Data indicated the scale scores of non- economically disadvantaged students were 3785.76 or higher than economically disadvantaged students. The analysis reported *n* = 448 for non-economically disadvantaged students; which represented 20.1% of the sample size and an *M* scale score of 3785.76. The economically disadvantaged students

had an *n* of 1783; which represents 79.9% of the sample size with an *M* scale score of 3713.65 and the *n* =2231.

Table 11

Algebra I 2016 End-of-Course STAAR Scores Results by Economic Status

Socioeconomic Status	*n*	*%*	*M*	*SD*
Non-Economically Disadvantaged	448	20.1	3785.76	375.63
Economically Disadvantaged	1783	79.9	3713.65	372.49
Total	2231	100.0		

Table 12 yields an analysis of 2017 Algebra I End-of-Course STAAR EOC based on traditional and A/B block schedules. Data signified scale scores of students on a traditional school schedule were higher than the students on the block schedule. The analysis reported *n* = 970 for the campuses on traditional schedule; which represents 46.7% of the sample size and an *M* scale score of 3740.81. The campuses on block schedule had an *n* of 1180; which represents 53.3% of the sample size with an *M* scale score of 3718.02 and the *n* =2078.

Table 12

Algebra 1 2017 End-of-Course STAAR Scores by Schedule Type

Schedule Type	*n*	*%*	*M*	*SD*
Traditional	970	46.7	3740.81	.423
Block	1180	53.3	3718.02	.381
Total	2078	100.0		

Table 13 reports data analysis, based on non-economically disadvantaged and economically disadvantaged students from the Algebra I 2017 End-of-Course STAAR results. Data indicated the scale scores of non- economically disadvantaged students were 3855.89 mean scale scores or higher than economically disadvantaged students. The analysis reported $n = 437$ for non-economically disadvantaged students; which represented 21.0% of the sample size and an *M* scale score of 3855.89. The economically disadvantaged students had an *n* of 1641; which represents 79.0% of the sample size with an *M* scale score of 3824.23.

Table 13

Algebra I 2017 End-of-Course STAAR Scores Results by Economic Status

Socioeconomic Status	*n*	*%*	*M*	*SD*
Non-Economically Disadvantaged	437	21.0	3855.89	367.07
Economically Disadvantaged	1641	79.0	3824.23	370.13
Total	2078	100.0		

Table 14 presents an analysis of 2018 Algebra I End-of-Course STAAR EOC based on traditional and A/B block schedules. Data signified scale scores of students on a traditional school schedule were higher than the students on the block schedule. The analysis reported n = 1001 for the campuses on traditional schedule; which represented 60.4% of the sample size and an M scale score of 3891.19; The campuses on block schedule had an n of 655; with an M scale score of 3883.36 and the n =1656

Table 14

Algebra 1 2018 End-of-Course STAAR Scores by Schedule Type

Schedule Type	*n*	*%*	*M*	*SD*
Traditional	1001	60.4	3891.19	.420
Block	655	39.6	3883.36	.385
Total	1656	100.0		

Table 15 depicts data analysis, based on non-economically disadvantaged and economically disadvantaged students from the Algebra I 2016 End-of-Course STAAR

results. Data represented the scale scores of non- economically disadvantaged students were 3895.48, indicating that mean scale scores were higher than economically disadvantaged students. The analysis reported *n* = 346 for non-economically disadvantaged students; which represents 20.9% of the sample size and a *M* scale score of 3895.48. The economically disadvantaged students had an *n* of 1310; which represents 79.1% of the sample size with an *M* scale score of 3886.15 and the *n* total is = 1656.

Table 15

Algebra I 2018 End-of-Course STAAR Scores Results by Economic Status

Socioeconomic Status	*n*	*%*	*M*	*SD*
Non-Economically Disadvantaged	346	20.9	3895.48	379.80
Economically Disadvantaged	1310	79.1	3886.15	384.86
Total	1656	100.0		

Independent *t*-test Analysis for End-of-Course English I STAAR Assessment

An independent-samples *t*-test was conducted to compare the 2016 End-of-Course English I STAAR state-mandated assessment scale scores of 9th grade students based on schedule type. The results were statistically significant different in the scores of students who followed a traditional bell schedule (*M* = 3862.31, *SD* = 479.54) compared to block bell schedule (*M* =3863.88, *SD* = 428.32) conditions; *t* (2995) = -.094, *p* =.000, *d* = 0.00. The effect size for this analysis (*d* = 0.00) was found to be trivial based on Cohen's (1988) convention for effect size (*d* = <.10).

An independent-samples *t*-test was conducted to compare the 2016 End-of-Course English I STAAR state-mandated assessment scale scores of 9th- grade students based on socioeconomic status. There was a statistically significant difference in the scores of students who are non-economically disadvantaged (*M* = 3961.06, *SD* = 481.22) compared to economically disadvantaged (*M* =3835.84, *SD* = 438.22) conditions; *t* (2995) =6.32, *p* =.000, *d* = 0.00. The effect size for this analysis (*d* = 0.00) was found to be trivial based on Cohen's (1988) convention for effect size (*d* = <.10).

An independent-samples *t*-test was conducted to compare the 2017 End-of-Course English I STAAR state-mandated assessment scale scores of 9th-grade students based on schedule type. There was a statistically significant difference in the scores of students who followed a traditional bell schedule (*M* = 3844.85, *SD* = 475.98) compared to block bell schedule (*M* =3881.20, *SD* = 454.89) conditions; *t* (2839) = -4.540 *p* =.000, *d* =0.07 The effect size for this analysis (*d* = 0.07) was found to be trivial based on Cohen's (1988) convention does for effect size (*d* = <.10).

An independent-samples *t*-test was conducted to compare the 2017 End-of-Course English I STAAR state-mandated assessment scale scores of 9th-grade students based on socioeconomic status. There was a statistically significant difference in the scores of students who are non-economically disadvantaged (*M* = 3962.33, *SD* = 486.48) compared to economically disadvantaged (*M* =3836.82, *SD* = 454.19) conditions; *t* (2839) =6.06, *p* =.035, *d* = 3.74 The effect size for this analysis (*d* = 3.74) was found to have a large effect based on Cohen's (1988) convention does for effect size (*d* = >.50). These results suggested that socioeconomic status does have an influence on assessment

scores. These results also suggested that schedule type does have an influence on assessment scores.

An independent-samples *t*-test was conducted to compare the 2018 End-of-Course English I STAAR state-mandated assessment scale scores of 9th-grade students based on schedule type. The result were not statistically significant in the scores of students who followed a traditional bell schedule (*M* = 3922.14, *SD* = 462.42) compared to block bell schedule (*M* =3859.27, *SD* = 441.94) conditions; *t* (2332) = -.663, *p* =.183

An independent-samples *t*-test was conducted to compare the 2018 End-of-Course English I STAAR state-mandated assessment scale scores of 9th-grade students based on socioeconomic status. There was not a statistically significant difference in the scores of students who are non-economically disadvantaged (*M* = 4007.33, *SD* = 469.18) compared to economically disadvantaged (*M* =3858.15, *SD* = 443.75) conditions; *t* (2332) =6.88, *p* =.179

Independent *t*-test Analysis for End-of-Course Algebra I STAAR

An independent-samples *t*-test was conducted to compare the 2016 Algebra I End-of-Course STAAR state-mandated assessment scale scores of 9th-grade students based on schedule type. There was a statistically significant difference in the scores of students who followed a traditional bell schedule (*M* = 3740.81, *SD* = 364.53) compared to block bell schedule (*M* =3718.02, *SD* = 381.51) conditions; *t* (2229) = -3.33, *p* =.000, *d* = 0.06 The effect size for this analysis (*d* = 0.06) was found to be trivial based on Cohen's (1988) convention for effect size (*d* = <.10). These results suggested that a schedule type does have an influence on assessment scores.

An independent-samples *t*-test was conducted to compare the 2016 Algebra I End-of-Course STAAR state-mandated assessment scale scores of 9th-grade students based on socioeconomic status. There was not a statistically significant difference in the scores of students who are non-economically disadvantaged (*M* = 3785.76, *SD* = 375.63) compared to economically disadvantaged (*M* =3713.65, *SD* = 372.49) conditions; *t* (2229) =3.66, *p* =.45

An independent-samples *t*-test was conducted to compare the 2017 Algebra I End-of-Course STAAR state-mandated assessment scale scores of 9thgrade students based on schedule type. There was a statistically significant difference in the scores of students who followed a traditional bell schedule (*M* = 3821.87, *SD* = 354.56) compared to block bell schedule (*M* =3838.78, *SD* = 382.32) conditions; *t* (2076) = -3.68, *p* =.000, *d* = 0.04. The effect size for this analysis (*d* = 0.04) was found to be trivial based on Cohen's (1988) convention for effect size (*d* = <.10). These results suggest that a schedule type does have an influence on assessment scores.

An independent-samples *t*-test was conducted to compare the 2017 Algebra I End-of-Course STAAR state-mandated assessment scale scores of 9th-grade students based on socioeconomic status. There was not a statistically significant difference in the scores of students who are non-economically disadvantaged (*M* = 3855.89, *SD* = 367.07) compared to economically disadvantaged (*M* =3824.23, *SD* = 370.13) conditions; *t* (2076) =1.59, *p* =.63

An independent-samples *t*-test was conducted to compare the 2018 Algebra I End-of-Course STAAR state-mandated assessment scale scores of 9th-grade students

based on schedule type. There was a statistically significant difference in the scores of students who followed a traditional bell schedule (*M* = 3891.19, *SD* = 3379.36) compared to block bell schedule (*M* =3883.36, *SD* = 390.50) conditions; *t* (1654) = -2.33, *p* =.000, *d* = 0.02 The effect size for this analysis (*d* = 0.02) was found to be trivial based on Cohen's (1988) convention for effect size (*d* = <.10). These results suggested that a schedule type does have an influence on assessment scores.

An independent-samples *t*-test was conducted to compare the 2018 Algebra I End-of-Course STAAR state-mandated assessment scale scores of 9th-grade students based on socioeconomic status. There was not a statistically significant difference in the scores of students who are non-economically disadvantaged (*M* = 3895.48, *SD* = 379.80) compared to economically disadvantaged (*M* =3886.15, *SD* = 384.86) conditions; *t* (1654) =.41, *p* =.32

For RQ1 procedures for *One-way* analysis of variance (ANOVA) were followed to determine whether scores from two or more groups are significantly different at a selected probability level (Gay & Mills, 2012). Procedures for *one-way* Analysis of Variance (ANOVA) were a best fit for this study because the researcher was investigating the statistical significance of English I and Algebra I End-of-Course STAAR assessments scale scores, between and within campuses four high school groups. To verify *one-way* Analysis of Variance (ANOVA) and treatment of variables procedures the Tukey *post hoc* tests were utilized to determine the statistical difference in group means.

Table 16 represents scale scores for 9th grade students who were administered the 2016 End-of-Course English I STAAR state mandated assessment. The scores of the students were by schedule type and campus. These findings represented data that showed the sample size from Campus 1 had a higher mean scale score of 3908.86 compared to students from Campuses 2, 3, and 4. Comparably, the scale scores of students from Campus 3 were the second highest when compared to Campuses 2 and 4.

Table 16

English I 2016 End-of-Course STAAR Scores Results by Campus and Schedule Type

Schedule Type	Campus#	*n*	*%*	*M*	*SD*
Traditional	1	709	23.6	3908.86	510.28
Traditional	2	573	19.1	3804.71	432.08
Block	3	733	24.5	3872.56	420.86
Block	4	982	32.8	3857.40	433.90
Total		2997	100.0		

Table 17 yields scale scores for 9th grade students who were administered the 2017 End-of-Course English I STAAR state mandated assessment. The scores of the students were by schedule type and campus. These findings represented data that shows the sample size from Campus 1 had a higher mean scale score of 3925.85 compared to students from Campuses 2, 3, and 4. Comparably, the scale scores of students from Campus 3 were the second highest when compared to Campuses 2 and 4. When compared to the English I 2016 End-of-Course STAAR scale scores, the overall *M* or

average scale score for all four high school campuses; on the English I 2017 End-of-Course STAAR scale scores increased by 1.95; and overall *n* or total sample size for all four high school campuses decreased by 156 students from the year prior.

Table 17

English I 2017 End-of-Course STAAR Scores Results by Campus and Schedule Type

Schedule Type	Campus#	*n*	*%*	*M*	*SD*
Traditional	1	672	23.7	3925.85	483.45
Traditional	2	580	20.4	3750.99	449.67
Block	3	671	23.6	3904.70	464.90
Block	4	918	32.3	3864.02	446.90
Total		2841	100.0		

Table 18 reports scale scores for 9th grade students who were administered the 2018 End-of-Course English I STAAR state mandated assessment. The scores of the students were by schedule type and campus. These findings represented data that showed the sample size from Campus 1 had a higher mean scale score of 3981.12 compared to students from Campuses 2, 3, and 4. Comparably, the scale scores of students from Campus 4 were the second highest when compared to Campuses 2 and 3. In contrast to the 2017 End-of-Course English I STAAR scale scores the overall *M* or average for all four high school campuses increased by 29.4 and the overall *n* or sample size decreased by 480 students from the previous year.

Table 18

English I 2018 End-of-Course STAAR Scores Results by Campus and Schedule Type

Schedule Type	Campus#	*n*	*%*	*M*	*SD*
Traditional	1	707	30.3	3981.12	466.07
Traditional	2	604	25.9	3853.11	448.74
Block	3	532	22.8	3763.87	400.41
Block	4	491	21.0	3962.63	461.55
Total		2334	100.0		

RQ2

Table 19 depicts scale scores for 9th grade students who were administered the 2016 End-of-Course Algebra I STAAR state mandated assessment. The scores of the students were by schedule type and campus. These findings represented data that showed the sample size from Campus 3 had a higher mean scale score of 3847.04 compared to students from Campuses 1, 2, and 4. Comparably, the scale scores of students from Campus 1 were the second highest when compared to Campuses 2 and 3.

Table 19

Algebra I 2016 End-of-Course STAAR Scores Results by Campus and Schedule Type

Schedule Type	Campus#	*n*	*%*	*M*	*SD*

Traditional	1	581	26.0	3746.12	386.07
Traditional	2	409	18.3	3733.27	331.86
Block	3	615	27.6	3847.04	380.49
Block	4	626	28.1	3591.26	337.73
Total		2231	100.0		

Table 20 presents scale scores for 9th grade students who were administered the 2017 End-of-Course Algebra I STAAR state mandated assessment. The scores of the students were by schedule type and campus. These findings represented data that showed the sample size from Campus 3 had a higher mean scale score of 3923.36 compared to students from Campuses 1, 2, and 4. Comparably, the scale scores of students from Campus 1 were the second highest when compared to Campuses 2 and 3. In contrast to the 2016 End-of-Course Algebra I STAAR, the overall *M* or average scale score for all four high school campuses was higher by 102.76, despite the difference in the *n* or sample size; which decreased by 153 students from the prior year.

Table 20

Algebra I 2017 End-of-Course STAAR Scores Results by Campus and Schedule Type

Schedule Type	Campus#	*n*	*%*	*M*	*SD*
Traditional	1	538	25.9	3848.60	368.06
Traditional	2	432	20.8	3788.58	334.42
Block	3	556	26.8	3923.36	374.79
Block	4	552	26.6	3753.60	371.06
Total		2078	100.0		

Table 21 yields scale scores for 9th grade students who were administered the 2018 End-of-Course Algebra I STAAR state mandated assessment. The scores of the students were categorized by schedule type and campus. These findings represented data that showed the sample size from Campus 3 had a higher mean scale score of 3917.71 compared to students from Campuses 1, 2, and 4. Comparably, the scale scores of students from Campus 1 were the second highest when compared to Campuses 2 and 3.

Noted for the Algebra I 2018 End-of-Course STAAR was the difference in *n* or sample size for Campus 4; which accounted for 9% of the total *n* or sample size. When compared to the *n* or sample size for Campus 4 the previous year; the *n* decreased by 412 students for the Algebra I 2017 End-of-Course STAAR scores results. The overall total *n* or sample size for all four high school campuses had a difference of 422 students from the year prior.

Table 21

Algebra I 2018 End-of-Course STAAR Scores Results by Campus and Schedule Type

Schedule Type	Campus#	*n*	*%*	*M*	*SD*
Traditional	1	574	35	3900.41	386.73
Traditional	2	427	25	3878.81	369.32
Block	3	515	31	3917.71	386.06
Block	4	140	9	3757.01	381.95
Total		1656	100.0		

One-way ANOVA Analysis for End-of-Course English I STAAR

A *one-way* between subjects ANOVA was conducted to compare the four high school campuses (traditional and block) on the 2016 End-of-Course English I STAAR assessment scale scores. There was a statistically significant effect on 2016 End-of-Course English I assessment scale scores at the p <.05 level for the conditions [F(3, 2227) = 52.51, *p*.= 000], f = 0.06. The effect size for this analysis was found to be small based on Cohen's (1988) convention for effect size (f = >0.10).

Post-hoc comparisons using the Tukey HSD test results are statistically significant and indicated the scores of students from Campus 2, which was a traditional schedule *(M* = 3804.71, *SD* = 432.08*)* and Campus 4, which followed a block schedule (*M* = 3857.40, *SD* = 433.90) were lower compared to the scale scores of students from Campus 1, which followed a traditional schedule (*M* = 3908.86, *SD* = 510.28) and Campus 3, which followed a block schedule (*M* = 3872.56, *SD* = 420.85) were higher. These results suggested that schedule type played a role on 2016 English I End-of-Course STAAR scores.

A *one-way* between subjects ANOVA was conducted to compare the four high school campuses (traditional and block) on the 2017 End-of-Course English I STAAR assessment scale scores. There was a statistically significant effect on 2017 End-of-Course English I assessment scale scores at the p <.05 level for the conditions [F(3, 2837) = 17.42, *p.*= 000], $f = 0.13$. The effect size for this analysis was found to be small based on Cohen's (1988) convention for effect size (f = >0.25).

Post-hoc comparisons using the Tukey HSD test results were statistically significant and indicated the scores of students from Campus 2, which was a traditional schedule *(M* = 3750.99, *SD* = 449.67*)* and Campus 4, which followed a block schedule (*M* = 3864.02, *SD* = 446.90) were lower compared to the scale scores of students from Campus 1, which followed a traditional schedule (*M* = 3925.85, *SD* = 483.44) and Campus 3, which followed a block schedule (*M* = 3904.70, *SD* = 464.90) were higher. These results suggested that schedule type played a role on 2017 English I End-of-Course STAAR scores.

A *one-way* between subjects ANOVA was conducted to compare the four high school campuses (traditional and block) on the 2018 End-of-Course English I STAAR assessment scale scores. There was a statistically significant effect on 2018 End-of-Course English I assessment scale scores at the p <.05 level for the two conditions [F(3, 2330) = 29.60, *p.*= 000], f = 0.19. The effect size for this analysis was found to be small based on Cohen's (1988) convention for effect size (f = >0.25). *Post hoc* comparisons using the Tukey HSD test results were statistically significant and indicated the scores of students from Campus 2, which was a traditional schedule *(M* = 3853*.11 SD* = 448.73*)*

and Campus 3, which followed a block schedule (*M* = 3763.87, *SD* = 400.41) were lower compared to the scale scores of students from Campus 1, which followed a traditional schedule (*M* = 3981.12, *SD* = 466.07) and Campus 4, which followed a block schedule (*M* = 3962.63, *SD* = 461.54) were higher. These results suggested that schedule type played a role on 2018 English I End-of-Course STAAR scores.

One-way ANOVA Analysis for End-of-Course Algebra I STAAR

A *one-way* between subjects ANOVA was conducted to compare the four high school campuses (traditional and block) on the 2016 End-of-Course Algebra I STAAR assessment scale scores. There was a significant effect on 2016 End-of-Course Algebra I assessment scale scores at the $p < .05$ level for the two conditions [F(3, 2227) = 52.51, *p.* = 000], $f = 0.81$. The effect size for this analysis was found to be large based on Cohen's (1988) convention for effect size (f = >0.40).

Post-hoc comparisons using the Tukey HSD test results were statistically significant and indicated the scores of students from Campus 2, which was a traditional schedule *(M* = 3733.27 *SD* = 331.85*)* and Campus 4, which followed a block schedule (*M* = 3591.26, *SD* = 337.73) were lower compared to the scale scores of students from Campus 1, which followed a traditional schedule (*M* = 3746.12, *SD* = 386.074) and Campus 3, which followed a block schedule (*M* = 3847.04, *SD* = 380.49) were higher. These results suggested that schedule type played a role on 2016 Algebra I End-of-Course STAAR scores.

A *one-way* between subjects ANOVA was conducted to compare the four high school campuses (traditional and block) on the 2017 End-of-Course Algebra I STAAR

assessment scale scores. There was a significant effect on 2017 End-of-Course Algebra I assessment scale scores at the p <.05 level for the two conditions [F(3, 2074) = 22.63, p.= 000], f = 0.17. The effect size for this analysis was found to be small on Cohen's (1988) convention for effect size (f = >0.25).

Post-hoc comparisons using the Tukey HSD test results were statistically significant and indicated the scores of students from Campus 2, which was a traditional schedule *(M* = 3788.58 *SD* = 334.42*)* and Campus 4, which followed a block schedule (*M* = 3753.60, *SD* = 371.05) were lower compared to the scale scores of students from Campus 1, which followed a traditional schedule (*M* = 3848.60, *SD* = 368.05) and Campus 3, which followed a block schedule (*M* = 3923.36, *SD* = 374.79) were higher. These results suggested that schedule type played a role on 2017 Algebra I End-of-Course STAAR scores.

A *one-way* between subjects ANOVA was conducted to compare the four high school campuses (traditional and block) on the 2018 End-of-Course Algebra I STAAR assessment scale scores. There was a significant effect on 2018 End-of-Course Algebra I assessment scale scores at the p <.05 level for the two conditions [F(3, 1652) = 6.8, p.= 000], f = 0.01. The effect size for this analysis was found to be small based on Cohen's (1988) convention for effect size (f = >0.10).

Post-hoc comparisons using the Tukey HSD test results were statistically significant and indicated the scores of students from Campus 2, which was a traditional schedule *(M* = 3878.81 *SD* = 369.31*)* and Campus 4, which followed a block schedule (*M* = 3757.01, *SD* = 381.95) were lower compared to the scale scores of students from

Campus 1, which followed a traditional schedule (*M* = 3900.41, *SD* = 386.73) and Campus 3, which followed a block schedule (*M* = 3917.71, *SD* = 386.06) were higher. These results suggesedt that schedule type played a role on 2018 Algebra I End-of-Course STAAR scores.

Summary of the Study

This chapter presented the findings for the data analysis portion of this study. Descriptive statistics in addition to the independent sample *t*-test and *one-way* Analysis of Variance (ANOVA) were employed to analyze variables and the causal comparative role among the independent and dependent variables. Inferential statistics were used in the treatment of variables means and grouping that represented three years of state academic achievement data for economically and non-economically disadvantaged students based on schedule type traditional and block in four major suburban high schools in Texas. The variables represented in this study were school schedule types, traditional and A/B block and students' socioeconomic status, on English I and Algebra I End-of- STAAR state mandated exams.The independent samples t-test was implemented as the researcher initially tested for statistical significance between mean scale scores of the participants based on school schedule types and socioeconomic status.

Levene's test for Equality verified findings of the independent sample *t*-test at a 95% confidence level. Due to having four high school campuses *one-way* Analysis of Variance (ANOVA), techniques were applied to determine differences in mean scale scores between four campuses. To evaluate effect size Cohen's *d* and *f* were used to imply the impact on the sample size for statistical significance. The variance analysis test

conducted established a *p*-value ($p = <.05$), to challenge the null hypothesis for RQ1 and RQ2. Finally, when significant F values were found, procedures for post-hoc comparison with Tukey's Honestly Significant Difference (HSD) test explained the differences in mean scale scores among campus schedule types.

According to the independent samples *t*-test when variables were isolated by schedule types traditional and block the results suggested that for the English I and Algebra I End-of-Course STAAR state mandated exam for 2015-2016, 2016-2017 and 2017-2018 that statistical significance was evident and results suggested there was sufficient evidence to reject the null hypothesis. When analyzing the academic outcomes of students based on socioeconomic status, statistical significance was evident for 2015-2016, 2016-2017 English I End-of-Course STAAR state mandated exam. However, the independent samples *t*-test reported statistical significance was nonexistent based on socioeconomic status for the 2017-2018 English I and 2015-2016 Algebra I End-of-Course STAAR state mandated exam. Findings from 2016-2017 and 2017-2018 Algebra I End-of-Course STAAR state mandated exam substantiated that there was a statistical significance based on the *p* value of .05 and there was sufficient evidence to reject the null hypothesis.

Concluding the results of the *one-way* Analysis of Variance (ANOVA) when examining the mean scale score for each campus indicate for 2015-2016, 2016-2017 and 2017-2018 English and Algebra I End-of-Course STAAR state mandated exams that statistical significance was evident for all three academic years based on the *p* value of

.05. The statistical significance or absence thereof for all variables is discussed further in Chapter V, where conclusions, implications and future recommendations are presented.

CHAPTER V

Summary, Conclusions, Implications, and Recommendations

Introduction

This study aimed to investigate the claims of student performance traditional in comparison to A/B block school scheduling to determine if there was statistical difference by schedule type and the role on student outcomes for economically disadvantaged students. Ramsey (2016) recommended that future studies on block scheduling consider socioeconomic status and special services and that race should be examined more closely. Although there was published research which compared the effect of block scheduling and traditional scheduling on standardized assessments, there is a paucity of published research that examines a possible statistically significant difference between the English I End-Of-Course (EOC) Test Scores, the Algebra I EOC Test Scores, of students in the state of Texas, who participated in block scheduling to that of students who participated in traditional scheduling. One related study was conducted by Smith (2017).

Harris in 2014 examined the relationship between school scheduling and student performance. For the purposes of this study, the researcher went beyond exploring the role of school schedule types and the impact on student achievement, with the inclusion of student socioeconomic status. Studies have measured both racial and social class

composition of a school's influence on academic achievement (Caldas & Bankston, 1997). Socioeconomic status was included to determine whether statistical significance existed and had an effect on student performance on the English I and Algebra I End-of-Course STAAR state-mandated assessments, over three academic years in four major suburban Texas high schools. By closely examining and understanding the presented data on the existence or lack of existence between the effect of school scheduling and the impact on the academic achievement of economically disadvantaged students will influence district leaders and policymakers when considering adopting A/B block schedules.

Summary of the Study

This quantitative study utilized a causal-comparative approach to analyze the role between school schedule types traditional and block and the academic achievement of students based on socioeconomic status four major suburban Texas high schools. Academic achievement was examined using mean scale scores from the 9th grade English I and Algebra I End-of-Course STAAR state-mandated assessments to span over three academic school years.

The two research questions that guided this study:

1. In a high school located in Texas, for 2015-2016, 2016-2017, and 2017-2018 academic years, was there a statistically significant difference between the STAAR EOC English I scores of economically disadvantaged students who participated in traditional scheduling in comparison to the STAAR EOC English I scores of non-economically disadvantaged students who participated in A/B block scheduling?

2. In a high school located in Texas, for 2015-2016, 2016-2017, and 2017-2018 academic years, was there a statistically significant difference between the STAAR EOC Algebra I scores of economically disadvantaged students who participated in traditional scheduling in comparison to STAAR EOC English I scores of non-economically disadvantaged students who participated in A/B block scheduling?

The design of the causal-comparative study required a null hypothesis in addition to an alternative hypothesis to accompany each research question. The corresponding null and alternative were the hypothesis for question 1:

H_0 There is no statistically significant difference between the STAAR EOC English I scores of economically disadvantaged students who participated in traditional scheduling in comparison to the STAAR EOC English I scores of non-economically disadvantaged students who participated in A/B block scheduling in a high school located in Texas, for 2015-2016, 2016-2017, and 2017-2018 academic years.

H_1 There is a statistically significant difference between the STAAR EOC English I scores of economically disadvantaged students who participated in traditional scheduling to non-economically disadvantaged students who participated in A/B block scheduling in a high school located in Texas, for 2015-2016, 2016-2017, and 2017-2018 academic years.

The corresponding null and alternative hypothesis for question 2 were:

H_0 There is no statistically significant difference between STAAR EOC Algebra I scores of economically disadvantaged students who participated in traditional scheduling in comparison to non-economically disadvantaged students who participated in A/B block

scheduling in a high school located in Texas, for 2015-2016, 2016-2017, and 2017-2018 academic years.

H_1 There is a statistically significant difference between the STAAR EOC Algebra I scores of economically disadvantaged students who participated in traditional scheduling in comparison to those who participated in A/B block scheduling in a high school located in Texas, for 2015-2016, 2016-2017, and 2017-2018 academic years.

In 2012, the End-of-Course STAAR assessments were implemented and administered to all 9th-grade students in the state of Texas. Ninth grade students are assessed in English 1, Algebra1, and Biology. This study used scale scores from English I and Algebra I from 2015-2016, 2016-2017 and 2017-2018 school years in four major suburban Texas high schools, two of which followed a traditional schedule and two followed a block school schedule. The campuses selected for this study were identified by the Texas Education Agency (TEA), as members of campus comparison groups. TEA utilizes comparison groups to determine school performance and academic distinction designations, each campus is identified by school type then grouped with 40 other campuses in Texas that are most similar in grade levels, size, percentage of students who are economically disadvantaged, mobility rate, and percentage of English language learners.

The student assessment data were disaggregated and adjusted by mean scale scores by the Texas Education Agency (TEA) Texas Academic Performance Reports (TAPR) reports. The corresponding scale score means from 2015-2016, 2016- 2017, 2017-2018 school years, were converted into means for all four campuses by schedule

type and economically disadvantaged student population. Mean scale scores collected for all four campuses for the corresponding academic years of this study in English I and Algebra1, were compared by schedule type and economically disadvantaged population versus the non-economically disadvantaged student population. Statistical techniques to compare mean scale scores were executed using IBM Statistical Package for the Social Science (SPSS) version 25 (IBM Corp, 2017). Variance analysis procedures were utilized from the independent samples *t*-test to compare student groups by socioeconomic status and group campuses by schedule type, followed by *a one-way* analysis of variance (ANOVA), to make a statistical comparison of the mean scale scores between and within the four campuses.

Results

This study analyzed the role school schedule type traditional and block and the impact on academic outcomes of students based on socioeconomic status in four major suburban high schools in Texas spanning over three academic school years. Academic achievement was quantified by English I and Algebra I End-of-Course STAAR state-mandated exams. Two research questions, including null and alternative hypotheses, were used to guide the research and statistical variance analysis was used to evaluate if the null hypothesis could be accepted or rejected. The IBM Statistical Package for the Social Science (SPSS) version 25(IBM Corp, 2017) was used to administer independent samples *t*-test and *one-way* analysis of variance (ANOVA). The statistical analysis for the research questions yielded the following results.

RQ1 In a high school located in Texas, for 2015-2016, 2016-2017, and 2017-2018 academic years, was there a statistically significant difference between the STAAR EOC English I scores of economically disadvantaged students who participated in traditional scheduling in comparison to the STAAR EOC English I scores of non-economically disadvantaged students who participated in A/B block scheduling?

The independent samples *t*-test grouped the campuses by schedule type. Campuses 1 and 2 followed a traditional schedule, and campuses 3 and 4 follow a block schedule. The 2016 English I End-of-Course STAAR exam reported *M* =3862.31 scale score for traditional schedule campuses and block schedule campuses had a higher mean of *M* = 3863.88 for a difference of 1.0 or .02%. When all four campuses were statistically analyzed by socioeconomic status for the English I 2016 End-of-Course, the non-economically disadvantaged students had a mean scale of *M* = 3961.06 the economically disadvantaged students had a lower mean scale score of *M* = 3835.84 with a difference of 126 or 3.1%. For the 2016 academic year, the students performed better academically on a traditional schedule and the economically disadvantaged students' academic achievement was below the non-economically students for all four Texas high school campuses. Results from the independent *t*-test indicated that both analyses conducted yielded statistical significance.

Student achievement results from the 2017 English I End-of-Course STAAR exam for campuses that followed a traditional schedule decreased from the prior year, mean scale scores reported *M* = 3844.85 which is a difference of 44 or 0.4%. However, academic achievement from the campuses that followed a block schedule increased from the year

prior *M* = 3881.20, which indicated a gain of 19 or 0.4%, economically disadvantaged students also improved with an *M* = 3836 with a gain of 1 or .02% when compared to the previous year. Although the economically disadvantaged population improved, the non-economically disadvantaged student population gained in performance with an *M* = 3962.33 the difference in performance between both groups was 1 or .02%. For the 2017 English I End-of-Course exam students performed better on block schedule and demonstrated an improvement of 37 or .9%, the non-economically disadvantaged students outperformed the economically disadvantaged students, independent samples t-test results yielded statistical significance for schedule type and socioeconomic status for all four Texas high schools.

The results from the 2018 English I End-of-Course STAAR exams indicated an increase of student performance for campuses that follow a traditional schedule with an *M* = 3922.14 which is an increase of 78 or 1.9% from the previous year. Campuses following block schedule had an *M* = 3859.27 and declined when compared to the prior year by 22 or 0.5%. When examining student achievement by socioeconomic status, economically disadvantaged students improved with an *M* = 3858 by 22 or 0.5%. Non-economically disadvantaged students showed improvement in performance from the previous year with an M = 4007 with a gain of 45 or 1.1%. For the 2018 school year, students had higher achievement at campuses that followed a traditional school schedule versus campuses on a block schedule, and economically disadvantaged student performance lagged behind the non-economically disadvantaged students by 149 or 3.7%. According to the independent samples *t*-test, student performance by schedule type and by socioeconomic

status indicated no statistical significance. To conclude, 2016 and 2017 yielded statistically significant results while 2018 did not yield statistical significance. Therefore the null hypothesis was rejected for 2016 and 2017 according to campus schedule type and socioeconomic status of the students. However, for 2018, based on the data the null hypothesis was accepted.

One-way variance analysis (ANOVA) traditional schedule

The results from the *one-way* variance analysis (ANOVA) provided a comparison of the campus performance when compared to each campus schedule type. For the 2016 English 1 End-of-Course STAAR exam. The analysis for Campus 1, which followed a traditional schedule reported the highest student achievement scale scores of M = 3908.86 and an economically disadvantaged student population of 64.9%, which was the lowest economically disadvantaged population for this year in comparison to all four campuses. Campus 3, which followed a block schedule reported the second-highest scale scores M = 3904.70 and reported the highest economically disadvantaged student population of all four Texas high school campuses with an enrollment of 71.5%.

For the 2017 English I End-of-Course STAAR exam Campus 1, which followed a traditional schedule reported an increase in economically disadvantaged student population of 4% for this year of the study with an overall enrollment of 67.5%. The results from the state exam ranked Campus 1 above all other campuses with scale scores M = 3925.85, which was an increase from the previous year by 16.99 scale score points or .4%. Campus 3, which followed a block schedule ranked second in student achievement for that year of the study scale scores M = 3904.70, which was an increase

from the previous year by 32.14 scale score points or .8% and reported the highest economically disadvantaged population of 72.5% which increased by .8% from the previous year.

The results for the 2018 English I End-of-Course exam also indicated Campus 1, which followed a traditional schedule had the highest student achievement scale scores M = 4015.54 and noted an increase from the prior year of 89.69 scale score points or 2.2%. The economically disadvantaged student population ranked the third highest for this year of the study with an enrollment of 69.2%. Unlike the other years prior the Campus 4, which followed a block schedule had the second-highest student performance when compared to all four campuses. Data reported M = 4003.56 with an increase of 139.54 points from the previous year, the economically disadvantaged student population was the highest of all campuses for this year of the study with an enrollment of 72.0%. The analysis from the *one-way* variance analysis (ANOVA) indicated statistical significance for three years of this study for the English 1 End-of-Course STAAR state-mandated exam. For the three years for this study from 2016-2018 for the English I End-of-Course STAAR exam results from the *one-way* variance analysis (ANOVA), data indicated statistical significance each year. Based on the results presented there was reasonable evidence to reject the null hypothesis and accept the alternative.

RQ2 In a high school located in Texas, for 2015-2016, 2016-2017, and 2017-2018 academic years, was there a statistically significant difference between the STAAR EOC Algebra I scores of economically disadvantaged students who participated in traditional

scheduling in comparison to the STAAR EOC English I scores of non-economically disadvantaged students who participated in A/B block scheduling?

Research question two examined student performance by schedule type and socioeconomic status employing the procedures from the independent samples *t*-test. The four Texas high schools were grouped according to schedule type, Campus 1 and Campus 2 followed a traditional schedule, and Campus 3 and Campus 4 followed block schedule for the three years of this study, then two groups one indicating economically disadvantaged and non-economically disadvantaged. The independent samples *t*-test revealed for the Algebra I 2016 End-of-Course STAAR exam performance for both schedule types were similar for the first year, traditional schedule campuses had an *M* = of 3740 and block schedule campuses had an *M* = 3718 with a difference of 22 scale score points. Performance between groups based on socioeconomic status had a larger difference; economically disadvantaged students had an *M* = of 3713 non-economically disadvantaged students scored *M* = 3785, with a difference of 72 scale score points. Based on the 2016 Algebra End-of-Course STAAR data students performed higher at campuses that follow traditional schedules, and non-economically disadvantaged students outperformed economically disadvantaged students. The variance results indicated a statistically significant difference between schedule types. However, there was no statistical significance when performance was analyzed by socioeconomic status.

The results for the 2017 Algebra I End-of-Course STAAR exam presented an increase in academic achievement for campuses that followed a traditional schedule with 81points added to scale score or 2.1% when compared to the year prior; students on

block schedule also improved by 114 scale score points or 2.9% from the previous year. Economically disadvantaged student achievement improved with an *M* = scale score of 3824 with 111 points added to the scale score or 2.9% gain. For the 2017 Algebra End-of-Course STAAR exam, student achievement was higher for campuses on block schedule which is different from the previous year. Data indicated there was a statistical significance for campus schedule types but there was no statistical significance reported for performance based on socioeconomic status.

Results from the 2018 Algebra I End-of-Course STAAR exam indicated high achievement for the campuses that follow a traditional schedule, there was a gain of 70 scale score points or 1.7% increase when compared to the previous year. Campuses that followed block schedules increased by 45 scale score points or 1.1% for the year prior. Performance by socioeconomic status indicated an improvement of 62 scale sore points or 1.6% for students categorized as economically disadvantaged from the previous year. Non-economically disadvantaged students also increased 10 scale score points or 0.3%. Overall students performed better on the traditional schedule for the 2018 Algebra I End-of-Course STAAR and the non-economically disadvantaged students had high achievement. However, economically disadvantaged students had higher gains in student achievement.

Based on the evaluation from the independent *t*-test student performance by schedule type was statistically significant. However, there was no statistical significance in academic achievement by socioeconomic status. Based on the data from the independent samples *t*-test for years 2016, 2017 and 2018 on the Algebra I End-of-Course STAAR

Exam for the analysis conducted by schedule type the results indicated statistical significance thereby rejecting the null hypothesis, the analysis based on socioeconomic status yield no statistical significance for 2016,2017 and 2018 for the Algebra I End-of-Course STAARexam thereby accepting the null hypothesis.

One-way variance analysis (ANOVA) block schedule

The results from the *one-way* variance analysis (ANOVA) provided a comparison of the campus performance when compared to each campus schedule type. For the 2016 Algebra 1 End-of-Course STAAR exam. Campus 3, which followed a block schedule reported the highest scale scores for this year of the study M = 3847.04, the economically disadvantaged student annulment was 71.5%, which was ranked second highest for 2016. Campus 1, which follows a traditional schedule reported the second-highest student performance with scale scores M = 3879.77 however this campus reported the lowest enrollment of economically disadvantaged students at 64.9%, in comparison to the four Texas high schools identified for this study.

The results for the 2017 Algebra I End-of-Course STAAR indicated Campus 3, which followed a block schedule had the highest scale score M = 3954.58 of all four campuses results indicated an increase from the prior year of 107.54 scale score points or 2.7%. The economically disadvantaged student population ranked second-highest enrollment at 72.5%, which was an increase of 1%. Campus 1, which followed a traditional schedule ranked second highest in student achievement for this year of the study M = 3879.77, which increased from the previous year by 133.65 scale score points

or 3.4%. The economically disadvantaged enrollment was ranked fourth among the four Texas high schools at 67.5% this was a notable increase from the previous year by 2.6%.

The results for 2018 Algebra I End-of-Course revealed that Campus 3, which followed a block schedule scale scores M = 3951.14 ranked the highest among the four Texas high schools for student achievement and although ranked the highest for this year there was a decrease of 3.44 scale score points. The economically disadvantaged student enrollment was ranked second when compared to the four Texas high schools at 71.1%, which was a decrease from the prior years of 1.4%. Campus 1, which followed a traditional schedule ranked second in student achievement for this study M = 3932.12, which indicated an increase of 52.35 scale score points or 1.3% from the previous year. The economically disadvantaged student enrollment ranked third when compared to all four Texas high schools at 69.2%, which increased for the prior year by 1.7%. A notable finding for Campus 4, which followed a block schedule reported a substantial difference in sample size with a decrease of 412, therefore 140 students were included in the sample. This may indicate a high absentee rate or testing irregularity when exams were administered. The year prior sample included 552 students. For the three year span for this study from 2016-2018 for the Algebra I End-of-Course STAAR exam results from the *one-way* variance analysis (ANOVA), data indicated statistical significance each year. Based on the results presented there was reasonable evidence to reject the null hypothesis and accept the alternative.

Conclusions

This research indicated there was a statistical significance in the role of school schedule type traditional or block, and the effect on economically disadvantaged student academic achievement, on the English I and Algebra I End-of-Course STAAR state-mandated exams, according to Cohen's (1988) schedule type had a weak effect on student outcomes. Statistical findings from this study were congruent with prior research that was reviewed in chapter II. The findings and results from this study supported that students performed better on English I and Algebra I End-of-Course state-mandated exams.

According to a study conducted by Watkins in 2017, results from a quantitative correlational study indicated that traditional scheduling had a more positive effect than block, with results from this study congruent with Watkins' finding in English- End-of-Course STAAR state-mandated exam. Childers (2018) conducted a quantitative ex-post facto study to determine the effectiveness of block scheduling on students' EOC tests and on state standardized tests. The scores used in the Childers' study were representative of 1, 474 students in the state of Georgia, who were enrolled in English I, Math I, Biology, and Physical Science between the academic years of 2009 and 2012. Results from the study by Childers (2018) indicated that the type of block scheduling in which the students engaged did not influence their performance, except for in math. Similar to the results of the study by Childers (2018), the results from this study determined that students performed better on English I End-of-Course STAAR state mandated exam with an *M* of 3950.08, the highest achieving campus that followed a block schedule had a *M* = 3908.32 with a difference of 41.76 scale score points. Results from the Algebra I End-of-Course

STAAR state mandated exam indicated that students performed better on block schedule with an M = 3915.58, which outperformed students on traditional schedule with an M = 3852.67 with a difference of 62.91in scale scores.

The findings for the independent samples *t*-test yielded that there was a statistical significance when comparing school schedule type of traditional or block and the impact on economically disadvantaged student achievement in 2016 and 2017 for the English I End-of-Course STAAR state-mandated exam. Therefore, the null hypothesis can be rejected for 2016 and 2017. Data for 2018 English I End-of-Course STAAR exam substantiated no statistical significance for school schedule type of traditional or block and the academic performance of economically disadvantaged students in comparison to non-economically disadvantaged students in four Texas high schools, results yielded a *p*-value > .05. Therefore, the null hypothesis cannot be rejected for the 2018 administration of the English I End-of-Course STAAR exam.

The findings for the *one-way* variance analysis (ANOVA) that compared four Texas high schools indicated that there was a statistical significance when comparing the four campuses for 2016, 2017, and 2018 of the administration of the English I End-of-Course STAAR state-mandated exam. Based on the evidence from this study the null hypothesis was rejected.

The findings for the independent samples *t*-test yielded that there was a statistical significance when comparing school schedule type traditional or block for 2016, 2017, and 2018 Algebra I End-of-Course STAAR state-mandated exam. However, the economically disadvantaged student achievement in 2016 and 2017 for the English I End-

of-Course STAAR state-mandated exam was statistically significant and had a lower mean scale score than non-economically disadvantaged students. Therefore, the null hypothesis can be rejected for the analysis of schedule types. Data for 2018 English I End-of-Course STAAR exam substantiated no statistical significance for school schedule type of traditional or block and the academic performance of economically disadvantaged students in comparison to non-economically disadvantaged students in four Texas high schools, results yielded a *p*-value > .05. Therefore, the null hypothesis cannot be rejected for the 2018 administration of the English I End-of-Course STAAR exam. However, findings for the independent samples *t*-test upon examination of economically disadvantaged in comparison to non-economically disadvantaged student achievement for 2016, 2017, and 2018 Algebra I End-of-Course STAAR state-mandated exam denoted no statistical significance, which indicated the null hypothesis can be accepted.

The findings for the *one-way* variance analysis (ANOVA) that compared four Texas high schools indicate that there was a statistical significance when comparing the four campuses for 2016, 2017, and 2018 of the administration of the Algebra I End-of-Course STAAR state-mandated exam. Based on the evidence from this study the null hypothesis was rejected.

Implications

The results of this study led to implications for policymakers and district leaders in the field of education. This study has implications to guide the conversation of school initiatives that can improve the academic achievement of economically disadvantaged students and minimize the achievement gap of economically disadvantaged and minority

students between students. Texas high schools can begin to investigate ways to employ school scheduling with the implementation of response to intervention (RTI) which is currently absent at the high school level, to improve student achievement for students who are at risk of not graduating.

According to (Nichols, 2005), students from low-income and ethnic minority backgrounds experienced few academic gains in English achievement on block scheduling, the findings for this study support this statement. Supporters of the traditional schedule suggest that having the same class each day allows students to review, practice, and apply what they have learned more frequently (Harris, 2014). Supporters of the A/B block schedule found that a lack of class attendance can be an issue when considering a block schedule. When a student misses one day on the block schedule, they are missing the equivalent of two class periods (Mistretta & Polansky, 1997).

Recommendations for Future Research

1. A quantitative study examining the impact on student achievement by race or ethnicity.
2. A quantitative study that includes longitudinal data by graduation cohorts to examine the effect of school scheduling and graduation rates.
3. A mixed-methods study that examines the perceptions of scheduling and the academic performance of economically disadvantaged students.
4. A quantitative study that examines schedule types and the impact on grades, graduation rates, and post-secondary readiness.

5. A quantitative study that examines teacher absenteeism on traditional and block and the effect on student achievement.
6. A quantitative study that compares similar school districts and the possible difference in student performance based on schedule types.
7. A quantitative study that examines academic performance by geographical location, rural or suburban.
8. A quantitative study that examines teacher instructional performance based on schedule types.
9. A qualitative study that examines the perceptions of superintendents based on school scheduling.
10. A quantitative study that analyzes the differences in funding based school scheduling.

Recommendations Beyond Research

School schedule type at the high school level could be considered with policy in terms of school improvement, educational leaders are challenged regularly to improve student outcomes and to provide equitable opportunities in this era of high stakes testing. The findings from this study should help guide administrators and policymakers when implementing effective strategies to improve student achievement. Often-times schools become experiments to improve student achievement specifically at campuses with high populations of minority and economically disadvantaged students, without good sound educational research to support decisions by policymakers and district leaders. There is

no replacement for highly effective teaching and a strong instructional delivery system, in which teachers are included in the instructional design process.

Policymakers and educational leaders must look beyond immediate fixes and examine systemic issues that impact student achievement and to account for empirical evidence in educational research. Initially, this study included attendance and graduation rates. In order to determine statistical significance attendance data will need to be solicited from independent school districts, state reporting through Public Education Information Management System (PEIMS) accounts for attendance by grouping, therefore is not sufficient to conduct a statistical analysis. An additional limitation of study was to include graduation rates, the reporting of graduations rates through the Texas Education Agency (TEA), overlaps from the preceding year to following year there for creating barriers when coding data in preparation for statistical analysis.

Concluding Remarks

As an experienced campus instructional leader, I have devoted the majority of my years serving at Title I high schools in Texas. I have experienced gains in student achievement with both schedule types traditional and block and scheduling along with many factors such as school composition, external environmental factors, funding sources all influence student achievement. As a campus practictioner, I worked at one of the most at-risk campuses in Texas the implementation of traditional schedules was one of many factors that improved the accountability rating of the campus. Although the findings from this study were significant, the data indicated that school schedule type played a small role in how well students perform. Perhaps in a school turnaround situation when a campus is

deemed to be low performing it bears a rating of improvement required by the Texas Education Agency (TEA), a change in school schedule type would be better suited for improving the academic accountability rating for a struggling campus with proper teacher professional development for long-term sustainability.

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APPENDIX A

NATIONAL INSTITUE OF HEALTH CERTFICATE

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Marcus Brannon** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 02/20/2015

Certification Number: 1705300

APPENDIX B

INSTITUTIONAL REVIEW BOARD APPROVAL

STEPHEN F. AUSTIN STATE UNIVERSITY

Institutional Review Board for the Protection of Human Subjects in Research
P.O. Box 13019, SFA Station • Nacogdoches, Texas 75962-3046
Phone (936) 468-1153 • Fax (936) 468-1573

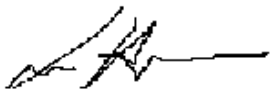
Principal Investigator: Pauline Sampson
Research and Graduate Studies
Box 13024
sampsonp@sfasu.edu

Co-investigators: Marcus Brannon (mdb1906@gmail.com)

RE: Project Title "Causal Comparative Study: The Effect of School Scheduling and Academic Performance of Economically Disadvantaged Students"
Case # AY2020-1021

TYPE OF RESEARCH: Dissertation

FROM: Luis E. Aguerrevere, Chair IRB-H



DATE: September 25,2019

I would like to thank you for submitting your project entitled "Causal Comparative Study: The Effect of School Scheduling and Academic Performance of Economically Disadvantaged Students" to the IRB for review. It has been reviewed and has been **Approved** based on the following criteria:

45 CFR 46.104(d)(4): Secondary research for which consent is not required: Secondary research uses of identifiable private information or identifiable biospecimens, if at least one of the following criteria are met: (1) The identifiable private information or identifiable biospecimens are publically available; or (2) Information, which may include information about biospecimens, is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained directly or through identifiers linked to the subjects, the investigator does not contact the subjects, and the investigator will not re-identify subjects; or (3) The research involves only information collection and analysis involving the investigator's use of identifiable health information when that use is regulated under 45 CFR 160 and 164, Subparts A and E (HIPAA), for the purposes of "health care operations" or "research" as those terms are defined under HIPAA or for "public health activities and purposes" under HIPAA; or (4) The research is conducted by, or on behalf of a Federal department or agency using government-generated or government-collected information obtained for non-research activities.

Your project has approval through **September 25, 2020**, should you need additional time to

APPENDIX C

TEXAS EDUCATION AGENCY PUBLIC INFPRMATION REQUEST

Good evening,

My name is Marcus Brannon and I am a doctoral candidate at Stephen F. Austin State Office of Graduate and Research Studies. In partial fulfillment of my degree program I am conducting a study and need to request the following data from TEA.

This is a public information request for student achievement data on the Algebra I and English I EOCs (raw and scale) scores for the campus listed below. The data should include three academic years (2015-2016, 2016-2017, 2017-2018) first time testers spring administration. Additionally, please include the attendance and graduation rates for all of the student groups noted by campus (2015-2016, 2016-2017, 2017-2018).

Campuses

Student Groups Needed

All students

Economically Disadvantaged

African American

Hispanic

White

Asian

American Indian

Pacific Islander

Two or More Races

If you have any questions or concerns feel free to email me at [redacted] or I can be reached by phone at [redacted] You may also contact my Dissertation Chair Dr. Pauline Sampson at [redacted] .

Best regards,

Marcus Brannon

Doctoral Candidate

Stephen F. Austin State University

APPENDIX D

PUBLIC INFORMATION REQUEST RELEASE OF DOCUMENTS AND EXTEND FULFILLMENT DATE

Public Information Request
Release Documents at No Charge-Refer to Website
Extend Fulfillment Date
April 28, 2020

[redacted]

[redacted]

Dear Mr. Marcus Brannon:

On April 27, 2020, the Texas Education Agency (TEA) received your request for public information. A copy of your original request is enclosed.

Release Documents at No Charge-Refer to Website:
To the extent it exists, a portion of the requested information is provided to you with this letter. Additionally, there are no charges for fulfilling this portion of your request, which is now considered closed.

1. The agency has four-year longitudinal graduation rates for the requested groups readily available on TEA's website. You can learn more about four-year graduation rate calculations on pages 4-7 of the latest report here: https://tea.texas.gov/sites/default/files/dropcomp_2017-18_v3.pdf. Four-year longitudinal graduation rates for the classes of 2016-2018 can be accessed through data searches that begin at the following webpage: https://tea.texas.gov/reports-and-data/school-performance/accountability-research/completion-graduation-and-dropout/completion-graduation-and-dropouts-data-search

   Clicking on the desired year under the "Four-Year Rates" heading will take you to the "Four-Year Graduation and Dropout Data" page for that year. For example, clicking on "Class of 2018 Four-Year Rates" will take you here: https://tea.texas.gov/reports-and-data/school-performance/accountability-research/completion-graduation-and-dropout/four-year-graduation-and-dropout-data-class-of-2018

   Under the "Data Search" heading on that page, you will have the option to search for campus data. Clicking on "Campus" will take you to a page where you can enter the campus name or number of interest, which will then take you to the

four-year longitudinal rates for all students. At the top of the all-students page you will see a separate link to view tables by 'Race/ethnicity, economic status, and gender.'

2. Please review the attached directions for downloading the attendance and graduation rate elements from TAPR for the corresponding years.

If you have trouble accessing the information at the listed web link, let us know since we can look at alternative ways to access the information by inspection or duplication or through the US mail.

Extend Fulfillment Date:

Currently, we are in the process of compiling the following documents responsive to your request.

Masked STAAR student-level data for:
- spring administration in the years: 2015-2016, 2016-2017 and 2017-2018
- Algebra I and English I
- campuses: [redacted]uthwest ISD
- Including the following variables:
Scrambled ID, ethnicity, score code, scale score, raw score, approaches, meets, masters, campus, economically disadvantaged, first time test takers

TEA anticipates that the information will be released to you at no cost on or before: May 12, 2020.

If you have any questions or wish to discuss this matter further, please contact me at (512) 463-3464 or by email at PIR@tea.texas.gov.

Sincerely,

Jenny Eaton
Public Information Coordinator

Enclosures: Original Request
Attendance and Graduation Data Download Instructions.docx

APPENDIX E

RESEARH CODEBOOK

Variable	Variable Code	Scale
1 Student ID	Scrambled ID (assigned by Texas Education Agency	Nominal
Use the pseudonyms Campus Campus Campus Campus	1,2,3,4 1 2 3 4	Nominal
3.Schedule Type	1= Traditional 2=Block	Nominal
4 Grade	9= First time test takers	Nominal
5 Race/ Ethnicity	1=Black 2= Hispanic 3= White 4= Asian 5=Other	Nominal
6 Economical Disadvantages Status	0= Non Economically Disadvantaged 1= Economically Disadvantaged	Nominal
7 EOC Raw Score	Based on TEA STAAR Conversion Scale (2015, 2016, 2017, 2018)	Ordinal
8 Scale Score	Based on TEA STAAR Conversion Scale(2015, 2016, 2017, 2018)	Ordinal

Variable	Variable Code	Scale
9 Approaches Standard	Based on TEA STAAR Conversion Scale (2015, 2016, 2017, 2018) 0 = Not Met 1 = Met	Nominal
10 Meets Standard	Based on TEA STAAR Conversion Scale 0 = Not Met 1 = Met	Nominal
11 Masters Standard	Based on TEA STAAR Conversion Scale 0 = Not Met 1 = Met	Nominal

VITA

Marcus Dewayne Brannon graduated from Lincoln Humanities Communications Magnet High School in 2002. He attended Jarvis Christian College, and received his Bachelor of Science in Biology and Chemistry in 2006. He began teaching in Birdville Independent School District in 2007, and attended Concordia University Texas at Austin to pursue his Masters of Education Degree, which was conferred in 2013. He became an assistant principal 2013 and was accepted into the 2014 Doctoral Cohort at Stephen F. Austin State University. In 2014 he served as assistant principal at Sam Houston High School. He also served as principal of Nichols Junior High School in Arlington Independent School District and currently as principal of Rogene Worley Middle School in Mansfield Independent School District.

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