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The Influence of English Language Arts Instructional Minutes on Student Achievement in Grades 6, 7, & 8

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The Influence of English Language Arts Instructional Minutes on Student Achievement in Grades 6, 7, and 8

by

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Abstract

The purpose of this quantitative, non-experimental study was to examine if a relationship existed between allocated English Language Arts (ELA) instructional minutes within a school's bell schedule for Grades 6, 7, and 8 and its corresponding mean PARCC score for that grade. Furthermore, the study also sought to detect the presence of an interaction effect regarding time, socioeconomic status, and student performance. The study controlled for other student, faculty, and school variables as well. Data for ELA instructional time were obtained from school personnel and also through school websites. Additional variable were obtained through the New Jersey School Performance Reports for schools in the sample. Using multiple regression for both research questions, several independent variables were found to be statistically significant predictors. Allocated ELA minutes were found to be statistically significant on both sixth and eighth grades, however the unstandardized betas were very small and negative. Additional variables were found to be statistically significant predictors in one of the focus grades: percentage of students with disabilities (sixth grade), percentage of chronic absentees (seventh grade), and percentage of economically disadvantaged students (eighth grade). The study was unable to detect the presence of an interaction effect between time, student achievement, and socioeconomic status.

Key words: Instructional time, student achievement, English Language Arts, PARCC, middle school, socioeconomic status

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Dedication

I would like to dedicate this project to my wife, my parents, and my children.

To my parents: Thank you for your love and support of me over the years and for always modeling dignity and respect for others.

To my three children: Thank you for your understanding that I was “away at college” for many weekends over the past two years. The sky’s the limit for all of you.

And to my wife, Judy: Thank you for encouraging me to take this giant step and enrolling in this program. You are a great mother and teacher and even better partner in life.

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CHAPTER 1

INTRODUCTION

Background

In 1983, *A Nation at Risk* was released by the National Commission on Excellence in Education. Ever since the release, American school districts have been seeking to prove that they are developing students who are literate and prepared for life beyond school. *A Nation at Risk*, a rallying cry of sorts, painted a dire picture of the American education system in contrast to other countries around the world. In the years that followed, many American presidents—both Republican and Democratic—have established policies and worked with legislators to craft legislation to heighten accountability for the young people of this nation. Through the various reauthorizations of the Elementary and Secondary Education Act (ESEA), whether it be No Child Left Behind (2002) or Every Student Succeeds (2015), high stakes testing has been a core element of those laws.

Among the more than three dozen recommendations laid out in *A Nation at Risk* were many that focused on time allocations in schools (National Commission on Excellence in Education, 1983). The report encouraged school districts and State legislatures to strongly consider 7-hour school days, as well as a 200- to 220-day school year. Furthermore, the commission recommended a better organization of the school day to optimize student learning. In the following decade, the Education Commission of the States produced its report, *Prisoners of Time*. Echoing many of the same remedies as *A Nation at Risk*, this publication also criticized the traditional American school calendar, called for longer school days, and tasked policymakers with mirroring the educational practices of our competitors on the international stage (National Education Commission on Time & Learning, 1994).

With many of the recent iterations of ESEA echoing the call for greater student achievement and delineating varying degrees of punitive measures for non-compliance (Ladd, 2017), schools today dedicate considerable time to core subjects in which standardized tests are administered. Criticism often emanates that there is too much focus on passing these assessments and there is a heightened focus on "teaching to the test" (Taylor, 2016). In addition to the focus on the mathematics and English language arts (ELA) curricula, many schools have invested in additional instructional minutes in the school day for math and ELA. ESEA re-adoptions in 2002 and 2014 have both required annual testing in Grades 3 through 8 in both of the aforementioned subjects. (U.S. Department of Education, 2002; U.S. Department of Education, 2015).

Most elementary and middle school have bell schedules in which ELA and mathematics dominate the amount of instructional minutes over other subjects such as science, social studies, technology and the arts (Brown, 2016; McMurrer, 2007). McMurrer's research found that, on average, middle school students had approximately 331 minutes per week in English language arts, well ahead of the other core areas: math (274 minutes), science (250), and social studies (248). The analysis further revealed that since the enactment of NCLB, 24% of middle schools had reported increasing their instructional minutes in ELA and 20% had increased time in mathematics.

The relationship between time in schools and the achievement of students has been investigated in many fashions over the past 50 years. Research has been conducted on the relationship of student achievement with the length of the school year, the length of the school day, extended school day programs, allocated instructional minutes, and block scheduling. Based on the proliferation of instructional minutes in ELA and mathematics since the inception of

NCLB, one would surmise that the research on the matter has been conclusive and clear that time positively affects student outcomes. To the contrary, the results of these studies have been consistently mixed (Anderson, Humlum & Nandrup, 2016; Camara 1998). In spite of this, schools continue to provide inflated amounts of instruction in the core, tested areas coupled with reduced time in other subjects not covered in high stakes assessments.

Studies on the effects of the length of the school calendar have been carried out many times in recent years. The school calendar in the United States, long linked to our agrarian past, has a very small range when comparing the length of the calendar across states. Most states (30) require children to attend a minimum of 180 days per school year. Colorado mandates the shortest possible school calendar with 160 days and Kansas has the longest calendar requirement of 186 days. Hossler, Stage, and Gallagher (1988) concluded that there was a small positive relationship between the number of school days and student achievement. However, their study was for a short window and no longitudinal follow-up occurred. Eren and Millimet (2007) found that the length of the school year had a negative relationship with higher achieving students and a positive relationship with students in the lowest quantiles of their study's population.

Another recommendation from *A Nation at Risk* and *Prisoners of Time* was the suggestion of a longer school day (National Commission on Excellence in Education, 1983; National Education Commission on Time & Learning, 1994). A review by the Virginia Department of Education (1992) found inconsistent evidence that a lengthened school day would lead to academic gains. Where evidence was found that short-term gains were possible for full-day kindergarten students versus their half-day counterparts, gains in other areas were sparse. A potential side effect, reported in the study, was the counter-argument that extended school days can lead to heightened fatigue, which could lead to disinterest and eventually discipline

problems. Conversely, the Knowledge is Power Program, a charter school network, is a source of evidence in which a longer school day has correlated to strong academic performance. The Gaston Preparatory School, located in North Carolina, operates on a 9.5-hour schedule and was recognized in 2003 as the sixth-highest performing middle school in the state.

Studies on allocated instructional minutes have been mixed as well. Levin (1984) concluded that instructional time in a specific content area is positively related to academic achievement in that curricular subject. Cuban (2008) arrived at a conclusion of less resolve, stating that the relationship between allocated class time and student achievement "is tentative at best." As other researchers have stated, it is not so much the quantity of instruction as much it is the quality of instruction (Mazzarella, 1984; Rasberry, 1992).

The degree to which time matters has been explored in previous studies as well. Several examinations have shown that additional time can be of most benefit to students from low-socioeconomic status (SES) backgrounds as opposed to their high-SES peers. Coleman et al. (1966) delivered the first detailed report the significance of socioeconomic status and its relationship to student achievement. Many have pointed out that children from low-SES families have disadvantages that contribute to an achievement gap. With this in mind, many look to schools as being key players in helping low-SES and at-risk students to catch up with their classmates. Additional time for at-risk students has, at times, proven fruitful for their achievement in mathematics and ELA (Jez & Wassmer, 2011; Nomi, 2015; Nomi & Allensworth, 2013).

The Problem Statement

Amidst the attention on the American educational system from analyses like *A Nation at Risk*, many policymakers in our country have made numerous recommendations about bettering the academic experience for our students. Although many researchers and academics have criticized the conclusions of that report, the effects of their insinuations have lingered. The federal government, through legislative activity and executive emphasis, has placed a heightened emphasis on school and district accountability regarding student achievement. The mechanism for evaluating student achievement is the use of state-adopted, standardized assessments.

Accordingly, school districts across the country work diligently to provide the optimal learning environment so that their students can be successful. Schools cannot control for the number of economically disadvantaged students they have or the proportion of students in their schools who have learning disabilities. Schools can manipulate time to optimize the educational setting. Research on time and its effects on learning have been mixed. Block scheduling, for example, has proven to lead to diminished disciplinary incidents but not necessarily on enhanced academic achievement (Evans, Tokarczyk, Rice, & McCray, 2001). Different school districts have varying number of minutes in their school days and each state has a different expectation on the minimum number of school days in a calendar year.

Unlike subjects like mathematics, science, and social studies, American students are required to take a course in English for every year they attend school, K-12. Additionally, a composition course is a requirement for new students in virtually every American college or university. The question remains how best to prepare students for success in subsequent courses and on standardized assessments. There is minimal research in existence about the impact, if any, between instructional minutes in ELA and student achievement at the middle school level. With

that in mind, there is a need to examine if there is any relationship between ELA instructional minutes and scores on the Partnership for Assessment of Readiness for College and Career (PARCC) exams in Grades 6, 7, and 8.

The Purpose of the Study

The purpose of this study was to determine if a relationship exists between English language arts instructional minutes and the average student score in New Jersey middle schools on the ELA PARCC exams in Grades 6, 7, and 8. Information taken from the New Jersey School Performance Reports will provide data on student achievement as well as socioeconomic status at each middle school in which instructional time information is obtained. In addition, the degree to which time matters will be examined through the lens of socioeconomic status. The study will seek to answer whether or not time is more important for high-SES students, low-SES students, for both or if there is no relationship.

The Significance of the Study

With taxpayer dollars being used for the hiring of school personnel, it would be pertinent for district leaders to know if an investment in added instructional time is truly worthwhile. In New Jersey, elements of teacher and principal evaluation are linked to student improvement on state standardized tests in Grades 4 through 8 in ELA and 4 through 7 in mathematics. Teachers and principals will certainly benefit from knowing if added time can help student achievement. With the above in mind, well-informed decisions can be made to benefit students and to also be wise stewards of taxpayer dollars.

Furthermore, this study will contribute to an area in which there is a dearth of research: middle school ELA instructional time and student achievement. Research exists on school days

in a calendar year and instructional minutes in the overall school day, but little research exists on the subject-specific instructional minutes that this study aims to examine. Research that does exist on these topics is often inconclusive.

Research Questions

Research Question #1 – What relationship, if any, exists between English language arts instructional minutes in Grades 6, 7, and 8 and the average school score on the ELA section of the 2018 PARCC assessment?

Research Question #2 – To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and the average school score on the 2018 PARCC assessment?

Subsidiary Research Questions

Subsidiary Research Question #1 - What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 sixth grade PARCC exams?

Subsidiary Research Question #2 - What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 seventh grade PARCC exams?

Subsidiary Research Question #3 - What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 eighth grade PARCC exams?

Subsidiary Question #4 - To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 6th grade PARCC assessment?

Subsidiary Question #5 - To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 7th grade PARCC assessment?

Subsidiary Question #6 - To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 8th grade PARCC assessment?

Research Design

This quantitative study will examine the correlation strength between ELA instructional minutes and the percentage of students who passed the ELA portion of the PARCC exams in Grades 6, 7, and 8. Emails will be sent to middle school principals in New Jersey to survey how many instructional minutes are embedded in their respective bell schedules for ELA in Grades 6, 7, and 8. Based on the responses received from school principals, the New Jersey School Performance Reports will be used to obtain the average score on the ELA PARCC exams in each grade being examined in this study. The School performance reports will also be used to ascertain the percentage of students in each school that are classified as economically disadvantaged. Socioeconomic status will be tested to see if it is a moderating effect on the relationship between ELA instructional minutes and PARCC ELA performance.

Key Terms

Accountability - federal law requires each state to develop systems of accountability to measure whether or not students are meeting expectations in core curricular areas (English language Arts, mathematics, and science).

Economically Disadvantaged Students – students who are eligible for free or reduced lunch. The percentage of economically disadvantaged students in a school is a metric that is included in New Jersey's School Performance Reports.

Elementary and Secondary Education Act (ESEA) - federal law, first passed in 1965, which addresses educational issues and provides funding for numerous initiatives primarily for vulnerable students.

Every Student Succeeds Act (ESSA) - the 2015 reauthorization of ESEA, superseding many of the elements of NCLB. The bill was signed into law by President Barack Obama and granted flexibility to many of the punitive measures of No Child Left Behind with a focus on ensuring that all students are college and career ready.

Instructional time - the amount of allocated time for students in a specific subject area.

Length of the School Day – the number of hours and minutes in a school day. In New Jersey, all school days must be a minimum of four hours.

Length of the School Year – the total number of days in the calendar year for students. The average number of days in a school year in the United States is 180 days (Kolbe, Partridge, & O'Reilly, 2012). New Jersey requires a minimum of 180 days in a school year.

New Jersey School Performance Report - Annual profiles published by the New Jersey Department of Education for each public school in the state. Each report contains demographic

data, achievement data from standardized assessments, disaggregated data for subgroups, attendance data as well as additional metrics.

No Child Left Behind Act (NCLB) - signed into law by President George W. Bush in 2002. The law heightened the emphasis on school accountability with the creation of adequate yearly progress. Schools were required to show incremental improvement in student achievement on standardized tests. The law also created options for parents and set higher standards for teachers with the creation of the "highly qualified teacher" designation.

PARCC - The Partnership for Assessment of Readiness for College and Career exam. This test replaced the New Jersey Assessment of Skills and Knowledge (NJ ASK) and the High School Proficiency Assessment (HSPA) in the 2014-15 school year. The 2017-18 was the final year that the test was utilized in New Jersey. Effective 2019, it has been replaced with the New Jersey Student Learning Assessment (NJSLA).

Organization of the Study

Chapter 1 of the study provides an overview of the problem related to instructional time and academic achievement. The genesis of how time became a variable of interest is explained as well as the varying ways in which time can be calculated. The purpose and significance of the study were articulated by the researcher.

Chapter 2 provides an overview of the history of government intervention in education and the accountability measures that exist today. The bulk of the chapter pertains to literature on the relationship between time and academic achievement. Reviews of previous studies on the length of the school day, length of the school year, and scheduling formats will be included in

this chapter. An overview of research on the influence of socioeconomic status, time, and achievement will be discussed.

Chapter 3 explains the design of the study and procedures that will be implemented in obtaining data for the study.

Chapter 4 provides an overview of the data that was obtained and an analysis of that data.

Chapter 5 summarizes the implications from the data, and the researcher offers suggestions for professional practice as well as recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

Introduction

The purpose of this study was to examine the influence, if any, of English Language Arts (ELA) instructional minutes and a school's mean score on the ELA section of the 2018 PARCC exams. Additionally, the degree to which socioeconomic status affects the relationship between time and student achievement is also a focus of this study. With that in mind, much of the literature review will focus on instructional time and its potential impact on student achievement. Searches for relevant information were conducted through numerous electronic platforms: the Seton Hall library databases, EBSCOhost, Educational Resources Information Center (ERIC), JSTOR, and Google Scholar. Non-educational search engines were used as well (Google). The terms/phrases used in these searches were: impact, effect, relationship, instructional minutes, school day, school year, extended day, block scheduling, student achievement, language arts, socioeconomic, at-risk, middle school, standardized tests, and PARCC.

To be included in this review, the standards were as follows:

1. Peer-reviewed research such as journal articles and research studies
2. Reports from governmental agencies
3. Books and texts from educational authors
4. Primarily studies from within the last thirty years were included that focused on time and achievement.
5. Other dissertations

The body of this review will primarily focus on research conducted regarding instructional time and any impact it may have on student achievement. The genesis of why

schools focus on time will be explored as well. Recent federal legislation that focused on education and accountability over the previous two decades will be covered as well to see why schools dedicate their energies on student achievement scores.

A Nation at Risk

A Nation at Risk was the byproduct of a commission initiated by United States Secretary of Education T. H. Bell in 1981. The primary purpose of the group was to "examine the quality of education in the United States." The charter of the commission tasked the group with numerous areas to be investigated. Among the topics were teacher quality, fostering success at the college level, and comparing educational achievement of the United States against other "advanced nations." The report that ensued gave a blistering assessment of American education. The opening paragraph of the report bluntly declares: "the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people. What was unimaginable a generation ago has begun to occur--others are matching and surpassing our educational attainments" (National Commission on Excellence in Education, 1983). Citing statistics about the decline in SAT scores, the rise of remedial mathematics courses in college, and staggering rates of illiteracy, the commission stoked a call to action for Americans to demand changes in education or risk a perilous future. The report concluded with many recommendations (38). Among them were:

1. Minimum course requirements for high school students
2. Higher standards for college admissions
3. A seven-hour school day and a 200-220 day school calendar

No Child Left Behind Act

The No Child Left Behind Act (NCLB) of 2002 was a signature piece of bipartisan legislation signed into law by President George W. Bush. There was widespread support for the law, with only 51 of the 535 members of Congress voting against it. The law included numerous items of significance, all of which were designed to bolster academic achievement in American public schools. The legislation mandated annual testing in Grades 3 through 8, and once in high school, in mathematics and reading. Additionally, assessments in science were required once in elementary (3-5), middle, and in high school (Riddle, 2004).

While states had the ability to select their own assessment, and to determine what was considered passing, the legislation mandated that the results of these tests be reported – not simply with overall school passing rates – but with disaggregated data that revealed the progress, or lack thereof, of low-income students, special education students, and children of different ethnic backgrounds. In administering these annual tests, schools were expected to show "adequate yearly progress" (AYP). AYP was also determined by the states, but was expected to be an incremental rise, culminating with 100% proficiency of all groups in the 2013-2014 school year. The law provided specific sanctions that were to be imposed on schools and districts that did not meet AYP, with stiffening sanctions for repeated failure to meet AYP. Among possible sanctions were the ability to switch schools within a district if a school was underperforming, free tutoring, and changes of administrators (Riddle, 2004).

NCLB also sought to enhance curriculum and instruction in American schools as well. The law mandated that educators meet certain criteria to be deemed "highly qualified teachers." In short, teachers were expected, especially at the secondary level, to have an academic background (such as a bachelor's degree) in the subject matter that they teach. States were given

the ability to develop matrices for assuring that a teacher had the requisite knowledge and background to provide a thorough learning experience for their students. Lastly, this latest iteration of ESEA mandated that all states develop academic standards for math, reading, and science. In turn, state assessments were to be developed to measure student proficiency of those standards.

Dee, Jacob, and Schwartz (2013) examined the effects of NCLB on schools from a standpoint of expenditures, time and school climate. Their research found an increase in the amount of instructional time in tested subjects – mathematics and ELA. The increase equated to a roughly 45 minutes increase per week in math and ELA, with ELA the larger beneficiary of the added time. The inflated minutes were even more pronounced in schools that had at least 50% of their students eligible for free lunch. These gains were most notable in states that did not previously have accountability measures in place.

McMurrer (2007) analyzed the responses of 349 school districts to a survey on time allocations in the wake of NCLB. The survey was shared with 491 school districts nationally that included urban, suburban, and rural school districts as well as districts of varying population sizes. The survey response rate was 71%. 80% of respondents reported increasing ELA instruction by at least 75 minutes per week in the years that followed with 54% of districts adding at least 150 minutes per week. The added time in the tested subjects came at the expense of science, social studies, art, physical education, recess, and even lunch. The data obtained in the analysis found an average decrease in the percentage of instructional time for the arts and physical education as 35% , with science and social studies instructional time declining 33% and 32% respectively. The focus of McMurrer's survey, however, was on elementary time allocations whereas this study's concentration is middle school instructional minutes.

Every Student Succeeds Act

President Barack Obama took office in 2009 and with ESEA overdue for reauthorization, his administration sought to entice states to adopt initiatives that he supported. In exchange for enacting programs that he espoused, the Obama Department of Education offered flexibility from certain NCLB requirements that over time proved onerous (McGuinn, 2014). Most notable of these were the steadily increasing requirements of student proficiency rates, which schools were not keeping pace with. In seeking relief from these burdensome elements of NCLB, states were offered grants to develop improved state standards, to improve teacher and principal evaluation systems, to implement data tracking systems that linked student achievement and growth to their respective teachers, and to expand charter schools (Hunt Institute, 2016).

Nine years after NCLB was to be reauthorized, and in the final year of President Obama's eight years in office, the latest iteration of ESEA was signed into law in December of 2015 and was titled the Every Student Succeeds Act (ESSA). With both houses in the legislative branch controlled by the opposing party, many of President Obama's initiatives that he trumpeted in the early stages of his presidency were not a part of the final version of the legislation. Eliminated from the law were the enticement of updated teacher and principal evaluation systems as well as mandating the linkage of student performance on assessments to teacher's evaluations. Decisions of this nature were returned to the states, as much of ESSA focused on diminishing the federal role in education. Senator Lamar Alexander, who chaired the Senate committee that was tasked with crafting the legislation, later described the move from NCLB to ESSA as "the rise and fall of the national school board" (Addison, 2017). ESSA eliminated the NCLB expectations of AYP and the highly qualified teacher. It reaffirmed, however, the expectation that state assessments

would continue to be administered in Grades 3-8 and again in high school for reading, mathematics, and science.

Partnership for Assessment of Readiness for College and Career

The push for improved state standards at the onset of the Obama administration spawned the creation of the Common Core State Standards (CCSS). Sponsored by the National Governor's Association, these standards outlined the skills and knowledge children should possess at the end of each grade in regard to mathematics and English Language Arts (ELA). Forty-six states and the District of Columbia ultimately adopted these standards. Emanating from the standards were two assessments that would be administered in multiple states on command of the standards: the Smarter Balanced Assessment Consortium and the Partnership for Assessment of Readiness for College and Career. Thirty-one states joined the Smarter Balanced Consortium and nineteen states and the District of Columbia were part of PARCC. Chief education officials, along with higher education officials from each state, comprised the governing board of PARCC. These officials developed the test items for the exam. According to its website, "Every PARCC test item starts with the standards and then goes through a rigorous review by more than 30 people, including teachers and other educators from the PARCC states. At any point, a test item might get sent back to be rewritten—or thrown out altogether."

Participating states gave their school districts the opportunity to pilot the PARCC exams during the 2013-14 school year, which was the final year of the New Jersey Assessment of Skills and Knowledge for New Jersey. The PARCC exams became New Jersey's state assessment during the 2014-15 school year. The exams were a shift from paper and pencil tests to computer-based assessments.

Time and Student Achievement

As stated previously, the seminal publication *A Nation at Risk* as well as *Prisoners of Time* both cited a need in this country to reexamine the usage of time in our schools. Specifically, both called for a longer school year and a longer school day. In 2009, President Barack Obama declared:

> "We can no longer afford an academic calendar designed when America was a nation of farmers who needed their children at home plowing the land at the end of each day. That calendar may have once made sense, but today, it puts us at a competitive disadvantage. Our children spend over a month less in school than children in South Korea. That is no way to prepare them for a 21st Century economy. I know longer school days and school years are not wildly popular ideas, but the challenges of a new century demand more time in the classroom. If they can do that in South Korea, we can do it right here in the United States of America."
>
> "Despite resources that are unmatched anywhere in the world, we have let our grades slip, our schools crumble, our teacher quality fall short, and other nations outpace us. In 8th grade math, we've fallen to 9th place. Singapore's middle-schoolers outperform ours three to one. Just a third of our 13- and 14-year olds can read as well as they should."

Despite the matter-of-fact declarations that these changes were needed, research on time and student achievement has not been as concise. Past studies have focused on the length of the school day, the length of the school year, allocated/engaged time, and scheduling methods in schools.

Types of Instructional Time

Aronson, Zimmerman, and Carlos (1999) detail the various types of time to be examined in schools. The broadest category is allocated time. Allocated time is the total number of days and hours that students are required to attend school. Allocated instructional time is the number

of hours or minutes that students are in their academic classes. Allocated non-instructional time is the hours and minutes in which children are in school but not in the learning environment: lunch, recess, homeroom, and passing time between classes. Engaged time, often referred to as time on task, is the time in which students are taking part in learning activities in their classes. The final category is academic learning time (ALT), which quite simply is when children are truly learning. Aronson, Zimmerman, and Carlos define ALT as "the precise period when an instructional activity is perfectly aligned with a student's readiness and learning occurs." With the above in mind, it is clear that there are numerous ways to examine time in schools.

Length of the School Year

No time alteration would have a bigger fiscal impact than the addition of school days to the calendar. Added days mean more money for salaries, which means more impact on school district budgets. Nevertheless, both *A Nation at Risk* and *Prisoners of Time* clearly articulated the need for an expanded school calendar. In a 2011 study, Jez and Wassmer examined the academic performance of over 500 elementary schools in California coupled with the number of instructional minutes in a school year. Using data from the 2005-2006 school year, the dependent variable was each school's Academic Performance Index (API). The API is determined by standardized tests administered over the course of the academic year. Their results found a statistically significant relationship between increased instructional time and stronger academic achievement. Furthermore, the results also showed an especially pronounced effect that increased learning time had on the performance of economically disadvantaged students. On why that would be occurring, Jez and Wassmer surmise: "Unlike disadvantaged students, more

advantaged students likely have educational resources outside of school they can draw on" to make up for differences in time (p. 22).

Marcotte and Hansen (2010) analyzed the loss of school days as opposed to the addition of days of the calendar. Using data from Colorado and Maryland, the researchers examined the number of school closures that took place each year for specific schools. With most schools administering state standardized tests at about the 120-day mark of the school year, most "lost" school days are often made up after the tests have been given. Their results showed that for every day school was cancelled for a weather emergency, the passing rates of the students on the math portion of state assessments fell by one-third to one-half of a percentage point for each day school was closed. Conversely, Goodman (2015) completed a similar analysis on weather closures and the impact on student performance in Massachusetts. Using data from the Massachusetts Department of Elementary and Secondary Education, Goodman found no effect on student outcomes, concluding that teachers are able to adapt to best prepare their students.

Sims (2008) evaluated the relationship between the number of days in the school calendar prior to state testing taking place and the performance of students on those exams in Wisconsin. Many school districts in Wisconsin had moved their starting dates into the month of August, and in turn were generating added preparation days in advance of the Wisconsin Knowledge and Concepts Examination (WKCE). A state law was enacted in 2002 that mandated that schools could no longer start their academic year until September 1st. In examining pre-implementation scores versus post-implementation scores, there was a small but clear positive relationship between the number of days prior to testing and the performance of fourth graders on the math portion of the exam. Interestingly, no such relationship existed on the ELA portion of the test.

The aforementioned studies on the impact of the length of the school year on student achievement arrived at a wide array of conclusions. An analysis on the number of minutes in the year yielded a small, positive outcome with a significant impact on low-SES students. On the other hand, studies on school closures on the loss of days in advance of state testing had conflicted results; some studies concluded that loss of days mattered whereas others found no such connection. Lastly, a similar study on the start date of the school year found a positive relationship for mathematics, but no impact on ELA scores. With that in mind, there were no clear conclusions that could be drawn from this subsection.

Length of the School Day

Based on the bureaucratic recommendation of a longer school day, adding minutes to lengthen the school day is a common consideration in educational circles. Critics often compare the instructional time in the United States against other nations whose school days and years are, in some cases, considerably longer than ours. The Virginia Department of Education (1992) conducted a review of educational research on the topic in an effort to see what strategies could benefit students in the Commonwealth. An analysis of empirical research that had been conducted revealed that added instructional minutes to the school day did not correlate to added student achievement. The study also posited that added minutes could contribute to fatigue for students and could precipitate disciplinary issues. Aronson, Zimmerman and Carlos (1999) arrived at a similar conclusion about the length of the school day. “The length of the school day says nothing about how that time is devoted to learning activities.” These researchers concluded that it is the quality of instruction, not the quantity, that matters more.

In a 2005 analysis, Farbman and Kaplan contrasted the academic performance of several schools that employed an extended day schedule. By extended, the researchers defined this as a school whose typical school day was 15% greater than conventional school schedules. The ways in which schools "extended" their days varied; some provide tutoring opportunities, some added instructional time allocations to core subject others provided "double periods" of math and/or English. In a comparison of several district and charter schools in Massachusetts, their data revealed that profiled schools generally out-performed non-extended day schools for which there were students with similar percentages of free and reduced lunch students. This initiative in Massachusetts started with 10 schools and expanded to 22. Budget issues in some districts forced the expanded day opportunity to end prematurely (Kocian, 2009).

The aforementioned Knowledge is Power Program (KIPP), a charter school network of 45 schools for students in Grades 5 through 8, operate for about 9.5 hours a day with half-day sessions on Saturdays. KIPP academies overwhelmingly enroll children who are from low-socioeconomic families. In addition to opportunities in the arts, students have two hours of language arts each day and two hours of mathematics each day. KIPP Gaston College Preparatory School in North Carolina boasts of being one of the highest performing schools in the state of North Carolina. KIPP academy New York has routinely ranked in the top 10% of all middle schools in New York City on CTB standardized tests in both reading and mathematics (Farbman & Kaplan, 2005)

To the contrary, an extended day trial in Miami for close to 40 underperforming schools did not have results as positive as the KIPP academies. Anecdotal evidence from teachers and administrators conveyed feelings of fatigue and burnout from the students. Program evaluators shared that higher-achieving students viewed the added time as a punishment. Student

achievement scores on the Florida Comprehensive Assessment Test showed these Miami students scoring below their academic peers (Durando, 2009).

Patell, Cooper, and Allan (2010) reviewed fifteen empirical studies that have focused on extended school time. They concluded that there is a "neutral to small positive effect" when extended school programs are implemented. The greatest beneficiaries of extended learning activities are students at risk of failure. The authors caution though that limitations existed in all of the studies and arriving at causation would not be wise. Nevertheless, Patell, Cooper and Allan echo the sentiments of others in that the quality of teacher instruction is also a major contributing factor to student outcomes.

Added instructional time beyond the school day (i.e. after school programs) are a source of promise. Vandell, Reisner, and Pierce (2007) found that students who regularly attended an after-school math program saw gains on standardized math exams. In their study, they tracked the performance of 2,914 elementary and middle students across 14 school districts from across the country. 63% of the participants were eligible for free or reduced lunch. The programs that were part of the study met after school for as many as four days a week. After two years of participation in the program, elementary students saw gains of 20 percentiles in math standardized test performance and middle school students saw gains of 12 percentiles in math as well.

Farmer-Hinton (2002) saw similar results after comparing students who attended the Lighthouse program in Chicago versus those who had not. The Lighthouse program is 2 hours long and held after school each day. One hour of the program is for additional instruction in math and/or reading, and the second hour is for recreation. Participants in that study, who were

predominantly minority and low-income, showed gains of one month's learning in math and reading achievement as opposed to their classmates who were not in the program.

Sammarone (2014) analyzed the length of the school day and its relationship with the percentage of proficient students on the New Jersey Assessment of Skills and Knowledge (NJ ASK). The NJ ASK was the predecessor to the PARCC assessment in New Jersey for Grades 3 through 8. Data from the New Jersey School Performance Reports was used to compare the proficiency rates of each middle school with the length of each school's academic day. Using hierarchical regression for Grades 6, 7, and 8 and for both mathematics and ELA, Sammarone found that the length of the school day had R-squared values ranging from 0.2% to 1.2%. The length of the school day was a statistically significant predictor, but the R-squared values were extremely minimal.

Tully (2017) completed a similar analysis looking at 200 New Jersey middle schools and the academic performance of those schools in each tested grade. Again, the dependent variable was the percentage of students who scored at the proficient or advanced proficient levels on the NJ ASK in Grades 6, 7, and 8 for both mathematics and ELA. For all six analyses, no statistically significant relationship existed. The only independent variables that had a statistically significant relationship with student performance were socioeconomic status and student attendance.

In summary, studies on the effect of the length of the school day had differing conclusions. Empirical analyses on simply the number of the minutes in the entire school day found no relationship between time and achievement. The recurring message of quality mattering more than quantity was a frequent assumption. There were numerous success stories about schools that far-exceeded the standard school day length with corresponding levels of academic

achievement. Finally, targeted after school programs with a narrow focus appeared to have modest, positive levels of gains as well.

Allocated Instructional Minutes

A criticism of the use of allocated time is the assumption that portions of this time is lost to transitions, management issues, "special" schedules and so on. Smith (2000) conducted a qualitative analysis of the use of time in eight elementary schools in Chicago. The study was initiated due to poor performance on standardized tests and accusations of time mismanagement in the school system. The research team examined documents, conducted observations and interviewed administrators and teachers. The researchers sought to focus on differences in allocated and engaged time. After the review, it was discovered that 37 school days were either partially or totally surrendered for special activities that were non-instructional. In all, after examining three years' worth of data, Smith concluded that schools actually use 40-60% of their allocated instructional time for actual instruction. The remaining time is lost for non-academic purposes.

Baker, Fabrigo, Galindo, and Mishook (2004) conducted an analysis of international test scores and time allocations in specific subjects to test for a relationship. The researchers examined scores from the 2000 PISA administration, the 1999 TIMSS, and the International study of Civic Education (1999). All three of these instruments contained questions about instructional time:

- How many instructional weeks are there in a school year?
- How many class periods are in a school week?

- How many instructional minutes are there in an average class period? (Baker et al, 2004)

Using the answers to the above queries, the authors were able to extrapolate the number of hours in a week devoted to each subject. The PISA data revealed that Mexico has the highest amount of instructional time in a year – roughly 1140 hours, with Austria in a close second with 1120 hours. On the low end, Greece had the least number of hours of the sample, approximately, 790 instructional hours. The United States was in the average range, with 993 hours in a year dedicated to instruction. Beyond the descriptive statistics, an examination of the relationship between instructional time and the achievement scores on the three devices yielded results that were not statistically significant in every test.

The study then looked at country-specific data and examined varying time allocations by school and tested them against achievement scores associated with those schools. For each of the subjects, there was a wide range of correlations ranging from positive *r*'s to negative *r*'s. For the math instructional time, the international mean for countries with a positive *r* was 0.09. For the negative correlations, the international mean was -0.12. Thirty-two countries had no correlation at all. For science, the international means for *r* were 0.13 and -0.18. Civics scored had the highest positive correlation, with an international mean of 0.26. The negative mean was 0.10. A correlation of 0.26, although the highest of the values mentioned in this study, is still a weak correlation. The authors conclude their study by candidly stating "Do not waste resources in marginal increases in instructional time, as long as the system falls within world norms." Like many other researchers, they urge priority be placed on curriculum and instruction as opposed to time.

Rivkin and Schiman (2015) examined PISA scores from the 2009 administration of the exam. At the conclusion of the assessment, test takers complete several survey questions about their own background as well as information about their school. The researchers examined the relationship between instructional minutes, as indicated in the surveys, and mathematics and language arts scores. The sample size of this analysis contained 253,286 observations from 7,374 schools in 72 countries. The results demonstrated evidence that additional time correlated with higher levels of achievement. The results were positive, yet modest. However, due to the fact that the students were offering the time estimates for their instructional minutes, there were issues with precision in this particular study.

Taken as one of several variables, Ayodele (2014) analyzed the relationship between total allocated instructional time, total engaged time, and numerical ability with high school student performance on the Chemistry Achievement Test. Using hierarchical regression, the three variables had an adjusted R^2 of 0.639, meaning the 63.9% of the variance can be attributed to the three variables. Upon closer examination, engaged time and numerical ability were found to have statistically significant Betas of .334 and .570 respectively. Total instructional time, on the other hand, was not a statistically significant predictor, p=.523. Although this study was based on student observations of a mere 90 students, it adds to the position that it is the quality of the instruction and not so much the quantity of instruction that impacts student learning.

There have been numerous analyses of content-specific minutes and their relation to student achievement here in the United States. Smith (1979) sought the correlation strength between fifth grade social studies allocated minutes and student performance on the STEP Achievement Test. Using data from 68 classroom in the Washington D.C. suburbs, teachers tracked the amount of minutes they actually spent on social studies teaching in their respective

classrooms. The average instructional time for social studies was 27.5 minutes with a standard deviation of 8.7 minutes. The correlation between the two variables was positive, but weak at 0.23. It should be noted however that 68 classrooms is a relatively small sample size.

"Double doses" of instruction in mathematics or ELA are oftentimes found at the secondary level, particularly for students in need of remediation. Nomi (2015) reviewed the Chicago Public Schools initiation of "double dose" English to students with below-average skills. Beginning in 2003, ninth grade students who scored below the national median on the Iowa Test of Basic Skills were assigned to two periods of English each day, a standard English I course and a support period of English. From an instructional minutes standpoint, this equaled 90 minutes of ELA instruction each day. Examining the pre- and post-treatment results showed a small, but positive impact on student outcomes on the standardized assessment the freshmen took at year's end. A side effect of this policy was a decline in peer ability levels in the remedial support class. Nomi noted that the decline in the academic prowess of the students in the support classrooms can lead to stagnation in the pacing and difficulty levels of the coursework and can coincide with increased discipline problems. The ability to learn from academic peers with higher skills may be absent in such classes and could possibly be negating the gains from added instructional time. A potential drawback to this study is the fact the Chicago Schools, from a curriculum standpoint, are decentralized. Therefore, there was considerable autonomy between schools as to how they spent and structured the additional math period of support.

Similarly, the Chicago school system began a sister program with regard to Algebra. Using the same criteria as mentioned before (scoring below the national median on the Iowa Test for math in eighth grade), students were assigned to a standard Algebra I class and a support class. In an effort to provide some structural guidance, the school district encouraged schools to

either assign below-median students to the same teacher for both periods, or, to keep all of the students in the classes together for both math classes. The result of these recommendations was highly homogenized math classrooms for Algebra I. Upon review by Nomi and Allensworth (2013), and in examining the performance of five different cohorts of students, the double period of math instruction did yield higher passing rates on the PLAN standardized assessment of Algebra skills. Student scores increased by close to one-third of a standard deviation. Interestingly, there was no impact on the failure rates of students who were enrolled in this program and moving forward a school year, students who took part in this initiative fared no better in their 10th grade geometry course as well. The failure rates for the following year were not changed by the added class time the year prior.

The State of Florida passed legislation in 2012 mandating the expansion of the school day by one hour for schools in the bottom 100 of elementary reading performance. Using the percentage of passing scores on the Florida Comprehensive Assessment Test, these schools were to dedicate the additional hour strictly to improving student literacy. Figlio, Holden, and Ozek (2018) examined the treatment effect on reading outcomes for the participating schools. The descriptive statistics of this analysis reveal that the extended school day institutions were substantially enrolled with children from low socioeconomic families. The resulting data showed 0.05 standard deviations of positive growth in the year following implementation. The authors caution however that many of these schools with expanded literacy time are the beneficiaries of multiple types of student interventions being implemented at once. With that in mind, concluding that added instructional time causes student gains is problematic.

Kosek (2017) examined the influence of mathematics instructional minutes in Grades 6, 7, and 8 on student performance on the New Jersey Assessment of Skills and Knowledge (NJ

ASK). As part of the study, middle school principals in New Jersey completed a survey on the number of math-specific instructional minutes their schools designate in the daily schedule or students in each middle school grade. Based on the responses of 234 principals, an analysis was completed on the strength of any relationship between time as well as other school, student, and teacher variables from the New Jersey School Report Cards. Of the three tested grades, only in eighth grade were the number of mathematics instructional minutes found to be a statistically significant predictor of math performance in the NJ ASK, with 1.17% of the variance accounting for students who passed the test. The percentage of students who were economically disadvantaged was the foremost predictor of student outcomes in the analysis. The data for this study was based on a survey response rate of 24.4%. There were 234 responses out of 958 schools statewide that educated children in Grades 6, 7, and 8.

The totality of the studies on subject-specific instructional minutes often arrived at the conclusion of a small, positive relationship between time and student achievement. For many of the studies though, there were shortcomings or limitations. Small sample sizes, other mitigating factors, inconsistencies with implementation fidelity, and imprecision with data reporting were some of the drawbacks in the empirical evidence.

Block vs. Traditional Scheduling

Block scheduling has been employed in many secondary schools over the past two decades. Whereas traditional secondary school schedules typically consist of roughly eight 40-45-minute periods, schools employing block schedules have 80-90 minutes periods that meet on a semester basis. Students therefore take fewer classes in a given day which minimizes the transitions that occur. Teachers in block settings often feel that the expanded time blocks allow

them to employ more creative techniques in their classrooms (Canady & Rettig, 1995). However, in spite of some teacher satisfaction, Gruber and Onwuegbuzie (2001) were unable to pinpoint any academic advantage that students in schools that employed block scheduling had over those with traditional schedules. In fact, in their analysis of 261 Georgia high school students who experienced either block or traditional scheduling, the results found that students who were in traditional schedules fared better. The researchers utilized independent samples t-tests to detect these differences when reviewing the performance of the participants on Georgia's end of year standardized assessment. Lawrence and McPherson (2000) conducted a similar study and arrived at the same conclusions.

Nichols (2005) conducted a pre- and post-implementation analysis of five Indiana high schools looking at each school's language arts grades longitudinally. Nichols concluded that there is was a slight positive impact in these 5 schools since the implementation of block scheduling. While the overall trend was positive, a closer analysis revealed that no apparent gains were observed for low-income students. Evans, Tokarczyk, Rice, and McCray, (2002) similarly conducted research in three districts that had converted to block scheduling in 1997-1998 school year. The researchers compared data from the final year of traditional scheduling to the second year of block scheduling. The results showed gains on the average SAT score as well as an increased passing rate on the high school proficiency test. The data from this study also showed a marked decline in low-level discipline issues. While the suspension rate remained stable in the schools that were studied, there was a sharp decline in detentions. Although the data from this study is very positive, the authors make clear that a small sample was the basis of this study and that future research is still needed.

Block scheduling research, like many of the other types of studies on the use of time, results in conflicting conclusions. Several studies concluded that pre- and post-implementation data revealed no differences in the levels of achievement for students. Conversely, other studies found a positive impact, particularly for higher-achieving students. Aside from test scores, a consistent conclusion was the reduction of minor discipline issues.

Socioeconomic Status, Time, and Achievement

In educational circles, the phrase "socioeconomic status" takes on numerous meanings. In an assessment of past research, White (1982) offers a number of variables that have been used as measures of socioeconomic status: parent's income, parent's level of education, parent's occupation, and quality of housing. One of the most common variables used for research in schools is whether or not a child is eligible for free or reduced lunch. In New Jersey, the annual school performance reports use students who are eligible for free or reduced lunch as the metric for "economically disadvantaged" students.

Coleman et al. (1966) provided the first in-depth findings on the role of socioeconomic status and academic achievement. The Coleman Report, as it was informally referred to, was the byproduct of an exhaustive analysis of data from roughly 570,000 students. The report examined the impact of numerous factors from both the school (teacher and school variables) and the student (demographic variables) that could influence student achievement. Coleman went on to state that the social make-up of a school had a strong effect on student outcomes. Coleman and his team concluded that "Inequalities imposed on children by their home, neighborhood, and peer environment are carried along to become the inequalities with which they confront adult life

at the end of school." SES was, based on the research, the preeminent variable in predicting outcomes for a student's academic success, or lack thereof.

Sirin (2005) conducted a meta-analysis on studies that had been carried out since White (1982) to determine if the same conclusions could be reached. A recurring complication was the multitude of factors that are often accepted as measures of SES. Sirin concluded that a "parent's location in the socioeconomic structure has a strong impact on student's academic achievement. In particular, Sirin found a cumulative, increasing effect size as students progressed through their schooling, with the effect being the most pronounced at the middle school level. Contrary to the practice in place in New Jersey however, Sirin frowned upon the use of free and reduced lunch eligibility as a marker for SES. Sirin surmised that "adolescents are less likely than younger children to file applications" for lunch programs.

To the present, research continues to chronicle a stark achievement gap between high and low-SES children. Reardon et al (2013) concluded that children from poverty-stricken families enter ninth grade with literacy skills five years below their high-income peers. Drop-out rates for high school students are the most pronounced in low-income families (NCES, 2014). As students move on to college, children with families in the top financial quartile are eight times more likely to earn a college degree (U.S. Census Bureau, 2014). It is clear that a family's financial status is a critical factor in predicting a child's future success.

Several of the aforementioned studies (Jez & Wassmer, 2011; Nomi, 2015; Nomi & Allensworth, 2013) have concluded that additional time may be most beneficial to children from low-SES backgrounds. These conclusions have coalesced around a number of recurring assumptions about family dynamics that can result in low-SES students trailing their high-SES peers when they begin schooling. These include:

- Low-SES households have less access to learning materials such as books and computers (Bradley, Corwyn, McAdoo, & Garcia, 2001).
- Low-SES families oftentimes have less parental involvement with educational activities compared to high-SES students (Buckingham, Wheldall, & Beaman-Wheldall, 2013).
- High-SES children have greater access to pre-school programs (Garcia & Weiss, 2017)

The question remains if added instructional time is useful and beneficial to children from low-SES backgrounds to make up for any alleged deficiencies. Garcia & Weiss (2017) conclude that "early learning gaps do not go away." With that in mind, students who did not begin their academic careers on the same footing as their classmates would need inflated time allocations not just at the start of their elementary years, but likely throughout their K-12 experience. Educational psychologist John Carroll (1963) postulated a rather simple equation for such a complicated educational issue:

$$Degree\ of\ Learning = \frac{\text{Time Spent}}{\text{Time Needed}}$$

Using this as a model for Research Question 2, previous research reveals a need for greater time allocations for students who are at-risk of failure. If those conclusions are indeed accurate, schools would be wise to schedule additional time in the event that large numbers of low-SES, at-risk students attend those schools. At the opposite end, Anderson (1984) declared: "put simply, the higher a student's aptitude for a given subject, the less time he or she needs to learn all or any portion of a subject." Returning to Carroll's equation, the closer the answer to the above equation is to 1, the ideal learning time is being provided. Different students from different backgrounds come to schools each day with learning gaps that need to be filled to

optimize their academic performance. Reardon et al (2013) revealed that by the end of middle school, children from low-SES families enter high school with literacy skills approximately five years behind those of their high-SES peers. With Carroll's equation in mind, to actualize the ideal learning for children from low-SES backgrounds, who are frequently at an academic disadvantage, more time is needed and therefore should be allocated.

To illustrate this concept, Raudenbush, Hong, and Rowan (2002) studied the impact of an intensive math program in 67 Title I schools with a focus on Grades 3, 4, and 5. The students in these schools were largely low-income. The researchers used results from the Stanford Achievement Test at the end of year to evaluate the effectiveness of the treatment program. The resulting data showed significant positive effects in fifth grade, particularly for free-lunch students in the program. There was however a large standard error since the sample size of students in the fifth-grade treatment group was not large. In spite of that fact, Raudenbush et al recommend further research on the topic as low-income children appeared to benefit from the treatment. The authors conclude: "Without the advantage of being exposed to a variety of mathematics knowledge at home, in the local community, or from summer programs, low-income students also rely on schools for accessing more advanced content topics that will enrich their knowledge structure and prepare them for future study."

Many of the abovementioned studies concluded that children from low-SES backgrounds have deficiencies that added time could potentially help to remedy. As opposed to their high-SES classmates, at-risk students oftentimes do not come to school with the same academic foundations that their counterparts experienced through preschool and out-of-school exposure to literacy. Several of the empirical studies laid out in this subsection found positive influences for children from low-SES backgrounds when they received "double dose" instruction in either math

or ELA. Carroll's (1963) "degree of learning" equation reverberates through subsequent analyses and is a key underpinning to this study.

Literature Review Summary

American educational prowess has been compared to that of our international counterparts for many years. It has led many pundits to opine that there are issues in U.S. schools that need heightened attention. A recurring remedy offered by policymakers has been better usage of time in our schools. From position papers like *A Nation at Risk* and *Prisoners of Time*, and also through executive and legislative emphasis, many have encouraged a longer school year and a longer school day to mirror what occurs in other nations. In spite of the repeated drumbeat for more and better use of time, previous research over the years on the topic has been mixed.

There are many different levels of time in schools. Allocated time refers to the time allotted (in a school year, a school day, a class period). Engaged time refers to the time in which students are actively in learning activities. Academic learning time (ALT) refers to the moment in which student are productively engaged in learning activities. An abundance of research has been carried out regarding allocated time. As allocated time is much more straightforward, and far less subjective than engaged time or ALT, studies on allocated time have been conducted quantitatively for decades. Examination on the length of the school year were decidedly mixed. Where some studies found the number of school days prior to testing being of significance, others who completed similar analyses in other states found no such evidence.

Many researchers have looked at the number of minutes in the school day for a relationship with student performance and have also arrived at varying conclusions. A straightforward analysis of the total number of minutes in the school day in approximately 200

New Jersey middle school by two researchers found little to no evidence of any influence. Extended school day programs, where this a more concrete target of where additional time will be directed, have shown greater effects. The majority of the studies chronicled within the literature review showed positive outcomes. Many researchers have concluded that the quality of time matters more than the quantity.

The focus of this study is on content-specific instructional minutes in middle school ELA classrooms. Unfortunately, none of the studies identified as part of this literature review mirrored the narrow focus of this study. Research on previous studies on subject-specific minutes ran the gamut from math, science, social studies, and ELA and across all grade spans. These studies ranged in scope from international comparisons down to an analysis within a single school district. The recurring conclusion of the bulk of these studies was that there was a small, positive relationship between increased allocated class time and student achievement. Given the fact that these past studies have spanned many grade levels, and they have focused on different content areas, it could be argued that additional time, regardless of the content area or grade level should yield similar results since this study is focusing solely on allocated time.

Conversely, none of the research to date has dealt with the specific grade span and content area upon which this study is focused. English language arts is a critically important subject that builds on work in the elementary grades and becomes increasingly complex as students enter the secondary grades. Student success in reading complicated texts in social studies, science, and literature are largely dependent on individual reading skills (Alvermann, 2002). Writing abilities are an entirely different skill that is crucial for students to master in order to demonstrate their command of the content and to be effective communicators. Given the nature of middle school and the heterogenous grouping of students in most classes, ability levels

will vary greatly across classrooms. This presents challenges for middle school ELA teachers as they plan lessons for this wide-ranging subject, knowing full well that there are an array of competency levels in the students in their classrooms.

The literature also revealed a potential dichotomy on the impact of instructional time on low-socioeconomic status students and their high-socioeconomic status peers. Many past studies have shown that a family's socioeconomic status is a stronger predictor of their child's academic success. It also revealed many factors that result in low-SES children beginning their schooling at a disadvantage. In an effort to narrow this achievement gap, many studies concluded that schools need to do more to help low-SES students child catch up to their classmates. Instructional time appeared to be an avenue to bolster the success of these children. Multiple studies found that inflated time allocations were most beneficial to disadvantaged children. As many of these studies did not coincide with focus of this study – middle school ELA time allocations – this study presents any opportunity once again to add to the literature on the impact of time on achievement for different populations. The examination of the effect of instructional time on schools with varying degrees of economically disadvantaged students adds a new concentration as well. The results of this moderation analysis will assist practitioners and school leaders in developing better bell schedules and time allocations that have been tested.

CHAPTER 3

METHODOLOGY

Introduction

Collectively, past research on the subject of time and student achievement has shown uneven results and studies have not shared the same focus as this investigation. Whether the study was conducted on the length of the school day, the length of the school year, or the scheduling methodology of the school, results have been inconsistent. In addition, although many studies have been conducted on this subject from a broad sense, few have been as narrow as the focus of this study: the relationship between English language arts instructional minutes at the middle school level and the mean ELA score on the 2018 PARCC assessments. Using data from a survey that will be sent to middle school principals in the State of New Jersey, coupled with key data points on those schools' New Jersey School Performance Reports, the researcher aims to answer the research questions below.

Restatement of Research Questions

Research Question #1 – What relationship, if any, exists between English language arts instructional minutes in Grades 6, 7, and 8 and a school's mean score on the ELA section of the 2018 PARCC assessment?

Research Question #2 – To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 PARCC assessment?

Restatement of Subsidiary Research Questions

Subsidiary Research Question #1 - What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 sixth grade PARCC exams?

Subsidiary Research Question #2 - What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 seventh grade PARCC exams?

Subsidiary Research Question #3 - What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 eighth grade PARCC exams?

Subsidiary Question #4 - To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 6^{th} grade PARCC assessment?

Subsidiary Question #5 - To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 7^{th} grade PARCC assessment?

Subsidiary Question #6 - To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 8^{th} grade PARCC assessment?

Research Design

This is a quantitative, non-experimental study that seeks to determine if a relationship exists between English language arts instructional minutes in Grades 6, 7, and 8 and student

performance on the 2018 PARCC ELA assessment when controlling for other student, staff, and school variables. The dependent variables in this study will be PARCC ELA scores for 2018. The independent variables will be the amount of ELA instructional minutes employed in a school as well as the number of economically disadvantaged students in those same schools. The data for this study will be from the 2017-18 school year, with data being obtained from the New Jersey School Performance Reports, publicly accessible data on school websites as well as through a survey of school principals and other personnel. Utilizing multiple regression, the researcher will determine if a statistically significant relationship exists, and if so, the strength and direction of that relationship. Furthermore, moderation analysis will be used to test whether a variable (socioeconomic status) affects the direction and/or strength of the relationship between instructional minutes and the mean PARCC ELA score for a school.

Instrumentation

Two mechanisms will be used to acquire data for this study. The first method will be the use of a five-question survey that will be emailed to all of the principals in New Jersey whose schools included Grades 6, 7, and 8. The survey will be completed via Qualtrics and easily transfers submissions into a spreadsheet. The following questions will be a part of the survey:

1. Does your school utilize any of the following block scheduling formats?
    a. Our school employs block scheduling in which students take one set of courses in the first semester and a new set of classes in the second semester.
    b. Our school employs block scheduling in which courses meet on an A/B or every other day schedule
    c. Our school does not utilize block scheduling.

d. Our school employs a hybrid block schedule. *Please explain below in question 5.*

2. How many minutes a day did students in grade 6 receive instruction in English language arts, reading, and/or writing during the 2017-18 school year?
3. How many minutes a day did students in grade 7 receive instruction in English language arts, reading, and/or writing during the 2017-18 school year?
4. How many minutes a day did students in grade 8 receive instruction in English language arts, reading, and/or writing during the 2017-18 school year?
5. Were there any unique scheduling rotations in your school that would be necessary to know in order to calculate the weekly total of ELA instructional minutes in your school during the 2017-18 school year? *If you selected A or B in question 1, there is no need to explain again here.*

The option exists to analyze the amount of instructional minutes on a weekly or an annual basis. To examine the minutes annually, it would be essential to know the exact dates in which each school administered the state assessment. New Jersey Schools had a 30-day window to administer the PARCC assessment in 2018, so testing dates could vary significantly for each school. In an effort to make the survey as straightforward as possible, and not require principals to pinpoint the exact dates of testing, the analysis in the study will focus on weekly instructional minutes.

The Partnership for Accountability of Readiness of College and Career (PARCC) assessment will be the second instrument required for this study. The PARCC assessment, developed by Pearson, was the assessment implemented in New Jersey to assess students understanding of the New Jersey Student Learning Standards (previously the Common Core State Standards) as part of federally-mandated annual testing promulgated through the Every

Student Succeeds Act. The ELA portion of the PARCC assessment was divided into three units, which at the middle school level were 90 minutes per unit. Three types of questions existed on PARCC ELA exams:

- Evidence-Based Selected Response items: multiple-choice items in which students cite text evidence to support their answer
- Technology-Enhanced Constructed Response items: students use technology to demonstrate comprehension of text in ways that paper-based tests could not previously score ("drag and drop," reordering sequence of events, shade texts)
- Prose-Constructed Response items: students respond to questions/prompts to compose an essay response.

Preliminary PARCC scores were reported to school districts in mid-June following the test administration, and official score reports were provided in late August. PARCC performance was reported on a scale of 650 to 850 with five levels being used to communicate student progress:

- Level 1: Did not yet meet expectations
- Level 2: Partially met expectations
- Level 3: Approached expectations
- Level 4: Met expectations
- Level 5: Exceeded expectations

Level one scores ranged from 650-699. Level two scores were from 700-725 and the level three ceiling was 749. Level four is considered passing, from 750-800. Level five is the highest level of proficiency, with 850 registering as a perfect score.

Data Collection

The New Jersey Department of Education (NJDOE) publishes, on annual basis, the New Jersey Public School Directory which provides the names of the school leaders across the state. This information is downloadable from the NJDOE in a .csv spreadsheet. The directory is arranged by county, district, and finally at the school level. The spreadsheet further provides the school's address, grade span, and then principal's email address. As the focus of this study is on the influence of ELA-instructional minutes at the middle school level, principals will only be included in the survey if their school has students in Grades 6, 7, and 8. Focusing solely on schools with 6-8 grade configuration will eliminate K-6 elementary schools and 7-12 junior/senior high schools. Schools with Grades 6-8 are more likely to exemplify the "school within a school" concept that typifies a middle school. Including K-6 and 7-12 schools that only partially contain the focus grades of this study could result in the inclusion of other independent variables such as absenteeism and suspensions rates that may be skewed by the other grades included within those schools. There are 678 schools in New Jersey that fit this description.

In the event of a low response rate to the survey, the researcher also proactively visited the school websites of the schools who were invited to participate in the study. As some schools make this information publicly accessible through their handbooks or "Program of Studies," the researcher was also to obtain the time allocations through this method as well.

The relevant data to this study will be added onto a Microsoft Excel spreadsheet. Institutional Review Board procedures will be adhered to and responding schools will be coded; no individual school or district names will be published in the final report of this study.

Upon the completion of the collection of survey responses, the weekly instructional minute totals for ELA of responding schools will be matched with other data that is available on

each responding school's New Jersey School Performance Report. The NJ School Performance Reports are found on the NJDOE website with data going back to the 2012-13 school year. The New Jersey Department of Education (NJ DOE) annually publishes data profiles of each school in the state. The bulk of the data is provided by school districts through the NJ SMART database system. According to the NJ DOE's reference guide (2017), "New Jersey School Performance Reports provide families, educators and the public valuable information about how a school is doing and how the school is preparing students for success after high school." Each school's data profile provides readers with information such as enrollment figures, state testing results, student growth on state assessments, absenteeism information, total instructional time, suspension rates as well as the percentages of students who are economically disadvantaged, have IEP's, and who are English language learners. The percentage of students who are economically disadvantaged, which in New Jersey are students who are eligible for free or reduced lunch, will be the metric used for moderation analysis between time and SES. This data point is readily available for respective schools, however it should not be confused as an indicator for poverty. To be clear, students can be eligible for reduced lunch and be above the poverty threshold. Poverty rates, on the other hand, are not always readily available for every community. Although these two indicators are not the same, there is certainly a relationship between the two (Snyder & Musu-Gillette, 2015).

New Jersey had historically utilized a classification system for the socioeconomic status of individual school districts: District Factor Groups (DFG). These classifications were recalibrated after each decennial census and took into account factors such as the median income of a community, the percentage of individuals living in poverty, as well as the unemployment rate among other factors. The communities with the lowest socioeconomic status were classified

with the letter "A" and the districts with the highest levels of affluence were classified as "J" with several other categories in between (B, CD, DE, and so on.). Due to the fact that the DFGs have not been updated since the 2000 census, they are not being included in this analysis as a categorical variable for SES. Rather, since the number of economically disadvantaged students found on the School Performance Reports is far more current, those metrics will be used instead.

School performance reports are released annually in the spring. In accordance with requirements from ESSA, the NJ DOE must identify schools in need of improvement and offer remedial measures. Beginning with the 2016-17 profiles, each school was given an overall score based on specific metrics such as test performance, student growth, and absenteeism. Once each school was scored, all New Jersey schools were ranked from the highest score to the lowest to identify the bottom five percent of schools that would be targeted for remediation.

Reliability and Validity

Reliability is the measure of the level of consistency of outcomes on an assessment. "Reliability focuses on the extent to which differences in test scores reflect true differences in the knowledge, ability, or skill being tested rather than fluctuations due to chance" (PARCC Technical Report, 2019, p.73). The technical report following the 2018 administration of PARCC provides reliability measures regarding internal consistency – the degree to which the assessment is measuring what it purports to assess. The measure of internal consistency is the reliability coefficient, which ranges from 0 to 1. The closer the value is to 1, the higher the likelihood that test-takers would obtain similar scores provided that no interventions occurred that could boost their achievement. Coefficient alpha, or Cronbach's coefficient alpha, is the primary measure of reliability. According to the 2018 PARCC Technical Manual (2019), the

average reliability estimates were .93 for Grades 6, 7, and 8 on the Spring 2018 PARCC ELA assessment. With that in mind, an excellent level of reliability existed on the 2018 PARCC administration for middle grades ELA tests, based on the PARCC manual.

The ELA scoring for the PARCC assessment is made up of two subscores, Reading (RD) and Writing (WR), and five subclaim scores—Reading Literature (RL), Reading Information (RI), Reading Vocabulary (RV), Writing Written Expression (WE), and Writing Knowledge Language and Conventions (WKL). The technical manual contains numerous tables of intercorrelations, which are correlations within each subcategory of the ELA portion of the test as compared to other subcategories. Per the manual, "If these components within a content area are strongly related to each other, this is evidence of unidimensionality" (p. 120). Based on the data in the tables, there are strong correlations between subcategories on the ELA section of the PARCC assessment. For example, the correlation between Reading Literature (RL) and the Reading Information (RI) was 0.75 based on 333,216 student scores, a strong correlation. The correlation between Writing Knowledge Language and Conventions (WKL) and Writing Written Expression (WE) was 0.95, a very strong correlation.

Validity is the degree to which a test assesses what it purports to assess. The PARCC test was ultimately tasked with assessing student mastery of the Common Core State Standards (CCSS). Those standards, which were adopted by more than forty states, were the content and skills for which the PARCC and Smarter Balanced Assessment evaluated. According to the 2018 PARCC Technical Manual (2019), a deliberate process was undertaken to ensure that the test assessed what it was supposed to assess. Pearson, the developer of the PARCC assessment, along with members of the consortium outline in the technical manual a process of ensuring that test

items reflected what was delineated in the CCSS. The manual states: “At each step in the assessment development process, PARCC states involved hundreds of educators, assessment experts, and bias and sensitivity experts in review of text, items, and tasks for accuracy, appropriateness, and freedom from bias.” This would support the position that the PARCC assessment was indeed valid as success on one section of the test very frequently correlated with success on other ELA portions of the exam.

Data Analysis

The data collected through the principal survey and review of school websites will then be linked with the data from the New Jersey School Performance Reports and will be stored in Microsoft Excel. As the data collection phase is completed, the data will be examined to make sure no data was omitted. In the event that any schools do not have data for all three grades—for both PARCC mean scores and the percentage of economically disadvantaged children—those schools will be removed from the analysis. Once the initial review is completed, the spreadsheet will be uploaded to the IBM Statistical Package for the Social Sciences (SPSS).

The analysis will begin with a review of the descriptive statistics (mean, median, standard deviation). Multiple regression will be executed via SPSS to answer research question one and subsidiary questions 1-3. The dependent variable will be PARCC ELA mean scores for the respective grade. The independent variables will be instructional minutes, the number of economically disadvantaged students, the previous year’s mean score (acting as a control), and other student, school, and staff factors. Those additional factors include:

Table 1

Additional Independent Variables and Rationale for Inclusion in the Study

Independent Variables	Rationale for Inclusion
• the percentage of students in the school who were chronically absent	The NJ DOE defines chronic absentees as students who missed at least 10% of the school year. One would realistically assume that increased rates of missed class time would negatively affect student achievement (Roby, 2004).
• the percentage of students in the school with disabilities	Students with Individual Education Programs are receiving special education services. As many of these students are performing behind grade level, it would be reasonable to presume that the higher the percentage of classified students in a school, the lower the mean PARCC score would be (Abedi, 2009).
• the percentage of students who are English language learners	Students who are English language learners (Els) are learning English as a second language. As the focus of this study is on ELA PARCC scores, one could assume that the higher the percentage of ELs in a school, the lower the mean PARCC score would be as these students are still learning the English language (Abedi, 2004).
• percentage of students from specific racial/ethnic backgrounds - Asian - Black - Hispanic - White	Fox (2011) conducted a quantitative analysis of student achievement data in Texas that examined, among other factors, the race/ethnicity of the participants. One of the conclusions of the study was that Asian and European-American students scored "noticeably higher" than Native-American, African-American and Hispanic-American students. Citing Coleman (1966), Fox posited that ethnic minority students tended to have less qualified teachers as well as inequities in instructional materials and equipment.
• the average number of years of public school experience for the faculty • the faculty attendance rate	Much of the past research on allocated instructional time has concluded that it is not so much the amount of time that matters, but rather the quality of the instruction that occurs in the classroom. These three faculty variables

Table 1 con't

	all would presumably correlate to the quality of instruction students are receiving (Clotfelter, Ladd, & Vigdor, 2007; Clotfelter, Ladd, & Vigdor, 2007).
• whether or not the school utilizes semesterized block scheduling or blocks that do not meet on a daily basis (i.e., every other day). An adequate number of schools will be needed to include block scheduling as an added variable; if not, these schools will be excluded from the analysis.	While the conclusions from research on block scheduling have been mixed, this variable will be included provided that there an adequate number of responses from schools that employ block scheduling.
• Testing participation rate for the school. Participation rates lower than 80% will be excluded from the analysis.	ESSA requires that 95% of students participate in annual state testing. However, an opt-out (or refusal) trend accompanied the PARCC assessment in which students were not participating due to philosophical issues with the test. Participation percentages are included on NJ School Performance Reports. As the participation rate declines, a less accurate picture of the school's academic prowess can be gleaned from the PARCC scores as it is not truly representative of the entire student body.

All of the data points outlined above can be found on the school's respective New Jersey School Performance Report.

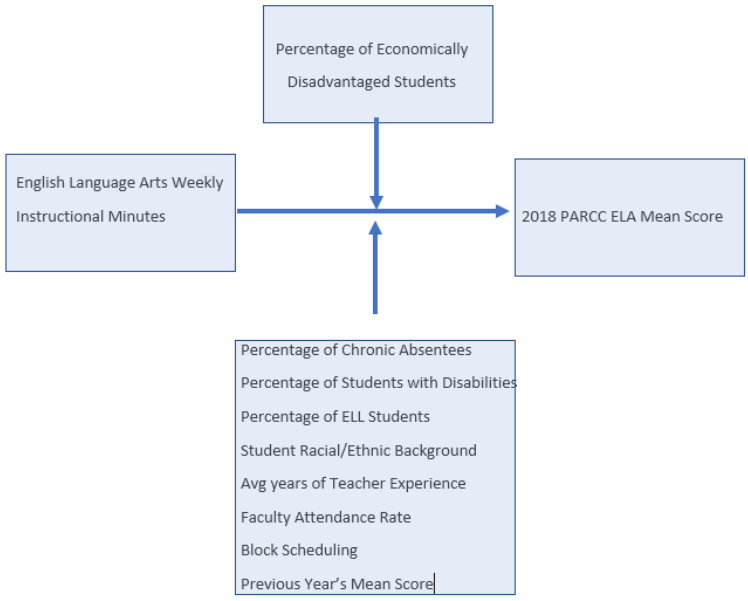
Due to the nature of block scheduling, minor alterations of the number of instructional minutes will be necessary. As explained in Chapter 2, block scheduling is employed in many schools and provides extended learning periods that do not occur every day of the school year. Block scheduling typically occurs in two formats. The first is an extended class period of 80-90 minutes that meets every day for a semester. Another popular format is to have 80-90 minute classes that meet every other day. For the purpose of calculating the number of weekly

instructional minutes, block scheduling schools will have their daily ELA minute allotments divided by two if the classes meet for half the school year. A school that has 90-minute classes that meet for 90 school days has the same number of instructional minutes as a school with a traditional bell schedule in which classes are 45 minutes in duration every day of the year. In an effort to equalize block and traditional scheduling schools, and provided that there are a sufficient number of schools in each category, block scheduling schools will have their minutes apportioned based on the number of minutes and the number of days of the year the class meets.

For research question two, multiple regression will again be utilized with all of the aforementioned variables. For this aspect of the study, the goal is to determine whether or not a statistically significant interaction effect is occurring. An interaction effect occurs when the impact of one variable depends on the value of a separate variable in the analysis. In this research question, the independent variables of socioeconomic status and instructional minutes will be calculated to see if the effect of instructional minutes changes as socioeconomic status varies.

Figure 1

Conceptual Model



Limitations

The primary limitation of this study is the reliance on survey responses from middle school principals in New Jersey. Unfortunately, the variable of content-specific instructional minutes cannot be gleaned from the School Performance Report, so the researcher was dependent on survey responses as the primary means of obtaining data. With a response rate of 10%, a much higher rate would have been more desirous. The researcher was able to obtain data from 58 schools that explicitly stated their allotment of ELA minutes on their websites. This data was more often than not based on school schedules from the 2019-20 school year and not necessarily the 2017-18 school year that is the academic year of focus. Given the relative stability that exists with school bell schedules, and their rather static nature, the researcher accepted this risk.

The change from the New Jersey Assessment of Skills and Knowledge to PARCC was not without controversy. The new exams, with their heightened emphasis on rigor, were pilloried by some in educational circles. The resulting controversy cast doubt in the minds of some regarding the validity of these tests. As a result, an "opt-out" or "refusal" movement grew in many New Jersey communities with some parents refusing to have their child(ren) take the tests. The amount of refusals varied across the state. Nevertheless, many schools had substantial portions of their population not take the exams. Therefore, without 100% of students participating, it is possible that the passing rates listed in the New Jersey School Performance Report may not paint the most accurate picture of some school's academic prowess.

Another limitation outside of the researcher's control are the dates in which the responding middle schools actually administered the PARCC exam. The New Jersey Department

of Education established a 30-day testing window (six weeks) across the months of April and May in which districts were able to pick their own testing dates, provided those dates were in the allotted timeframe. It is certainly conceivable that a school that waited until the final week of the testing block would have had much more time to cover additional content when compared to a school that gave the test in April at the start of the assessment window. This factor is not accounted for in this study and could be a contributing element to a school's performance.

It should also be noted that there are an array of programs and initiatives in place at schools across the state and country that affect student outcomes. From curricular programs to after school tutoring and professional development trainings, countless factors can contribute to the success of a school. With that in mind, while this study could certainly conclude that a relationship exists between time and student achievement, it cannot be discounted that a myriad of other factors are also affecting student progress at the same time.

Lastly, in Chapter 2 the distinction was made between allocated instructional time and engaged instructional time. Allocated time is simply the number of minutes allotted or scheduled by the administration. Engaged time is the portion of a class in which students are actively involved in educational activities. The research chronicled in Chapter 2 showed a much stronger relationship between engaged time and student achievement versus allocated time and student achievement (Silva, 2007; Ayodele, 2014). The final limitation of note is this study's focus, which is solely on allocated ELA minutes in Grades 6, 7, and 8 in New Jersey middle schools. While engaged instructional time has shown more significance, it should not be lost that allocated time is what makes engaged time possible. John Carroll (1963) summed up allocated time as the "opportunity to learn" in schools. The drawback to focusing solely on allocated time is the fact that the quality of instruction going on in classrooms cannot be controlled. The quality

of instruction occurring in a classroom will dictate the engaged time that is fostered. Master teachers will undoubtedly optimize the time allocated to them; novice or developing teachers may not be able to do so.

Summary

The purpose of this study is to examine the influence of ELA instructional minutes on student achievement and to see the extent to which socioeconomic status affects that interaction. This chapter explained the study design, the research questions, the instrumentation, the data collection process and the measures of analysis that will be undertaken.

CHAPTER 4

RESULTS

The purpose of this study is to see if a relationship exists between English Language Arts (ELA) scores on the 2017-18 PARCC assessment and the number of minutes schools allot in their bell schedules in Grades 6, 7, and 8. Using data obtained from schools, coupled with corresponding figures from the New Jersey School Performance reports, 124 schools were part of the sample of this study.

Table 2

Sources of Data for Study

Data Source for ELA minutes	Number of Schools
School principal	40
Other school personnel	25
School websites	59
N=	124

The survey was disseminated multiple times and 40 completed surveys were returned to the researcher. With a less-than-ideal response rate, the researcher obtained data from other school personnel (not specifically principals) who could corroborate the time allotments for ELA. Additionally, the researcher was able to access time allotments for 59 additional middle schools by accessing student handbooks and/or the "Program of Studies" on the schools' websites.

The Sample vs New Jersey

The 124 schools for which the analysis was conducted upon were examined statistically and then compared to the demographics of all New Jersey schools. This examination was conducted for each dependent and independent variable that is part of this study, with the

exception of content-specific minutes which are not readily accessible for all New Jersey schools:

- the mean score for PARCC ELA 6, ELA 7, and ELA 8
- the percentage of students in the school with disabilities
- the percentage of economically disadvantaged students
- the percentage of students who are English language learners
- percentage of students from specific racial/ethnic backgrounds
    - White
    - Hispanic
    - Black
    - Asian
- the average number of years of public-school experience for the faculty
- the faculty attendance rate

Table 3

Comparison of Sample vs All New Jersey Schools

Variable	Sample				All New Jersey Schools			
	Mean	S.D.	Min	Max	Mean	S.D.	Min	Max
PARCC ELA6 mean score	757	17.5	712	800	754	21.2	689	809
PARCC ELA7 mean score	764	20.2	712	807	760	21.2	679	823
PARCC ELA8 mean score	763	20.1	711	807	759	21.0	677	812
Percentage of students in the school who were economically disadvantaged	26%	24.7	0	91%	36%	28.9	0	100
Percentage of students in the school with disabilities	18%	4.5	2	31	19%	14.8	0	100
Percentage of students who are English language learners	3%	4.7	0	27	6%	9.5	0	99
Percentage of students in the school who were white	60%	25.0	0.3	93	46%	30.6	0	100
Percentage of students in the school who were Hispanic	18%	17.1	2	77	26%	23.9	0	100

Percentage of students in the school who were black	10%	15.5	0	93	15%	21.0	0	100
Percentage of students in the school who were Asian	9%	11.6	0	71	9%	13.3	0	89
Average number of years of public school experience for the faculty	12	2.1	6.5	17.1	12	2.8	0	26.7
Faculty attendance rate	96%	2.5	80	100	96%	4.0	3.3	100

Comparing the sample against the total population revealed similarities and a few distinct differences. The overall sample exceeded the state mean for ELA performance on PARCC in all three grades. The sample was higher than the total population by 3, 4, and 4 points respectively for Grades 6, 7, and 8. There were also two clear disparities among the student variables. When comparing the percentage of students who were economically disadvantaged, the mean for the sample schools was 26% for having children who are economically disadvantaged. As stated before, this is measured by children who are eligible for free or reduced lunch. Across New Jersey, the mean for economically disadvantaged in schools is 36%, which is 10 points higher than the sample. With regard to the percentage of students in the school who were Caucasian, the sample was fourteen points higher than schools across New Jersey (60% versus 46%). Other variables that were a part of this study were in relative alignment with all New Jersey schools (students with disabilities, percentage of Asian students, and both staff variables).

In summary, the sample obtained for this study was more affluent, higher achieving, and had a higher percentage of White students when compared to statewide figures. Conversely, the proportion of Black and Hispanic students was lower than state averages. The differences with PARCC scores was minimal; however, the differences in socioeconomic status and race were roughly ten percentage points off. With this in mind, caution will need to be exercised when arriving at any conclusions given the distinct differences between this sample and the state.

Time Allocations

Due to the fact that some varying scheduling iterations existed in some schools, the daily period lengths were converted to weekly amounts of ELA instruction. Aside from schools where students took their ELA classes every day, the following alternatives did exist in a small number of schools:

- Students received a "double-period" of ELA every other day. (Two schools)
- Students attend classes on an A/B rotation, therefore, they had ELA every other day. (One school)
- Students have eight classes but only six meet each day – "rotate and drop" – in a four-day cycle, ELA class meets three out of four days. (Four schools)
- Students had ELA in a block for one semester, but not the other semester. (One school)
- Students had an ELA "lab" class once a week. (One school)
- In addition to their daily ELA class, students had an additional class of ELA for one semester. (One school)

Allocations of ELA instructional times for the 124 schools varied greatly. Of the 124 schools for which data were obtained, the mean for daily instructional minutes was 74, 71, and 71 minutes respectively for Grades 6, 7, and 8. As mentioned above, these numbers were then converted to weekly allotments.

Table 4

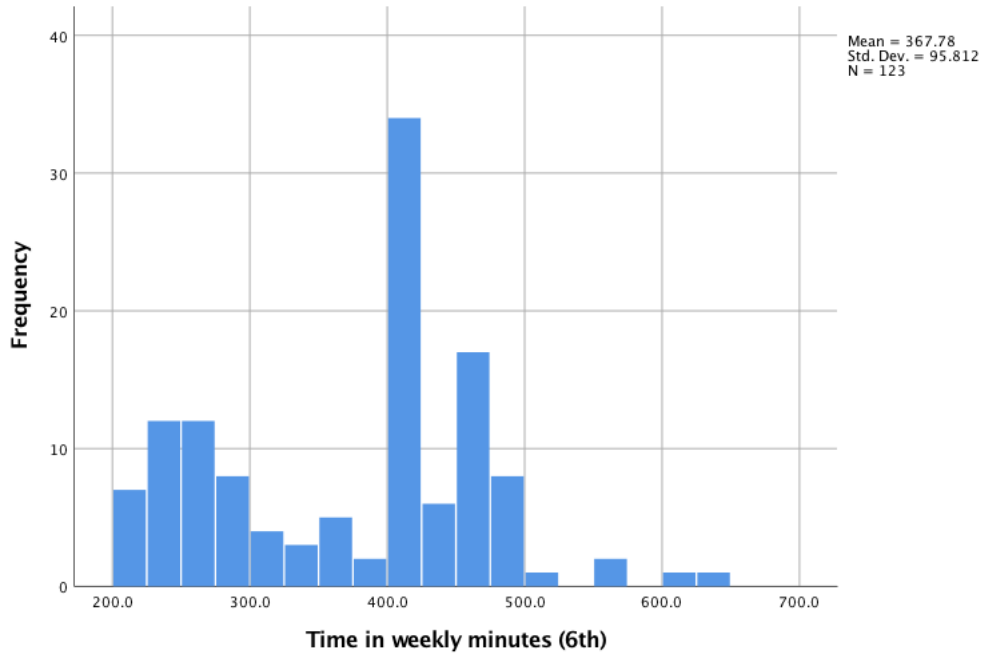
Descriptive Statistics for Time in Weekly Minutes

Grade	N	Minimum	Maximum	Mean	Std.Deviation
6th	122	200	625	368.8	95.6
7th	122	200	625	356.4	93.9
8th	122	200	625	352.8	94.7

In sixth grade, the mean for weekly time allocations of ELA was 368.8 minutes, with a standard deviation of 95.6. The minimum for this data set was 200 minutes per week and the maximum was 625 minutes per week. The mode for the sixth-grade data was 400 minutes per week.

Figure 2

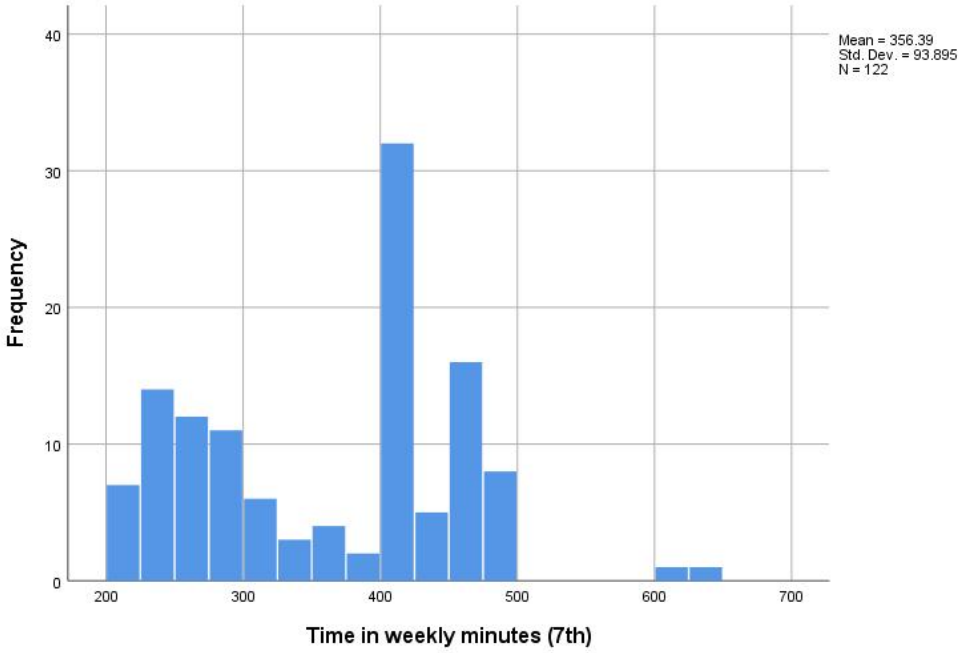
Histogram of Time Allocations for Sixth Grade.



In seventh grade, the mean for weekly time allocations of ELA was 356.3 minutes, with a standard deviation of 93.9. The minimum for this data set was 200 minutes per week and the maximum was 625 minutes per week. The mode for the seventh-grade data was 400 minutes per week.

Figure 3

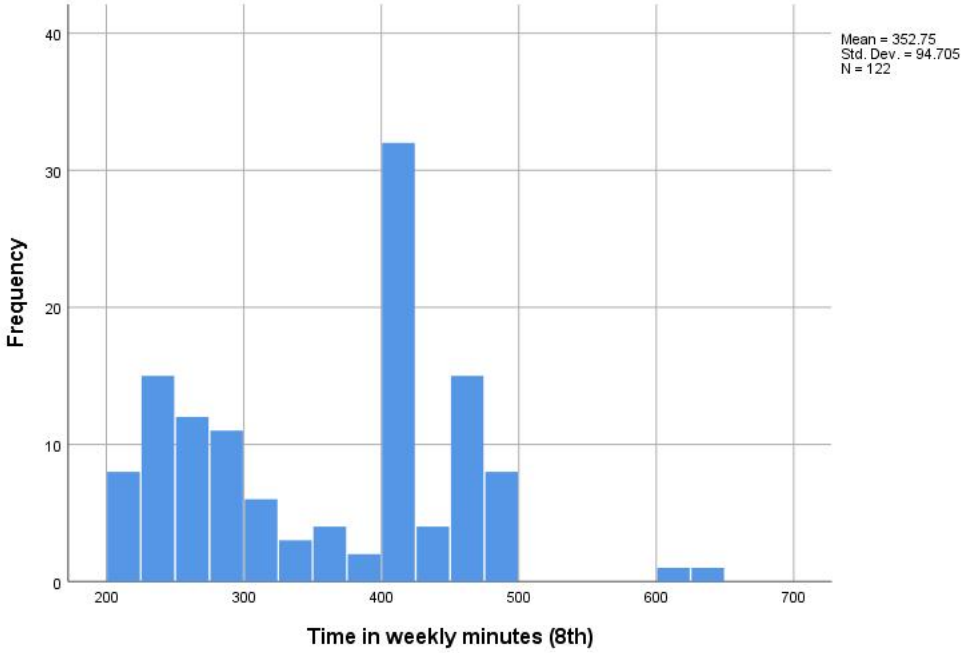
Histogram of Time Allocations for Seventh Grade.



In eighth grade, the mean for weekly time allocations of ELA was 352.8 minutes, with a standard deviation of 94.7. The minimum for this data set was 200 minutes per week and the maximum was 625 minutes per week. The mode for the eighth-grade data was 400 minutes per week.

Figure 4

Histogram of Time Allocations for Eighth Grade.



Based on the scheduling arrangement that existed for ELA, each school's minutes were converted to a weekly datapoint. As the mode was 80 in all three grades for daily allotments—by a wide margin—400 minutes per week of ELA instruction was the predominant number of instructional minutes captured in the sample. Given the wide array of numbers provided, there was a considerable range of weekly numbers. The maximum was 625 minutes per week (125 minutes per day) and the minimum was 215 (43 minutes per day).

Subsidiary Research Questions 1-3

- What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 sixth grade PARCC exams?
- What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 seventh grade PARCC exams?
- What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 eighth grade PARCC exams?

Correlation is the statistical measure of whether a relationship exists between two continuous variables. A positive correlation indicates that as one variable increases, typically the other variable rises as well. A negative correlation reveals that as one variable increases, the other variable in the analysis tends to decrease. The weekly time allotments for each school were entered into a Pearson correlation analysis along with PARCC performance for the corresponding grade.

An analysis of sixth grade weekly minutes and sixth grade PARCC mean scores revealed a correlation coefficient of -.198. This figure had a *p* value of .029, meaning that there is a 2.9% chance that this correlation occurred merely by chance. *P* values below .05 are deemed to be statistically significant. Although -.198 is a weak correlation strength, it reveals that as time allotments went up, PARCC mean scores tended to decline.

A statistical analysis of seventh grade weekly minutes and seventh grade PARCC mean scores revealed an *r* of -.230. This figure had a p-value of .011, meaning that there is a 1.1% chance that this correlation occurred merely by chance. Like sixth grade this result was also statistically significant and also a weak, negative correlation. This analysis also shows that as ELA minutes went up, PARCC mean scores tended to decline.

Correlation analysis of eighth grade weekly minutes and eighth grade PARCC mean scores revealed an *r* value of -.328. This figure had a *p* value of .000, meaning that there is a less than 1% chance that this correlation occurred merely by chance. Although slightly higher than the previous two results, -.328 is also a weak correlation. This third correlation reveals a third time that as time allocations went up, PARCC mean scores tended to decline.

Reviewing the examination of correlation coefficients revealed consistent findings of weak, negative correlations that were statistically significant in sixth, seventh, and eighth grades.

In all three grade levels, as allocated ELA instructional minutes increased, a corresponding decrease was found with a school's mean PARCC score for English language arts. Although statistically significant, these *r* values were on the weaker end.

To examine the relationship between PARCC achievement and instructional time, while accounting for possible confounding variables, multiple regression was utilized. The mean PARCC score of each school in the sample served as the dependent variable. The independent variables were: grade-specific ELA allocations, percentage of economically disadvantaged students, percentage of students with disabilities, percentage of English language learners, percentage of Black students in the school, percentage of Hispanic students in the school, grade-specific percentages of chronic absentees, faculty attendance rate, average years of experience for the faculty, and the previous year's PARCC mean score. Each of these regression analyses was run for sixth, seventh, and eighth grades.

The previous year's PARCC scores are entered into the model to examine the relationship of PARCC performance from one year to the next. As scheduling time allocations at schools tend to remain fixed, strong correlations of PARCC achievement from one year to the next would allow researchers and practitioners to make recommendations and conclusions from this study for application in their respective schools. A comparison of 2017-18 PARCC scores versus 2016-17 scores found the following differentials between the focus year and the previous year:

Table 5

Typical PARCC Growth – 2016-17 to 2017-18

	Mean Growth	Standard Deviation
6th Grade	2.41	6.54

7th Grade	3.47	7.94
8th Grade	2.26	9.81

In using the previous year's score, it is possible to look at the growth that took place within the sample from 2016-17 to 2017-18. This growth is determined by calculating the difference between the 2017-18 score and the 2016-17 score for the same grade. For sixth grade, the mean difference between the two years was 2.41 points. The majority of schools experienced growth, however with a standard deviation of 6.54, there were numerous schools that had a decline in scores. For seventh grade the mean growth was 3.47 points with a standard deviation of 7.94. In eighth grade, the mean growth within the sample was 2.26 points with a standard deviation of 9.81.

Table 6

Multiple Regression Output – Research Question 1

	6th Grade	7th Grade	8th Grade
Weekly ELA minutes (10-minute increments)	-0.12**	0.03	-0.23***
	(0.006)	(0.008)	(0.009)
Percent of students economically disadvantaged	-0.13	-0.16	-0.24**
	(0.081)	(0.103)	(0.118)
Percent of students with disabilities	-0.28**	0.13	-0.23
	0(.135)	(0.173)	(0.199)
Percent of Hispanic students	-0.06	-0.04	-0.14
	(0.072)	(0.094)	(0.133)
Percent of black students	0.03	0.07	-0.09
	(0.078)	(0.100)	(0.117)
Faculty Attendance rate	0.259	0.46	0.09
	(0.218)	(0.282)	(0.327)
Average Faculty Experience	-0.03	-0.28	0.11
	(0.264)	(0.343)	(0.398)
Percent of chronic absentees	-0.18	-0.43***	-0.256*
	(0.129)	(0.137)	(0.152)
Previous year's PARCC score	0.76***	0.80***	0.54***

	(0.059)	(0.070)	(0.073)
[Constant]	171.719***	120.830*	362.016***
	(49.019)	(62.144)	(65.704)
N	124	124	124
R-squared	0.901	0.879	0.834

*Note: * p<0.10; ** p<0.05; *** p<0.01. Standard errors are in parentheses*

Examining sixth grade data points, the R^2 value is .901, meaning that 90.1% of the variance in sixth grade PARCC scores can be explained by the independent variables in the model. The Beta coefficients for this sixth-grade analysis found only two of the independent variables to be statistically significant predictors: percentage of students with disabilities and ELA-instructional minutes. Students with disabilities was a significant predictor of sixth-grade PARCC performance, Beta = -.070, t = -2.069, p = .041. This negative beta revealed that as the number of students with disabilities increased, a school's mean PARCC score was likely to decline as a result. More specifically, a 1 percentage point increase in the percentage of students with disabilities corresponds to a .278 decline in a school's mean PARCC score at the sixth-grade level.

Allocated ELA instructional minutes were also a significant predictor of sixth grade PARCC achievement, Beta = -.067, t = -2.081, p = .040. Also a negative beta, this showed that as ELA instructional minutes increased, the average PARCC score tended to drop. Examining time in 10-minute increments (by multiplying the unstandardized beta by 10), a 10-minute increase in ELA instructional time corresponded to a .12 decline in a school's mean sixth grade PARCC score when accounting for the previous year's score and other control variables. Aside from the previous year's PARCC score, which served as a control and had a p value of .000, all of the other predictors had p values higher than .05. These other variables are above the threshold

for statistical significance, meaning there is a higher than 5% chance that they occurred by chance.

Shifting to seventh grade, the model summary reveals the R^2 value is .879, meaning that 87.9% of the variance in seventh grade PARCC scores can be explained by the predictors in this model. In this model, the only predictor for which the relationship was statistically significant, besides the control variable of previous year's scores, was chronic absenteeism. The percentage of seventh graders in a school who were chronically absent (absent for at least 10% of the school year) was a significant predictor, Beta = -.124, t = -3.154, p = .002. This negative beta reveals that as the percentage of chronic absentees increases, a corresponding decrease in the school's mean PARCC score for seventh grade is typical. More specifically, for each percentage point of chronic absentees, the mean PARCC score declined by .432 points. The variable of interest in this study, ELA instructional minutes, had a p value of .754 in the seventh-grade analysis and was not statistically significant.

Focusing on eighth grade performance, the model summary reveals the R^2 value is .834, meaning that 83.4% of the variance in eighth grade PARCC scores can be explained by the predictors in this model. In this model, two predictors were found to be statistically significant: percentage of economically disadvantaged students and allocated ELA-instructional minutes. The percentage of students with disabilities was a significant predictor, Beta = -.296, t = -2.009, p = .047. The negative beta associated with SES again shows that as the percentage of low-SES students increases, the mean PARCC score was likely to decline. For every percentage point that this variable increased, an accompanying decline in a school's average PARCC score would be expected to fall by .237.

Allotted ELA-instructional minutes was also a significant predictor of PARCC performance, Beta = -.112, t = -2.497, p = .014. The negative beta shows that as ELA time allocations increase, a corresponding decline in PARCC scores is to be expected. In fact, for every 10-minute increase in ELA instruction, there is a .23 decrease in a school's mean PARCC score for eighth grade when accounting for the previous year's score and other control variables. Besides the previous year's PARCC score, which served as a control and had a p value of .000, all of the other predictors had p values higher than .05 and were not statistically significant.

Research Question 1 Summary

The statistical analysis of time and student performance on PARCC identified four predictors that were statistically significant:

- Percentage of students with disabilities (sixth grade only): Beta= -.070
- Allocated instructional minutes:
    - Sixth Grade: Beta= -.067
    - Eighth Grade: Beta= -.112
- Percentage of chronic absentees (seventh grade only): Beta= -.124
- Percentage of economically disadvantaged students (eighth grade only): Beta= - .296

All of the these four predictors had a negative beta, meaning that as the independent variable increased, PARCC performance tended to decline. This included the variable of interest, ELA-instructional time. The correlation analysis at the start of the chapter mirrored the same results as the regression analysis: in all three grades, although minimal, an increase in time was associated with a decline in a school's PARCC performance. These correlations were all weak, yet the conclusions paralleled those found via regression in sixth and eighth grades.

Research Questions 4-6

- To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 6th grade PARCC assessment?
- To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 7th grade PARCC assessment?
- To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 8th grade PARCC assessment?

For this portion of the study, the goal is to determine whether or not a statistically significant interaction effect is present. An interaction effect occurs when the impact of one variable varies based on the value of a different variable. In this research question, the independent variables of socioeconomic status and instructional minutes will be calculated to see if the effect of instructional minutes changes as socioeconomic status varies. To do so, time * SES will be added to multiple regression as an additional variable. The weekly school allocations for ELA will be multiplied by the percentage of economically disadvantaged students in the same school. The product of that calculation will be the variable of interest for research question 2.

Table 7

Multiple Regression Output – Research Question 2

	6th Grade	7th Grade	8th Grade
Weekly ELA Minutes * Percent of Economically Disadvantaged Students	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
[Constant]	174.255***	124.390**	362.948***
	(49.272)	(62.486)	(66.236)
N	124	124	124
R-squared	0.902	0.880	0.834

*Note: * p<0.10; ** p<0.05; *** p<0.01. Standard errors are in parentheses. All independent variables from previous regression model were included in this analysis as well. For brevity, those numbers are excluded from this table.*

Looking at sixth-grade performance, the model summary reveals the R^2 value is .902, meaning that 90.2% of the variance in sixth grade PARCC scores can be explained by the predictors in this model. The variable of interest in this model, sixth grade weekly time allocations * percentage of economically disadvantaged students, had a *p* value of .351 and was not statistically significant.

The R^2 value for seventh grade was .880, which revealed that 88.0% of the variance in seventh grade PARCC scores are explained by this model. The independent variable of seventh grade weekly time allocations * percentage of economically disadvantaged students had a *p* value of .388 and was not statistically significant.

The eighth-grade regression model had an R^2 of .834, showing that 83.4% of the variance in eighth grade PARCC performance can be explained by all of the predictors in this model. The predictor of eighth grade weekly time allocations * percentage of economically disadvantaged students had a *p* value of .867 which was also not statistically significant.

In summary, using the data from the sample and calculating the product of time and SES as an additional variable, the researcher was unable to detect an interaction effect in Grades 6, 7,

or 8. With the added variable of time * SES added to the multiple regression models, the p-values for each grade were not statistically significant. With the data that were available for this analysis, the researcher is unable to conclude that as the percentage of economically disadvantaged students in a school varies, time allotments for ELA matter more or less for the population of the school.

Summary of Chapter 4

Using data from survey responses as well as publicly accessible information from school websites, the researcher was able to derive allocated ELA instructional minutes from 124 schools that educate students in Grades 6, 7, and 8. After converting daily ELA allotments to weekly figures, the researcher analyzed the variables through both Pearson correlation and multiple regression. Weak, negative correlations were found in all three grades when examining a school's mean PARCC score from 2017-18 along with its weekly ELA instructional minutes. In this analysis, the *r* value showed that as time allocations increased, PARCC mean scores tended to decline.

Using multiple regression, the researcher found four independent variables with a statistically significant relationship with PARCC performance. Although significant, none of the variables was found to be statistically significant across all three grades. The four variables were:

- ELA-instructional minutes (sixth and eighth grades)
- Percentage of students with disabilities (sixth grade only)
- Percentage of chronic absentees (seventh grade only)
- Percentage of economically disadvantaged students (eighth grade only)

In all four cases, the unstandardized beta for each revealed that as these predictors increase in value, mean PARCC scores tended to decline, although minimally.

In seeking to detect the presence of an interaction effect between time allotments and socioeconomic status, the researcher added an additional variable of time * SES to the previous multiple regression runs. For each grade level, the researcher was unable to detect a statistically significant interaction effect between weekly ELA allotments and the percentage of economically disadvantaged students in the school.

Limitations, conclusions, implications, and recommendations for future study will be addressed in Chapter 5.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Purpose of the Study

The purpose of this study was to examine if a relationship existed between English language arts instructional minutes and the average student score in New Jersey middle schools on the ELA PARCC exams in Grades 6, 7, and 8 during the 2017-18 school year. Instructional time has been seen as an untapped asset by many over the years, with *A Nation at Risk* (1983) and *Prisoners of Time* (1994) decrying the amount of time allotted in schools and that an increase was warranted. President Barack Obama in 2009 called for longer school days as a means to catch up with our international peers.

Despite the matter-of-fact declarations from politicians, the research to date was mixed on the link between time and student achievement. When examining content-specific instructional minutes, there was a small, positive trend observed in several studies (Figlio, Holden, & Ozek, 2018; Nomi, 2015; Nomi & Allensworth 2013;). There were other studies that identified no significant impact (Ayodele, 2014; Kosek, 2017). This study aimed to add to the research on allocated instructional time, with a focus on English language arts in the middle grades.

Interpretations of Results

Using data from survey responses, publicly accessible information on school websites, and information from New Jersey School Performance Reports, the researcher utilized multiple regression to answer research questions 1-6. In addition to allocated ELA instructional minutes and mean PARCC scores, other independent variables were included in the analysis. These

additional variables included: percentage of economically disadvantaged students, percentage of students with disabilities, percentage of English language learners, percentage of black students in the school, percentage of Hispanic students in the school, grade-specific percentages of chronic absentees, faculty attendance rate, average years of experience for the faculty, and the previous year's PARCC mean score.

Subsidiary Research Questions 1-3

Subsidiary Research Question #1 - What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 sixth grade PARCC exams?

Subsidiary Research Question #2 - What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 seventh grade PARCC exams?

Subsidiary Research Question #3 - What relationship, if any, exists between English language arts instructional minutes and a school's mean score on the ELA section of the 2018 eighth grade PARCC exams?

Pearson correlation was preliminarily used to examine the bivariate relationship between allocated ELA minutes and a school's mean PARCC score for sixth, seventh, and eighth grades. Using SPSS, correlation coefficients of -.198, -.230, and -.328 were found for sixth, seventh, and eighth grades, respectively. The strength of these coefficients would be characterized as weak; however, all three were negative. Negative correlations mean that as one figure rises, the other

tends to decline. In this instance, as time allocations increased, a school's mean PARCC score tended to decline.

To account for additional variables that may affect student achievement, multiple regression was used to examine the relationship of these added predictors on the dependent variable of PARCC achievement. Four predictors were found to have a statistically significant relationship on PARCC mean scores based on the sample in this study. In sixth grade, the percentage of students with disabilities and allocated ELA instructional minutes were both statistically significant. The percent of students with disabilities had a standardized Beta of -.070 and an unstandardized β of -.280. Allocated ELA minutes had a standardized Beta of -.067 and an unstandardized β of -.12. Similar to the correlation coefficients stated previously, the negative outcomes revealed that as the predictors increased, mean PARCC scores would correspondingly decline.

In seventh grade, the sole predictor to be statistically significant was the percentage of students in the school who were chronically absent. Absenteeism had a standardized Beta of -.124 and an unstandardized β of -.432. The negative result revealed once again that as the percentage of chronic absentees increased, the mean PARCC score for a school tended to decline.

Lastly, in eighth grade the two predictors that were statistically significant were allocated ELA instructional minutes and the percentage of economically disadvantaged students in a school. ELA instructional minutes had a standardized Beta of -.112 and an unstandardized β of -.237. The percent of economically disadvantaged had a standardized Beta of -.296 and an unstandardized β of -.24. Both of these predictors had negative outcomes which demonstrates that as these predictors increase, the dependent variable tended to decline.

Subsidiary Research Questions 4-6

Subsidiary Question #4 - To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 6th grade PARCC assessment?

Subsidiary Question #5 - To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 7th grade PARCC assessment?

Subsidiary Question #6 - To what extent does the socioeconomic status of a school affect the relationship between English language arts instructional minutes and a school's mean score on the 2018 8th grade PARCC assessment?

An added predictor was incorporated into the regression model: allocated ELA minutes * the percent of economically disadvantaged students in a school. The purpose of this additional variable was to test for an interaction effect. The presence of an interaction effect would reveal that as the percentage of economically disadvantaged students in a school varies, the effect of time could possibly matter more or less. Regression models for each grade were rerun and the added predictor was included in the model.

The researcher was unable to detect the presence of an interaction effect. In all three grades, time * SES resulted in a *p* value that was not statistically significant. The *p* values were .351, .388, and .867 respectively for Grades 6, 7, and 8.

Implications of Results

Despite the proclamations that time is a potential answer to student achievement, this study was unable to match that claim. To the contrary, the findings of this study illustrated that

as time allocations increased, specifically in sixth and eighth grade, student achievement scores for a school tended to decline by a very small amount. McMurrer (2007) analyzed time allocations in the wake of the *No Child Left Behind* Act's implementation and found that on average elementary schools were increasing ELA time by 75 minutes per week. It could be argued that with the harsher penalties that came with updated federal laws, schools added these minutes with the hope that it would help meet the benchmarks they were expected to meet. It could be contended further that schools with a history of poor performance on standardized assessments felt added pressure to meet expectations and that time was seen as a remedy for this predicament. The results of this study, although the findings were weak, found that as time allocations increased, student achievement declined by a small value. The demand to meet expectations, particularly for schools without a history of strong academic achievement, could explain the negative bivariate relationship that was found in this study.

The other independent variables that were statistically significant predictors corroborated past research findings. Roby (2004) analyzed absenteeism data in Ohio and found a statistically significant relationship between student achievement and attendance. As seventh grade chronic absenteeism numbers were found to have a statistically significant, negative relationship with a school's mean PARCC score, this would support the findings of Roby. The percentage of students with disabilities was also a statistically significant predictor of a school's mean PARCC score in sixth grade. Abedi (2009) found that students with disabilities routinely score below non-classified students on the Stanford Achievement Test. The findings in sixth grade showed that as the percentage of students with disabilities increased, a school's mean PARCC score declined. Given the fact that students with disabilities are more likely to struggle than their non-classified peers, this result would logically correlate with past research.

The percentage of students from economically disadvantaged homes was a statistically significant predictor of a school's mean PARCC score in eighth grade. As the percentage of students from low-SES homes increased, a school's mean PARCC score was likely to decline. The link between socioeconomic status is well-documented. Coleman (1966) was the first to provide an in-depth analysis on the topic, chronicling the struggles that have plagued students from economically disadvantaged households. Subsequent work from Sirin (2005) and Reardon (2013) offered more current research supporting Coleman's conclusions. With the aforementioned in mind, it should not be surprising that this was a statistically significant predictor in this study.

The long history of the link between student achievement and socioeconomic status was the driving factor in research questions 4-6. The rationale behind these subsidiary research questions was to test the theory of Carroll whose formula for learning was as follows:

$$Degree\ of\ Learning = \frac{\text{Time Spent}}{\text{Time Needed}}$$

With the research of Carroll and others detailing the challenges faced by children from economically disadvantaged households, it was the researcher's hypothesis that added time would be of benefit for students in schools with higher numbers of economically disadvantaged students. Based on the data from the sample, which contained schools that were on average 10% lower than the New Jersey mean for economically disadvantaged students, the researcher was unable to detect an interaction effect. An interaction effect could have potentially confirmed that time was more important for students from low-SES homes.

Limitations

The principal limitation of this study was the small sample size relative to the number of survey invitations that were distributed. The sample, when compared to all New Jersey schools, was on average more affluent and higher-achieving when using PARCC as the measure of academic success. A larger sample size could have increased the likelihood of identifying more statistically significant variables in regard to a relationship with student achievement. In addition, a larger sample could have conceivably been more in alignment demographically with all New Jersey schools, which may have added to the ability to answer research questions 4-6.

In addition, this study examines time allocations and student achievement for solely the 2017-18 academic year. The researcher was unable to track time allocations and PARCC scores longitudinally, and therefore growth cannot be taken into account. Conceivably, a school with inflated time allocations could have incrementally improved over multiple years. Therefore, the possibility exists that time could have been an integral factor in a school's multi-year improvement. This study is not able to consider that based on the available data.

Recommendations for Future Research

The aforementioned limitation may have stymied the ability of this study to arrive at more sound conclusions. In an effort to continue to examine the topic of time and student achievement, numerous future opportunities could be explored by researchers. These include:

- recreate this study with a larger sample size
- conduct a study on student achievement and time allocations from a longitudinal perspective
- recreate this study and focus solely on special education students

- explore the relationship of time and student achievement in different grade spans
- explore the relationship of content-specific time allocations in subjects other than ELA and student achievement
- while examining instructional minutes and student achievement, examine if an interaction effect exists with time and a teacher's summative rating
- recreate this study with student performance on the New Jersey Student Learning Assessment as the dependent variable

Recommendations for Policy and Practice

For several decades, policymakers have suggested that time be a key ingredient in school reform efforts. Suggestions have included longer school days and longer school years. These calls for more time have reverberated to the present day. Research over the years has not supported this clarion call. The Virginia Department of Education (1992) conducted a meta-analysis and found no impact between time and student achievement. Aaronson, Zimmerman, and Carlos (1999) carried a review of multiple studies as well and arrived at the same conclusion. Politicians and policymakers need to review data and talk with researchers in academia about the remedies that they are trumpeting.

A recurring alternative theory offered by researchers was the concept that it was not the quantity but the quality of instruction that mattered most (Aaronson et al. 1999; Mazzarella, 1984; Rasberry, 1992). Policymakers at the state and federal levels should continue to make professional development for school staff members a top priority. In addition, setting high standards for teacher certification should be a bedrock principle for states to ensure that talented individuals are joining the educational workforce. Although this study did not focus on teacher

quality, it cannot be denied that teachers have the awesome capability to make a tremendous difference in student outcomes.

This study found a negative, statistically significant relationship between time and student achievement. Local boards of education and school administrators must be cognizant that time may not necessarily be the "silver bullet" that it is so frequently advertised as. Before committing tens (or even hundreds) of thousands of taxpayer dollars to new staff to inflate their time allocations, stakeholders should examine the research on the relationship of time and student achievement.

Student attendance was a statistically significant predictor of student achievement in seventh grade in this study. The New Jersey Department of Education, as it has been doing for the past seven years, should continue to place a heightened focus on chronic absenteeism in our schools. Chronic absenteeism has been a part of a school's performance report here in New Jersey since 2014, being part of the "College and Career Readiness" section of the report. A school's absenteeism score is a key metric in the school's overall summative rating. This emphasis should be continued as being present in school is critical for student success in the classroom and when, as adults, they join the workforce. School leaders should closely monitor the attendance numbers of at-risk students and work with families as partners to ensure that students are attending school regularly.

As has been found in numerous other studies (Sammarone, 2014; Tully, 2017), socioeconomic status was found to be a statistically significant predictor of student outcomes. This conclusion must lead schools and policymakers to focus on what actions can be taken to help economically disadvantaged students reach their utmost potential. These interventions should happen at the earliest grades possible. The *Abbott* decisions in New Jersey already dictate

significant allocations of state funding for schools with high numbers of economically disadvantaged students. In addition, pre-school is mandated in many of those school districts as well. Offering after-school and summer enrichment programs should be a priority in school with high numbers of economically disadvantaged students. Parent outreach programs that seek to build partnerships between schools and families would be beneficial as well.

Conclusion

Time was not the difference maker in this study that so many bureaucrats had hinted it would be. Although found to be a statistically significant predictor, the relationship was slightly negative between time and a school's mean PARCC score for English language arts. As time increased, scores actually declined by a very small margin. School district leaders and policymakers must be mindful of this outcome before expending substantial amounts of money on personnel in the name of enhancing student achievement via additional time. To the contrary, administrators and legislators must work to continue to enhance the teaching profession and to help teachers hone their skills to optimize the learning environment for all of the young people in their classrooms.

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SETON HALL UNIVERSITY
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February 17, 2020

Franklin R. Goulburn

Re: Study ID# 2020-046

Dear Mr. Goulburn:

The Research Ethics Committee of the Seton Hall University Institutional Review Board reviewed and approved your research proposal entitled ""The Influence of English Language Arts Instructional Minutes on PARCC Performance in Grades 6, 7, and 8" as resubmitted. This memo serves as official notice of the aforementioned study's approval as exempt. Enclosed for your records is the stamped original Consent Form. You can make copies of this form for your use.

The Institutional Review Board approval of your research is valid for a one-year period from the date of this letter. During this time, any changes to the research protocol, informed consent form or study team must be reviewed and approved by the IRB prior to their implementation.

You will receive a communication from the Institutional Review Board at least 1 month prior to your expiration date requesting that you submit an Annual Progress Report to keep the study active, or a Final Review of Human Subjects Research form to close the study. In all future correspondence with the Institutional Review Board, please reference the ID# listed above.

Sincerely,

Mara Podvey

Mara C. Podvey, PhD, OTR
Associate Professor
Co-Chair, Institutional Review Board

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