THE EFFECT OF ALTERNATIVE LUNCH SCHEDULE AND TRADITIONAL LUNCH SCHEDULE ON NORTH CAROLINA SCHOOL ENGLISH II AND MATH I END OF COURSE TEST SCORES

by

Kristina Nicole Boone Lowe

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

This casual comparative design study examined the impact of the type of lunch schedule, traditional or alternative, had on EOC scores for English II and Math I in North Carolina schools. A convenience sample of 132 schools from an archival data set obtained from the North Carolina Department of Public Instruction. Using a casual comparative design, two independent samples *t* tests were conducted to examine the difference in English II and Math I EOC scores between two groups. The data analysis resulted in a failure to reject Null Hypothesis One and failure to reject Null Hypothesis Two. Recommendations for future research include expanding the research to include additional schools, conducting the study longitudinally, using a national test such as SAT or PSAT, utilizing a qualitative design.

Keywords: PowerHour, SMART lunch, single lunch period, organized activities

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Dedication

This is dedicated to my husband who has, stood beside, motivated and encouraged me through all of my educational journeys. I will never be able to thank you enough for allowing me to chase this dream! This is also dedicated to my children Carson, Collin, and Clint who have been my motivation to show them what perseverance, lifelong learning, and dedication look like.

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I would like to thank Dr. Bartlett for all his guidance, patience, gentle pushes, and encouragement. They always came at the most necessary times. I am forever indebted and grateful to you because of you I have been able to complete this process. You met all my questions, rambling emails, and self-doubt with kindness and guidance. I could not have done this without your help!

I would like to thank Dr. Barthlow for guiding me on this final leg of my journey. Dr. Barthlow came in on the last leg of the journey and exuded nothing but patience and kindness. Her gentleness and kindness gave me the courage for the final push. Bless you, Dr. Barthlow, and a tremendous thank you!

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I would also like to thank Dr. David Robinson who has been an advocate, a mentor, an ally, a sounding board for all of the questions and self-doubts, and most importantly a great friend.

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List of Abbreviations

Common Core State Standards (CCSS)

Elementary and Secondary Education Act (ESEA)

End of Course (EOC)

English as Second Language (ESL)

Every School Succeeds Act (ESSA)

Exceptional Children (EC)

Local Education Agency (LEA)

Organized Activities (OA)

Professional Learning Communities (PLC)

Moderate-Vigorous Physical Activity (MVPA)

National School Lunch Program (NSLP)

No Child Left Behind (NCLB)

North Carolina End of Course (NCEOC)

North Carolina Final Exam (NCFE)

Race to the Top (RtTT)

Visually Impaired (VI)

CHAPTER ONE: INTRODUCTION

Overview

Chapter One provides the background of the study accompanied with overviews of the history of school lunch and the theoretical framework for the study. The problem statement, the purpose statement, the significance of the study, research questions and hypothesis, and relevant definitions to the study are also presented in Chapter One.

Background

Historical Background

In the past decade, sweeping reforms have changed the landscape of education. Initiatives such as Common Core State Standards (CCSS), No Child Left Behind Act (NCLB), Every Student Succeeds Act (ESSA), Race to The Top (RtTT), The Healthy Hunger-Free Kids Act, and the initiative Let's Move!, coupled with individual state mandates, and an ever-shrinking budget, has left school districts in a predicament to meet the requirements of all mandates while simultaneously offering students choices, instructional rigor, access to necessary materials, meeting instructional time requirements, and meeting performance goals (Evaluating professional development, 1999). The myriad of goals to accomplish has left schools with no option but to get creative in their daily structure. This innovative creativity has led some school leaders to implement an hour-long lunch scheduling model.

Providing lunch has not always been the responsibility of schools. When public schools were first conceptualized, students would travel home or bring their lunch to school with them. However, due to poverty and other social concerns, a hot school lunch became conceptualized in the early 1900s with private funding, as opposed to the federal funding of today. Federal funding was established as a response to Hunter's 1904 book, *Poverty*, and the witnessed expansion of

the Great Depression (Gunderson, 2014). After the sweeping expansions of federally funded school lunches, the National School Lunch Act was written into law in 1946 (Gunderson, 2014), and the midday meal greatly changed the way that school administration scheduled students ' time. Yet, the school administration did not give a great deal of consideration to the amount of time which was allotted for lunch, and students were not given an ample amount to both eat and take care of simple hygiene matters like washing their hands prior to consuming their meal (Hunter, 1945). Years after school lunch was initiated, while students were still allowed to travel home for lunch, school officials were left wondering how to occupy the increasing number of students whose parents encouraged them to stay at school for the lunch meal. Historically, school administrators seemingly understood that students who were expected to work diligently in classes six hours a day needed longer than a 20-minute lunch period (Hunter, 1945).

In the mid-1980s, many of the high schools in the United States were taxed with a virtually non-existent budget from budget cuts and a steady decline in enrollment in addition to the sharp criticism that had climbed through the 1960s and 1970s and reached its height when *A Nation at Risk* was published in 1983 (Carroll, 1990; Sacheck et al., 2015). As a result of public criticism, the block schedule was widely adopted and studied in America's public schools. Since the wide adoption of the block schedule in the early 1990s, there have been many different adaptions of the block schedule model (Francka & Lindsey, 1995; Retting & Canady, 2001; Seed, 1998). With the adoption of the block schedule in the early 1990s, researchers estimated that more than 50% of schools who had initially gone to a block schedule were exploring at how to adapt the block schedule or had already made adjustments to the traditional 4x4 block schedule (Canady & Rettig, 1995).

When schools started to alter their block schedules, new information emerged about how schools were managing their instructional time. One of the adaptations that emerged was a longer lunch period for the entire school, and how it was beneficial to all stakeholders in the school setting. Some of the prompting factors that caused schools to alter their lunches were: overcrowding in the cafeteria, opportunities to collaborate with cross-curricular teachers, access to computer labs, research opportunities in media centers, assembly times for the whole school, timing of lunch, and various other factors that caused schools to alter their lunches (Chen, 2017; Goodman, 2007; Hodges, Dochen, & Joy, 2001; Nye, 2001). This variation to the school day in the form of a longer lunch period for the entire school can be classified as an alternative lunch programming. The alternative lunch programming is broken into two equal halves known as A and B. The breakdown of lunch into two segments allows for students to be cognizant of where they are within the lunch period and utilize their time accordingly (Chen, 2017, Ellspermann, 2014; Goodman, 2007; Nye, 2001). The equal halves also allow teachers to hold office hours, tutoring sessions, enrichment activities, and professional learning communities. The longer lunch also allows students to complete missed assignments, to receive tutoring, to access the media center, to utilize computer labs, and to participate in co-curricular clubs, organized activities, and assemblies (Ellspermann, 2014; Goodman, 2007; Gould, 2014; Nye, 2001).

Research in the education performance platform has crossed over into lunch scheduling to address social issues. Educators seek to determine if participation in organized activities, both during the school day and after-school activities, increases students ’achievement (Bengoechea, Sabiston, Ahmed, & Farnoush, 2010; Morris, 2015; Wu, Mackaskill, Salvadori, & Dworatzek, 2015). These researchers argue that students needed ample time to relax and turn their thoughts away from classwork to allow them to come back to class refreshed and ready to engage in their

studies. A longer lunch also allows for life experiences in managing responsibility with other students, decision-making skills, and self-discipline (Allingham, 1951).

Social Background

Also connected to the structure of school lunches is the obesity epidemic in America. One of the most visible changes in society is the waistline of Americans. As early as the 1920s, American doctors began to observe adolescent patients with obesity, and it was a cause for concern. Currently, adolescent obesity is at the epidemic level and seen its greatest rise in numbers since the 1970s (Dawes, 2014). This rise in obesity rate is particularly true for African American and Hispanic children (Dawes, 2014). Because of the epidemic level of childhood obesity, curricula, such as Common Core State Standards, now incorporate healthy dieting and exercise into the standards from elementary school forward (Common Core State Standards, 2016). Leaving behind dieting books marketed toward adolescents, and summer slim down camps, medicine has moved forward in its approach to combating the growing epidemic of obesity. The medical field has listed too much soda, corn syrup sweetening, no access to safe outdoor play, sedentary lifestyle, government cutbacks to programs like physical education classes, abundance of homework, excessive unhealthy meals, too many sweets, car rides to school rather than walking, media targeting youth with advertisements for unhealthy foods, socioeconomic status and food selection, and a social tolerance to obesity (Dawes, 2014). Schools can change this sedentary lifestyle choice and excesses of homework through alteration of physical activity offered during the school day (Ellspermann, 2014; Young et al., 2007).

Within school reform efforts, the climate of a school has become an important factor as schools refocus their programs and schedules (Shortt & Thayer, 2000; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013). School climate is of vast importance and as such the Centers for

Disease Control and Prevention recommends that school climate reform should occur as a data-driven strategy. One way that schools can and are addressing the Centers for Disease Control and Prevention school climate concerns is to promote healthy relationships, dropout prevention, and school connectedness with the alternation of the daily schedule. Thapa et al. (2013) reported that research conducted in the area of school climate has been growing in recent years as not only a concern of the United States, but many other countries have shown a vested interest in this area of education (p. 358). Additionally, Uline and Tschannen-Moran (2008) asserted that for student achievement one of the mitigating and influential factors is school climate. The greatest influence on school climate is how the school day is structured (Nye, 2001; Seed, 1998).

Theoretical Background

The theoretical foundation for this study will include constructivism and sociocultural theories. Piaget's constructivist approach examines how people learn and how they form their own knowledge (Miller, 2011). A constructivist approach has become more prevalent in teacher education preparation programs and in public schools nationally with demonstrated significant success in student learning (Gordon, 2009). Constructivist theory encourages lessons and opportunities which are customized to each student's 'prior knowledge with emphasis placed upon problem-solving, hands-on learning, exploration, higher-order thinking and reflective thinking (Bevevino, Dengel, & Adams, 1999; DeVries, 2002; Grennon-Brooks & Brooks, 1999). Lunch is a time in which students are forming their own knowledge with their peers, learning through interaction, and reflecting on events from the day. With an alternative lunch schedule, students are allowed more opportunities to form their own knowledge through personalized experiences (Ellspermann, 2014; Nye, 2001). A constructivist approach is used in alternative

lunch scheduling by allowing for additional lessons and opportunities in which students customize interactions based on their own needs.

Vygotsky's sociocultural theory outlines learning as a social process and urges that students should have access to ample opportunities of a social variety and richness to explore and interact with others (Honig & McDonald, 2005; John-Steiner & Mahn, 1996; Rezaee, 2011). Alternative lunch scheduling allows for students to have time for social interaction and focus on participation, engagement and activities that impact their personal learning in which they have a choice (Ellspermann, 2014; Nye, 2001). Sociocultural theory and alternative lunch scheduling are interconnected because during the hour-long lunch students can learn from each other and engage in a social process that enables students to grow and learn in a social context.

Both constructivist and sociocultural theories define learning as a social process where students need to be engaged in activities that require them to think, problem-solve, explore interests, and interact with peers and mentors. Engagement in these types of activities allows for learning to take place. Even though lunch schedules are not regulated by state or federal laws, students can be offered opportunities to participate in the types of learning opportunities that positively impact their own formation of knowledge.

Problem Statement

Expectations of the education field are driven by federal, state and local agencies to raise student achievement as evidenced by student test scores. Yet, in recent years, schools have been plagued with decreased funds, and as a result of decreased funding and higher achievement standards, schools are forced to be creative with their daily schedule to attempt to create opportunities for student achievement (Boylan & Ho, 2017). However, there is a lack of quantitative studies focused on the impact of school lunch schedule and on multiple disciplines

within school performance overview (Denault & Dery, 2015; Finnan, 2015; Greene, & Maggs, 2014; Hodges, McIntosh, & Gentry, 2017; Morris, 2015). A literature review highlights how the scope of information is limited to how schools can shift to an alternative lunch schedule (Goodman, 2007), and the rationale and individual school benefits of moving to an alternative lunch schedule (Goodman, 2007; Gould, 2014; Nye, 2001; Stone, 2009). However, there is no direct research examining the impact that an alternative lunch schedule has on multidisciplinary school scores that give a multidiscipline overview of school schedule impact on different subjects. Generally, this lack of research on multiple discipline impact on the school is overlooked for the impact school schedule has one specific subject areas like science, English, and math, but not examining the impact examining multiple disciplines at once to provide a whole school picture of how lunch schedules impact school achievement. There are calls for additional research in the area of school schedule impact on multiple subjects 'achievement (Marquez, 2016; Wallace, 2013). In North Carolina, high school achievement is most closely monitored through End of Course tests in Biology, English II and Math I. Examining two subjects at once provides a multidiscipline picture of how lunch schedules impact a school's performance. This oversight for multidiscipline school performance results in a clear gap in the literature regarding quantitative studies to determine the impact scheduling has upon overall school performance.

Daily schedule impacts student achievement (Boylan & Ho, 2017) thus tying student achievement into school performance. The ideals that with an alternative lunch schedule there is more time for soft skill development, more student-driven focus on academics, and fewer interruptions, would support schools who participate in alternative lunch scheduling to receive higher performance grades (Denault & Dery, 2015; Finnan, 2015; Greene, & Maggs, 2014;

Hodges et al., 2017; Morris, 2015). Taking a broad examination of a school's scheduling of lunch and End of Course (EOC) scores will help to close the gap in research and allow schools to make informed scheduling decisions. The result of this study will provide schools, school administration, and local education agencies with data about the effects of lunch scheduling impacts on school EOC scores. The problem is there is a lack of research about the impact lunch scheduling has on student achievement (Bonner, 2012; Marquez, 2016; Wallace, 2013).

Purpose Statement

The purpose of this quantitative, causal-comparative study is to determine the effect which lunch scheduling, the time given to students for lunch, has if on a schools' EOC (English II or Math I) performance grade. This study seeks to compare English II and Math I EOC exam achievement of schools that use an alternative lunch schedule to English II and Math I EOC exam achievement of schools that use traditional lunch schedules. For this study, the independent variable will be the type of lunch a school schedules and contains two levels: alternative lunch schedule and traditional lunch schedule. Alternative lunch is where the school scheduled the entire student body to partake in lunch at the same time for a period longer than 45 minutes (Chen, 2017, Ellspermann, 2014; Goodman, 2007; Nye, 2001). A traditional lunch is where there are different lunch periods for sections of the study body for 30 minutes or less (Chen, 2017, Ellspermann, 2014; Goodman, 2007; Nye, 2001). The dependent variable will be the school performance grade for English II and Math I. The North Carolina school grade for English II and Math I is a numeric grade awarded by the state based on a mathematical formula encompassing all test scores from both the fall and spring semester. The North Carolina High Schools who received an archival school grade for English II and Math I in the 2018 - 2019 school year will be included in the study.

This study will include traditional, public high schools from North Carolina. The high schools included in the study will have used either an alternative lunch schedule or a traditional lunch schedule. The data will be archival data, using the North Carolina School EOC scores for the 413 traditional high schools from the 2018 - 2019 school year.

Significance of the Study

Whole school scheduling can be a daunting task for many administrators. However, how the day is structured has an impact on students learning and performance on high stakes tests (Bonner, 2012; Marquez, 2016; Wallace, 2013) like North Carolina's English II and Math I EOCs. With the increased focus on schools 'performance on high stakes testing and students ' individual performance on placement exams, a school's daily schedule, including lunch structure, is deeply tied to school and student achievement grades (Bonner, 2012; Marquez, 2016; Wallace, 2013). Within local education agencies (LEAs), schedules are sometimes controlled at the district level, yet some administrators see the need to transform how the school day is scheduled for the sake of learning and academics. These administrators seeking a change require informative research that can help to steer the vehicle of change. A better understanding of schools that use an alternative lunch schedule can help decision-makers determine the best option for their schools.

Studying the possible relationship between how a school's daily schedule, including lunch structure, impacts overall school EOC scores is a gap in the literature that needs addressing and attention (Bonner, 2012; Marquez, 2016; Wallace, 2013). This gap in literature related to the relationship between achievement and daily schedule is also tied to an older and resurfacing rise in the volume of research focused on the appropriate amount of class time for students ' achievement at the secondary level (Carroll, 1990; Rettig, & Canady, 1995; Stanley, Spradlin, &

Plucker, 2007). This rise in literature is a direct result of experts elucidating the weakness of the traditional schedule (Carroll, 1990; Canday, & Rettig, 1995; Marshak, 1997). For informed decision-making, school administrators need quantitative information to determine if time spent on non-traditional instructional activities create learning opportunities during an alternative lunch schedule for high school students that transcend into student achievement (Denault & Dery, 2015; Finnan, 2015; Greene, & Maggs, 2014; Hodges, McIntosh, & Gentry, 2017; Morris, 2015).

This study will expand on the limited, dated research examining alternative scheduling (Carroll, 1990; Rettig, & Canady, 1990), and serve to supplement the limited information available to school investigating the option of alternative lunch scheduling (Chen, 2017; Dorman, Gauthier, & Thirkill, 2013; Ellspermann, 2014; Goodman, 2007; Hodges, McIntosh, & Gentry, 2017; Nye, 2001). Alternative lunch scheduling is a way for school districts to provide students with academic and personal growth opportunities at little to no cost. This study will help to establish the association of lunch schedule type on the overall school performance grade. Additionally, the study results may allow for schools to reflect and determine if their alternative lunch schedule is having the desired impact on student achievement.

Research Questions

RQ1: Is there a difference between the 2018 - 2019 North Carolina school English II EOC scores for students who had an alternative lunch schedule and those who had a traditional lunch schedule?

RQ2: Is there a difference between the 2018 - 2019 North Carolina school Math I EOC scores of students who had an alternative lunch schedule and those who had a traditional lunch schedule?

Definitions

1. *A/B (Alternate-day) schedule* – A/B (alternate-day) schedule is a teaching schedule where students and teachers meet their classes every other day for blocks of time greater than 60 minutes (Canady & Rettig, 1995).
2. *Alternative lunch programming* - Alternative lunch programming is a lunch schedule where the whole school is scheduled for lunch at the same time. Students have a choice to engage in various activities (Chen, 2017, Ellspermann, 2014; Goodman, 2007; Nye, 2001).
3. *Block schedule* - Students are scheduled and attend the same four 90-minute classes for 90 days. A student can complete eight classes within a year (Canady & Rettig, 1995).
4. *Modified block* - Modified block is a teaching schedule that organizes four days into 100-minute periods, and the fifth day is a traditional schedule. Within a modified block, the schedule could be as follows Monday and Wednesday are dedicated A days, Tuesday and Thursday are dedicated B days, and C days are on Friday (Marshak, 2001).

5. *SMART lunch* - SMART lunch is an acronym that stands for Students Maximizing Achievement through Relationships and Time; SMART lunch is a form of alternative lunch programming (Gould, 2014).
6. *Traditional schedule* - A traditional schedule is a single-period daily school schedule composed of students participating in six, seven or eight classes each day which vary in meeting times which range between 40 and 60 minutes (Canady & Rettig, 1995).
7. *Traditional school lunch* - A schedule where there are different lunch periods for segments of the study body for 30 minutes or less (Chen, 2017; Ellspermann, 2014; Goodman, 2007; Nye, 2001).

CHAPTER TWO: LITERATURE REVIEW

Overview

The field of education is constantly evolving. It is necessary for institutional leaders to evaluate instructional programs, operational systems, and instructional methods in order to make informed decisions. One of the main foci of the education system in recent years has been improving student achievement on high stakes tests. Schools are forced to become creative in the methods to improve test scores due to the consistency in shrinking budgets and ever-evolving instructional programs (Canday & Rettig, 1995). Alternative lunch scheduling provides students' academic and personal growth opportunities at little to no cost to school districts (Ellspermann, 2014). Alternative lunch scheduling provides the opportunity to evaluate test scores when students are engaged in varied daily schedules. This chapter will provide an explanation of the theoretical frameworks of constructivism and sociocultural theories. Additionally, a comprehensive review and synthesis of the existing literature that pertains to the topic of the study will be included.

Theoretical Framework

Sociocultural theory

The concept of block scheduling was the result of conversations occurring among educational trailblazers who thought that students provided with more time in the classroom would have the opportunity for additional interactions between teachers and peers. This additional time for interaction was believed to lead to additional learning for students. The educational trailblazers based this thought process upon a learning theory first developed by Piaget. A sociocultural approach to learning is a method allowing for student development by engaging them in persistent and systematic inquiry (Zuckerman, Chudinova, & Khavkin, 1998).

A sociocultural approach implies that cognitive development comes through social interaction either between or among people. This interaction leads to the internalization of information gained by the individual interacting in a social setting (Eun, 2008).

Vygotsky's sociocultural theory origination can be traced back to the 1920s and 1930s in Russia. Vygotsky and collaborators based the theory on the concept that human activities occur in cultural settings. These cultural settings are mediated by the language and other symbolic systems; psychologists of the time were intent on developing simple explanations of human behavior and interaction. Vygotsky developed the sociocultural theory by examining a range of subjects. The subjects included the psychology of art, language and thought, and learning and development, and included a highlight on the learning of students with special needs. Historically, Vygotsky's work was suppressed for 20 years and was not accessible to the field of education until the late 1950s and early 1960s.

In the last 25 years, Vygotsky's theory has been advanced in over a dozen countries, and the expansions and interpretations have led to diverse perspectives on sociocultural theory (John-Steiner, & Mahn, 1996). Forman and McPhail (1993) extended the sociocultural theory by studying the way learners assist each other; Moll and Whitmore (1993) expanded on the theory by studying a bilingual classroom in the southwestern United States where reading and writing in two languages were integrated into project-type literacy lessons. To add to the sociocultural theory Engeström (1994) studied how teachers collaborated and engaged in dialogue about the curriculum to move the theory to include teachers.

Vygotsky's sociocultural theory states three factors must be present in a lesson in order to students to be engaged within a learning process: ideas are central and general to the discipline taught; cultural tools are adapted to allow for thinking about the ideas generated; and students

need the cooperation of their peers to solve problems. This cooperation enables students to garner understanding for each others' point of view and thought processes. Vygotsky's sociocultural theory endorses the use of student inquiry while holding the educator responsible for the task of creating an environment for the student to learn by creating an atmosphere in which the student feels comfortable asking questions and recounting their personal observations (Zuckerman et al., 1998).

Constructivist theory provides the foundation for block scheduling. According to this theory, the resulting longer class periods allow for more varied instructional strategies, deeper class discussions, and additional time of in-depth studies of units. Teachers who instruct on a block schedule share that they have an opportunity to make personal connections with their students, and writing teachers report that students have time to connect with their writings and with peers academically and socially (Flannery, 2008). The reports of these teachers and the events occurring within their classroom directly support and parallel with Vygotskian sociocultural ideals. The sociocultural ideals provide the foundation for block classes because the theory supports the need for peer and teacher collaboration within the classroom (John-Steiner & Mahn, 1996). A primary supportive argument for the use of a 90 – 100-minute class schedule is the extended class schedule that allows students to familiarize themselves with the content being presented through instructional practices that include hands-on and collaborative activities (Canday & Rettig, 1995).

Constructivist theory

Unlike the traditional model of the teacher providing lesson information through a lecture to the student, a sociocultural framework allows for students to take a more active role in their learning (John-Steiner & Mahn, 1996). By pairing Vygotsky's sociocultural theoretical

framework with constructivism, the themes work jointly to support instructional activities such as cooperative learning, role play, whole group discussions, and hands-on experiments. Constructivism focuses on the students' active participation and it is considered to be a positive aspect as it encourages students to participate and take an active role in the classroom to further engage in the subjects' content (Hyslop-Margison & Strobel, 2008). Categorically, learning is contingent upon interaction with others within a constructivist framework. The proponents of block scheduling endorse these schools of thought; they support the idea that students are given the opportunity to work in small groups and that teachers can make use of cooperative learning strategies. Cooperative learning strategies allow students to purposely interact in structured mixed ability groups to facilitate learning for all students (Jenkins, Queen, & Algozzine, 2002).

Constructivist theory was founded by Piaget in 1952 and outlines that learners actively create, interpret, and reorganize knowledge in a personal, individual way (Gordon, 2009). DeVries (2002) wrote, "A constructivist orientation is one in which the child's subjective experience must be taken into account in all educational efforts because the child is understood as the active constructor of knowledge, personality, and morally" (p.1). Piaget also added to his theory that new knowledge could be constructed only when the student is confronted with external experiences that could not be assimilated into prior knowledge categories. These new experiences must be accommodated by reconstructing the prior knowledge that a student has already developed (Piaget, 1952). Learning is contingent upon interaction with others within a constructivist framework. Constructivism means that learning involves constructing, creating, inventing, and developing one's own personalized knowledge and meaning (Hackmann, 2004; Windschitl, 1999). The role of a classroom teacher is to facilitate the presentation of information followed by organizing activities for learners to facilitate their own learning. Marlowe and Page

(1998 & 2005) defined learning in a constructivist teacher's classroom as a cycle of questioning, interpreting, and analyzing information; the integration of new knowledge with past experiences is also a learning target in order to combine information and thinking to advance, shape, and alter meaning and understanding of previously-perceived concepts.

According to Flannery (2008), educators have enthusiastically transformed their classrooms into creative workplaces as a result of teaching on a block schedule. Canady and Rettig (1995) presented the argument that the only way educational strategies discussed in theory can be successful is to have adequate time for student interactions to occur. The block schedule allows teachers to have adequate time to instruct while also enabling teachers to capitalize on an environment that allows for individualized instructional plans for students, which include students to interaction. Vygotsky's sociocultural theory is observable in action within block scheduling due to the increase in student interactions. The study can help determine if the sociocultural theory's premise can be beneficial to students during lunch.

Related Literature

National School Lunch Program

Hot school lunches have not always been a part of the American school day. Initially, when students were sent to school, their lunch was packed in a pail or they ventured home to eat lunch. However, as early as the 1890s, there were efforts to organize school lunches which were 100 years behind some extensive European countries' programs. The roots of what Americans know today as the National School Lunch Program (NSLP) can be traced back to the Children's Aid Society of New York in 1853. The Children's Aid Society of New York started serving meals to students who attended the vocational school. Various other cities and states had similar programs that eventually gained enough momentum and funding to become laws in 15 states by

1937. With the onset of the Great Depression of the 1930s, there was widespread unemployment, and families were unable to send their students to school with a meal for the day; subsequently, this initiated the creation of a federal intervention program in the form of Public Law 320. However, it was not until 1946 that the 79th Congress authorized the National School Lunch Act and appropriated funds of the previously passed Public Law 320. Since its inception in 1946, the NSLP has undergone various changes and legislative mandates with regards to funding and what exactly schools can serve or sell to students (Gunderson, 2014; Wojcick & Heyman, 2010). Some of the changes that the NSLP program have undergone are oversights into the details on minimum nutritional requirements, creating a free and reduced program for socioeconomically disadvantaged students, record-keeping practices, authorized commodities, and many other oversight details. However, there are no federal regulations or consistencies on how long schools give students to consume their lunch (Gunderson, 2014; Wojcick & Heyman, 2010).

Lunch Period

With the introduction of schools serving lunches to the students or allowing students to eat their lunch on school grounds, a scheduling dilemma arose of just exactly how much time students needed for lunch. Even before the National School Lunch Act of 1946, schools were facing scrutiny over how long they were allotting students for lunch. Initially, when school lunch was first introduced to the school day, schools were allowing so little time for lunch periods that students were forgoing the personal hygiene routine of washing their hands before eating (Hunter, 1945), and this is a continual, ongoing problem in today's lunch scheduling (Chen, 2017; Dorman et al., 2013; Ellspermann, 2014; Goodman, 2007; Hodges, McIntosh, & Gentry, 2017; Nye, 2001). Chen (2017) reported "U.S. government recommends that children

have a minimum of 20 minutes to actually eat their lunch. However, many nutrition experts say even this is not enough for children to properly eat and digest their food before heading back to class" (para. 4). Chen (2017) went on to surmise that once students made it through the lunch line and sat down, they only had 15 minutes, or sometimes less, to consume their school lunch, which accounts for anywhere from 30 to 50 percent of students daily caloric intake.

On the opposite side of giving students a shorter period for lunch, school systems that allowed students who could travel home for lunch to do so were left with students who ate their lunch at school during the extended time their classmates were traveling home, eating and traveling back to school. Schools faced the dilemma of answering the question of what exactly to do to occupy students who remained on campus for lunch during that additional time. Even as early as the 1940s, administrators and teachers knew that students needed more than a 20-minute lunch period after they were expected to diligently work in their classes for six hours a day. Historically students have needed ample time to refresh and relax before taxing their brains in the next course's endeavor. Furthermore, for future purposes, students needed to understand and develop their behaviors within larger groups. With a longer lunch period, students could refresh while teachers and administration could cooperatively plan while students gained life experience in managing responsibilities, decision making, and self-discipline for future endeavors (Allingham, 1951).

Traditional Scheduling

The structure of lunch schedules within a school is typically dictated by the daily course schedule, and course scheduling is one of the most taxing endeavors that administrators face. Course scheduling can also be the least satisfying task and many times the biggest influence on overall school climate and morale. Course scheduling is also one of the main discussion points

for schools to increase student achievement (Biesinger, Crippen, & Muis, 2008). Creeden (2012) added of scheduling

> No longer is the high school master schedule an item to be reviewed every spring and then put away for the year; high school principals are looking to their master schedules for solutions to the problems that affect their schools' day-to-day performance. (p. 14)

Scheduling takes an individual with an aptitude for puzzles or the result can be disastrous (Ullrich & Yeamen, 1999). Course scheduling is not a new task for administrators, and even in the inception stage of public education, decisions had to be made about daily schedules. As early as the 19th-century public education in the United States finds its origins with Horace Mann's vision of public education (Bohan, 2003). Dating back to 1890, the progressive movement started to take shape and gain popularity. During the progressive movement's infancy, the general population recognized the need to stabilize the country and drive people's lives (Cremin, 1962). During the 19th century citizens not only wanted to boost education, they also wanted to make education readily available for the multitudes. One of the outcomes of the progressive education movement was the foundation for the high school model which is still in use presently (Wraga, 2001). During this time schools planned the school calendar and daily schedule around the needs of the community. For instance, many rural farming communities' schools would be in session during the summer months. This is when the schools could be in session continuously undisturbed by winters, road conditions and away from the spring planting season when students were needed to help on the farms (Huyvaert, 1998). This flexibility in creating a school calendar, or daily schedule, was not met with the rigidity that is experienced today. North Carolina's school calendar laws state that the start date can be no earlier than the Monday closest to August 26 with an end date no later than the Friday closest to June 11. School systems can

petition to have a weather-related calendar start date of the Monday closest to August 19 with the same end date of the Friday closest to June 11 (N.C. Gen. Stat. § 115C-84.2). The North Carolina calendar laws also dictate that all schools within the district must be closed all day for purposes of determining eligibility for a weather-related waiver where delayed starts or early dismissals of two or more hours no longer apply in the count towards the weather-related waiver. Furthermore, the calendar must span nine calendar months while containing a minimum of 185 days or 1,025 hours of instruction with at least nine teacher workdays built-in; have a minimum of ten annual vacation leave days; school cannot be in session on Sunday; Veterans Day shall be a holiday for all public school personnel and for all students and have the same or an equivalent number of legal holidays occurring within the school calendar as those chosen by the State for all other State employees (N.C. Gen. Stat. § 115C-84.2). Additionally, the North Carolina calendar regulations apply to local boards and mandates that they shall designate two workdays on which teachers may take accumulated vacation leave, and may designate the remaining workdays as days teachers may take accumulated vacation leave (N.C. Gen. Stat. § 115C-84.2). As a propelling force of change, reports and studies have populated in the 20th century citing a decline in student achievement and the profound effects of the economy on the education system (Zepeda & Mayers, 2006).

As an investigation for the status of the education system, the National Education Association authorized an 1892 committee to make recommendations for the standards of various studies at the secondary level. The study committee made recommendations for nine subjects: 1) Latin, 2) Greek, 3) English, 4) other modern languages, 5) mathematics, 6) physics, astronomy, and chemistry, 7) natural history, 8) history, civil government and political economy, and 9) geography. The American graduation rate was observed to double from 3 % to 6 %

(Bohan, 2003) due to the courses of study determined by the National Education Association committee coupled with the progressive education movement. This time of academic growth also noted a change in, and the necessity of, courses to be offered sequentially to students. The model of a three- or four-year sequence of social sciences remains a typical framework for programs of study in the public high school arena (Bhoan, 2003, p. 83). At the same time as a National Education Association's committee, John Hopkins University created the American Historical Association. The American Historical Association requested a detailed report about the teaching practices in American secondary schools (Saxe, 1991). Their 1896 report highlighted the need for secondary schools to create more time for history. Alongside this report, in 1892 National Education Association compiled a report on the different aspects of education. This report was to encourage high schools to focus on educational learning in five or six areas of academics in a student's four years in high school (Gorman, 1971). Through these reports, the foundation for the Carnegie unit in secondary education began to take shape (Alderman, 2000).

With the emergence of the Carnegie unit, the academic progress of students could be observed as the student completed courses. Framework for the Carnegie unit calls for a teacher, who specializes in a particular subject area, to instruct courses relevant to their area of expertise and studies in 50 - 55 minute classes in six to eight periods class periods a day (Geiken, Larson, & Van Deusen, 1999; Gullatt, 2006; Marchant & Paulson, 2001; Schroth, 2016; Texas Education Agency, 1999). With the Carnegie unit and teacher requirements at the secondary level, the traditional schedule was established. Additionally, the traditional scheduling method easily met the criteria of the Carnegie Unit through classes meeting for approximately an hour each day (Geiken et al., 1999; Tompkins & Gaumnitz, 1954).

By 1959, The Trump Plan was created. This plan was created by J. Lloyd Trump who proposed that schools eliminate the traditional schedule and explore classes of various lengths (Queen, 2000). "The Trump Plan" encourages teachers to employ different instructional techniques and practices to maximize instruction while varying the amount of time students are scheduled to be in class. For many reasons, these varying class time schedules did not remain for very long; however, it did make the educational field more cognizant of the opportunity to explore how schedule adaptions can occur. This cognition that schools could be in control of how to schedule the instructional day began an initiative in the late 1970s that sought to break the 100-year routine of traditional scheduling (Rikard & Banville, 2005). Until the 1980s, schools followed what is known as a traditional schedule and no observable adaptations were made. The traditional schedule, even in its early endeavors, faced critical review by educators following the practice (Gullatt, 2006; Maltese, Dexter, Tai, & Sadler, 2007).

Block Scheduling

In the mid-1980s schools, particularly high schools, were facing an ever-declining number of enrollment and barely operational budgets; as a way to offer more to students with a decreased amount of faculty, schools began adopting a block schedule (Carroll, 1990). The adoption of a new schedule, now known as a block schedule, was expedited by the publication of *A Nation at Risk* in 1983 (Carroll, 1990). This swift movement to change the daily schedule allowed for schools to create or adopt a schedule that worked for them since there was no existing standard on the block schedule. With the numbers of variations, the block schedule in its many different formats has been widely studied for benefits and advantages (Francka & Lindsey, 1995; Rettig & Canady, 2001). By the early 1990s, as many as 50 % of schools had

transitioned to block scheduling and explored the idea of adaption of the block schedule (Canady & Rettig, 1995).

The idea of block scheduling, although its adoption is relatively new, was part of the educational landscape as early as 1847. In 1847, Page presented the idea of what is now identified as an alternative-day block schedule. This presentation of an alternating day block schedule was founded on the concern that a teacher did not have enough time for their students when only seeing them every day for shorter periods of time. Page's recommendation was that the instructional time would be more impactful if the teacher was meeting with the classes only two or three days a week for an extended period (Holschen, 1999).

One of the most common forms of block scheduling is the 4 x 4-semester plan often called the accelerated schedule (Canady & Rettig, 1995). With the 4 x 4 block schedule, students take four courses during the first semester and then a new four courses during the second semester. By attending the same four 90-minute classes each day of the week for an entire semester, students complete a yearlong course in one semester (Lewis, Dugan, Winokur, & Cobb, 2005). In a 4 x 4 schedule, students are able to earn four credits per semester and a total of eight in an academic year. With this block scheduling format, students are allowed the opportunity to accumulate eight credits over the course of a year and 32 over the duration of four years.

In the endeavor to educate all students, there is the requirement of flexibility within the schedule. The 4 x 4 block schedule was designed to reduce the total number of weekly course assignments and preparations that had to be made by both teachers and students. Students on a block schedule can retake courses and can also play catch up in certain subjects. Additionally, academically inclined students can propel their studies by doubling up on a subject they wish to

strengthen or place emphasis on (Lewis et al., 2005; Scheduling Policies, 2009). When administrators are trying to find a tool in which to determine if a schedule change is worthy, or working, they encounter studies with mixed results. In a study conducted by Harris (2014), the researcher sought to determine the impact of scheduling on the academic achievement of high school students in Algebra, Biology, and English. The longitudinal study yielded mixed results, finding that student achievement was higher in the traditional schedule for Biology in all five years of the study, but achievement was higher in Algebra and English in the block schedule for four of the five years (Harris, 2014). Likewise, Murray and Moyer-Packenham (2014) examined the type of scheduling, and its impacts upon Algebra I test scores. Murray and Moyer-Packenham (2014) reported that there are mixed results based on the type of schedule the school used and the student's grade.

A/B alternating block. The A/B alternating block schedule is another means of block scheduling within the school day. Within this schedule, eight classes meet every other day for 90 minutes for the entire school year (Imbinbo & Gikes, 2009; Murray & Moyer-Packenham, 2014). There are variations of the A/B schedule that allow for students to be in their classes for upwards of 95 minutes per day, alternating days throughout the entire year (Rickar & Banville, 2005). The A/B schedule is a 4-class period day with odd-numbered classes meeting one day and even-numbered classes meeting another day.

Modified block scheduling. A/B scheduling or traditional scheduling can be identified within a 4 X 4 schedule to allow for continuous instruction of some subjects. Subjects such as math, band, orchestra, choir, AP courses, journalism, and English can be scheduled yearlong to meet every day, thus addressing concerns about learning gaps in the subjects. A modified block provides a blend of different models, where modules make up the school day (Imbimbo &

Gilkes, 2009). The hybrid block schedule combines longer and shorter periods of scheduled time to accommodate particular challenges associated with block scheduling and certain subjects that work better with constant instruction and or longer periods. Modified block scheduling is specific to the school, students, and community to address each school's own perceived needs and goals (Boarman & Kirkpatric 1995; Kenney, 2003).

Composite block. Another type of block scheduling is a composite block schedule. This is the block schedule where only certain classes are block scheduled and other classes remain on a traditional year-long schedule. The year-long classes are called singles or skinnies. For this schedule to be feasible, students are enrolled in a combination of classes. Often, classes in the English and social studies disciplines are offered in both block and traditional scheduled slots. The composite block schedule is similar to the modified block; however, it allows for more than one period to meet every day as a class for the entire year (Childers & Ireland, 2005).

Hillcrest model. The Hillcrest Model is an alternating day schedule founded on the A/B alternating block schedule, but it includes one day per week where all classes are held for shortened periods (Barnes, Stranton & Ukena, 1996). This method has the advantage of having contact with all students one day per week. Like the A/B alternating block schedule, it is built around the structure of 4 class period day with odd-numbered classes meeting one day and even-numbered classes meeting another day (Barnes, Stranton & Ukena, 1996).

A/B/C block schedule. A/B/C block scheduling is a teaching schedule that organizes four days into 100-minute periods and the fifth day is a traditional schedule. Within the A/B/C block schedule a school could operate a schedule where Monday and Wednesday are dedicated A days, Tuesday and Thursday are dedicated B days, and C days are on Friday (Marshak, 2001).

Trimester scheduling. On a trimester schedule, the school year is divided into three or four smaller segments. Within the divided schedule, courses are offered at a more concentrated level of instruction. The trimester schedule divides the school year into three equal sections, roughly 12 weeks each, with 2 trimesters, or 24 weeks, equaling one year's instruction (Murray & Moyer-Packenham, 2014).

Advantages of block scheduling. There are many observable advantages to block scheduling with each format of the block schedule allowing for its own unique advantages. Block scheduling garners extended periods of time for students to grasp concepts without having to stop and start lessons due to short periods of time together with their teachers. Additionally, students found that with block scheduling they generally had less homework (Gruber & Onwuegbuzie, 2001). For both teachers and students having fewer classes to prepare for eased their workload with only preparing for four classes each day. Gruber and Onwegbuzie (2001) present the notion that "short instructional periods cause students to feel overwhelmed by the variety of academic material, numerous sets of class rules, multiple homework assignments, and disjointed curricula" (p. 2). This notion is founded on Canady and Rettig (1995) listing the following benefits of block scheduling: teachers have the ability to plan lessons that exceed what traditional lessons can cover; fewer class changes result in fewer discipline issues; block scheduling allows for the time to use a variety of instructional models; students prepare for fewer classes daily which limits the number of tests, quizzes, and homework; teachers have a lighter case of students during any one semester; teachers do not have to prep for as many classes to instruct; students who have failed a course have early opportunities to retake courses remaining on track with their peer cohort; greater opportunity for students to accelerate course sequencing; there is a lighted demand on textbook requirements.

The advantages of Canady and Rettig's (1995) report are compiled for the various formats of block scheduling. There is not a format of block scheduling that produces all the advantages above, but most block formatting captures most of the advantages. One of the greatest advantages of block scheduling is the customization that schools can create within each school's operation of the schedule. Biesinger et al. (2008) conducted a mixed-method investigation into the effects of block scheduling on student self-efficacy instructional practices and student attitude in math; this found that the extended class time provided students an opportunity to become involved in the lesson being presented. Block-scheduling supporters believe that the increase in time spent in classes provides an opportunity for more in-depth learning and yields higher teacher and student morale (Imbimbo & Gilkes, 2009). The findings of Lewis et al. (2005) coupled with Rettig and Canady (2001), Eineder and Bishop (1997), and Geiken et al. (1999) study found that there is an increase in students' academic achievement by using a block schedule.

Disadvantages of block scheduling. As with all problems in life, there is no one simple solution to address all issues of a given problem. A commonly cited limitation, or problem, with block scheduling is student attendance. If a student misses a single class, it is the equivalent to missing two classes period within a traditional schedule (Gruber, & Onwegbuzie, 2001). Zelkowski (2010) rationalized that there is good evidence to show blocked classes are easier than traditional period schedule classes due to the lessening of content being covered (p. 12). There are also arguments against block scheduling that cite issues such as class sizes did not decrease, classroom climate did not improve, scheduling for the fine arts is challenging, class sequencing of specific classes can become an issue (Shortt & Thayer, 2000; Lewis, Dugan, Winokur, & Cobb, 2005). Nicholas (2005) noted that in block scheduling the class period is longer, and the

student loses quantitative instructional time when a school chooses block scheduling. Jenkins et al. (2002) compared teaching methods in a traditional and a block schedule and documented the amount of times each instructional method was used between teachers in a block schedule and teachers in a traditional schedule; and this found that there was no significant difference among the teachers practices in using lecture/direct instruction, use of small groups/structured pairs, and cooperative learning. Jenkins et al. (2002) cautioned "the block has been heralded as a promising solution to problems evident in teaching high school students, but not without cautions, caveats, and challenges" (p. 200). Zepeda and Mayers (2006), as well as Mistretta and Polansky (1997), found that students' grades are higher on a block schedule as compared to a traditional schedule.

There are many variables that still impact a school beyond a bell schedule; consequently, studies by Arnold (2002) and Gullatt (2006) reported that the students grade gains diminished within the second year of block scheduling while Trenta & Newman (2002) and Queen (2000) found that the data on students' grade point averages are varied when using a block schedule. The largest attraction to a block schedule is the additional in time in class leads to higher achievement; however, Biesinger et al. (2008) reported "… the results seem clear in that simply adding instructional time to the day will not have a direct impact on classroom practice" (p. 206). Biesinger et al. (2008) supported findings of Gruber and Onwuebuzie (2001), and Gullatt (2006) which concluded students in a block schedule actually experience a moderate decline in academic achievement in core content areas.

Time in school. Schools' utilization of time is under constant scrutiny; educators are always faced with encouragement to find better ways to utilize time, and as such learning in American schools has been called a "prisoner of time" by the National Education Commission

on Time and Learning (1994). In the early 1990s, schools began to explore how to better utilize instructional times. One of the results in North Carolina was schools shifting away from the traditional schedule. In the 1992 - 1993 school year in North Carolina, only 2 %, or 6 schools, had moved to a block period, yet by the 1995 - 1996 school year, 65 %, or 254 schools, had adopted a block schedule (North Carolina Department of Public Instruction, 1997). Within the block schedule, periods, blocks, or classes are broken into 90-minute instructional blocks with a class change in-between. Lunch typically occurs during the third block making its scheduled time 120 minutes. This allows the school to go to lunch in shifts; 1st lunch would be the first 30 minutes of class with the remaining 90 scheduled minutes for instruction; 2nd lunch would have 40 minutes of instruction, 30 minutes of lunch and then 50 minutes of instruction; and 3rd lunch would have the 90-minute block and then 30 minutes of lunch (Canady & Rettig, 1996). Fallis (2003) expressed the notion that to improve student achievement, the needs of students should be addressed in the allotment of time usage in schools. This shift in concern for student needs, away from the best interest of the community, allows for many different modes of scheduling. The initial shift in concern set the stage for the work of Fisher and Berliner's (1985) study regarding block scheduling. Fisher and Berliner (1985) helped to set a cornerstone for block scheduling in high schools as their research supported the need for a change in school structure. Fisher and Berliner's (1985) study focused on how time at school was arranged and gained popularity among educational leaders. This study enabled schools to view how other schools structured their day to capture the most benefit for students; additionally, it helped to ignite educational leaders thinking outside of tradition and transform school day structures and examine other contributing factors in student achievement. Consequently, McCreary and Hausman (2001) stated "Despite the popularity of schedule modifications as a cost-effective reform to

improve student outcomes, little empirical research on the consequences of alternative schedules has been conducted. The literature has been dominated by anecdotal reports" (p. 2). For an extended period of time, scheduling at the high school level has been examined without definitive results and largely examining the impact a schedule has upon a single subject, not a broad spectrum of subjects which give a better indices of the overall school performance.

Lunch Scheduling Options

When faced with increasing demands on schools' time, budgetary constraints (Leonard, 2001; Sacheck et al., 2015), and other influential factors, the administration may question what can be done to improve student food consumption, student learning, student involvement, and academic success. A review of literature suggests that lunch is one of the least critiqued aspects of the school day (Rowe & Rocha, 2015), and with a wide variety lunch scheduling options available to choose from with limited to no federal or state oversight about seat time to consume lunch; literature about scheduling options and student achievement has produced a limited return of studies. Compounding the limited studies are the variations to the schedules that schools are creating with limited insights into what impact the varied schedules have on student achievement.

Within the walls of schools in the United States exists a variety of daily schedules for school systems to employ. Four out of the five most popular schedules in use are based on a block schedule model (Arnold, 2002). In a traditional, and block high school schedule, lunch is built into a class period with the amount of time scheduled for lunch greatly ranging. The amount of time dedicated to lunch consumption ranges from ten minutes to an entire hour (Chen, 2017). Furthermore, a national survey found elementary school students have 25 minutes on average while high school students average 30 minutes. The quantity of time students receive is

inclusive of time that is spent in the lunch line, in the restroom, and in the transition to and from the cafeteria. This leaves students with around 10 to 15 minutes to eat lunch (Hellmich, 2011). Given this limited time to consume lunch, studies have been conducted to examine what students eat when they are given less time in the cafeteria. Cohen et al. (2016) reported that when students had less than 20 minutes scheduled nutritional components were on their tray; however, they did not consume the fruits and vegetables. Cohen et al. (2016) concluded

> These findings provide evidence that policies at the district, state, or national level may be warranted to ensure all children have sufficient time to eat their meals in schools, especially with the new mandatory national school lunch guidelines that require selection of a fruit or vegetable to qualify for a reimbursable school lunch. (p. 3)

The findings of the studies determined that when the time to eat is shortened there is an increase in food waste (Chen, 2017; Cohen et al., 2016; Goody & Aubrey, 2015).

With the lunch occurring amid a class period, there are many interruptions to the specific class in which lunch is scheduled. Interruptions can include announcements, bells to dismiss students to and from the cafeteria, and noise disruptions of students transitioning in the hallways. A traditional schedule with six to eight classes a day requires a vast amount of movement and transitions within the school day; one study showed that the traditional schedule resulted in an increase of discipline problems at rates of 20 % in one student and an alarming 57 % in another study (Canady & Rettig, 1995; Geiken et al., 1999; Marchant & Paulson, 2001; Mistretta & Polansky, 1997). Canady & Rettig (1995) theorized the number of students socializing and congregating amid class changes resulted in the disruptive environment shifting into the classroom and lessons. When looking at interruptions and use of class time, if teachers in a traditional schedule and a block schedule spend ten minutes at the beginning of each class on

administrative duties, then both schedules, block and traditional, have the same amount of time for instruction (Queen, 2000). However, with a reported 30 % of teachers inefficiently using the block schedule and a reported 60 % of the typical high school day being consumed by non-instructional occurrences; merely increasing the amount of time students are in class is not guaranteeing student success (Leonard, 2001; Queen, 2000). Conversely, Duel's (1999) research did not reveal significant differences in the discipline area of suspensions, both in school and out of school, between high schools using a traditional schedule versus a school using a block schedule.

Researchers in the education field have called for schools to restructure the scheduling of interruptions to classroom instruction to improve the emphasis on student learning (Shortt & Thayer, 2000) as this has been identified as the most successful tool that teachers have to ensure student achievement (Leonard, 2001). Kyriakides, Creeners, Antoniou, Demetriou, and Charalambous (2015) asserted that by increasing a school's authority and flexibility with policies will allow for the implementation of more effective educational policies that are based on a school's population of students and their needs. With more effective educational policies, like policies concerning managing teaching time, school leaders can better direct teachers' efforts, school resources, and educational processes to meet school needs.

Alternative Scheduling

Balanced school day. The balanced school day is a movement that primarily focuses on elementary schools where students are provided with two breaks during the school day. The two breaks during the day allow for the student to have 45 - 50 minutes with 20 minutes for eating and 20 – 30 minutes of outdoor or playtime. On either side of the breaks, there are 100-minute blocks of instructional time. The change to a balanced school day is cited as an enhancement to

the school learning environment (Wu et al., 2015). Some of the merits of a balanced school day include less instructional time lost during transitions, instructional time organization improved, better student concentration, and improved facilities cleanliness (Wu et al., 2015). The balanced school day is an effort to decrease the obesity rate, increase student activity, and improve instruction retention (Vanderloo & Tucker, 2017; Wu et al., 2015). Wilk, Clark, and Gilliland (2019) examined the moderate-vigorous physical activity of students ages 10 - 12 in schools who used a traditional school day and a modified school day. Wilk et al. (2019) looked at both the groupings of the traditional school day and the balanced school day and male and female subgroups moderate-vigorous physical activity (MVPA) rates in the balanced school day. What Wilk et al. (2019) found was that girls had lower MVPA than boys, and as both the boys and the girls aged their MVPA was considerably reduced from the initial age of 10. Wilks et al. (2019) findings indicated there was no statistically significant difference in the total minutes of MVPA during school hours between children from balanced school day schools and children from traditional school day schools. Wilks et al. (2019) noted that MVPA was significantly higher for older girls attending balanced school day schools as compared to girls the same age attending traditional school day schools, suggesting that implementing a balanced school day may help curtail diminishing MVPA as girls enter adolescence and high school.

To bring a balanced school day to the high school, scheduling alternatives are available to combat the continually shortened lunch period that schools face, which erode the balance that lunch can bring to a high school schedule. Schedules that embed a single lunch period for the entire school exist as an option; the single lunch period is most commonly used at the high school level. The name of the single lunch period varies depending on the region of the country where the author producing the literature is located. The single period is called PowerHour in

Florida (Ellspermann, 2014), Students Maximizing Achievement with Resources and Time (SMART) lunch in North Carolina (Gould, 2014), and, Lunch Hour in Maryland (Goodman, 2007). The main purpose of an alternative lunch schedule is to offer freedom — freedom to students who are performing well in the classroom to make decisions about how they spend their lunch hour, freedom for students who need academic assistance to receive tutoring from their teacher, and freedom for students to manage daily tasks during a non-instructional period (Ellspermann, 2014; Goodman, 2007; Gould, 2014)

Lunch schedules such as PowerHour, SMART lunch, LunchHour programs are collectively known as alternative lunch schedules and seek to move the entire school to a lunch schedule which is an hour during the middle of the instructional day. In a block schedule, students attend first and second periods then have an extended lunch period then complete the day attending third and fourth periods. At one school that uses SMART lunch, first period is from 7:55 am - 9:25 am, second period meets from 9:31 am - 11:00 am. Lunch is from 11:00 am - 11:58 am, third period is in session from 11:58 am - 1:29 pm, while fourth period is from 1:34 pm - 3:05 pm. The SMART lunch schedule is protected even in the event of altered schedules such as two-hour delays and assembly periods like pep rallies being held (Madison High School, 2017). The lunch programs also work within a traditional seven-period rotational schedule. The key is consistency; students have the lunch period at the same time each day (Goodman, 2007).

Modified block. In an effort to overcome difficulties presented by a traditional junior high schedule, where students raced from eight different 50 - minute classes each day, one middle school developed a modified block schedule. Within this schedule, they held classes that ranged from 90 to 270 - minute blocks of instruction. This inclusion of longer blocks of time liberated teachers to include cooperative learning, in-depth hands-on projects, and innovative

instructional methods. The staff and students reported educational tasks were much easier when they were only focusing on three subjects versus the normal eight. Also, the students were reported to have more positive attitudes in the extended blocks. The positive attitudes reached into areas of school climate, class engagement, and attitude toward schoolwork (Ullrich & Yeamen, 1999). While there is a multitude of options to modify block schedules, many exist to create better environments for learning and instruction for both teachers and students.

Block Scheduling and Subjects

Course scheduling is more than just creating a matrix of when each class is going to be offered and which teacher will be the instructor. The ultimate goal of scheduling is to make the best instructional use of the time available. Courses are subject to many different influences the state-mandated curriculum, teacher expertise, class dynamics and amount of time scheduled to meet with most of the factors influencing student performance (Cardinali, 2008). The frequency and amount of time a course meets are among the main elements teachers must consider when making lesson plans and curriculum decisions. Overall, the difference in a block and a traditional schedule that one would notice as a significant variant are the instructional practices and a less fragmented day (Hanover Research, 2014). Dorn (2015) observed of scheduling differences that "some subjects are good to have only for 50 minutes, while others, need the entire 90 minutes to enhance learning the material" (p. 7). When looking at a traditional lunch schedule, it allows for less fragmented classes and the ability to schedule classes to meet for longer periods. Certain courses are ultimately more impacted by the daily bell schedule; science courses being the most impacted because of labs and the ability to complete them in the allocated time (Hughes, 2004). Math and English courses are also impacted by the bell schedule, especially if the course embeds the lunch period.

English. For many students reading can be a daunting task which can be compounded by a fragmented instructional period; Gill (2011) found that for English courses "concentrated periods of time appear to hold promise" (p. 296). The fragmented time students experience could be because of a traditional schedule or a class period where lunch occurs. O'Brien (2013) found that block schedules can be used to embed extra time to struggling students by allowing them to double up in math or English. This sentiment is echoed in Benton-Kupper's (1999) study where English teachers believed if they had additional time to utilize instructional strategies that the students will better understand. Griffin et al. (2009) studied first-year special education literature teachers, and what the teachers reported in the study was "The availability of resources, daily patterns of instruction, teacher - student ratios, and availability of time are factors that characterize the classroom" (p. 59). Bair and Bair (2010) concluded a study with the thought that "It has also been hypothesized that the longer times of block scheduling allows more time for in-depth exploration of fewer concepts and thus facilitates conceptual learning in science" (p. 91).

Math. Math is commonly referred to as the universal language; however, not all students speak the proverbial universal language (Barrow, 2014). Biesinger, Crippen, and Muis (2008) studied the impacts of a block schedule on math courses and found of teacher instruction that "although most of the observed instructional activities were traditional in nature, (lecture, note-taking, individual practice, review of homework problems, etc.) almost all the instructors delivered at least three distinct instructional activities over the 85min period" (p. 204). The three distinct instructional activities would be impossible with a shorter amount of time and abrupt if broken apart by a lunch period. Of students, Bessinger, Crippen, and Muis (2008) reported "students learning in the block schedule also held more stable attitudes toward mathematics whereas

students learning in a traditional schedule experienced significant decreases in attitude" (p. 205). Gill (2011) concluded his study summarizing "the structure of the school day, an important aspect of instructional delivery, and reform practices are intertwined" (p. 298). Math is a subject where extended periods of student - centered instructed is beneficial to the students.

Alternative Lunch Schedule Structure

The SMART lunch, PowerHour and Lunch Hour schedules, or alternative lunch schedule, are broken into equal blocks of time, comprised of typically two or three blocks, known as A and B, or A, B, and C allowing for students to make decisions about when to eat lunch, review teachers' office hours, attend tutoring sessions, and participate in enrichment offerings. By allowing students to make decisions, they develop time management and decision-making skills. Additionally, students who are absent can work with teachers to complete missing assignments to prevent them from falling behind. The alternative lunch schedule also provides students additional opportunities to access the media center and computer labs outside. Ideally, a student would eat lunch during one block of the lunch period and move to an activity during the alternate half. This allows for 30 minutes, or more, if the student does not have any obligations during that specific lunch day, to eat lunch. Activities, tutoring, meetings, and enrichment activities have a specific schedule as to when each teacher is hosting the specific event (Ellspermann, 2014; Goodman, 2007; Gould, 2014; Nye, 2001).

When examining scheduling, even a modified block schedule, can create a more positive learning environment. In a traditional schedule, teachers and students are rushing to meet the class objectives and are often running out of time just before the class ends (Jenkins et al., 2002; Rose, & Whitty, 2010; Sommerfeld, 1996). A modified block schedule study by Ullrich and Yeaman (1999) found that student attitudes and achievement are more positive in a modified

block schedule. The reported dimension of improved attitude included: school climate, engagement during class, attitude toward schoolwork, and rating of teacher effectiveness. Extending the time that students routinely engaged with their teachers in a meaningful way improved students' perception (Ullrich & Yeamen, 1999). Ullrich and Yeamen (1999) also added that with the modified schedule students had fewer absences, were more positive, had a sense of belonging, were able to have more community involvement, and the curriculum offerings were expanded.

Implementation of Alternative Lunch Schedule

Many schools that choose to adopt an alternative lunch schedule do so to meet the needs of their students and teachers. Rose and Whitty (2010) highlight the process of lunch allowing for the elimination of stress because it opens up time in the day for students to not be uniform throughout the day (p. 264). The schools that have implemented the alternative lunch schedule have all shared that the first step was to garner faculty, staff and student buy-in. The process of changing the culture and implementing a school-wide lunch is a large undertaking and must be supported and needed by the school. Also, carving out time to dedicate and safeguard for the hour-long lunch is vital (Ellspermann, 2014; Goodman, 2007; Nye, 2001).

Open campus. Upon implementation, schools need to decide upon a policy in regard to having an open campus where students can leave for lunch and return to campus for afternoon classes. When determining if an open campus is an option, the administration should consider factors such as school location, street traffic, and transportation to dining options. Another implementation design that must be worked through is teacher unions and work assignments for the oversight of enrichment, clubs, and activities. The rationale for an open campus includes the idea that an open campus can motivate students to put forth more effort into their academic

performance (Lichtman-Sadot, 2016). Rud (2013) presented the rationale that an open campus allows students the opportunity to exercise their choice-making skills as consumers in a privatized dining setting, enabling students to refine decision-making skills.

Structure. When implementing an hour-long lunch, a consideration to be given is how the program is designed and structured. Common sense allows for the understanding of when a school has a climate where students and faculty members feel safe and secure the climate is more conducive to both teaching and learning (Shortt & Thayer, 2000). When beginning an endeavor, such as shifting to an alternative lunch schedule, a school needs to make sure that the students feel safe and secure and thus a higher level of achievement can be attained. Implementation and the expectations of an hour-long lunch need to be clear to both faculty and students, so they can operate within the alternative lunch program. School administration must provide leadership in the areas of scheduling activities, duties, professional learning communities (PLCs), and enrichment activities. The scheduling of activities, tutoring, opening spaces, supervisions, and intramurals are vital to the program's success and implementation. Once implemented, it is necessary to compare the data before the program to data after implementation.

School Climate

One aspect of a school's climate is teachers developing relationships and personal connections with their students. Researchers found that teachers, who had more than 125 students in a day, experienced difficulty creating a personal connection with their students and personalized individual attention to each student's needs was challenging (Canady & Rettig, 1995; Geiken et al., 1999; Mistretta & Polanksy, 1997). Canady and Rettig (1995) also reported that students experienced a more difficult time developing close relationships with their teachers as they had as many as six to eight in a day. Canady and Rettig (1995) articulated trepidation

about the potential for success for adults in the frantic and isolated schedules that a traditional schedule can create. Short and Thayer (1997) reiterated this trepidation with the foundations of traditional schedules being rooted in the compartmentalization and specialization that is observed in a factory setting. The compartmentalization and dishevelment fundamentally fail to meet the needs of twenty-first-century student learners (Hess, Wronkovich, & Robinson, 1999; Shortt & Thayer, 1995; Shortt & Thayer, 2000). The shortcomings and failures of a traditional schedule to positively influence school culture created additional layers of needs to shift the structure of the day at the high school level.

As a result of the cultural need to improve scheduling, switching to a single lunch period can result in an overall more positive climate of the school (Goodman, 2007). The more positive climate can be observed through the suspension rate, and in the first year of operation, the James Hubert Blake High School had a suspension rate of 19.5 % compared to a more recent suspension rate recorded at 5.4 % (Goodman, 2007). Through the use of an alternative lunch schedule, lunchtime can become an instructional component for students, and students develop more positive relationships with teachers. Other positive benefits are a reduction of a class-cutting opportunity, improvement in attendance, student ownership in learning by gaining clarity on lessons taught, and a diversity of students attended voluntary review sessions before tests (Ellspermann, 2014; Goodman, 2007; Gould, 2014; Nye, 2001).

School climate is directly tied to the morale of teachers. By raising teacher morale, leaders can make teaching more enjoyable for both the teachers and students of the school (Thapa et al., 2013). When educational endeavors are more enjoyable, it can result in an environment more conducive to learning (Thapa et al., 2013). Thapa et al. (2013) reasoned “the patterns of norms, goals, values, and interactions that shape relationships in schools provide an

essential area of school climate. One of the most important aspects of relationships in schools is how connected people feel to one another" (p. 363). One of the ways that leaders can help to raise teacher morale is to make a way for professional and academic advancement and development. These academic advancements can occur during an alternate lunch schedule as teachers have the flexibility to interact with students and administrators (Nicholas-Omoregbe, 2009). Shortt and Thayer (1999) also highlight that block scheduling enhances school climate through better student behavior, greater emphasis on staff development, increased attention to instructional programming, and differentiated instruction based on students' needs at a higher level of occurrence.

To assist in the positive climate and continuation of learning, certain elements become ingrained in the alternative lunch schedule. A vital component of climate change and student engagement is access to the gym and weight room for students to release extra energy (Sacheck et al., 2015). Another positive climate element is tutoring programs; moreover, through the development of a single lunch hour, James Hubert Blake High School created a peer tutoring program with the members of the National Honor Society and found that the alternative lunch schedule provided a time for students to seek out additional help on their academic studies. The single lunch hour also allowed coaches and guidance counselors to meet with students without pulling them away from their classes. Students could take care of financial obligations and a myriad of day to day tasks to be taken care of during lunch (Goodman, 2007).

The rationale to change from a traditional lunch schedule to an hour-long, alternative lunch schedule can be spurred by the desire to enable students a greater depth of learning with projects. Teachers identified when assigning projects prior to the single lunch that students had no time available to them to access the computer labs or media center to complete projects.

Students identified that many teachers overlapped projects creating an additional layer of difficulties for students. The single lunch was also in response to students having difficulties attending events after school due to busy schedules, low involvement numbers in after-school activities and sports, and transportation issues from after school events when offered. Also, the alternative lunch schedule period provides students with a rigorous schedule a time to relax and socialize with peers (Ellspermann, 2014; Nye, 2001). Once implemented, the alternative lunch schedule becomes a purposeful block of time and takes on an atmosphere of relaxation and recuperation. This new atmosphere can allow faculty and students time to slow down, recuperate and reorganize.

The use of a single lunch period allowed for improved communication between teachers especially about due dates of major assignments. With additional time built into the day, teachers of different disciplines can plan cross-curricular events. For instance, a teacher of world history and world literature could plan a collective unit on the Holocaust. Teachers also developed cross-curricular relationships when discussing major assignment due dates (Ellspermann, 2014; Nye, 2001).

Non-Academic Lessons

With the increased time to consume lunch, teachers can engage students in non-academic lessons such as gardening, table manners, or recycling. Guskey (2002) noted,

> learning to be proficient at something new and finding meaning in a new way of doing things requires both time and effort. Any change that holds great promise for increasing teachers' competence and enhancing student learning is likely to require extra work, especially at first. (p. 386)

Teaching students the importance of planning, accountability and budgeting their time is a necessary skill and takes time to hone. Lewis et al. (2005) concluded "specifically, block scheduling often results in better non-academic outcomes (e.g., positive class climate and enhanced instructional opportunities) than does traditional scheduling" (p.85). The number of nonacademic lessons that block scheduling can enfold with alternative lunch scheduling are vast and only limited to constraints schools and administrators place upon the two.

Additionally, national and international reports find that high school students do not have the necessary interpersonal skills (Bancino, & Zevalkink, 2007; Ciccolo, 2008; Coll, & Zegwaard, 2006; Harris, & Rogers, 2008; Lewis, 2007). Harris and Rogers (2008) also reported the need for students to possess soft skills to ensure success at the postsecondary level. Soft skills have been categorized as personal characteristics to include work ethic, possessing a positive attitude, social grace, facility with language, friendliness, integrity and the willingness to learn. Fallis (2003) wrote that traditionally school's time has been focused on the community interests and not how the students could be best served; to improve student achievement, the time usage in school should be budgeted to address the needs of its students. Alternative lunch scheduling allows for the acquisition of interpersonal skills and much more soft job skill sets to be honed by allowing them opportunities outside of a traditional classroom to interact with their peers, teachers, and administrators which is a skill set that students need (Ellspermann, 2014).

Nutrition

When more time is dedicated to consuming lunch, students learn that lunch is of nutritional importance. Consequently, as many as 58 % of Americans view lunch as a meal that can be skipped (Fairfield County Business Journal, 2005) and roughly 62 % of professionals report that it is standard practice to consume their meal at their desks while multitasking

(Wollan, 2016). The seemingly simple act of skipping lunch can lead to obesity, high blood pressure, and heart disease (Dorman et al., 2013; Fairfield County Business Journal, 2005). Additionally, the rise in childhood obesity is interrelated by multiple factors such as a decrease in students' physical activity coupled with an increase in sedentary activity (Rutkow et al., 2016). The Let's Move initiative was a response to the rising obesity rates as Wojcicki and Heyman (2010) remarked of Let's Move "This innovative multifactorial approach has potential for altering the course of the childhood obesity crisis — changing our country's approach to eating, nutrition, and physical activity by simultaneously targeting individuals, neighborhoods, and larger communities" (p. 1457). With decreased time to eat, students are forced to eat rapidly, and when one eats quickly, they tend to consume additional calories, receive less pleasure from the meal and feel hunger onset more quickly (Hellmich, 2011). The number of obese individuals in the United States has been on the rise for the past 30 years and is not confined to a single age group; the rise in obesity rates has been observed in all age groups (Skinner, Perrin, & Skelton, 2016). The lesson of leisurely eating is vital for students to acquire with the rising obesity rate of Americans because currently around one-third of adolescents and children are obese or overweight. This number translates into roughly 25 million children within the United States (Hellmich, 2011). When students are faced with less than 20 minutes to eat, students do not select fruits to eat, and consumption of the required entrée, milk and vegetable is notably less (Cohen et al., 2016).

Students can learn lifelong lessons about nutrition and healthy lifestyle choices through the use of alternative lunch schedules. This lesson about a healthy lifestyle is one that society needs to master because in data collected from 2011 to 2012 there was a notable increase in severe obesity among children and adolescents (Skinner et al., 2016). Johnson et al. (2019) notes

that establishing healthy eating habits throughout childhood help to establish a habit of life long healthy eating habits. Obesity in children is connected to education because the understanding of our obesity rates, and contributing factors are of importance to public health and policymakers (Skinner et al., 2016). Skinner et al. (2016) report that the current 4.5 million children in the United States and adolescents with severe obesity will need intensive efforts for their long-term improvement in obesity status. Globally, there are approximately 170 million children classified as overweight and obese (Rutkow et al., 2016). For long term care of comorbid conditions, there is a dire need for targeted interventions to staunch the ride in morbid obesity among children (Skinner et al., 2016). Rutkow, Jones-Smith, Walters, O'Hara, and Bleich (2016) reported that because of its global presence obesity needs to be addressed. Opportunities to prevent or mitigate childhood obesity have a societal obligation to be recognized and opportunities to prevent need to be pursued through legislation and policymakers. Rutkow et al. (2016) concluded that public policy is a vital part of any all-encompassing approach to addressing childhood obesity. Public policy is not limited to school nutrition, time spent consuming food, and physical exercise requirements and opportunities.

Rud (2013) connected the ideas of co-curricular lessons in nutrition—students' understanding of dining, nutrition, and food preparation--and socialization —students' understanding the social aspects of eating together— stating both are as important as the other. Furthermore, lessons centered on overall health, body, and choice-making can be incorporated into the midday meal (Rud, 2013). Smilie (2013) also added that the learning that takes place in the lunchroom is an extension of how our classrooms operate and how the marketplace operates. Meaning, the values that a school displays in the school cafeteria are interconnected with multiple facets of students' lives beyond the tray from which they consume their midday meal.

The use of cafeteria time as an opportunity to work with nutrition lessons is not a new idea; it is one that has roots in the early decades of the 20th century (Smilie, 2013). Anderson, Butcher and Schanzenbach (2019) noted that while there have been many different studies on the impact of different variables such as: consumption of school lunch, availability of junk food, variations in state physical education requirements, rate of attendance in pre-schools, ADHD medications, asthma onset, role of school environments and policies that there is no one definitive answer on how to address or solve the obesity epidemic in the United States.

Longer Lunch Benefits

Student academic expectations. With the ever-increasing demands for proficient test scores (Au, 2013; Leonard, 2001; Pucket et al., 2013; Zepeda & Mayers, 2006), it can be difficult for a student to receive the academic aid that they need from teachers. So much so, that prior to the implementation of an alternative lunch schedule, the lack of availability to receive tutoring and to make up assignments and test missing resulted in a 37 % failure rate of courses which when calculated after the first year was 3.8 % (Ellspermann, 2014). The continual call to improve student learning as demonstrated by measurable student outcomes, such as end of course testing, while not receiving any additional monetary funding from administrative authorities causes schools to attempt to achieve the most efficient schedule to optimize instructional opportunities and curtailing wasted class time (Leonard, 2001; Zepeda & Mayers, 2006). Dexter, Tai, and Sadler (2006) examined the instructional strategies and techniques of teachers in block versus traditional scheduling and college science preparation. The results of Dexter et al. (2006) study demonstrated that there were no differences in teachers' instructional practices between the two scheduling formats. Student achievement results revealed only a three-point difference between the two scheduling plans which amounts to only about a third of a

letter grade for traditional format over a block schedule (Dexter et al., 2006). Though their findings Dexter et al. (2006) provide current researchers to determine how events outside of instructional practices impact student achievement. The unexamined events can include lunch scheduling formats and various factors such as school climate, teacher morale, and student academic expectations.

Extra-curricular activities. The current trend in schools is a decline in student participation in extra-curricular activities and difficulties carving time out of the instructional time for students who desire to participate in extra-curricular activities. Schools can use the lunch period to assemble students *en masse* without causing a loss in instructional time. After the first year of the alternative lunch schedule, student participation was up to an estimated 60 % from 10 % in extra-curricular activities (Ellspermann, 2014). Additionally, school learning projects, where students learn lesson such as how to repurpose areas of the school to be turned into dining options, lessons which focus on manners, and social luncheon etiquette, gardening where each grade tends to at least once every three weeks can be encompassed into the time set aside for lunch (Stone, 2009). The school learning projects research demonstrates that as early as the elementary level alternate lunch programming with non-academic skills engrained within the time can be beneficial to students in life skills and performance on academic tests.

Teacher engagement. Longer lunch periods allow teachers the required duty-free lunch while allowing time for teachers to provide the opportunity to sponsor clubs, and to create tutoring sessions. Longer lunch periods can also eliminate the difficulties schools face to meet seat time, and raise test scores (Ellsperman, 2014). The opportunity to sponsor clubs and incorporate food consumption into the meetings promotes inclusive participation by allowing members to get to know each other better and solidify relationships. Teacher-led clubs can also

diversify the participants by creating a less intimidating atmosphere (Neely, Walton, & Stephens, 2016).

Clean campus. An additional positive factor stemming from the formation of a longer lunch is the campus can be kept cleaner because the students understand that if they do not clean up after themselves the alternative lunch schedule can be revoked (Ellsperman, 2014). Having a clean campus has been linked to school performance as Uline and Tschannen-Moran (2008) noted that the way a school is kept clean and maintained is tied to student achievement; the message of how a building is designed, managed, and maintained sends a message to its stakeholders and residents about the value of what is occurring on the campus. Ellspermann (2014) described the idea that alternative lunch scheduling can be tied to students maintaining a level of cleanness of their campus, even leaving it better than they first encountered it. By holding the student accountable, a clean campus can help a student's achievement.

Physical activity. A component to alternative lunch scheduling is allowing students to participate in various physical activity pursuits and increasing academic outcomes has recently been paired with physical activity, and for some educators, this seems to be a counterintuitive idea. However, there has been a considerable amount of evidence produced to exemplify the positive relationship between physical activity and school performance (Sacheck et al., 2015). Given the idea that some students need physical activity, for some students the penultimate goal of lunchtime was to make it onto the playground or physical endeavor, lunch was merely a detour where schools allowed physical activity during lunch. Miller et al. (2018) reported

> in a nationally representative sample of elementary, middle, and high schools, less than 4 % required daily PE for the entire school year; less than half (45 %) provided opportunities for students to participate in classroom PA breaks; only 55 % offered

> opportunities for students to participate in PA clubs or intramural sports programs; and the majority of schools had 10 % or less of their students walking or biking to and from school. (p. 36)

When time is allowed for physical pursuits, students can return to class ready to learn and not waste as much of their lunch selections. Also, teachers found there was less time spent calming students, regaining order, dealing with bullying that carried over from physical pursuits as teachers find that students rarely come back from the play and lunch period angry, and they were more ready and eager to learn (Sacheck et al., 2015; Stone, 2009). Smith (1979) observed that schools that allowed students to play prior to eating lunch were better settled and consumed more of their lunches; consequently, Sacheck et al. (2015) reported that students who attend schools with support for physical activity environments were 2.4 times more likely to achieve an advanced or proficient score on the math Massachusetts Comprehensive Assessment System. The combined research of Smith (1979) and Sacheck et al. (2015) contributed additional evidence that there is an association between school-based physical activity and neutral or improved, not diminished, academic achievement. Furthermore, students who are physically active have better school attendance practices, academic memory performance, and problem-solving skills (Sacheck et al., 2015).

Organized Activities

Participation in Organized Activities (OA) is linked to positive behavioral and developmental outcomes in children (Morris, 2015). Also, OA also leads to an increase in a student's academic endeavors and associated with a more positive outlook toward school. OA can be organized into six categories: school involvement, academics, communities, arts, intramural, and letter sports (including junior varsity and varsity teams together). With the

inclusion of intramural sports into longer lunch periods, the benefits of positivity in academic endeavors and school outlook could be incorporated into an alternative lunch schedule. Every two hours per day, or 10 hours per week, that a student, who has been identified as disadvantaged, participates in one of the OA activity categories resulted in a 1.1-point gain in achievement (Morris, 2015). The largest limitation would be that students would have a minimum of two and a half hours per week, or five hours maximum, depending on how the alternative lunch schedule actives time was used by the student or OA. However, some of the achievement gains can be captured within an alternative lunch schedule

An additional OA, which are considered non-academic, that have been incorporated into school days is yoga. Yoga has been taught in the classroom during the traditional instructional time and indicated that valuable lessons were carried over from non-instructional yoga activity into the classroom lessons and activities. The lessons that carried over can be identified as focus, perseverance, positive relationships (Finnan, 2015). To extend the carryover lessons potential, teachers can be receptive to students' triggers and remind students of the yoga lesson's main points and employ this reminder as a refocusing technique. Also, the practice of yoga builds a community within the classroom and translates into group lessons and teachers reported calmer more attentive students. During an alternative lunch schedule, enrichment activities like yoga are typically offered to the entire student body. This can assist students who want to try an activity, begin a healthy lifestyle, and hone their focus, perseverance, and relationships. The additional benefits of yoga could help students achieve at a higher level in their classes (Finnan, 2015).

McCreary and Hauseman (2001) helped to bolster the mindset that the structure, not limited to the bell schedule, of a student’s day impacted performance on achievement tests. By

attaching a school's daily schedule and achievements observed on tests created a new lens for administrators to view the daily schedule and its potential to maximize student achievement. As a result of the varying lenses through which administrators can view the daily schedule, research on this topic has been ongoing for several decades with a variety of block scheduling formats being recommended by an array of educators and researchers within the field (Canady & Rettig, 1995; Ellspermann, 2014; Rickard & Banville, 2005).

Every Student Succeeds Act

The 2002 No Child Left Behind (NCLB) legislation signed into law by President George W. Bush replaced the 1965 Elementary and Secondary Education Act (ESSA). Under new presidential administration, NCLB was scheduled for revision in 2007, and, over time, NCLB's rigid requirements became progressively more unworkable for schools and educators. President Barack Obama signed the 2015 Every Student Succeeds Act (ESSA) which is a reauthorization of the 1965 Elementary and Secondary Education Act (ESEA). Under the reauthorization, ESSA while still holding states accountable for student achievement, gives states more autonomy over accountability. Individual states get to determine the educational plans within the guidelines outlined by the federal government for their constituent schools. Each state's plan must induce descriptions for how they will assess academic standards, annual testing, school accountability, goals for academic achievement, plans for supporting and improving struggling school, and state and local school report cards. ESSA governs that schools must have academic standards in reading, math, and science that prepare students to be college and career ready. In alignment with these academic standards, ESSA holds states to testing high school students once in high school in reading and math (Every Student Succeeds Act, 2017).

North Carolina End of Course Exams

North Carolina End of Course (EOC) exams have long been used as a measurement of a school's accountability. The use of high stakes testing in specific subjects was as a measure of a school's overall health was brought to attention by the tests mandated in the No Child Left Behind Act and the testing mandates have continued through recent legislation changes of the transition to ESSA (Au, 2011). The North Carolina Department of Public Instruction left the EOC exams for English II, Math I and Biology in place. The Accountability department of North Carolina Department of Public Education makes available to the public data sets dating back to the 1996 – 1997 school year and which specific courses are deemed an EOC varies based on legislation. ESSA also requires states to issue each school an accountability report and report card with details about student academic achievement, graduation rates, and academic progress made available to the public. North Carolina has selected to do this through the issuance of a North Carolina School Performance Grade. The North Carolina School Performance Grade is a letter grade awarded on a formula comprised of student achievement via number of students attaining proficiency in English II, Biology, Math I, Math III, ACT, WorkKeys, Graduation rate and math course rigor. The second component of the mathematical formula is the student growth in English II, Math I, and Math III. The selection of which course tests are used in the North Carolina School Performance Grade is submitted and approved by the U. S. Department of Education (Every Student Succeeds Act, 2017; Lee, 2020; North Carolina Department of Public Instruction, 2017). Since legislation places emphasis on certain subjects, EOCs historically carry more weight in the public eye. This also lends well to academic research; one instance of previous EOC exam results being used in a study about scheduling is a study by Lawrence and McPherson (2000) which revealed higher mean scores for North Carolina End-of-Course exams

for Algebra I, U.S. History, English I, and Biology for traditional schedules, as compared to block schedules.

Summary

This chapter consists of information regarding the traditional, and block scheduling frameworks as well as lesser utilized schedule modification techniques of alternative lunch scheduling and balanced school day schedules. It also examines the establishment of the modern lunch period and how lunch has impacted scheduling formats. Each scheduling format is discussed in detail, outlining the overall structure of each block schedule format. In addition, different types of lunch schedules are discussed in detail along with how different activities can be incorporated, implementation, and potential positive impacts upon schools that implement an alternative lunch schedule. With limited funding and increasing demands in high school testing achievement, many school districts are becoming creative in how they offer more with less. Many different areas of education have been thoroughly explored in studies; however, few areas have attracted more attention than schools 'scheduling formats. Variations of block scheduling have yielded different results. The purpose of the study is to explore to impact that alternative lunch scheduling has on English II and Math I performance scores.

CHAPTER THREE: METHODS

Overview

Using a causal-comparative design, collected data was analyzed to examine the impact, if any, that the type of lunch schedule had on a schools North Carolina school EOC score for English II and Math I. Data was retrieved from the department of North Carolina Public Instructions (NCDPI) website. Chapter Three includes a discussion of the study's overall design, research questions to be used to guide the study, hypotheses, participants and setting, procedures, and data analysis.

Design

This quantitative research followed a non-experimental, causal-comparative design (Gall, Gall, & Borg, 2007) to compare the North Carolina school EOC scores (English II and Math I) based on the type of school lunch schedule (alternative lunch schedule or traditional lunch schedule). All public traditional high schools in North Carolina were included in the study, and the schools were grouped based on the type of lunch schedule they use. The casual comparative design is the most appropriate design to explore cause and effect relationships since the purpose of a causal-comparative design is to determine possible causes and effects of a specific characteristic by comparison of groups (Gall et al., 2007; Joyner, Rouse, & Glatthorn, 2013). Additionally, Gall et al. (2007) highlighted the nature of casual-comparative research and stated that causal-comparative research is categorized as a non-experimental investigation where the researcher seeks to identify relationships of a cause-and-effect nature. The cause-and-effect relationship can be examined by forming groups where the independent variable is either present or absent. Once the groups are formed and examined the researcher can determine if the groups differ as a result of the dependent variable (p. 306). A further justification of this causal-

comparative design is that the researcher did not manipulate the independent variable (Gall et al., 2007). Additionally, the data set is archival and collected ex-post facto, further justifying the design choice (Warner, 2013). Since all traditional high schools in North Carolina were included, the independent variable is the type of lunch schedule. Schools who schedule the entire student body for lunch for a block of time 45 minutes or longer were classified as alternative lunch scheduling (Chen, 2017, Ellspermann, 2014; Goodman, 2007; Nye, 2001), and schools who scheduled different lunch periods for sections of the study body for any period of time were classified as traditional lunch scheduling (Chen, 2017, Ellspermann, 2014; Goodman, 2007; Nye, 2001). The dependent variable is the school's EOC grade for English II and Math I.

End of Course exams and their scores have been widely used as instruments in studying the field of education. Hise (2016) used EOCs to study the difference between tests that included constructed responses and tests that did not. Heissel (2014) used Math I End of Course tests as the instrument to determine if the delivery method, online or in person, had an impact on student outcomes. Likewise, Philipp (2014) used tests from all disciplines (history, math, English, science) to determine if the delivery method impacted student outcomes.

Research Questions

The research questions for this study are:

RQ1: Is there a difference between the 2018 - 2019 North Carolina school English II EOC scores for students who had an alternative lunch schedule and those who had a traditional lunch schedule?

RQ2: Is there a difference between the 2018 - 2019 North Carolina school Math I EOC scores of students who had an alternative lunch schedule and those who had a traditional lunch schedule?

Hypotheses

$H_0$1: There is no statistically significant difference between the 2018 - 2019 North Carolina school English II EOC scores of students who had an alternative lunch schedule and those who had a traditional lunch schedule.

$H_0$2: There is no statistically significant difference between the 2018 - 2019 North Carolina school Math I EOC scores of students who had an alternative lunch schedule and those who had a traditional lunch schedule.

Participants and Setting

The high schools located in North Carolina were examined for this study. Archival data containing high school North Carolina school EOC scores was gathered from the North Carolina Department of Public Instruction 2018 - 2019 accountability reports (North Carolina Department of Public Instruction, 2017). The title of the public domain file containing all the information is *2018 - 19 School Performance Grades*. Initially, all high schools from a southern state were identified to be used in the sample. However, due to the need for the schools to fit into the categories of alternative lunch schedule or traditional lunch schedule, the identification of high

schools as an alternative lunch schedule or a traditional lunch will be obtained by school website, survey, or an email to the school administration.

A convenience sample was obtained from the North Carolina Department of Public Instruction accountability website of North Carolina school EOC scores, was used for the study. Convenience sampling was chosen as the assignment of school EOC performance grade of 0 - 100 was out of the researcher's control and the participants were readily available via public domain access to archival data (Warner, 2013). North Carolina consists of 413 traditional high schools. Out of these high schools, 136 high schools will be used in the sample 68 in the Alternative lunch group and 68 randomly chosen schools with a Traditional lunch schedule. The schools using a traditional lunch schedule were assigned a number and then the researcher used an online random number generator to select 68 schools from the group. There were 60 schools were omitted from the research because the type of lunch the school used was not determinable due to a lack of response to an email, the whole school schedule being undeterminable, school now closed, or the school ran a blended schedule of alternative and traditional lunch schedule. There are also missing data for some schools due to the cycle of students in admittance or year of operation for the school. Out of the total of 316 schools, 63 schools were in the North Central region, 27 in the Northeast region, 25 in the Northwest region, 57 in the Piedmont-Triad region, 31 in the Sandhills region, 32 in the Southeast region, 54 in the Southwest region, and 27 in the Western region. Out of the total of 316 schools, 87 schools exceeded growth, 119 schools met growth, 107 did not meet growth. Student growth calculations compare the actual performance of the school's students to their expected performance based on their prior testing performance (North Carolina Department of Public Instruction, 2017). Out of the total of 316 schools, 25 schools were identified as Title I, and 25 Title I schools were included in the study. The 136

high schools included in the study exceeded the required minimum of 98 for a medium effect size with a statistical power of .7 at the .05 alpha level (Gall et al., 2007).

Groups

The groups were solidified once the lunch schedule type was determined; the two groups are alternative lunch schedule or traditional lunch schedule. All high schools in North Carolina will be included in the study as such the lunch type and group formation was determined by visiting the school website to obtain the overall school schedule or emailing the school administration if the school does not publish the overall school schedule. The participants included 68 schools who used an alternative lunch schedule and 248 schools that used a traditional lunch schedule. Schools who schedule the entire student body for lunch for a block of time 45 minutes or longer will be classified as alternative lunch scheduling (Chen, 2017, Ellspermann, 2014; Goodman, 2007; Nye, 2001), and schools who scheduled different lunch periods for sections of the study body for 30 minutes or less were classified as traditional lunch scheduling (Chen, 2017, Ellspermann, 2014; Goodman, 2007; Nye, 2001).

Alternative lunch schedule. There were 68 schools in the alternative lunch group. 22 schools were in the North Central region, 10 in the Northeast region, 09 in the Northwest region, 03 in the Piedmont-Triad region, 04 in the Sandhills region, 07 in the Southeast region, 09 in the Southwest region, and 04 in the Western region. 14 schools exceeded growth, 22 schools met growth, 30 did not meet growth. 05 schools were identified as Title I. Student demographics of the school who use alternative lunch scheduling included 70,649 total students, 34,343 were female and 36,306 were male. 18,777 students were enrolled in the 9th grade, 18,941 students were enrolled in the 10th grade, 17,773 students were enrolled in the 11th grade, 17,326 students were enrolled in the 12th grade. 2,915 students identified their race as two or more, 9,550 as

Hispanic, 261 as American Indian, 3,427 as Asian, 75 as Pacific Islander, 15,001 as Black, and 39,420 as white.

Traditional lunch schedule. There were 68 randomly selected schools in the traditional lunch group. The 68 schools were selected by an online random number generator with no duplicate numbers. The group consists of 15 schools in the North Central region, 1 in the Northeast region, 6 in the Northwest region, 13 in the Piedmont-Triad region, 6 in the Sandhills region, 11 in the Southeast region, 11 in the Southwest region, and 5 in the Western region. 21 schools exceeded growth, 28 schools met growth, 19 did not meet growth. 1 school was identified as Title I. Student demographics of the school who use traditional lunch scheduling included 79,149 total students, 38,133 were female and 41,016 were male. 21,439 students were enrolled in the 9th grade, 20,900 students were enrolled in the 10th grade, 19,436 students were enrolled in the 11th grade, 18,781 students were enrolled in the 12th grade. 3,191 students identified their race as two or more, 13,329 as Hispanic, 669 as American Indian, 2,261 as Asian, 86 as Pacific Islander, 18,012 as Black, and 41,601 as white.

Instrumentation

North Carolina End of Course exams

The instrument that was used to explore the impact that alternative lunch scheduling has on student achievement will be the North Carolina End of Course exam (NCEOC). All North Carolina End of Course (NCEOC) exams are developed and graded by the North Carolina Department of Public Instruction. The purpose of the NCEOC exams is to measure student learning. The courses that require an NCEOC exam are Math I, English II, and Biology. All three exams are developed in the same manner; the test development process is a multistep process conducted by the state to create validity. Each item is created by North Carolina item

writers, teachers, and curriculum specialists and content specialists. The item is then evaluated for accuracy of content and appropriate vocabulary, overall reliability, guidelines for item writing and sensitivity and bias concerns. The third step in the production of a test item is production edits and copyright checks. The fourth step in the seventeen-step process is content review by teachers with then is followed by a reconciliation of teacher content review. The next step is production edits followed by a review performed by North Carolina Department of Instruction curriculum and instruction review in conjunction with exceptional children, English as a Second Language, and Visually Impaired review, as well as a literacy review. The next step is to reconcile all the different reviews. The ninth step is production edits where items needing revisions outside the technical scope such as artwork, graphs and English language arts selections are revised. The step following production edits is where each item is reviewed for overall item quality by an North Carolina Department of Public Instruction - Test Measurement Specialist. The next step is to reconcile the Test Measurement Specialist review, grammar review, and security review followed by another round of production edits, additional grammar reviews, and security checks. The final approval is then issued, and the final two steps of the item development process are the last round of production edits and then final item approval (North Carolina Department of Public Instruction, 2017).

English II EOC. The North Carolina English II EOC exam has six available forms with Forms A, B, C, M and O having a Cronbach's Alpha coefficient reliability scores of 0.89 and Form N has Cronbach's Alpha coefficient reliability score of 0.90. The forms can all be administered in paper and pencil version or in an online delivery format. Both delivery methods have the same reliability results (North Carolina Department of Public Instruction, 2014).

The English II NCEOC test contains 68 total questions with 15 being field test items; the test has 4 constructed responses with 1 being a field test question leaving 56 multiple choice questions of which 14 are field test items. English II exam is scored by a level system with scores from 2 to 5. The lowest level 2 is a scale score of 141 which means that the student correctly answered between 21 to 23 out of 56 questions. The highest score a student can receive is a level 5 with the lowest level 5 having a scale score of 165 or between 47 to 48 of the 56 questions correct. The state mean for the English II score is a 151.1 scale score with a standard deviation of 10.4. The test is slated for 180 minutes with a student allowed to take a maximum of 240 minutes for the 60 questions (North Carolina Department of Public Instruction, 2014).

Math I EOC. The North Carolina Math I EOC exam has four available forms A, B, M, and N. Forms A and B have a Cronbach's Alpha coefficient reliability score of 0.91 and forms M and N have a Cronbach's Alpha coefficient reliability score of 0.90. Each of the forms can be administered in both paper and pencil or online delivery formats with both delivery methods holding the reliability results steady (North Carolina Department of Public Instruction, 2014).

The estimated administration time of the NC Math 1 EOC is 180 minutes with the maximum amount of allotted time being 240 minutes. The NC Math 1 EOC includes multiple-choice items, items that require numeric entry, and technology-enhanced items and consists of two parts: calculator inactive and calculator active. The NC Math 1 assessment contains 60 total test items and is aligned to the standard course of study for Mathematics. These test items require students to not only recall information but also to apply concepts and skills and make decisions. The conceptual categories that are assessed include Number and Quantity and Algebra, Geometry, Functions, Statistics, and Probability (North Carolina Department of Public Instruction, 2014).

Test Scoring. NCDPI uses the WinScan software program for scoring all EOC responses. WinScan is a specialized scoring and reporting software program created and managed by the NCDPI accountability division. At the beginning of each testing window, a new release of WinScan is updated and distributed to all LEAs and charter schools. Each version is programmed using the score keys and raw-to-scale score conversion tables for all approved operational test forms. WinScan is then used at each LEA to score and report test results as soon as student response materials are sent to the LEA office from schools. Each district testing coordinator is responsible for retrieving the WinScan reports for all North Carolina final exams (NCFE) and EOCs as computer-based forms are numerically scored electronically via a centrally hosted server at NCDPI using WinScan software. Once WinScan assigns scores for each item, data are then merged with student-level records then electronically made available to test coordinators. Student's response choices for the gridded response on Math I items are re-evaluated again before the scores are certified, any recorded response format not previously accounted for in the WinScan scoring key list for these items are verified and updated to ensure all valid response choices are properly scored. Once the data are available, district testing coordinators can generate school rosters, class rosters, and individual reports. Initial district school-level reporting occurs at the LEA level (North Carolina Department of Public Instruction, 2014).

Procedures

After gaining Institutional Review Board (IRB) approval from Liberty University (see Appendix A for IRB approval) the researcher downloaded the Microsoft Excel file of North Carolina school performance scores from the North Carolina Department of Public Instruction accountability website (North Carolina Department of Public Instruction, 2017). To get to this

file the researcher visited the North Carolina Department of Public Instruction's website. Under the heading that states departments there is a drop-down menu, the researcher selected Accountability as this is where state testing information is housed. Once on the accountability department site, on the left-hand side, the research selected Analysis and Reporting. The data set will be under the school year for 2018 - 2019 entitled 2018 - 19 School Performance Grades. This Excel file is public domain and can be accessed by the general public for each year of state testing. The researcher selected and downloaded for this study will be for the 2018 - 2019 school year.

After filtering the data downloaded from the state website for grades 9 - 12 high schools, the researcher eliminated any unnecessary information. Unnecessary information included information about lower grade levels performance which encompasses: grades 3 - 8 math denominator, grades 3 - 8 math percent college/career ready, grades 3 - 8 math percent grade-level proficient, grades 3 - 8 reading denominator, grades 3 - 8 reading percent college/career ready, grades 3 - 8 reading percent grade-level proficient, grades 5 and 8 science denominator, grades 5 and 8 percent college/career ready, grades 5 & 8 grade-level proficient.

The following information is included in the downloaded dataset and retained in the dataset for informative purposes: State board district, Title I school, school performance grade, EVAAS Growth Status, EVAAS Growth Index, Number of Participation Targets, Percent Participation Targets Met, Graduation Project, Summer Program, ACT Denominator, ACT Percent, ACT WorkKeys Denominator, ACT WorkKeys Percent, Passing NC Math 3 Denominator, Passing NC Math 3 Percent, 4-Year Cohort Graduation Rate Denominator, 4-Year Cohort Graduation Rate Percent, 5-Year Cohort Graduation Rate Denominator, 5-Year Cohort Graduation Rate Percent, Performance Composite Denominator, Performance Composite

Percent College/Career Ready, Performance Composite Percent Grade Level Proficient, NC Math 1 Denominator, NC Math 1 Percent College/Career Ready, NC Math 1 Percent Grade Level Proficient, Biology Denominator, Biology Percent College/Career Ready, Biology Percent Grade Level Proficient, English II Denominator, English II Percent College/Career Ready, English II Percent Grade Level Proficient.

After school performance grade was recorded for each school, the researcher visiedt each school's website to determine the type of lunch scheduling the school employed. To obtain this information, the researcher went to the school's website and looked for the schools' daily schedule. This information is generally located on the main page or under a student section. The lunch schedule type was noted in an Excel sheet, coded, and then uploaded into SPSS for statistical processing and analysis.

If the type of lunch scheduling was not determinable on the schools 'website, the researcher contacted the school administration listed on the school website directly via e-mail and asked what type of schedule they used. The researcher used a Google form for ease of use and data capture when emailing the school administration. If the school administration does not respond within 05 days, the researcher reached out again via e-mail (see Appendix B for email and Google form to obtain lunch schedule information). A third and final attempt to contact the school administration was made 05 days after the second email. After all email responses have been recorded and coded for type of lunch and corresponding school EOC scores, the information was put into an Excel file dataset. The Excel dataset was then be uploaded into SPSS where it was organized and summarized for the data analysis.

Data Analysis

Two independent *t* tests were utilized to test the two null hypotheses at the 95 % confidence level. The two research questions seek to identify if there is a statistical significance in test scores between schools that use alternative lunch scheduling and schools that do not across three subjects. The data was first screened for inconsistencies and outliers, and then descriptive statistics were recorded. Data screening was conducted to check for missing data, errors, inconsistencies, and outliers. Box and whisker plots for each data set were run to identify potential extreme outliers. In addition, the data must meet two assumptions in order to conduct a *t* test. The researcher checked for normality using the Shapiro-Wilk test. The Shapiro-Wilk test examines the normal distribution of data. If the Shapiro-Wilk test is greater than .05, the data set is considered normal or robust. Additionally, the researcher conducted a Levene's test of equality of variance to determine if distributions consisted of the same variances. Levene's test of equality of variance examines if variances are equal across the groups. The alpha level for each null hypothesis was set at .05. Cohen's *d* was used to calculate effect size (Gall et al., 2007). IBM SPSS ® statistical software was used to conduct the *t* tests.

CHAPTER FOUR: FINDINGS

Overview

This causal-comparative study had the purpose of determining if a statistical difference exists between the type of school lunch schedule (alternative lunch schedule or traditional lunch schedule) and English II and Math I EOC scores. The study examined both English II EOC and Math I EOC achievement data on state achievement assessments. Each of the content areas are discussed independently. An independent *t* test was used to conduct the statistical analysis. This chapter will discuss the study's findings, outline the research questions, null hypothesis, descriptive statistics, and the statistical analysis results of the tests.

Research Questions

RQ1: Is there a difference between the 2018 - 2019 North Carolina school English II EOC scores for students who had an alternative lunch schedule and those who had a traditional lunch schedule?

RQ2: Is there a difference between the 2018 - 2019 North Carolina school Math I EOC scores of students who had an alternative lunch schedule and those who had a traditional lunch schedule?

Hypotheses

$H_0$1: There is no statistically significant difference between the 2018 - 2019 North Carolina school English II EOC scores of students who had an alternative lunch schedule and those who had a traditional lunch schedule.

$H_0$2: There is no statistically significant difference between the 2018 - 2019 North Carolina school Math I EOC scores of students who had an alternative lunch schedule and those who had a traditional lunch schedule.

Descriptive Statistics

Descriptive statistics were generated for each of the research questions. For Research Question One, 134 schools were compared using English II EOC score percent at grade level proficient. One school in the study was missing data for English II. The sample includes 66 schools who used an alternative lunch schedule and 68 schools who used a traditional lunch schedule. The schools who used a traditional lunch schedule had a higher percent of the students scoring proficient on the English II EOC (M = 57.8, SD = 12.2) than schools who used an alternative lunch schedule (M = 56.3, SD = 15.8; see Table 1).

Table 1

Descriptive Statistics for English II EOC Scores (Research Question One)

Percent Level 3 and Above (GLP)

Lunch Type	Mean	N	Std. Deviation
Alternative	56.32	66	15.77
Traditional	57.78	68	12.18
Total	57.06	134	14.03

For Research Question Two, 134 schools were compared using the percent proficient at grade level on the Math 1 EOC which included 66 schools who used an alternative lunch scheduling option and 68 who used a traditional lunch schedule. The percent of student grade level proficient on the Math 1 EOC was higher for schools who used a traditional lunch schedule (M = 43.16, SD = 14.85) than schools who used an alternative lunch schedule (M = 39.18, SD = 15.67; see Table 2).

Table 2

Descriptive Statistics for Math I EOC Scores (Research Question Two)

Percent Level 3 and Above (GLP)

Lunch Type	Mean	N	Std. Deviation
Alternative	39.18	66	15.67
Traditional	43.16	68	14.85
Total	41.20	134	15.33

Results

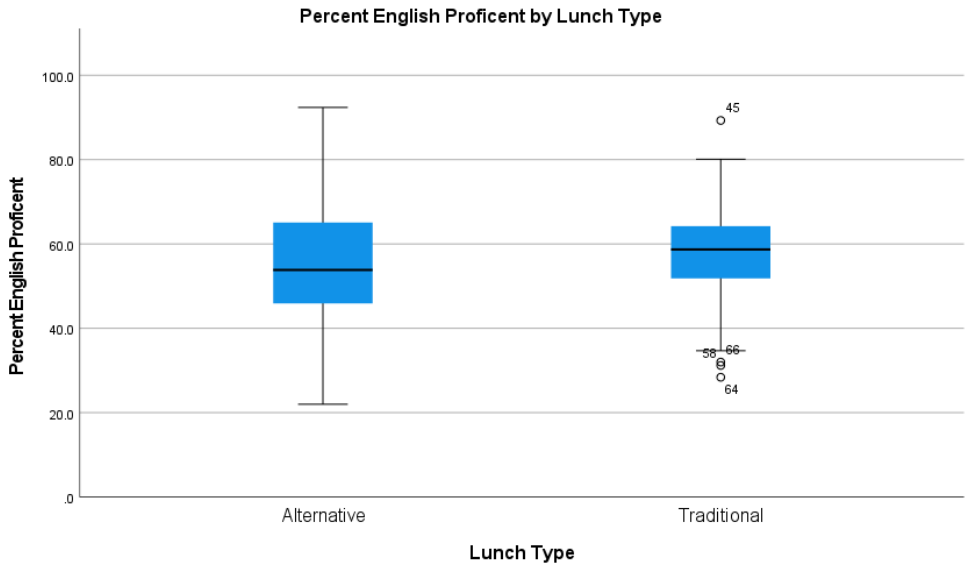
The following section presents the results of the data screening for each research question for the study. This section includes data screening using boxplots to determine whether any extreme outliers existed in the data.

Data Screening

The data sets for English II EOC and Math 1 EOC grade level percent proficient were independently screened for outliers. In the analysis of the data for English II EOC, there were three outliers identified through a review of a boxplot graph. The results of the boxplot graph can be seen in Figure 1. In the analysis for the data for English II EOC, four outliers were identified. In order to determine if the outliers should be removed from the English II EOC data set, the researcher ran the analysis again with the outliers removed. The results of the analysis did not cause a change in the significance levels (difference of 0.78 on the Means of Difference and p remained unchanged at <.001) of the results. Therefore, the outliers were considered a genuinely unusual data point and were included for the final analysis.

Figure 1

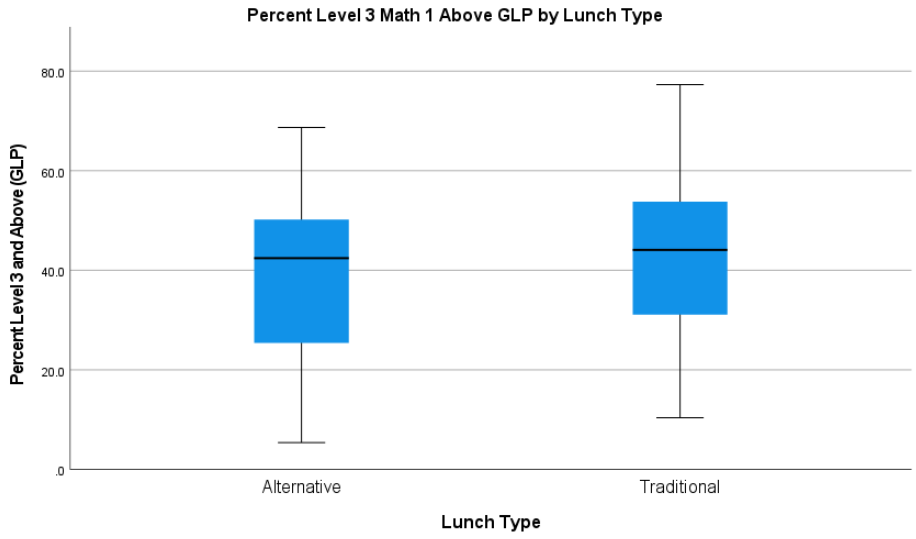
Boxplot for English II EOC Percent Grade Level Proficient.



In the analysis of the data for Math I EOC, there were no outliers identified through a review of a boxplot graph. The results of the boxplot graph can be seen in Figure 2. Therefore, all the data points were included for the final analysis.

Figure 2

Boxplot for Math I EOC Percent Grade Level Proficient.



Hypotheses

In this section, the result of assumption testing and results of the independent samples *t* test for Research Question One are discussed. Data from these analyses are given in the tables located within the section.

Assumptions

The statistical analysis for an independent samples *t* test requires testing for normality of the data set. The data sample contained 134 (66 schools who used Alternative Lunch schedule and 68 schools who used traditional lunch scheduling) schools, so the researcher used the Kolmogorov-Smirnov[a] to satisfy this assumption. The English II EOC scores for both Alternative and Traditional lunch schedules were determined to be normally distributed, as assessed by the Kolmogorov-Smirnov[a] test of normality with a $p > 0.05$ (See Table 3).

Table 3

Kolmogorov-Smirnov[a] Test of Normality for English II EOC Scores

		Kolmogorov-Smirnov[a]		
Lunch Type				
Percent English Proficient	Alternative	0.099	66	0.184
	Traditional	0.100	68	0.088

a. Lilliefors Significance Correction

The researcher tested the homogeneity of variances using Levene's test for equality of variances. There was homogeneity of variances for the English II EOC scores for schools using Alternative lunch scheduling or traditional lunch scheduling as assessed by Levene's test of equality of variances ($p = 0.024$; see Table 4). Since the p – value for these data were less than

0.05 the equality of variance is not tenable; therefore, significance was assessed using the "equal variance not assumed" value for *p*.

Table 4

Levene's Test for Equality of Variances

		Levene's Test for Equality of Variances	
		F	Sig.
Percent English Proficient	Equal variances assumed	5.243	0.024

Results

An independent samples *t* test was used to test the null hypothesis regarding differences in of the schools using Alternative Lunch Scheduling and Traditional Lunch Scheduling. Equal variance was not assumed since the *p* – value for these data were less than 0.05. The researcher failed to reject the null hypothesis at a 95% confidence level were t(122) = -.598, *p* = .551, *d* = 1.04. The effect size was very large. Schools who used Traditional lunch scheduling (*M* = 57.78, *S.D.* = 12.18) had a higher learning attitude scores than schools who used Alternative lunch scheduling (*M* = 56.32, *S.D.* = 15.77).

Table 5

t tests for Equality of Means

		t-test for Equality of Means						
							95% Confidence Interval of the Difference	
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Percent English Proficient	Equal variances not assumed	-.598	122.29	.551	-1.46	2.44	-6.29	3.37

Results for Hypothesis two

In this section, results for the assumption testing and results of the independent samples *t* test for Research Question Two are discussed. Data from these analyses are given in the tables found within the section.

Assumptions

The statistical analysis for an independent samples *t* test requires testing for the normality of the data. The data sample for Research Question Two consisted of 134 school (66 schools who used Alternative Lunch schedule and 68 schools who used traditional lunch scheduling), so the researcher used the Kolmogorov-Smirnov[a] to satisfy this assumption. The Math I EOC scores for both Alternative lunch schedule and Traditional lunch schedule were determined to be normally distributed, as assessed by the Kolmogorov-Smirnov[a] test of normality with a $p > .05$ (See Table 6).

Table 6

Kolmogorov-Smirnov[a] Test of Normality for Math I EOC Scores

		Kolmogorov-Smirnov[a]		
Lunch Type				
Percent English Proficient	Alternative	0.094	66	0.200*
	Traditional	0.089	68	0.200*

* This is a lower bound of the true significance
a. Lilliefors Significance Correction

The researcher tested the homogeneity of variances using Levene's test for equality of variances. There was homogeneity of variances for Math I EOC Scores for schools who used Alternative Lunch Schedules and Traditional Lunch Schedules as determined by assessing Levene's Test of equality of Variances (p = .581; see Table 7). Since the p – value for these data were greater than .05, the assumption has been met.

Table 7

Levene's Test for Equality of Variances

		Levene's Test for Equality of Variances	
		F	Sig.
Percent Level 3 and Above (GLP)	Equal variances assumed	0.306	0.581

Results

An independent samples t test was used to test the null hypothesis regarding differences in of the schools using Alternative Lunch Scheduling and Traditional Lunch Scheduling. Equal variance was assumed. The researcher failed to reject the null hypothesis was at a 95% confidence level were t(132) = -1.51, p = .133, d = .261. The effect size was small. Schools who

used Traditional lunch scheduling (*M* = 43.16, *S.D.* = 14.85) had EOC scores than schools who used Alternative lunch scheduling (*M* = 39.18, *S.D.* = 15.67).

Table 8

t tests for Equality of Means

		t-test for Equality of Means						
							95% Confidence Interval of the Difference	
		t	*df*	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Percent Level 3 and Above (GLP)	Equal variances assumed	-1.510	132	0.133	-3.9816	2.6372	-9.1982	1.2351

CHAPTER FIVE: CONCLUSIONS

Overview

The purpose of this quantitative, causal-comparative study is to determine the effect which lunch scheduling, the time given to students for lunch, has if on a schools' EOC (English II or Math I) performance grade. The contents of this chapter will discuss the results of the statistical analysis for each research question as well as the implications. In addition, limitations and recommendations for further research will be addressed.

Discussion

The goal of this study was to identify any differences between schools' achievement scores on the English II and Math I EOC exams based on their lunch schedule. The study was guided by the following research questions:

RQ1: Is there a difference between the 2018 - 2019 North Carolina school English II EOC scores for students who had an alternative lunch schedule and those who had a traditional lunch schedule?

RQ2: Is there a difference between the 2018 - 2019 North Carolina school Math I EOC scores of students who had an alternative lunch schedule and those who had a traditional lunch schedule?

The first research question sought to determine the difference between schools using alternative lunch scheduling and traditional lunch scheduling on the English II EOC score. Out of the possible data set, there were 66 schools who use Alternative lunch scheduling and 68 randomly chosen schools who used Traditional lunch scheduling examined. An independent samples *t* test was run to determine if there were differences in percent proficient scores on the English II EOC between Alternative and Traditional lunch scheduling. While the English II

EOC scores for schools who use Traditional lunch scheduling was slightly higher (M = 57.78, SD = 12.18) than the schools who use Alternative lunch scheduling (M = 56.32, SD = 15.77), there was not a statistically significant difference on the EOC scores (p = .551). Therefore, the researcher failed to reject the null hypothesis.

The second research question sought to determine the difference between schools using alternative lunch scheduling and traditional lunch scheduling on the Math I EOC score. There were 66 schools who use Alternative lunch scheduling and 68 schools who used Traditional lunch scheduling examined. An independent samples *t* test was run to determine if there were differences in percent proficient scores on the Math I EOC between Alternative and Traditional lunch scheduling. While the Math I EOC scores for schools who use Traditional lunch scheduling (M = 43.16, SD = 14.85) was slightly higher than the schools who use Alternative lunch scheduling (M = 39.18, SD = 15.67), there was not a statistically significant difference on the EOC scores (p = .133). Therefore, the researcher failed to reject the null hypothesis.

When analyzing why students who are given an Alternative lunch schedule to support their academic studies over students who did not receive the same support in traditional lunch, generally students lack the maturity to make impactful choices (Bechara, Damasio, & Damasio, 2000). Bechara, Demasio, and Demasio (2000) elaborate that memorization of facts is improved when they are tied to an emotion when learning. When students are memorizing the details, or facts, of alternative lunch scheduling and the educational requirements, students, often times, are missing an emotional connection to their education (Declercq & Verboven, 2015). Alternative lunch schedules also require students to process and possess the ability to adapt to a schedule and environment that has shifting requirements daily; the ability to an evolutionary environment is a mark of human intelligence (Collins & Koechlin, 2012).

Students who are presented with the opportunity to receive additional services through an alternative lunch schedule must take advantage of the given structure; however, students learning is largely influenced by outside, uncontrollable factors and "they may have developed less academic ability during previous schooling" (Declercq & Verboven, 2015, p. 532). Students who filter into high school come from different learning experiences, expectations, and situations. There is no feasible way to control for all outside factors, yet alternative lunch scheduling aims to help combat some negating factors in student academics. Alternative lunch scheduling does not statistically produce a measurable difference in the outcomes of student testing in contrast to students who attend schools with a traditionally scheduled lunch. The measurable difference could be attributed in part to brain maturation during adolescence is related to the ages of 10- 24 years (Arain et al., n.d.). The maturation of the brain is controlled and related to several external factors such as: age, heredity, environment, sex hormones, sleep, nutritional status, pharmacotherapy, and drug abuse among other factors (Arain et al., n.d.). The lack of frontal lobe maturity inhibits a student's ability to make a rational, informed decision about their education, and support tools available to them in an alternative lunch schedule. This inability to take advantage of support systems can lead students to perform equal or not as well as their peers who are enrolled in a school uses a traditional lunch schedule.

Research between scheduling and student achievement is divided. A student's sense of community plays a profound role in students' decision making, buying into the value of education, and likewise, students' achievement (Angelle, 2017). Maslow (1943) founded the Maslow's Theory of Human Motivation, and by offering an alternative lunch schedule students are presented with the opportunity to have their basic human needs meet and push onward to meeting the higher order needs that contribute to student learning, growth, and achievement

(Angelle, 2017). Within the alternative lunch schedule, the opportunities for participation in organized activities (OA) can have an impact on achievement as the OAs can meet some of the students' basic needs. Morris (2015) found that students who participated in OAs outscored students who did not by 1.1 points. Furthermore, Marks and Wade (2015) found that when students are engaged in a school climate that fosters a student's ability to focus on

> personal strengths, positive emotions, well-being, and factors related to success and thriving can connect with an inner sense of hope and an uplifting desire for growth and constructive change (p. 10)

The climate that an alternative lunch schedule fosters allows a student to focus on these areas and shift their desire towards growth and change from within making the learning autonomous and profound for the student. As a piece of school climate teacher morale is discussed often, and its related impact on student achievement and school climate. In a school that has a more positive climate, students are more likely to excel academically. Ullrich and Yeaman (1999) shared that student's attitude was more positive in a modified block school where students had more options much like in an alternative lunch schedule; reporting that students found the modified schedule, with extended periods with teachers, allowed students to retain, prepare, process, distress as well as maintain a high level of attendance and lower discipline problems. In regard to community and belonging, students who are allowed to explore and engage in their own interest develop a sense of belonging thus allowing them to assimilate into the school community and conform to the high expectations (Angelle, 2017). By employing an alternative lunch schedule, students are able to connect with the school community and rise to academic rigor.

Implications

Regardless of the findings of this study being not statistically significant, the findings do support the body of research on the important, albeit indirect, role that a daily schedule has on student achievement. A body of literature supports the idea that the role a school's schedule has in creating collaborative, positive culture that can develop students and improve academic achievement is paramount (Rose, & Whitty, 2010).

Therefore, the findings of this study can be used to support the constructs of developing students' soft skills, relationships, time managements abilities (Ellsperman, 2014; Goodman, 2007; Gould, 2014; Guskey, 2002; Harris & Rogers, 2008; Jenkins et al., 2002; Nye, 2001; Rose & Whitty, 2010; Ullrich & Yeaman, 1999). It also enables teachers to use data driven practices to support students who need additional supports (Kyriakides, Creeners, Antoniou, Demetriou, &Charalambous 2015; Shortt & Thayer, 2000). It can be concluded that which schedule a school chooses does matter. Knowing that there are options and choosing a schedule that best fits that needs of the school can help to create the best possible outcome for students and teachers. This concept aligns with the ideas presented by (find source) that suggests that all facets of a school environment impact student achievement and overall wellbeing.

Limitations

This study was limited in a variety of ways. The data for the study was archival and accessed through the North Carolina Department of Public Instructions website. Due to the ongoing pandemic, there were schools who could not be contacted to inclusion in the study. Additionally, due to changes in information reported within the data sets previously published

data sets, some data that for demographic reporting could not be obtained creating a partial picture of demographics.

The causal comparative research design is limited by the uncontrolled extraneous variables. Additionally, the causal comparative is a non-experimental design in which the independent variable is not manipulated by the researcher. With this particular design, it is impossible to choose the experimental groups due to the fact that the events already occurred. When using this particular design, it becomes difficult to assign a particular cause to the various groups (Salkind, 2010).

The study also consisted of a small sample size due to convenience sampling being used by the researcher. This study was conducted using data from high schools who used Alternative or Traditional lunch scheduling in the state of North Carolina. Due to the limited number of schools who reported using Alternative lunch scheduling it is not feasible to generalize any findings to any other grade levels or states within the country. The size of the sample met the requirements of Gall et. al (2007), but a larger size would have provided a better basis for the study. Finally, the research design potentially contributed to the limitations of the study's results by comparing only two EOC data points between the two groups.

Recommendations for Future Research

After a review of the results from this study, the following recommendations are made for any future research on the effects of lunch schedule.

1. Using a larger sample size to include more of the schools that had to be omitted. The sample size for this study was the main limitation for obtaining and reporting results with a greater added value.

2. This study could also be conducted in a longitudinal manner to develop a baseline year. By examining student achievement in relation to the type of school lunch schedule, the researcher can determine if lunch schedule is more impactful over time, as the student matures, or if there is limited or insignificant change in achievement. In a longitudinal study cohorts of students using alternative or traditional lunch schedule in North Carolina could be followed for three years through the Math I EOC freshman year, English II EOC sophomore year, and Biology EOC junior year.
3. The study could also be conducted using a national test, like PSAT or SAT, and examine participants achievement from across a wider region or country. This would allow for the results to be more applicable to a larger population.
4. In future research, questionnaires, surveys, or interviews should be employed by researchers to gather information from participants, both teachers and students, about lunch schedule implementations and the impact on various aspect of school culture.

References

Alderman, D. T. (2000). A comparison study of the relationships of 4/4 block scheduled schools and 7-period traditional scheduled schools on the Standards of Learning Tests for Virginia public secondary schools (Order No. 3075911). Available from ProQuest Dissertations & Theses Global. (304625885).

Allingham, B. (1951). Noon activities: Effective schedule of lunch, recreation. *The Clearing House, 25*(5), 295-297. Retrieved from http://www.jstor.org/stable/30179211

Anderson, P. M., Butcher, K. F., & Schanzenbach, D. W. (2019). Understanding recent trends in childhood obesity in the united states. Economics and Human Biology, 34, 16-25. doi:10.1016/j.ehb.2019.02.002

Angelle, P. S. (2017). Beliefs and behaviors of two high school principals in developing a sense of school community for students. *NASSAP Bulletin*, *101*(1), 5-22. https://doi.org/10.1177/0192636517694957

Arain, M., Haque, M., Johal, L., Mathur, P., Nel, W., Rais, A., ... Sharma, S. (n.d.). Maturation of the adolescent brain. *Dove Medical Press Limited*, *9*, 449-461. https://doi.org/10.2147/NDT.S39776

Arnold, D. E. (2002). Block schedule and traditional schedule achievement: A comparison. *National Association of Secondary School Principals*, *86*(630), 42-53. https://doi.org/10.1177/019263650208663006

Au, K. H. (2013). Helping high school students meet higher standards. *Journal of Adolescent & Adult Literacy*, *56*(7), 535-539. Retrieved from http://www.jstor.org/stable/41827897?seq=1#page_scan_tab_contents

Bair, M. A., PhD., & Bair, D., EdD. (2010). Scheduling Inequality in Math and Science: How Trimesters Hurt Students at Risk of Academic Failure. *American Secondary Education*, 39(1), 78-94.

Bancino, R., & Zevalkink, C. (2007). Soft skills: The New curriculum for hard-core technical professionals. *Techniques: Connecting Education and Careers*, *82*(5), 20-22.

Barnes, R., Straton, J., Ukena. (1996). A lesson... in block scheduling. *The Science Teacher*, *63*(6), 35.

Barrow, M. A. (2014). Even Math Requires Learning Academic Language. *Phi Delta Kappan*, *95*(6), 35–38. https://doi.org/10.1177/003172171409500608

Bechara, A., Damasio, H., & Damasio, A. R. (2000). Emotion, decision making and the orbitofrontal cortex. *Oxford Publishing Limited(England*), *10*(3), 295-307. https://doi.org/10.1093/cercor/10.3.295

Bengoechea, E. G., Sabiston, C. M., Ahmed, R., & Farnoush, M. (2010). Exploring links to unorganized and organized physical activity during adolescence: The role gender, socioeconomic status, weight status, and enjoyment of physical education. *Research Quarterly for Exercise and Sport*, *81*(1), 7-16. https://doi.org/10.1080/02701367.2010.10599623

Benton-Kupper, J. (1999). Teaching in the block: Perceptions from within. *The High School Journal*, 83(1), 26.

Bevevino, M. M., Dengel, J., & Adams, K. (1999). Constructivist theory in the classroom: Internalizing concepts through inquiry learning. *The Clearing House*, *72*(5), 275-278. https://doi.org/10.1080/00098659909599406

Biesinger, K. D., Crippen, K. J., & Muis, K. R. (2008). The impact of block scheduling on student motivation and classroom practice in mathematics. *NASSP Bulletin*, *97*(3), 42-52. https://doi.org/10.1177/0192636508323925

Block scheduling in North Carolina: Implementation, teaching, and impact issues- 1997 survey results. (1997). Retrieved from http://www.dpi.state.nc.us/block_scheduling/1997_eoc_brief/summary.html

Boarman, G. L., & Kirkpatric, B. S. (1995). The hybrid schedule: Scheduling to the curriculum. *NASSP Bulletin*, *79*(571), 42-52. https://doi.org/10.1177/019263659507957106

Bohan, C. H. (2003). Early vanguards of progressive education: The committee of ten, the committee of Seven, and social education. *The Journal of Curriculum and Supervision*, *19*(1), 73-94.

Bonner, T. A. (2012). *Comparison of the effects block and traditional schedules have on the number of students who are proficient on the Biology end-of-course test in forty public high schools in the state of North Carolina* (Doctoral dissertation). Retrieved from http://digitalcommons.liberty.edu/doctoral/522/

Boylan, R. T., & Ho, V. (2017). The most unkindest cut of all? State spending on health, education, and welfare during recessions. *National Tax Journal*, *70*(2), 329-366. Retrieved from https:// doi.org/10.17310/ntj.2017.2.04

Canady, R. L. (1990). Parallel block scheduling: A better way to organize school. *Principal*, *73*(3), 26-29.

Canaday, R., & Rettig, M. (1995). *Block scheduling: A catalyst for change in high schools*. Princeton, NJ: Eye on Education.

Canady, R. L., & Rettig, M. D. (1996). *Teaching in the block: Strategies for engaging active learners*. Larchmont, NY: Eye on Education.

Cardinali, D. P. (2008). Chronoeducation: How the biological clock influences the learning process. In A. M. Battro, W. F. Kurt, & J. L. Pierre (Eds.). The educated brain: Essays in neuroeducation (pp. 110–126). Cambridge: Cambridge University Press.

Carroll, J. M. (1990). The Copernican plan: Restructuring the American high school. *The Phi Delta Kappan, 71*(5), 358-365. Retrieved from http://www.jstor.org/stable/20404155

Chen, G. (2017). Longer lunches, smarter students? The controversy of 10 minute or 1 hour lunch periods. Retrieved from http://www.publicschoolreview.com/blog/longer-lunches-smarter-students-the-controversy-of-10-minute-or-1-hour-lunch-periods

Childers, G., & Ireland, R. (2005). Mixing block and traditional scheduling. *Education Digest, 71*(3), 43-49.

Ciccolo, J. A. (2008). Preparing students for careers, not just jobs. *Techniques, 83*(2), 39-40. Retrieved from https://search-proquest-com.ezproxy.liberty.edu/docview/216135327?pq-origsite=summon&accountid=12085

Cohen, J. F., Jahn, J. L., Richardson, S., Cluggish, S. A., Parker, E., & Rimm, E. B. (2016). Amount of time to eat lunch is associated with children's selection and consumption of school meal entree, fruits, vegetables, and milk. *Journal of the Academy of Nutrition and Dietetics, 116*(1), 123-128. https://doi.org/10.1016/j.jand.2015.07.019

Coll, R. K. & Zegwaard, K. E. (2006). Perception of desirable graduate competencies for science and technology new graduates. Research in Science & Technological Education, 24(1), 29-58.

Collins, A., & Koechlin, E. (2012). Reasoning, learning, and creativity: Frontal lobe function and human decision-making. *PLoS Biology, 10*(3), e1001293. https://doi.org/10.1371/journal.pbio.1001293

Common Core State Standards. (2016). http://www.corestandards.org

Creeden, T. J. (2012). Meeting the needs of students and staff through the high school scheduling process (Order No. 3499490). Available from ProQuest Central; ProQuest Central; ProQuest Dissertations & Theses Global; Social Science Premium Collection.

Cremin, L. A. (1962). *The transformation of high school: Progressivism in American education*. New York: Vintage.

Dawes, L. (2014). *Childhood obesity in America: Biography of an epidemic*. Available from https://ebookcentral-proquest-com.ezproxy.liberty.edu/

Declercq, K., & Verboven, F. (2015). Socio-economic status and enrollment in higher education: Do costs matter? *Education Economics, 23*(5), 532-556. https://doi.org/10.1080/09645292.2015.1047822

Denault, A., & Dery, M. (2015). Participation in organized activities and conduct problems in elementary school: The mediating effect of social skills. *Journal of Emotional and Behavioral Disorders, 23*(3), 167-179. https://doi.org/DOI: 10.1177/1063426614543950

Deuel, L. S. (1999). Block scheduling in large, urban high schools: Effective on academic achievement, student behavior. High School Journal, 83(1). Retrieved from http://www.eric.ed.gov/ERICWebPortal/custom/portlets/recordDetails/ Detailmini.jsp. doi: 46744620.

DeVries, R. (2002). *What does research on constructivist education tell us about effective schooling* [Paper]. Retrieved from http://www2.education.uiowa.edu/html/iae/iae-z-op-devries-1-5.pdf

Dexter, K., Tai, R., & Sadler, P. (2006) Traditional and block scheduling for college science preparation: A comparison of college science success of students who report different high school scheduling plans. *The High School Journal 89*(4), 22-33.

Dorman, S. C., Gauthier, A. P., Laurence, M., Thirkill, L., & Kabaroff, J. L. (2013). Photographic examination of student lunches in schools using balanced school day versus traditional school day schedules. *ICAN: Infant, Child, & Adolescent Nutrition, 5*(2), 78-84. https://doi.org/10.1177/1941406413476547

Dorman, S., Gauthier, A., & Thirkill, L. (2013). The impact of the balanced school day on student physical activity and nutrition. *Physical & Health Education Journal*, *78*(4), 6-10.

Dorn, C. J. (2015). *Research of scheduling impact on student academic performance* (Doctoral dissertation). University of Wisconsin-River Falls, River Falls, WI.

Eineder, D., & Bishop, H. (1997) Block scheduling the high school: The effects on achievement, behavior, and student-teacher relationships. *NASSP Bulletin, 81*(45). doi: 10.1177/019263659708158907

Ellspermann, J. (2014). Power hour. *The Education Digest*, *80*(3), 11-14. Retrieved from http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com.ezproxy.liberty.edu:2048/docview/1619303476?accountid=12085

Engeström, Y. (1994). *The working health center project: Materializing zones of proximal development in a network of organizational learning*. In T. Kauppinen & M. Lahtonen (Eds.) Action research in Finland. Helsinki: Ministry of Labour.

Eun, B. (2008). Making connections: Grounding professional development in the developmental theories of Vygotsky. *The Teacher Educator, 43*(2), 134-155. https://doi.org/10.1080/08878730701838934

End-of-Grade and End-of-Course Tests. (n.d.). Retrieved from http://www.ncpublicschools.org/src/guide/performance/?&print=true

Evaluating professional development. (1999). In *rt3Region7*. [WikiSpace] Retrieved from http://rt3region7.ncdpi.wikispaces.net/file/view/Eval+PD+Article-Guskey.pdf

Every Student Succeeds Act: Federal Elementary and Secondary Education Policy. (2017). Congressional Digest, 96(7), 4–6.

Fairfield County Business Journal. (2005, August 29). Survey: Americans are too busy for lunch. Fairfield County Business Journal, *44*(35), 20. Retrieved from http%3A%2F%2Fezproxy.liberty.edu%3A2048%2Flogin%3Furl%3Dhttp%3A%2F%2Fgo.galegroup.com%2Fps%2Fi.do%3Fid%3DGALE%257CA136652859%26v%3D2.1%26u%3Dvic_liberty%26it%3Dr%26p%3DGRGM%26sw%3Dw%26asid%3Dc82ccdc187957c03669e50ec33923184

Fallis, T. (2003). The eleven period day. *Teaching Music, 10*(4), 48-51. https://doi.org/280908241

Finnan, C. (2015). Not a waste of time: Scheduling non-academic learning activities into the school day. *The Urban Review, 47*(1), 26-44. https://doi.org/10.1007/s11256-014-0286-5

Fisher, C., & Berliner, D. (1985). *Perspectives on instructional time*. New York, NY: Longman.

Flannery, M. (2008). Building blocks: Making the most of your many, many minutes. *NEA Today*, *27*(3), 42-43.

Forman, E. A., & McPhail, J. (1993). *Vygotskian perspective on children's collaborative problem solving activities.* In E. A. Forman, N. Minick, & C. A. Stone (Eds.), Contexts for learning: Sociocultural dynamics in children's development (pp. 213–229). New York: Oxford University Press

Francka, I., & Lindsey, M. (1995). Your answers to block scheduling. *American Secondary Education*, *24*(1), 21-28. Retrieved from http://www.jstor.org/stable/41064126

Frankie, T. M., Ho, T., & Christie, C. A. (2011). The chi-square test: Often used and more often misinterpreted. *American Journal of Evaluation, 33*(3), 448-458. https://doi.org/10.1177/1098214011426594

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction* (8th ed.). Upper Saddle River, NJ: Pearson Inc.

Geiken, N., Larson, J., & Van Deusen, J. (1999). Block scheduling: Opportunities and challenges for collaboration. *Teacher Librarian*, *27*(1), 26-31.

Gill, W. W. A. (2011). Middle school A/B block and traditional scheduling: An analysis of math and reading performance by race. *National Association of Secondary School Principals. NASSP Bulletin*, 95(4), 281-301

Goodman, C. C. (2007). A single 50-minute lunch hour fits everyone. *The Education Digest*, *72*(6), 42-48. Retrieved from http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com.ezproxy.liberty.edu:2048/docview/218189709?accountid=12085

Goody, M., & Aubrey, A. (2015). Kids who are time-crunched at school lunch toss more and eat less. Retrieved from http://www.npr.org/sections/thesalt/2015/09/24/439487395/kids-who-are-time-crunched-at-school-lunch-toss-more-and-eat-less

Gordon, M. (2009). The misuses and effective uses of constructivist teaching. *Teachers and Teaching: Theory and Practice*, *15*(6), 737-746. https://doi.org/https://doi.org/10.1080/13540600903357058

Gorman, B. W. (1971). *Secondary education: The high school America Needs*. New York, NY: Random House.

Gould, R. (2014, September 15). S.M.A.R.T. lunch: Hickory high pilot program aims to close achievement gap. *Hickory Record*. Retrieved from http://www.hickoryrecord.com/news/s-m-a-r-t-lunch-hickory-high-pilot-program/article_bd6c12ae-3ce8-11e4-8dd3-0017a43b2370.html

Greene, K. M., & Maggs, J. L. (2014). Revisiting the time trade-off hypothesis: Work, organized activities, and academics during college. *Journal of Youth and Adolescence*, *44*(8), 1623-1637. https://doi.org/10.1007/s10964-014-0215-7

Grennon-Brooks, J., & Brooks, M. G. (1999). *In search of understanding: The case for constructivist classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.

Griffin, C. C., Kilgore, K. L., Winn, J. A., Otis-Wilborn, A., Hou, W., & Garvan, C. W. (2009). First-Year Special Educators: The Influence of School and Classroom Context Factors on Their Accomplishments and Problems. *Teacher Education and Special Education*, 32(1), 45–63. https://doi.org/10.1177/0888406408330870

Gruber, C. D., & Onwegbuzie, A. J. (2001). Effects of block scheduling on academic achievement among high school students. *High School Journal*, *84*(4), 1-16.

Gullatt, D. (2006). Block Scheduling: The effects on curriculum and student productivity. *NASSP Bulletin*, *90*(3), 250-267. https://doi.org/10.1177/0192636506292382

Gunderson, G. W. (2014). National school lunch program (NSLP). Retrieved from https://www.fns.usda.gov/nslp/history

Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching*, *8*(3), 381-391. https://doi.org/10.1080/135406002100000512

Hackmann, D. (2004). Constructivism and block scheduling: Making the connection. *Phi Delta Kappan*, *85*(9), 697-702. https://doi.org/10.1177/003172170408500911

Hanover Research. (2014). Trends in higher education marketing, recruitment, and technology. Washington, DC. Retrieved from. http://hdl.voced.edu.au/10707/440252.

Harris, D. M. (2014). Exploring the effect of traditional and block scheduling: An examination of high school student achievement (Algebra, Biology and English), attendance rates, and disciplinary incidents (Order No. 3643957). Available from ProQuest Dissertations & Theses Global. (1636523468).

Harris, K. S., & Rogers, G. E. (2008). Soft skills in the technology education classroom: What do students need? *The Technology Teacher*, *68*(3), 19-24.

Heissel, J. (2016). The relative benefits of live versus online delivery: Evidence from virtual algebra I in North Carolina. Economics of Education Review, 53, 99-115. doi:10.1016/j.econedurev.2016.05.001

Hellmich, N. (2011). Cutting short lunch time in school may lead to obesity. Retrieved from http://usatoday30.usatoday.com/news/health/wellness/story/2011/08/Students-feel-rushed-at-school-lunch/50027612/1

Hess, C., Wronkovich, M., & Robinson, J. (1999). Measured outcomes of learning under block scheduling. *NASSP Bulletin*, *83*(607), 87-95. https://doi.org/10.1177/019263659908361111

Hise, N. "The Relationship Between Test Scores on Multiple Choice High-Stakes Tests and High-Stakes Tests that Include Constructed Responses" (2016). *Doctoral Dissertations and Projects*. 1294. https://digitalcommons.liberty.edu/doctoral/1294

Hodges, J., McIntosh, J., & Gentry, M. (2017). The effect of an out-of-school enrichment program on the academic achievement of high-potential students from low-income families. *Journal of Advanced Academics*, *28*(3), 204-224. https://doi.org/10.177/1932202X17715304

Hodges, R., Dochen, C. W., & Joy, D. (2001). Increasing students' success: When supplemental instruction becomes mandatory. *Journal of College Reading and Learning*, *31*(2), 143-156. https://doi.org/10.1080/10790195.2001.10850111

Holschen, C. C. (1999). The impact of the block schedule on high school mathematics instruction

Honig, M. I., & McDonald, M. A. (2005). From promise to participation: Afterschool programs through the lens of Socio-Cultural learning theory. *Afterschool Matters Occasional Paper Series, 5*, 1-26. Retrieved from https://www.researchgate.net/publication/307856757_From_promise_to_participation_After-school_programs_through_the_lens_of_socio-cultural_learning_theory

Hughes, W. W. (2004). Blocking student performance in high school? *Economics of Education Review*, 23(6), 663-667. doi:10.1016/j.econedurev.2004.03.002

Hunter, F. W. (1945). 20 more minutes for lunch. *The Clearing House*, *20*(1), 29-30. Retrieved from http://www.jstor.org/stable/30181440

Huyvaert, S. (1998). *Time is of the essences: Learning in schools*. Boston, MA: Allyn & Bacon.

Hyslop-Margison, E., & Strobel, J. (2008). Constructivism and education: Misunderstandings and pedagogical implications. *The Teacher Educator*, *43*(1), 72-86. https://doi.org/10.1080/08878730701728945

Imbimbo, J. & Gilkes, A. (2009). Promising practices series: Block scheduling. Retrieved from http://www.newvisions.org/sites/default/files/publications/BlockSched.pdf

Jenkins, E., Queen, A., & Algozzine, B. (2002). To block or not to block: That's not the question. *The Journal of Educational Research, 95*(4), 196-202. https://doi.org/10.1080/00220670209596592

John-Steiner, V., & Mahn, H. (1996). Sociocultural approaches to learning and development: A Vygotskian framework. *Educational Psychologist*, *31*(3-4), 191-206. https://doi.org/10.1080/00461520.1996.9653266

Johnson, K. V., Scott, A. L., Shreve, M., Ayers, B. L., Seaton, V. S., & McElfish, P. A. (2019). Marshallese beliefs, perceptions, and practices related to child feeding among marshallese in the united states: Implications for childhood obesity. Nutrition and Metabolic Insights, 12, 1178638819827609. doi:10.1177/1178638819827609

Joyner, R. L., Rouse, W. A., & Glatthorn, A. A. (2013). *Writing the winning thesis or dissertation: A step-by-step guide* (3rd ed.). Thousand Oaks, CA: Corwin.

Kenney, L. C. (2003). Back from the block or not? *School Administrator*, *60*(9), 21-25. Retrieved from http://www.aasa.org/SchoolAdministratorArticle.aspx?id=9060

Kyriakides, L., Creemers, B. P., Antoniou, P., Demetriou, D., & Charalambous, C. Y. (2015). The impact of school policy and stakeholders' actions on student learning: A longitudinal study. *Learning and Instruction, 36* 113-124. https://doi.org/10.1016/j.learninstruc.2015.01.004

Laerd Statistics (n.d.). Statistical tutorials and software guides. Retrieved from https://statistics.laerd.com/premium/index.php

Lawrence, W. W., & McPherson, D. D. (2000). A comparative study of block scheduling and traditional scheduling on academic achievement. Journal of Instructional Psychology, 27(3), 178.

Lee, A. (2020). Every Student Succeeds Act (ESSA): What you need to know. Retrieved from https://www.understood.org/en/school-learning/your-childs-rights/basics-about-childs-rights/every-student-succeeds-act-essa-what-you-need-to-know

Leonard, L. J. (2001). From indignation to indifference: Teacher concerns about externally imposed classroom interruptions. *The Journal of Educational Research, 95*(2), 103-109. https://doi.org/10.1080/00220670109596578

Lewis, C. D. (2007). Get ready, get set, get to work! *Techniques: Connecting Education and Careers*, *82*(5), 18-19.

Lewis, C., Dugan, J., Winokur, M., & Cobb, R. B. (2005). The effects of block scheduling on high school achievement. *NASSP Bulletin*, *89*(645), 72-87. https://doi.org/10.1177/019263650508964506

Lichtman-Sadot, S. (2016). Improving academic performance through conditional benefits: Open/closed campus policies in high school and student outcomes. *Economics of Education Review*, *54*, 95-112. https://doi.org/10.1016/j.econedurev.2016.07.001

Madison High School Website. (n.d.). http://mhs.madisonk12.schoolfusion.us/modules/cms/pages.phtml?pageid=238806&sessionid=1646a6c70047d2197e26ee7481b7f57c&t&sessionid=1646a6c70047d2197e26ee7481b7f57c&sessionid=1646a6c70047d2197e26ee7481b7f57c

Maltese, A. V., Dexter, K. M., Tai, R. H., & Sadler, P. M. (2007). Breaking from tradition: Unfulfilled promises of block scheduling in science. *Science Educator*, *16*(1), 1-7. Retrieved from https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=EJ773255

Marchant, G. J., & Paulson, S. E. (2001). Differential school functioning in a block schedule: A comparison of academic profiles. *High School Journal*, *84*(4), 12-20. https://doi.org/10.1353/hsj.2001.0011

Marker, K., Mitchall, A., & Lassiter, Jr., S. M. (2013). Doing more with less: How to maintain the integrity of beginning teacher support programs. *Journal of Cases in Educational Leadership*, *16*(1), 73-81. https://doi.org/10.1177/1555458913478422

Marks, L. I., & Wade, J. C. (2015). Positive psychology on campus: Creating the conditions for well-being and success. *About Campus*, *19*(6), 9-15. https://doi.org/10.1002/abc.21174

Marlowe, B. A. and Page, M. L. (1998). *Creating and sustaining the constructivist classroom.* Thousand Oaks, CA: Corwin.

Marlowe, B. A. and Page, M. L. (2005). *Creating and sustaining the constructivist classroom* (Rev. ed.). Thousand Oaks, CA: Corwin.

Marquez, K. A. (2016). *Analysis of high school scheduling frameworks and student achievement* (Doctoral dissertation). Retrieved from ProQuest. (10146947)

Marshak, D. (1997). *Action research on block scheduling*. Larchmont, NY: Eye on Education.

Marshak, D. (2001). *Improving teaching in the high school block period*. Lanham, MD: Scarecrow Press Inc.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370-396. https://doi.org/10.1037/h0054346

McCreary, J., & Hausman, C. (2001). *Differences in student outcomes between block semester, and trimester schedules*. Retrieved from https://files.eric.ed.gov/fulltext/ED457590.pdf

McEwan, A. E. (2012). Time and teaching. *The Educational Forum*, *76*(1), 81-89. https://doi.org/10.1080/00131725.2011.627985

Miller, P. H. (2011). *Theories of developmental psychology* (5th ed.). New York, NY: Worth Publishers.

Miller, G. F., Sliwa, S., Michael, S., Lee, S., Burgeson, C., Krautheim, A. M., . . . Economos, C. D. (2018). Evaluation of let's move! active schools activation grants. Preventive Medicine, 108, 36-40. doi:10.1016/j.ypmed.2017.12.024

Mistretta, G. M., & Polansky, H. B. (1997). Prisoners of time: Implementing a block schedule in the high school. *NASSP Bulletin*, *83*(593), 23-31. https://doi.org/10.1177/019263659708159304

Moll, L. C., Whitmore, K. (1993). *Vygotsky in educational practice*. In Forman, E., Minick, N., Stone, C. A. (Eds.), Contexts for learning: Sociocultural dynamics in children's development (pp. 19–42). New York: Oxford.

Morris, D. S. (2015). Actively closing the gap? Social class, organized activities, and academic achievement in high school. *Youth & Society*, *47*(2), 267-290. https://doi.org/10.1177/0044118X12461159

Murray, G. V., & Moyer-Packenham, P. S. (2014). Relationships between classroom schedule types and performance on the algebra I criterion-referenced test. *The Journal of Education*, *194*(2), 35-43. https://doi.org/10.1177/002205741419400205

National Education Commission on Time and Learning. (1994). *Prisoners of time*. Retrieved from https://files.eric.ed.gov/fulltext/ED489343.pdf

Neely, E., Walton, M., & Stephens, C. (2016). Food practices and school connectedness: A whole-school approach. *Health Education*, *116*(3), 320-340. https://doi.org/10.1108/HE-11-2014-0095

Nichols, J.D. (2005). Block-scheduled high schools: Impact on achievement in English and language arts. The Journal of Educational Research 98(5). Retrieved from Education Research Complete

Nicholas-Omoregbe, O. S. (2009). Impact of staff morale on performance in school organizations. *Ile-Ife*, *17*(1), 1-10. https://doi.org/10.4314/ifep.v17i1.43735

North Carolina Department of Public Instruction. (2017). http://www.ncpublicschools.org/accountability/

North Carolina Department of Public Instruction. (2017). School grade improve, graduation rate at record high, but challenges remain as state releases accountability data. Retrieved from http://www.ncpublicschools.org/newsroom/news/2017-18/20170907-01?&print=true

Nye, K. P. (2001). Longer lunch periods help one school get ahead. *The Education Digest*, *66*(7), 46-50. Retrieved from http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com.ezproxy.liberty.edu:2048/docview/1518290952?accountid=12085

Okpala, C. O., Okpala, A. O., & Smith, F. E. (2001). Parental involvement, instructional expenditures, family socioeconomic attributes, and student achievement. *The Journal of Educational Research*, *95*(2), 110-115. Retrieved from http://www.jstor.org/stable/27542366

Page, D. (1855). Theory and practice: The motives and methods of good school-keeping. New York: American Book Company. Retrieved from http://books.google.com/books.

Payne, D. A., & Jordan, M. M. (1996). The evaluation of a high school block schedule: Convergence of teacher and student data. *American Secondary Education*, *25*(2), 16-19. Retrieved from http://www.jstor.org/stable/41064196

Piaget, J. (1952). *The origins of intelligence in children*. New York, NY: International Universities Press.

Philipp, J. (2014). *End of course grades and end of course tests in the virtual environment: A study of correlation* (Unpublished dissertation). Liberty University, Lynchburg, VA.

Puckett, J., McBride, L., Shaddix, J., Swersky, A., & Gilyard, R. (2013). *Achieving more for less in U.S. education with a value-based approach*. Achieving more for less in U.S. education with a value-based approach, *78*(6), 31-40. Retrieved from Retrieved from http://ezproxy.liberty.edu/login?url=http://search.proquest.com/docview/1283316620?accountid=12085

Queen, J. A. (2000). Block scheduling revisited. *The Phi Delta Kappan*, *82*(3), 214-222. https://doi.org/10.1177/003172170008200307

Reeves, D. B. (2008). The learning leader/The extracurricular advantage. *Educational Leadership*, *66*(1), 86-87. Retrieved from https://static1.squarespace.com/static/56a6ae1c22482e2f99869834/t/5798bdd11b631b681e088c68/1469627857856/The+Extracurricular+Advantage.pdf

Rettig, M., & Canady, R. L. (2001). Block scheduling: More benefits than challenges. Response to Thomas (2001). *National Association of Secondary School Principals. NASSP Bulletin*, *85*(628), 78-86. https://doi.org/10.1177/019263650108562810

Rezaee, M. (2011). Sociocultural theory revisited: What are the educational implications. *Broad Research in Artificial Intelligence and Neuroscience*, *2*(4), 62-66. Retrieved from http://brain.edusoft.ro/index.php/brain/article/view/244/380

Rikard, G., & Banville, D. (2005). High school physical education teacher perceptions of block scheduling. *The High School Journal*, *88*(3), 26-34. https://doi.org/10.1353/hsj.2005.0004

Rose, S., & Whitty, P. (2010). "Where do we find the time to do this?" Struggling against the tyranny of time. *Alberta Journal of Educational Research*, *56*(3), 257.

Rowe, B., & Rocha, S. (2015). School lunch is not a meal: Posthuman eating as folk phenomenology. *Educational Studies, 51*(6), 482-496. https://doi.org/10.1080/00131946.2015.1098643

Rud, A. G. (2013). Midday eating while learning: The school cafeteria, homeschooling, and the open campus high school. *Journal of Thought, 48*(2), 78-88.

Rutkow, L., Jones-Smith, J., Walters, H. J., O'Hara, M., & Bleich, S. N. (2016). Factors that encourage and discourage policy-making to prevent childhood obesity: Experience in the united states. Journal of Public Health Policy, 37(4), 514-527. doi:10.1057/s41271-016-0035-y

Sacheck, J., Wright, C., Chomitz, V., Chui, K., Economos, C., & Schultz, N. (2015). *Active bodies, active minds: A case study on physical activity and academic success in Lawrence, Massachusetts*. Retrieved from The Boston Foundation: https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED559374

Saxe, D. W. (1991). *Social studies in schools: A history of the early years*. Retrieved from https://files.eric.ed.gov/fulltext/EJ718721.pdf

Scheduling Policies. (2009) *School Administrator*, *66*(2), 51. Retrieved from https://link.gale.com/apps/doc/A195675709/AONE?u=vic_liberty&sid=AONE&xid=1c8c0aa3

Schroth, G. (2016). Scheduling- Historical background of scheduling, selecting a schedule, scheduling models, staff development. Retrieved from http://education.stateuniversity.com/pages/2385/Scheduling.html

Seed, A. (1998). Free at last: Making the most of flexible block schedule. *Middle School Journal*, *29*(5), 20-21. Retrieved from http://www.jstor.org/stable/23023327

Shortt, T. L., & Thayer, Y. (2000). The principal factor in block schedule success. *High School Magazine, 7*(9), 10-15. Retrieved from http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/221166574?accountid=12085

Salkind, N. J. (2010). Encyclopedia of research design (Vols. 1-0). Thousand Oaks, CA: SAGE Publications, Inc. doi: 10.4135/9781412961288

Skinner, A. C., Perrin, E. M., & Skelton, J. A. (2016). Prevalence of obesity and severe obesity in US children, 1999-2014. *Obesity*, *24*(5), 1116-1123. https://doi.org/10.1002/oby.21497

Smilie, K. D. (2013). Time to eat: School lunch and the loss of leisure in education. *Journal of Thought*, *48*(2), 49-64. Retrieved from http://www.jstor.org/stable/jthought.48.2.49

Smith, T. R. (1979). The flip-flop lunch program: Play first, eat last. *The Phi Delta Kappan, 60*(6), 460. Retrieved from http://www.jstor.org/stable/20299432

Sommerfeld, M. (1996). More and more schools putting block scheduling to test of time. *Education Week, 15*(35), 14-15, 17. Retrieved from https://www.edweek.org/ew/articles/1996/05/22/35block.h15.html

Stanley, K. R., Spradlin, T. E., & Plucker, J. A. (2007). The daily schedule: A look at the relationship between time and academic achievement. *Education Policy Brief, 5*(6), 1-8. Retrieved from https://pdfs.semanticscholar.org/e6f7/7b437b2f703d91887e81c59fab9911140aab.pdf

Staples, A. (2008, October 8). High schools struggle to fund athletic programs. *Sports Illustrated*. Retrieved from https://www.si.com/more-sports/2008/10/08/hs-economy

Stone, M. K. (2009). Rethinking Lunchtime: Making lunch an integral part of education. *Green Teacher, 84*, 19-23. Retrieved from http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com.ezproxy.liberty.edu:2048/docview/228593520?accountid=12085

Texas Education Agency. (1999). *Block scheduling in Texas public high school*. Retrieved from https://tea.texas.gov/acctres/spec_prr_13_1999.pdf

Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A review of school climate research. *Review of Educational Research*, *83*(3), 357-385. https://doi.org/10.3102/0034654313483907

Tompkins, E., & Gaumnitz, W. H. (1954). The Carnegie unit: Its origin, status, and trends. *Bulletin 7, 7*. Retrieved from https://files.eric.ed.gov/fulltext/ED543699.pdf

Trenta, L. and Newman, I. (2002) Effects of a high school block scheduling program on students: A four-year longitudinal study of the effects of block scheduling on student outcome variables. *American Secondary Education, 31*(1). Retrieved May 15, 2017 from ProQuest.

Uline, C., & Tschannen-Moran, M. (2008). The walls speak: The interplay of quality facilities, school climate, and student achievement. *Journal of Educational Administration*, *46*(1), 55-73. https://doi.org/10.1108/09578230910955809

Ullrich, W. J., & Yeamen, J. T. (1999). Using a modified block schedule to create a positive learning environment. *Association for Middle Level Education, 31*(1), 14-20. https://doi.org/10.1080/00940771.1999.11494604

Vanderloo, L. M., & Tucker, P. (2017). Physical activity in sedentary time among young children in full-day kindergarten: Comparing traditional and balanced days schedules. *Health Education Journal*, *76*(1), 29-37. https://doi.org/10.1177/0017896916643354

Wallace, C. (2013). *Comparing traditional period and semester block in high school mathematics: Effect on algebra I end-of-course assessment* (Doctoral dissertation). Retrieved from http://digitalcommons.liberty.edu/

Warner, R. M. (2013). *Applied statistics: From bivariate through multivariate techniques* (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Wilk, P., Clark, A., & Gilliland, J. (2019). Comparing Physical Activity Behavior of Children During School Between Balanced and Traditional School Day Schedules. The Journal of School Health., 89(2). doi: 10.1111/josh.12722

Windschitl, M. (1999). A vision educators can put into practice: Portraying the constructivist classroom as a cultural system. *School Science and Mathematics*, 99(4), 189-196. https://doi.org/10.1111/j.1949-8594.1999.tb17473.x

Wojcicki, J., & Heyman, M. (2010). Let's move -- childhood obesity prevention from pregnancy and infancy onward. The New England Journal of Medicine, 362(16), 1457-1459. doi:http://dx.doi.org.ezproxy.liberty.edu/10.1056/NEJMp1001857

Wollan, M. (2016). Failure to Lunch. *New York Times*, p. 50. Retrieved from https://www.nytimes.com/2016/02/28/magazine/failure-to-lunch.html

Wraga, W. G. (2001). A progressive legacy squandered: The Cardinal principles report reconsidered. *History of Education Quarterly*, *41*(4), 494-519. https://doi.org/10.1111/j.1748-5959.2001.tb00096.x

Wu, T. F., Mackaskill, L. A., Salvadori, M. I., & Dworatzek, P. N. (2015). Is the balanced school day truly balanced? A review of the impacts on children, families, and school food environments. *Journal of School Health*, *85*(6), 405-410. https://doi.org/10.1111/josh.12265

Young, D. R., Felton, G. M., Grieser, M., Elder, J. P., Johnson, C., Lee, J., & Kubik, M. Y. (2007). Policies and opportunities for physical activity in middle school environments. *Journal of School Health*, *77*(1), 41-47. https://doi.org/10.1111/j.1746-1561.2007.00161.x

Zelkowski, J. (2010). Secondary mathematics: Four credits, block schedules, continuous enrollment? What maximizes college readiness? *The Mathematics Educator*, *20*(1), 8-21.

Zepeda, S., & Mayers, R. (2006). An analysis of research on block scheduling. *Review of Educational Research*, *76*(1), 137-170. https://doi.org/10.3102/00346543076001137

Zuckerman, G., Chudinova, E., & Khavkin, E. (1998). Inquiry as a pivotal element of knowledge acquisition within the Vygotskian paradigm: Building a science curriculum for the elementary school. *Cognition and Instruction*, *16*(2), 201-233. Retrieved from http://www.jstor.org/stable/3233721

APPENDIX A

April 16, 2020

Kristina Lowe
John Bartlett

Re: IRB Application - IRB-FY19-20-288 THE EFFECT OF ALTERNATIVE LUNCH SCHEDULE AND TRADITIONAL LUNCH SCHEDULE ON NORTH CAROLINA SCHOOL ENGLISH II AND MATH I END OF COURSE TEST SCORES

Dear Kristina Lowe, John Bartlett:

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Decision: No Human Subjects Research

Explanation: Your study does not classify as human subjects research because:

(1) it will not involve the collection of identifiable, private information.

Please note that this decision only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this determination or need assistance in determining whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,

[redacted]
Administrative Chair of Institutional Research
Research Ethics Office

Appendix B

Dear High School Administrator,

My name is Kristina Lowe, and I am a doctoral candidate. In partial fulfillment of the requirements of the Ed.D program at Liberty University, I am conducting a study entitled "The Effect Of Alternative Lunch Schedule And Traditional Lunch Schedule On North Carolina School English II And Math I End Of Course Test Scores".
I am writing to ask you to participate in a survey about what type of school lunch your school used for the 2018-2019 school year. I have collected data for all but 71 schools, for the study, the two types of lunch options are:

1. *Alternative lunch programming* - Alternative lunch programming is a lunch schedule where the whole school is scheduled for lunch at the same time. Students have a choice to engage in various activities (Chen, 2017, Ellspermann, 2014; Goodman, 2007; Nye, 2001).
2. *Traditional schedule* - A traditional schedule is a single-period daily school schedule composed of students participating in six, seven, or eight classes each day which vary in meeting times which range between 40 and 60 minutes (Canady & Rettig, 1995).

IRB approval has been applied for and granted through Liberty University; the IRB approval number is IRB-FY19-20-288. If you have any questions or concerns please feel free to reach me at [redacted] or [redacted]. My direct line is [redacted] extension [redacted]

Please use the following link to complete the 3 question survey—I have removed the upload option that was creating issues for some districts

https://forms.gle/yZ7iUCq79Ae5niFo9

Many Thanks,

Mrs. Kristina Lowe, Ed.S.
School Testing Coordinator
Dean of Students
Yearbook Advisor

[redacted]