Spring 4-2010

Exploring Differences in Teacher Attitudes and Instructional Strategies Between Traditional and Block Schedule High Schools: A Comparison of Two Large Schools

Jerry Randolph Raines
Lindenwood University

Exploring Differences in Teacher Attitudes and Instructional Strategies Between Traditional and Block Schedule High Schools: A Comparison of Two Large Schools

by

Jerry Randolph Raines

April 2010

A dissertation submitted to the Education Faculty of Lindenwood University in partial fulfillment of the requirements for the degree of

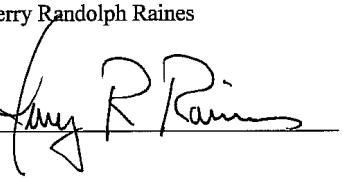
Doctor of Education

School of Education

Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work at Lindenwood University and that I have not submitted it for any other college or degree here or elsewhere.

Full Legal Name: Jerry Randolph Raines

Signature:  Date: 4/12/10

Exploring Differences in Teacher Attitudes and Instructional Strategies Between Traditional and Block Schedule High Schools: A Comparison of Two Large Schools

by

Jerry Randolph Raines

This dissertation has been approved as partial fulfillment of the requirements for the

degree of
Doctor of Education
at Lindenwood University by the School of Education

Dr. William Emrick, Dissertation Chair	3-23-10 Date
Dr. John Oldani, Committee Member	3/23/10 Date
Dr. Sherrie Wisdom, Committee Member	3/23/2010 Date

Acknowledgements

I express my thanks and gratitude to the many people who helped me through this process; to all those who provided support, talked things over, read, wrote, offered comments, and assisted in the editing and proofreading. Specifically, I would like to thank Dr. Bill Emrick for his help, guidance, and advice as I worked through this process; Dr. Sherrie Wisdom for her help with the statistics; Dr. John Oldani for his inspiration; and Dr. Susan Isenberg for her encouragement and direction throughout the entire process.

I would like to thank my research partner, Mr. Tim Reller, for keeping me on track, on task, and on target in order to accomplish this goal, "Doing the task."

Above all, I want to thank my wife, Pat, my daughter, Michelle, and my son, Jacob, who supported and encouraged me in spite of all the time it took me away from them. It was a long and difficult journey, but without them, I would not have been able to make it.

Abstract

As schools continue to strive to meet federal testing requirements, many schools have been looking at ways to improve. During the 1990's many school districts thought they had found the method, tool, or program, with which to accomplish this goal: the *block schedule*. This study was a comparison of the teaching strategies and attitudes of teachers at two high schools with a block schedule and two high schools with a traditional schedule.

The researchers began showing interest in this topic when several local schools decided to abandon the block schedule at their high schools, because of the increased cost associated with block scheduling. The researchers began a collaborative investigation to determine whether teachers on a block schedule use different instructional strategies than their colleagues on a traditional schedule. If teachers were using these strategies, then benefits from a block schedule could potentially outweigh the additional costs created by the schedule.

The subjects in this study were teachers from two large schools with student populations of more than 1,000, while the subjects in the companion study were teachers from two small schools with student populations less than 500. In each case, one school used a block schedule, while the other used a traditional schedule. The teachers of these schools were asked to complete a survey that was developed for the purpose of this study. A z test for proportion compared the responses of the participants to the survey instrument. The responses were compared by school size and type and the responses to the open-ended questions were analyzed.

The results of the survey indicated that there was little difference between the responses of the teachers on the Large School Block Schedule as compared to the teachers on the Large School Traditional Schedule. The teachers were generally satisfied with their schedule, but really liked some aspects of the other schedule. In conclusion, this researcher feels that school administrators should focus more on the instructional strategies used by teachers and less on the type of schedule, because the results of this study demonstrate that effective teaching can take place on either type of schedule.

Table of Contents

List of Tables

List of Figures

Chapter I – Introduction

Background of the Problem

In 1994 the National Education Commission on Time and Learning (NECTL) published a report titled *Prisoners of Time,* which included the following statement:

> Learning in America is a prisoner of time. For the past 150 years, American public schools have held time constant and let learning vary. The rule, only rarely voiced, is simple: learn what you can in the time we make available. It should surprise no one that bright, hardworking students do reasonably well. Everyone else-from the typical student to the dropout-runs into trouble. The degree to which today's American school is controlled by the dynamics of clock and calendar is surprising even to people who understand school operations. (p. 5)

This statement typifies the sentiment of the report that very little had occurred in the design of American high school schedules in the last 150 years. American high schools were expected to produce quality graduates that faced a vastly different world than their counterparts during the previous 150 years, but they continued to use the schedule that was designed to meet the needs of graduates from previous generations.

This report led to a debate among high school educators concerning the positive and negative effects of high school scheduling. Most of these debates focused on the use of a traditional schedule versus a block schedule, or some variation of the two. Traditional schedules usually consist of six to seven periods per day with students in class for 45–60 minutes. Block schedules typically consist of four to five periods per day for 80–100 minutes. Some versions of block scheduling at the high school level have been around since at least the late 1960s, when Joseph Carroll noticed that his students in

summer school did better than they did during the regular school year (Thomas, 2001). Carroll "attributed this success to the larger blocks of time students spent in class and the method of teaching used in summer school. Carroll urged schools to use this block-scheduling method from September through June" (p. 74). However, there was not a large amount of implementation of block scheduling until the years following the release of the *Prisoners of Time* (NECTL, 1994) report.

One of the recommendations from the *Prisoners of Time* report was to "Fix the design flaw: Use time in new and better ways" (NECTL, 1994, p. 29). Block scheduling was a possible solution mentioned in the report when addressing this recommendation. The report stated, "Block scheduling-the use of two or more periods for extended exploration of complex topics or for science laboratories-should become more common" (p. 31). This recommendation led many schools throughout the country to switch from traditional to block scheduling. This trend was evident in states such as Virginia, where as of 2003, 76% of the 303 high schools had adopted some variation of block scheduling (Rettig & Canady, 2003).

The move to improve the quality of education provided by schools in the United States was continued with the renewal of the Elementary and Secondary Education Act by Congress in 2001 (No Child Left Behind Act, 2003). This act, commonly referred to as *No Child Left Behind* (NCLB), set the goal of requiring all students to be proficient in communication arts and math by 2014. Legislation set the goal of proficiency for all students and required states to develop a plan for having all students proficient by 2014.

The plan must include incremental steps of the percentage of students who meet the proficiency standards known as *adequate yearly progress* (AYP). A series of

increasingly stiffer penalties were to be imposed on those schools that did not meet AYP. NCLB forced school districts to evaluate all practices, including the high school schedule, as they searched for practices that could lead to improved student achievement (Queen, 2008).

The pressure to meet the requirements of NCLB forced some schools, such as one suburban school district in St. Charles County, Missouri, to move away from a block schedule to a traditional schedule. When discussing the reasons for the switch, the superintendent stated the desire to "ensure students are instructed in core subjects – reading, math, and science specifically – every day" (Anthony, 2007). This challenge could only be met through the use of a traditional schedule, because students in the A/B block schedule only take classes on alternating days.

Supporters of block scheduling advocate for the change to block scheduling by noting the benefits that can be attained through the longer class periods in a block schedule (Veal & Schreiber, 1999). Block schedules can generally be described as either an A/B block or a Four-by-Four block. In the A/B block schedule, classes meet for 80–100 minutes every other day, and the classes are scheduled over an entire school year to earn one credit in each class. A Four-by-Four block consists of four classes that meet for 80–100 minutes every day. Each class is scheduled for one semester, and the student earns a full credit in the course at the end of the semester. Students then take four new courses the next semester and earn a credit in each course the second semester (Trenta & Newman, 2002). Block scheduling offered many promises to the schools that switched to this format, and schools experienced benefits by adopting a block schedule: Students were able to take a wider array of courses, schools reported fewer disciplinary referrals,

attendance rates improved, students completing advanced placement (AP) courses increased, students experienced advanced mastery of subject matter, and course grades improved (Hackmann & Waters, 1998).

This study and its companion study are an investigation of teaching strategies and teacher attitudes in four schools: two that use a traditional schedule and two that use a block schedule. The schools included in this study are two large high schools, one with a traditional schedule and one with a block schedule. The schools in the companion study are two high schools that are smaller in size, one with a block schedule and one with a traditional schedule. All of the schools in the study are located within a 30-mile radius near the St. Louis metropolitan area. The schools share similar student and teacher demographics. For the purposes of this study, Large School T and Small School T operate on a traditional schedule, while Large School B and Small School B operate on block schedules. The schools all operate under the graduation requirements set by the Missouri State Board of Education effective for the graduating class of 2010. According to the requirements, each student must earn 24 total credits to graduate: 4 communication arts, 3 mathematics, 3 science, 3 social studies, 1 fine art, 1 practical art, 1 physical education, ½ personal finance, ½ health, and 7 electives (Missouri Department of Elementary and Secondary Education, 2007). However, the two block-scheduled schools require more credits for graduation than the schools that operate with a traditional schedule because they offer more courses. The graduation requirements for the participating schools are outlined in Table 1.

Table 1

Graduation Requirements of Participating Schools

	Large School Block	Large School Traditional	Small School Traditional	Small School Block
Language Arts	4	4	4	4
Mathematics	3	3	3	3
Science	3	3	3	3
Social Studies	3	3	3	3
Fine Art	1 ½	1	1	1
Practical Art	1 ½	1	1	1 ½
Physical Education	1 ½	1	1	1 ½
Personal Finance	½	½	½	½
Health	½	½	½	½
Electives	12 ½	7	7	10
Total	31	24	24	28

Note. From Student Handbook of Large School B, Student Handbook of Large School T, Student Handbook of Small School T, and Student Handbook of Small School B.

The influence of the schedule, whether block or traditional, cannot be overstated. It structures the pace of student and teacher interactions, the instructional strategies used by the teacher, and the cognitive level used by the students during the lesson (Danielson, 2002). It is important to understand the differences in teacher attitudes and the teaching strategies if block scheduling is being implemented in a way that will allow students to

gain the full benefits offered by the expanded time of a block schedule. Teachers who have relied on lecturing have found they need to vary their approach when their schedule is a block schedule (Danielson, 2002). If teachers in a block schedule use the same teaching methods as their counterparts in a traditional schedule, then there likely will not be a positive change for schools associated with a switch to a block schedule (Canady & Rettig, 2001).

From the perspective of Jerry Raines, Assistant Principal at Large School B, the goal of this study was to determine if there are differences in teacher attitudes and teaching strategies between two larger schools (Large School B and Large School T). Mr. Raines met with the faculty of Large School B and Large School T to explain the research procedures. The faculties were provided directions to complete a survey (Appendix A) using the online survey tool, Zoomerang. Mr. Raines compiled the results from Large School B and Large School T and compared them to determine if there was a significant difference in the responses of the teachers based on the type of schedule used in their school.

Tim Reller, Principal at Small School T, studied whether those same differences exist in the two smaller schools (Small School T and Small School B). Mr. Reller met with the faculty at Small School T and Small School B to explain the survey process. The survey was delivered to the faculty in paper form, and they were asked to complete and return the forms to their respective building offices. Mr. Reller compiled the data from these two schools and compared them to determine if there was a significant difference in the responses of the teachers based on the type of schedule used in their building. The two researchers then compared the large school data with the small school data to

determine if there was a significant difference in the use of teaching strategies and attitudes of the teachers based on the size of the school.

Statement of the Problem

Block scheduling was designed to impact student learning by offering more time for teachers to change the methods that were used during a class period. The longer class periods allowed for teachers to move away from using lectures as their primary instructional strategy and employ a wider variety of strategies designed to actively engage students during the longer class periods. The problem was that administrators of block schedule schools did not know if teachers on the block schedule were using the research-based strategies that would help a block schedule to be more effective.

Students in a block schedule should be able to study topics at a higher cognitive level because of the extended time periods. In order to accomplish this goal, teachers must change their approach to teaching and move away from traditional lecture and note-taking to activities such as learning centers/research locations and cooperative learning that require students to complete tasks at a higher cognitive level (Canady & Rettig, 2001). The survey designed for this study asked teachers to comment on the frequency of their use of these teaching strategies. Data gathered from these surveys should illustrate if teachers on a block schedule are truly changing their teaching styles to meet the demands of the longer class periods or if they are using strategies similar to those teachers on a traditional schedule. The change in teaching strategies should also be accompanied by pre-service and in-service training of teachers (Bush & Johnstone, 2000). The questions in the survey were designed to determine the teacher's perspective

of the effectiveness of their pre-service and in-service training as related to their current educational situation.

Some schools have moved away from block scheduling because of the higher personnel costs incurred with such a schedule. These costs stem from the fact that more teachers are required to teach in a block schedule. Teachers in an eight-block schedule typically teach six classes over eight periods as compared to teachers in a traditional schedule who teach six classes over seven periods. Therefore, schools switching to a block schedule must add teachers to account for the additional classes that students are able to take (Kenney, 2003).

This study collected survey data from teachers at four high schools in Missouri. Large School B graduated its first class in 1906 with five students receiving diplomas. The school is located roughly 15 miles outside of St. Charles County. Today there are roughly 1900 students in the building, with around 475 students per grade level. The school has a graduation rate of 86.2%, which equates to around 410 students graduating per year. Large School A operated with a traditional schedule until the fall of 1996, when it made the switch to a block schedule. It has used some form of a block schedule ever since the transition.

Large School T was opened in the 2007–2008 school year as a new building in a well-established district in a suburb of St. Louis. This high school will not have a graduating class until May 2010; therefore, the graduation rate for this school was not available at the time of this study. The district has four high schools and has operated some form of a secondary school since 1910. At the time of this writing, the district uses a traditional schedule for all of its high schools and has been dedicated to this form of

scheduling even when the state increased the number of credits needed to graduate. For this district, that means students in grades 9–12 cannot fail a single class to meet the graduation requirements.

Small School T used a traditional seven-period day schedule until 1997, when it switched to a block schedule. The block schedule was used until 2001, when the school switched back to a traditional seven-period day. This switch was primarily made because of a reduction in the number of teachers due to budgetary constraints. The switch also allowed the school to join in a consortium of local school districts offering instruction through interactive television (ITV). The other schools in the consortium all operated on a traditional schedule; therefore, the traditional schedule was used for the ITV classes.

Small School B has used a block schedule for the past 11 years. A committee of teachers, parents, students, and other stakeholders made this switch after an exhaustive study. The committee studied the current schedule and other possible alternatives and made a recommendation to Small School B's Board of Education to adopt a block schedule. After the schedule was approved, the faculty underwent professional development on the use of effective teaching strategies in a block schedule. Since the time of implementation, the majority of the faculty who received this training have retired or left the district.

Research Questions

Teachers in each of the schools responded to survey statements focused on teaching strategies they used and the appropriateness of the schedule in place within their school. These responses were classified using a Likert scale for measurement.

Participants were also asked to respond in writing to an open-ended question after each survey statement designed to direct them to expand on their response.

This companion study answered the following research questions:

1. Does the type of school schedule make a significant difference in the attitudes and teaching strategies among teachers who teach in either traditional or block schedule high schools?
2. Does the size of a school on a traditional or block schedule make a difference between the attitudes and teaching strategies of teachers on each schedule?

Purpose of the Study

This study provided additional research in the area of teacher attitudes toward the type of schedule used and differences in teaching strategies used in block and traditional schedule schools. This information will be important for school administrators as they face the challenge of providing a quality education within the limited resources provided to public education. Administrators will be able to use the information provided in this study to help determine if a block schedule meets the needs of their school and provides them with information about how they can improve the quality of teaching and learning in a block schedule school.

Hypothesis

Teachers who teach on a block schedule will use instructional strategies and display attitudes toward teaching that differ from teachers who teach on a traditional schedule.

Independent Variables

The independent variable in this study was the type of schedule (block or traditional) being utilized and the size of the school.

Dependent Variables

The dependent variables for this study were teachers' attitudes toward the type of schedule (block or traditional) used in their school and the types of teaching strategies used in each schedule.

Limitations of the Study

1. The teacher demographics of the schools are obviously different. Teachers have different backgrounds and different educational experiences affecting their attitudes toward educational change.
2. The student demographics are also different, which may have an effect on teacher attitudes and perceptions depending on the situation.
3. Not all participants responded to the survey.
4. It is difficult to make generalizations based on information from only four schools.
5. Each school is located in a different area (rural and metropolitan), which affects the attitudes of both teachers and students.
6. The teachers self-reported the data, and therefore, the data only represents the teachers' perceptions of their uses of the strategies and may not actually represent what they do in the classroom.

Definitions of Terms

Traditional schedule. A schedule where the school day is divided into 45–60 minute periods. Students have six or seven periods in a school day and will take a different course each class period. These classes meet daily for the entire school year and the student has the opportunity to earn one half credit each semester per class, for a total of six or seven credits for the year, depending on the number of periods (six or seven) in the school day (NECTL, 1994).

A/B block schedule. A schedule where the school day is divided into 75–100 minute periods. Students have four or five periods in a school day and take a different course each period. The school calendar alternates between "A days" and "B days." Students take four or five classes on an "A day" and four or five different classes on a "B day" and have the opportunity to earn one half credit each semester per class, for a total of eight or ten credits per year (Trenta & Newman, 2002).

Four-by-Four block schedule. A schedule where the school day is divided into 80–90 minute periods. Students have four periods per day and take a different course each period. Each class meets every day for one semester and the students earn one credit per class each semester. In the subsequent semester, students take four different classes every day for 80–90 minutes and have the opportunity to earn one credit in each class for a total of four credits per semester and eight credits for the academic year (Trenta & Newman, 2002).

No Child Left Behind (NCLB) Act of 2001. A reauthorization of Elementary and Secondary Education Act of 1965 that was signed into law by President George W. Bush in 2002. This act required that all states receiving federal money for public education set

standards for proficiency in communication arts, math, and science. States must develop assessments to measure the proficiency of students in each subject at certain grade levels. States must also set proficiency targets, which require that all students be proficient in communication arts, math, and science by 2014 (No Child Left Behind Act, 2003).

Missouri Assessment Program (MAP). Assessment program in the state of Missouri. Students are assessed in communication arts in the 11th grade, math in the 10th grade, and science in the 10th grade. The results of the assessments are used to determine the proficiency level of students required by No Child Left Behind. The assessments consist of selected response questions where students are asked to select the correct response from four possible answers, constructed response questions where students write their response to the question posed to them, and performance events where students must complete a multiple step problem and answer questions related to the problem. (Missouri Department of Elementary and Secondary Education, 2009)

Adequate yearly progress (AYP). A yearly target of growth in the number of students proficient in math and communication arts set by No Child Left Behind. The yearly target increases until all students are required to be proficient in 2014. Schools that fail to meet AYP will undergo a series of consequences that range from notifying parents of the inability to meet AYP to giving students the right to transfer schools and the potential loss of federal funding (NCLB Act, 2003).

Department of Elementary and Secondary Education (DESE). Missouri government agency responsible for developing regulations and enforcing the laws established by the legislature relating to elementary and secondary education.

Learning centers. A teaching strategy in which there are different centers arranged through the classroom. Each center has a different learning activity for the students to complete. The learning activities require students to apply information they have previously learned. These activities are designed to provide a higher level of student engagement, and they typically require students to complete tasks at a higher cognitive level than traditional classroom assignments (King-Sears, 2007).

Secondary data. Statistical information that DESE collects and posts on its Web site for each school in the state.

Summary

Over the years various schedules have been utilized to deliver instruction in high schools. The schedule that has been most widely used has been a traditional seven-period day. During the 1990s the block schedule replaced the traditional seven-period day in many secondary schools around the nation; however, many teachers were still trained to teach in the 50-minute class period of a traditional schedule. Block scheduling contains class periods that are approximately twice as long as the traditional class period, but usually meet every other day. Although classroom time increased in a block schedule, the number of times the classes meet is decreased; thus, the overall length of contact time for teacher and student is similar for each type of schedule. Numerous studies have been conducted on the effects of block scheduling on student achievement. This study collected data using a survey and open-ended questionnaire from teachers on their attitudes toward the schedule used in their school and the types of instructional strategies they used. From this data, the research questions were addressed.

Chapter II – Literature Review

This chapter includes a review of the pertinent research on the implementation and use of block scheduling in high schools across the United States. This literature review includes the following sections: types of schedules, advantages and disadvantages of block scheduling, impact of block scheduling on academic achievement, implications for educators, teacher perceptions of block scheduling, student perceptions of block scheduling, effective teaching strategies, and schools and their use of block schedules.

Types of Schedules

Various types of daily schedules are used in high schools across the country. However, most of these schedules can be separated into four main categories: a traditional schedule; an A/B block schedule; Four-by-Four block schedule; and the Copernican Plan, otherwise known as the Trimester (Trenta & Newman, 2002; Schultz, 2000). In a traditional schedule, students meet six or seven periods a day with each class lasting 45–60 minutes. Students in A/B block scheduling meet with four or five classes per day with each class lasting 75–90 minutes, and the classes meet on alternate days throughout the entire school year (see Table 2). Students in a Four-by-Four schedule meet with four classes per day with the classes lasting 80–90 minutes. Students complete four classes per semester and then take four new classes the following semester (Dugan, Lewis, & Winokur, 2005) (see Table 3). In the Copernican Plan, students meet each day consisting of two main blocks, lunch, and an elective course. The two main blocks consist of core academic classes and typically meet every day for 150 minutes. The elective class typically meets every day as well for 45 minutes per day. The block classes meet for 60 days in order to earn credit; then students rotate to two new block classes.

The year is broken into to three 60-day semesters; thus the name trimester. Since the elective class only meets for 45 minutes a day, this class meets for the entire year (Schultz, 2000) (see Table 4).

Table 2

Example of a Student Schedule in A/B Block Schedule

	A Day	B Day
Block 1	Algebra 1	Band
Block 2	American History	Language Arts I
Block 3	Computer Applications	Physical Science
Block 4	Physical Education	Art Media

Table 3

Example of a Student Schedule in a Four-by-Four Block Schedule

	Semester 1	Semester 2
Block 1	Algebra 1	Band
Block 2	American History	Language Arts I
Block 3	Computer Applications	Physical Science
Block 4	Physical Education	Art Media

Table 4

Example of a Student Schedule in a Copernican Plan (Trimester)

	1st Trimester	2nd Trimester	3rd Trimester
Block 1	Mathematics	Social Studies	Art Fundamentals
Block 2	Science	Physical Education	English
Lunch	Lunch	Lunch	Lunch
Elective	Band	Band	Band

Students in the A/B block or the Four-by-Four block have the opportunity to earn more credits than their counterparts in a traditional schedule. The additional credits are earned because students take eight or more courses during a year, while students in a traditional schedule take only seven courses per year. Further, students in a non-traditional schedule earn the additional credits even though they have the same total amount of classroom instruction as those students in a traditional schedule. Alternative scheduling has helped schools meet the increased graduation requirements that many states have begun to put in place (Canady & Rettig, 1995).

Advantages and Disadvantages of Block Scheduling

1. Any type of schedule has certain advantages and disadvantages that must be understood before implementation. The advantages of block scheduling are as follows: Block scheduling reduces the number of classes students take every day, which, in turn, may reduce the amount of work students must do to prepare for school each day.

2. Block scheduling also reduces the number of classes teachers teach each day, providing teachers more time at school to prepare for instruction and reduces the number of students teachers see in a day (Hurley, 1997).
3. Block scheduling provides more time for teachers to cover the content in greater detail, fewer classes to prepare for, and more planning time which can reduce teacher burnout (Hannaford, Fouraker, & Dickerson, 2000).
4. Gullatt (2006) stated other advantages to the block schedule such as a calmer school atmosphere, better discipline, and improved student attitudes.

In addition to the previously listed advantages of block scheduling, Jenkins, Queen, and Algozzine (2002) stated another advantage of block scheduling was that it allows teachers to use teaching strategies that could not be employed within a traditional schedule because of the shorter class periods. When correctly employed, these teaching strategies actively engage students in the subject they were learning. Jenkins, et al. referenced more than 2,000 surveys, which showed similarities and differences in the traditional and block schedule. In general, few differences were evident in opinions about level of use, appropriateness, and training for a variety of instructional approaches.

As states began to increase the number of credits required to graduate from high school, some schools turned to block scheduling because of the advantage it offered students to gain more graduation credits. Block scheduling naturally allows students to take more classes throughout their high school career because students are taking eight or more courses per year as opposed to students in a traditional schedule who take seven courses in a year. Therefore, students in a block schedule have the opportunity to earn

more credits than those students in a traditional schedule (Canady & Rettig, 2001). With an increase in credits, schools were also able to offer more courses. Schools that made the switch to a block schedule had to account for the increase in possible credits with new elective courses. Some schools created additional courses just to have enough offerings to meet the criteria of a block schedule, which meant that more staff was needed to operate the schedule.

Students who attended a school with a block schedule that offers 8 or 10 credits per year would have the opportunity to earn more credits throughout their four years of high school than those who attended a school operating with a traditional seven-period day. This in itself can sometimes be a problem, especially when a student tries to transfer from one school to another and the schools operate on different types of schedules. To combat this issue, many schools use a formula to correlate the number of credits a student could have earned if they were on a block schedule.

The move to block scheduling was spurred by the National Education Commission on Time and Learning (1994), which concluded the American education system was a "prisoner of time" because the structure of the school day had changed very little in the last 150 years. Among the recommendations made in this report was "Block scheduling—the use of two or more periods for extended exploration of complex topics or for science laboratories—should become more common" (p. 31). The response involving block scheduling has been to reallocate the time students spend on a given subject in a day.

Thomas (2001) maintained that some classes and subjects, such as science, technology, art, and career and technical courses, would naturally lend themselves to the

type of teaching methods required for a block schedule. Teachers in these classes could use the extra time to incorporate lab or other hands-on learning experiences that allow students to extend their learning more than possible in a 45 or 50-minute class period. On the other hand, subjects such as math and social studies did not naturally lend themselves to longer blocks of instructional time. Instead, teachers in these subjects would have to use more creativity to develop lessons to keep their students engaged. The teachers in these subjects could not lecture on a topic for the entire class period or have students practice math for an entire class period as they may have done with a traditional schedule.

There have also been several disadvantages reported on the use of block scheduling. Slate and Jones (2000) conducted a trial period of a Four-by-Four block schedule and then surveyed students' perceptions of the schedule. Students in this survey reported difficulty paying attention during the longer class periods. They also reported more discipline problems in classes where teachers attempted to lecture the entire class period compared to those classes where the teacher used more than one teaching strategy per class period.

The goal of block scheduling was to increase time spent in the classroom on a specific topic so that the teacher could go into greater detail, thus providing more enriching course content and improving student achievement. However, recent research conducted at numerous schools illustrate this is not the case (Gullatt, 2006). This research found that schools who adopted the block schedule as their main method of content delivery witnessed their students' ACT and/or SAT scores in mathematics actually decrease. Gullatt (2006) further stated that student performance on AP examinations was also affected depending on the type of schedule to which students were exposed.

Typically, students on a block schedule did poorer on AP examinations than those on a traditional schedule.

The use of instructional time by teachers was compared in block schedule and traditional schedule high schools in a study conducted by Gullatt (2006). This study determined no significant difference between the types of instructional practices used in the classrooms of block and traditional schedule schools. In addition, Gullatt determined that the most common method of instruction was the lecture regardless of the type of schedule used in the school.

Thomas (2001) stated that block scheduling did not provide more time in the school year for the study of a subject and in most cases actually reduced the amount of class time that students spent on an individual subject. This action

> does not translate to escaping the prison of time. Instead, it merely changes the type of prison. Block scheduling may give students more freedom within a day to discuss ideas and concepts but less time over the course of the year to develop and internalize concepts as part of a larger whole. (p. 75)

Dugan et al. (2005) found that teachers in a block schedule must effectively design instruction for longer class periods and maintain appropriate academic pacing to meet the educational objectives for the class. The authors reported that students were often less attentive during block schedule classes. This lack of attention was often due to teachers using the same teaching strategies on a block schedule as they had used on a traditional schedule. According to Gebeke (1991), the typical attention span of a high school age student can be as little as 30 minutes to as much as 50 minutes. The implications of these facts are that teachers must find new and creative teaching strategies

to keep students interested and focused or face the inevitable consequence of a lack of attention to course content by the students.

Gruber and Onwuegbuzie (2001) stated that to prepare for the move to block scheduling, resources must be allocated to train teachers on the appropriate methods used in longer class periods. Missing one class using a block schedule was equivalent to missing two class periods in a traditional schedule; consequently less time was available for field trips and schools had to carefully protect instructional time.

Impact of Block Scheduling and Traditional Scheduling on Academic Achievement

To determine if there was a difference in achievement between students in schools using block and traditional schedules in Massachusetts, Harvey (2008) collected and analyzed standardized test information from the 259 public high schools in Massachusetts from 2001–2005. In addition, demographic data about the students, schools and the types of schedules the school used were collected. Demographic information was used to group schools and compare them. The study found no statistical difference between the performance of students on any type of block schedule versus students on a traditional schedule. In fact, the only statistical difference found in this study was that students in a modified block schedule significantly outscored students from other types of block schedule on the language arts test. At the same time, these scores were not statistically significant when compared to students on a traditional schedule. As defined by Harvey (2008), the modified block combines attributes of block and traditional schedule, where some classes would meet for shorter periods of time and some classes would meet for extended periods of time.

Nichols (2005) compared the grade point average (GPA) of students pre-block and post-block. The study analyzed the impact block scheduling had on English and language arts achievement scores. According to the article, one of the most important concerns expressed in the educational review by the National Commission on Excellence in Education (Gardner, 1983) titled *A Nation At Risk* was related to how effective time was being used in America's schools. In response to this report many educators from the national, state, and local levels argued that the duration of the school day and the school year should be lengthened. Along with wanting to increase the school day, many educators wanted to restructure the traditional daily schedule as well. Nichols found an overall small increase in GPA after implementation of a block schedule; however, the change was not statistically significant. Nichols also found that students in block scheduling had more time available in their schedules to take classes which could have led to this increase. An increase in the number of classes available to students could potentially be one of the most beneficial aspects of using a block schedule. Students have the opportunity to take at least one additional course per year under a block schedule than in a traditional seven-period day. Thus block scheduling allowed students to study a wider variety of topics, potentially allowing more in-depth investigation of subject matter.

Dugan et al. (2005) compared the effects of block scheduling on high school achievement in mathematics and reading, using data from a large district with three high schools. Each of the high schools used a different type of schedule: One used a traditional schedule, one an A/B block schedule, and one a Four-by-Four block schedule. Specifically, student scores from 9th and 11th grade standardized tests were matched and

sorted. Students in the A/B block schedule showed smaller gains than those in the traditional schedule, while those in the Four-by-Four block schedule showed larger gains than those students in the traditional schedule. As a group, there was no statistically significant difference in student scores in mathematics across the three schedules. Students on the Four-by-Four block showed a statistically significant gain from 9th to 11th grade when compared to those students on a traditional schedule.

Khazzaka (1998) analyzed the records of six secondary schools which made the switch to block scheduling. His study compared the merits of each type of schedule (block or traditional) with respect to student achievement, student attendance, student disciplinary infractions, and survey results. His findings showed that student GPA, attendance, and discipline improved. During the study 1,330 students attended the schools and 549 of those students responded to the survey. Survey results indicated that 76% of the students who responded thought that the block schedule was superior to the traditional schedule and 71% of the students who responded thought that the block schedule was less stressful than the traditional one. The study also included a teacher survey which had the following results: 91% of the respondents preferred the block schedule, 76% felt less stress while teaching with a block schedule, and 75% felt they were able to provide more individual attention to students while teaching under a block schedule.

"To block or not to block?" is the question Mowen (2004) attempted to answer. While the author admitted there is no magic pill to cure educational challenges, block scheduling could be an effective educational tool under the right circumstances. According to the author, block schedules could offer non-academic benefits such as

reducing the number of courses students took in a day. This can help students have a better transition from the middle school to high school because it would closer resemble the schedule they would have faced at the middle school. The block schedule also provided for increased content emphasis and time on task. The blocked time schedule provided disorganized students a fighting chance to keep abreast of assignments and projects.

Lawrence and McPherson (2000) compared the scores of students on End-of-Course exams in Algebra I, Biology, English I, and U.S. History. The subjects of the study were students in a North Carolina high school which had recently changed to a block schedule. The researchers compared the scores of students from the last 2 years on a traditional schedule to the first 2 years of a block schedule, finding that students on the traditional schedule scored significantly higher statistically in all subject areas. At the same time, the study stated that some of the statistical differences could be attributed to the block schedule being implemented for only a brief period of time and teachers not adequately adjusting to the new schedule.

Instructional practices can often affect students with disabilities differently than students without disabilities. Therefore, it is important to investigate the effects of changes such as block scheduling on students with disabilities. Bottge, Gugerty, Serlin, and Moon (2003) investigated this possibility and found that the schedule configuration did not impact the performance of students with disabilities. Students in this study performed within the same range whether on a traditional schedule or block schedule.

Rettig and Canady (2003) found three key variables for educators to consider as they worked to improve student achievement: the time variable, the teacher variable, and

the student variable. Block scheduling attempted to manipulate the time variable, but it would have no impact on student achievement if the other variables did not shift. Teachers must do more than just provide extended time for learning; they must ensure that the instruction is aligned to the standards being tested, differentiate their instruction to provide support for struggling students, and provide instructional strategies that engage their students in learning. Students also shared responsibility for their learning and would not be successful if they did not attend school and actively engage in their learning. Teachers and students shared a responsibility of developing an effort-based classroom where teachers rewarded students for their effort, not just their ability. This encouraged students to work harder to meet the standards set by the classroom teacher.

Tests of Achievement and Proficiency (TAP) from Riverside Publishing Company, used in the state of Virginia, measures secondary students' progress toward a set of commonly accepted learning standards. Arnold (2002) used the results of these assessments to compare the traditional schedule versus the A/B block schedule in 155 schools in Virginia. Fifty-one of the schools identified used the A/B block schedule, while the remainder used the traditional schedule. Arnold found no significant statistical differences between the scores of students using a traditional schedule versus those students on a block schedule. There was a difference noted in the length of time that schools had been using the block schedule. Those schools in years one and two of implementation of the block schedule outperformed those in a traditional schedule, while students in block scheduling for more than 3 years were outperformed by those students on a traditional schedule. However, none of the differences were statistically significant. The study also compared the schedule types based on the student-teacher ratios of the

school. It was reported that within schools with the lowest student-teacher ratio, students on the block schedule significantly outperformed those students using a traditional schedule.

In a study of three districts which implemented a Four-by-Four block schedule, Evans, Tokarczyk, Rice, and McCray (2002) found increases in several measures of student achievement 2 years after implementation of the block schedule compared to data from those same schools before they switched to the block schedule:

> Overall, the percentage of students on the honor roll increased at the three sites by 9 percent (from 22 percent to 31 percent). The number of students on high honor roll, or principal's honor roll, increased from approximately 6 percent to 9 percent. The percentage of students receiving a single D or F for a final course grade decreased by 7 percent (from 29 percent to 22 percent). There was also a decrease in the number of students experiencing multiple failures, from 8 percent to 5 percent, in spite of the fact that most students completed eight courses instead of the traditional seven. (p. 321)

Non-academic gains were also noted in this study. While the number of suspensions remained constant, the number of detentions decreased by about 50%. In other words, although serious offenses remained the same, minor discipline offenses dramatically reduced. Further, the average daily attendance over the 2-year period increased from 92.4% to 94.1% (Evans et. al., 2002).

Gruber and Onwuegbuzie (2001) compared the GPA and scores on the Georgia High School Graduation Test (GHSGT). The participants in this study were comprised of 115 high school students who received instruction via the Four-by-Four block schedule

and 146 students who received instruction via a traditional schedule. The study found no statistically significant difference in student GPA in the two groups. In analyzing the results from the GHSGT, they found no statistically significant difference in the writing portion of the test. On the language arts, mathematics, science, and social studies portion of the test, students from the traditional schedules scored statistically significant higher than those students from the Four-by-Four block schedule.

Coventry High School in Akron, Ohio, adopted a modified Four-by-Four block format that allowed students and teachers the choice of taking or teaching a class in the block or traditional schedule. Hess, Wronkovich, and Robinson (1999) conducted a pre-test and post-test study of the sophomores at Coventry after 5 years of using the modified block system. They administered retired copies of the Scholastic Aptitude Test (SAT) subject area tests at the beginning of the learning term and then again at the conclusion of the term in four the most commonly taken courses for sophomores in the high school. Upon comparing the pre-test and post-test results, the researchers found no significant differences in the scores amongst the world history and geometry students. However, students on a Four-by-Four block schedule scored at a statistically significant higher level than their peers from the other schedule types in English and biology.

Dexter, Tai, and Sadler (2006) attempted to answer the question of what impact the type of high school schedule has on students' college performance. They surveyed students in introductory-level college science classes asking what type of schedule they used in high school and compared the students' final grades for the science course across the various types of schedules (traditional, Four-by-Four block, and A/B block) reported by the students. Researchers found students on a traditional schedule outperformed those

on a Four-by-Four block by about one third of a letter grade in their college science course. They also discovered an interaction that suggested high performing students from an A/B block schedule were at an advantage while low performing A/B block students were at a disadvantage when compared to similar students from a traditional schedule or a Four-by-Four block schedule.

Implications for Educators Using Block Scheduling

Bottge et al. (2003) found that teachers used the same type of instructional strategies and spent the same percentage of time on these strategies regardless of the scheduling type used at their high school. Students and teachers also reported being satisfied with the type of schedule they were using whether block or traditional. Gullatt (2006) stated that a revised schedule alone does not improve the quality of the teacher and student interaction, but the types of teaching strategies employed make a huge impact. The Carnegie Council on Adolescent Development (1989) stated, "Students need time to learn and teachers should be able to create blocks of time for instruction that best meets the needs of students, responds to curricular priorities, and capitalizes on learning opportunities" (p. 52). From this prior statement, it is clear that how a teacher uses instructional time is important. Goodlad (1984) may have said it better:

> We must not stop with providing only time. I would choose fewer hours well-used over more hours of engagement with sterile activities. Increasing [time] will in fact be counterproductive unless there is, simultaneously, marked improvement in how time is used. (p. 283)

Further research would determine the amount of professional development teachers within a block schedule have received in implementing block-teaching strategies.

Kienholz argued that traditional scheduling created a frantic pace in the classroom, which in turn created an impersonal, chaotic environment in the school. In contrast, block schedules allowed for the teacher to get to know his or her students' individual needs and allowed the class to have a greater depth of analysis of the content matter. The depth of this analysis required more effort and planning on the part of the teacher. The block schedule also required varied techniques and approaches to keep students focused. With the additional length of the class period, it was vital to vary instructional delivery and approach. Teaching and learning in a block schedule could be accomplished in a more relaxed, less frenetic pace. Concepts and ideas could be explored and studied in an unbroken period of time, allowing both teachers and students time to question and reflect. Blocked scheduling was marked by coherence and integrity (Kienholz, 2003).

Schools that move from a traditional schedule to a block schedule must provide adequate training for teachers as they make this transition. Stokes and Wilson (2000) found that teachers in their study reported the most important component of implementing a block schedule was training the teachers on planning for and teaching in a block schedule.

As more and more schools made the switch to block schedules the training piece became more evident. According to a study by Zepeda and Mayers (2001), as block schedule classrooms required more varied instructional practices, it also created a whole new set of problems for first-year teachers as well. It has been well documented that first-year teachers face isolation, classroom management issues, general frustration, and have difficulty adapting to student's needs/abilities. This particular study also found that

new teachers on a block schedule faced issues associated with teaching in a block schedule. Often these teachers were not prepared for the challenges they faced in the longer class periods. These first-year teachers were often asked to teach the entry-level (low-level) classes which require more organization and varied teaching strategies than the upper-level classes. In other words, students who are most at-risk for failure often have teachers with the least amount of professional experience. The implications of Zepeda and Mayers' (2001) study indicated that first-year teachers need systematic support from principals/supervisors, department chairs, and mentors on the use of teaching strategies and classroom management in the block schedule.

Teacher training seems to be one of the biggest implications for schools that are moving towards a block schedule or have already made the switch. Teachers must understand how to work with the challenges and opportunities provided by the block schedule (Schultz, 2000). According to the same article, teacher training is often the most overlooked necessity when implementing block scheduling plans. The author goes on to say that this training is especially essential for teachers who are trying to meet the diverse needs of the gifted and/or talented student, as this type of student may already know the curriculum to a depth and breadth beyond the abilities of the teacher. Increased time per class provides students with more opportunities to explore the content and to go into greater detail, but increasing the time alone does nothing to enhance the content or the experiences of the class. Teachers are the critical link for the success or failure of any block schedule class (Schultz, 2000).

Rettig and Canady (2003) collected data from Virginia's high schools over a period of 9 years and found that 237 of the 303 high schools in the state had implemented

a block schedule over the past 18 years and 231 schools continued to implement some form of block scheduling. They found the schools that had implemented some form of block scheduling had seen the following benefits:

- School management problems are reduced because students spend less time in highly congested areas, such as in hallways and dressing rooms.
- The amount of class tardiness is reduced.
- Teachers make better us of technology and engage students in more active learning strategies.
- Stress is reduced for both teachers and students because they meet fewer classes during any on school day or term.
- Time lost to general administrative duties, such as calling roll, setting up and cleaning up, and getting students into an academic mode of behavior is reduced.
- The number of courses students may take increases if a change is made to either the eight A/B or the Four-by-Four schedules for a six or seven period day, without a commensurate increase in stress. More time is available for student support and extended learning.
- In eight-course models, "double dosing" classes (meeting in a block every day all year long) allow additional learning time for students at risk or failing key courses such as Algebra I and English 9 or required state examinations. (Rettig & Canady, 2003, p. 28)

Teachers from two south Florida high schools that had recently implemented block scheduling were surveyed by Hamdy and Urich (1998). The teachers from these

schools agreed that in-service training before implementation of block scheduling was the most crucial factor to the success of the implementation of a block schedule. In this survey, teachers of certain subjects such as math, foreign language, and communication arts agreed that the gaps between classes and semesters, when using a Four-by-Four block, was a hindrance to student learning. Based on survey results, the author suggested that schools planning to implement block scheduling provide adequate in-service training to their teachers before the full implementation, and that administrators create flexible scheduling that allows certain subjects to be taught every day within the structure of a block schedule.

Teachers in a block schedule must operate their classroom differently than their counterparts in a traditional schedule for their students to attain the benefits of block scheduling. Queen (2000) provided the following recommendations for teachers using a block schedule:

1. Teachers must develop and follow monthly, weekly, and daily pacing guides.
2. Teachers must master a minimum of five instructional strategies to engage students directly in the learning process and should aim to master seven or eight.
3. Teachers should pace each lesson by changing grouping patterns, varying presentations, and using different instructional activities every 10 to 15 minutes. In most cases a teacher should use a minimum of three instructional strategies during any class period.

4. Teachers should incorporate alternative and authentic assessment practices when evaluating students.
5. Teachers must use the entire class period for instruction. Every day.
6. Teachers should strive to be creative and flexible in assigning activities and should incorporate outside assignments into regular classroom activities.
7. Teachers should monitor individual students consistently to be sure of total student participation in small and large groups.
8. Successful block teachers should mentor, formally and informally, beginning teachers and veteran teachers having difficulty with instruction in block scheduling. (Queen, 2000, p. 221)

In a survey of 10 high schools using a block schedule and 13 high schools using a traditional schedule, Deuel (1999) found that the educators in the schools using the block schedule reported many positive benefits. The benefits for teachers using a block schedule included implementing a wide range of instructional strategies, increased numbers of learning activities utilized, experimentation with different student evaluation techniques, and the ability to provide more individualized attention to students. The positive benefits of block scheduling relayed by the guidance counselors surveyed included a reduction in stress among students because of the reduced number of classes per day, more time available to do in-depth study, and the ability of students to take more classes to meet the graduation requirements and take electives that were interesting to them. Further, principals surveyed indicated that leadership and professional development for staff were crucial to the success of block scheduling.

In another study comparing the teaching strategies of teachers on a block schedule and those on a traditional schedule, Jenkins, Queen, and Algonzzine (2001) found only small differences between the two groups. The study compared teachers from schools using a Four-by-Four block in North Carolina versus teachers from schools in the same state using a traditional schedule. Teachers completed surveys rating the frequency of specific teaching strategies used in their classrooms. The teachers reported that the only significant difference was the use of peer tutoring or peer coaching. According to the study, teachers using primarily a block schedule favored these strategies. The study also found that teachers from both schedules reported no statistically significant difference in the amount of training they had received in the various teaching strategies included on the survey.

As many previous studies have noted, appropriate teaching strategies differ from a block schedule and a traditional schedule. O'Brien (2006) reviewed the teaching strategies used at one Pennsylvania high school to determine if they matched the recommended strategies found in a literature review of the topic. Two surveys were administered to the teachers to determine the intended use of teaching strategies and classroom observations were conducted to determine the actual use of teaching strategies. The data collected revealed that the actual use of student-centered teaching strategies was below the levels recommended in the review of literature. It was also determined that the review of literature recommended a broader variety of student-centered teaching strategies than the teachers in this school reported they intended to use or actually were observed using.

Flynn, Lawrenz, and Schultz (2005) compared the instructional practices of mathematics teachers in a block and a traditional schedule. The only statistically significant difference found among the reported teaching strategies was in the use of writing reflections in a journal or notebook and the use of computers and/or calculators to solve problems; both of these items were used more often by teachers in a block schedule. However, when the data was controlled for socioeconomic status, the use of computers and/or calculators was no longer statistically significant. This data suggests that the use of calculators and computers may be more related to socioeconomic status than the type of schedule used at the school.

Science was often one of the subject areas that reported benefits from the extended time periods in a block schedule (Thomas, 2001; Jenkins et al., 2002). Grosshans (2006) reviewed the teaching strategies implemented by science teachers at a large rural high school to determine if they were using strategies such as inquiry-based learning, which was adopted by the National Science Standards. According to the author, the strategies could be more readily implemented with the longer class periods provided by a block schedule. Teachers reported in an advance questionnaire using a wider variety of teaching strategies, but the classroom observations revealed that the teaching strategies observed were not based on inquiry learning, which is recommended by the National Science Standards. However, teachers reported being aware of the inquiry-based learning techniques recommended by the National Science Standards.

Benton-Kupper (1999) found that communication arts teachers were satisfied with the switch to a block schedule. Through in-depth interviews and observations of three teachers who had recently transitioned from a traditional schedule to a block schedule,

Benton-Kupper was able to determine that the observed teachers felt they were better able to teach their content to a deeper level of understanding and use a wider variety of teaching strategies in a block schedule as compared to a traditional schedule. The teachers in this study admitted they did not cover the same amount of content as they had with a traditional schedule, but they believed the extended class time provided for additional learning activities that helped students retain the material presented. With a traditional schedule, teachers stated they often had to interrupt a lesson at the end of the period and then come back to it the next day. Contrary, with the block schedule, teachers often finished the lesson in one class period and used activities that promoted self-analysis and critical thinking for the remainder of the period.

To determine if teachers in the Irving Independent School District in Irving, Texas, had changed their approach to teaching after the implementation of block scheduling, Bush and Johnstone (2000) conducted a number of observations of teachers' classrooms. The 48 observations for this study took place in three high schools within the district in Algebra I, Biology I, English II, and U.S. History classes. These subjects were chosen because all students were required to take the classes to graduate from high school. The observations produced information on the teachers' activities, students' activities, level of student engagement, and classroom configurations. The researchers determined that most of the teachers had not changed their instructional practices to match the longer class periods that block scheduling provided. Most classroom time was devoted to the teacher delivering content, guiding discussion, and monitoring the seatwork of students. Research showed little evidence of the student-centered and

individualized instruction that was supposed to be facilitated by the change to block scheduling.

Bush and Johnstone (2000) made three recommendations based on the findings of their study:

1. Clear, measurable goals related to instructional practices are needed for those who teach in extended periods. Teachers need to be an integral part of the goal development process and to have a clear understanding of instructional expectations. Unless teachers know what is expected, change is not going to happen automatically. Goals should mirror the local expert estimates of how time should be used in an effort to close the gaps between "what should be" and "what is." Additionally, goals should reflect state and national standards.
2. Teachers need ongoing staff development related to teaching in the block and teaching in the 21st century. Specifically, teachers would benefit from more instruction related to time allocations, teacher- and student-centered instructional strategies, constructivist learning and thinking strategies, disciplinary issues in a learner-centered environment and national standards.
3. Teachers should know their expectations related to the provision of teacher- and student-centered teaching methods and should be rewarded when they comply. Unless teachers are held accountable for trying new things and going beyond traditional, teacher-centered instruction, instructional practice will never change. Perhaps a reward system that

> gives teachers more credit for training hours when they implement the new approach in their classes should be reviewed. (p. 20–21)

Corley (2001) conducted a survey of teachers at an Ohio high school 3 years after the original implementation of a block schedule. The survey results revealed that many teachers had not modified their teaching strategies to effectively fit with the extended time in a block schedule. Teachers in the survey were also concerned with the lack of continuity in some educational programs, such as music and foreign language caused by a block schedule. As a result of this data, Corley made recommendations for schools that had implemented a block schedule. Among these recommendations were providing on-going professional development to teachers on the effective use of teaching strategies in the block schedule because many teachers reported they did not feel they had received adequate training in the use of a variety of teaching strategies; therefore, teachers felt they were unable to take full advantage of the additional class time provided by the block schedule. Corley also recommended that because of the reduced amount of time teachers see students in a block schedule compared to a traditional schedule (50 minutes over a 2-week period), that teachers be provided with ongoing professional development in the effective use of classroom time in a block schedule. The author's last recommendation was to provide flexible scheduling allowing classes such as music and foreign language to meet every day within the framework of a block schedule.

Examining a variety of perspectives, Tan et al. (2002) surveyed parents, students, and teachers at Millard High School in Utah on their perceptions of block scheduling. They found that 76% of parents, 74% of students, and 73.8% of teachers agreed that teachers sometimes allowed students to complete homework in class. This item raised

some issues for the researchers because teachers might be continuing to teach for 45 minutes like they did with a traditional schedule and then allow students to work on homework for the remainder of the class period. This strategy would defeat the purpose of the extended classroom time, and it would not allow teachers to cover the amount of material they would using a traditional schedule. Further, students would not develop the study habits and skills they needed to be successful in post-secondary education.

Teacher Perceptions of Block Scheduling

Evans et al. (2002) also investigated the perceptions of teachers after implementing block scheduling. The teachers interviewed reported the following benefits from block scheduling:

- By varying activities between large group assignments, small group assignments, and individual projects, teachers reported that they were able to spend more than half of each class period on activities other than teacher-oriented lecture.
- Students seemed more settled in class, and there were fewer student behavior problems, resulting in fewer detentions.
- The extended time blocks allowed teachers to do more activities and expand on lessons. For example, teachers could present a lesson, show a movie, and conduct a review all in one day.
- Students were able to participate in more independent projects and present the results from the projects to their teachers and classmates during class time.

- In general, teachers spent much more time working with individual students and felt that they knew their students better.
- Because they could cover concepts with more depth, teachers perceived teaching to be more interesting and challenging. Teachers also reported that they could cover the same amount of material, or more, than they could cover under a traditional schedule.
- There were fewer projects and papers to grade at one time because teachers had a lighter student load than under the traditional schedule. (p. 320)

The study also revealed some disadvantages to block scheduling, such as difficulty providing substitutes with enough material to keep students occupied. Teachers also stated it was more difficult for absent students to catch up, especially after an extended absence.

Similarly, Veal and Flinders (2001) surveyed teachers at a large Midwestern high school that was experimenting with different types of schedules on a 3-year trial basis. The students at this school were divided into three groups for scheduling purposes. One group of students used a traditional six-period schedule, the second group a Four-by-Four schedule, and the third group a hybrid of the traditional schedule and the block schedule. Teachers in the block and hybrid schedules reported an increase in the variety of instructional practices they used, specifically an increase in the use of group work and lab work. Teachers in the block schedule also reported an increase in the pace of their teaching. In general, teachers using the block schedule felt they had to cover the same amount of material in less classroom time. This pressure often led the block teachers to

use lecture to cover the required material. Teachers using the block schedule reported they were better able to build relationships with their students because of the increased time they spent with them and the fewer number of students they saw per day. Teachers in the block schedule also reported a positive affect on the amount of time they were able to reflect on their teaching. Teachers also reported spending increased time planning their lessons.

Using other methodologies, Queen, Algozzine, and Isenhour (1999) conducted surveys, teacher interviews, and observations in North Carolina to determine the most effective teacher behaviors in a block schedule. According to the teachers, the most important factor was their instructional pacing because classes in a block schedule actually met for less time than those in a traditional schedule. Consequently, teachers had to adjust their pacing to be able to meet the curriculum standards for the school year. Teachers also listed the following items as important: (a) the ability to use a wide variety of instructional strategies, (b) providing interactive instruction, (c) high level of competency in the discipline they were teaching, (d) instructional leadership at the department and school level, (e) creativity, (f) flexibility, and (g) classroom management.

Hamdy and Urich (1998) conducted a survey of teachers at two south Florida high schools that used a block schedule, one used a Four-by-Four and the other an A/B block. They found that teachers from both types of block scheduling were in agreement on several topics regarding block scheduling: (a) the importance of training for teachers on the implementation of a variety of teaching strategies, (b) the use of a variety of teaching strategies to keep students engaged during the longer class periods, (c) the additional stress due to classroom management and preparation issues, (d) the lapse of time between

students taking the subject leading to a loss in retention of subject matter, and (e) the average or advanced students benefiting while below average students did not seem to benefit from longer class periods. These recommendations allowed teachers to deliver quality instruction to their students while using a block schedule.

Stader and DeSpain (1999) conducted a survey of the high schools in Missouri that had implemented a block schedule for more than 2 years. The survey was sent to high school principals who were asked to randomly select teachers to complete the survey, selecting one who represented each of the following disciplines: English/social studies, mathematics/science, and practical arts/fine arts/physical education. Survey questions were divided into the following categories: student achievement, school climate, teacher methodology, and an overview. Overall, the results indicated that all participants responded with a positive perception of block scheduling to the aforementioned areas of the study. When the results were disaggregated by subject area, teachers in the mathematics/science discipline did not perceive an improvement in the quality of student work, depth of subject matter covered, or retention of material.

In a survey of 23 teachers at the Southside Public Schools in Arkansas, Calvery, Sheets, and Bell (1999) measured the teachers' perceptions of block scheduling after it had been implemented for 2 years. The teachers responded to questions using Likert scale responses on a 1–5 scale. The average score of the teachers' responses to the questions/statements are shown in the parentheses below:

1. From your vantage point, rate your personal like/dislike to block compared to a seven-period day. (4.2)
2. Do you think you make optimum use of preparation time? (3.9)

3. Do you make optimum use of instructional time? (4.2)
4. Have you adopted new methodologies? (3.7)
5. Are you planning your schedule to cover your entire course needs? (4.1)
6. Are you covering as much information in the same course in block as you covered in traditional seven-period day? (2.9)
7. Do you think club activities have interrupted the instructional day less in block scheduling? (3.5)
8. I have fewer absences and discipline problems with block scheduling. (3.7)
9. Students complete more assignments in the block than in the traditional seven-period scheme. (3.2)
10. I am able to spend more time with individual students. (3.7)
11. I am better able to keep up with individual student's progress. (3.6)
12. Weighing all aspects of block versus a seven-period day, I think block is best for our students. (4.4)
13. I think block is best for school overall. (4.1)

(Calveryet al., 1999, pp. 5–6)

These results indicated an overall positive feeling by teachers to the change from a traditional seven-period day to a block schedule. The only response to receive less than the possible median score was the statement concerning the amount of content covered in a block schedule versus a traditional schedule. Although the teachers were able to cover less content, they responded positively that their students completed more work in a block schedule compared to a traditional schedule. The overall positive reaction by the

teachers to block scheduling may be a reflection of the fact that the teachers were willing to cover less content if they believed their students were completing the assignments and mastering the content they were able to cover.

Biesinger, Crippen, and Muis (2008) conducted a study on instructional practices and student motivation with respect to block scheduling in a mathematics classroom, comparing four different schools, three of which used a block schedule, with the fourth using a traditional schedule. Their method of investigation was mixed, with one of the methods being classroom observations over a 6-month period. Biesinger et al. observed that 93% of the teachers used a textbook during their lessons, and except for an overhead projector, use of technology was almost non-existent. The instructional practices employed during these observations were traditional in nature (lecture, note-taking, individual practice, and review of homework), according to Biesinger et al. The authors also noted that though the lessons were traditional in format, almost all the instructors in the study broke up their lessons into three distinct activities over the block period. Biesinger et al. also noted that during post-observation interviews, 90% of the teachers indicated that the classes observed typified their normal teaching routine and normal student behavior.

In a study conducted on 15 physical education teachers from 8 different schools, Rikard and Banville (2005) compared the teacher perceptions of teachers on a block schedule to teachers on a traditional schedule. The data collected indicated that the teachers reported several changes while teaching in a block schedule format. According to their study, they placed more emphasis on fitness, they had to use several class transitions during the block, and they used a limited variety of teaching strategies. Rikard

and Banville also demonstrated results that are consistent with other research previously mentioned in this study, such as reduced stress levels, a decline in student absenteeism and tardiness, and reduced student behavior problems. Statistically, the study concluded that 66% of the teachers perceived that students learn more while in a block schedule as compared to a traditional schedule.

Zepeda and Mayers (2006) analyzed the research on block scheduling with mixed results on teacher perceptions and instructional practices. Numerous studies were cited, ranging over several states, gathering information from both rural and urban school districts. According to Zepeda and Mayers, teachers reported decreased student absenteeism, fewer student discipline problems, less class preparation, and less student anxiety. Their analysis also showed mixed results on teachers' perceptions based on the experience level of the teacher. Staunton (1997) found that more experienced teachers were more favorable to making a transition to block scheduling than their less experienced colleagues. Baker and Bowman (2000) conducted a similar study that showed the exact opposite: Less experienced teachers were more apt to be in favor of making the switch to a block schedule as compared to the more experienced teachers. Zepeda and Mayers (2006) also found that teacher use of multiple or varied instructional practice was just as inconclusive, with one study contradicting another. These mixed results may indicate that there is no clear preference among teachers of the type of schedule that should be used.

Student Perceptions of Block Scheduling

Evans et al. (2002) determined that the perceptions of students can often determine the success or failure of any initiative. The researchers accomplished this by administering a pre-test and post-test to students in a variety of New Jersey high schools that were making the switch from a traditional schedule to a block schedule. Students reported the following positive outcomes:

- An opportunity to take more electives including advanced electives such as Advanced Placement courses.
- More time to work with other students in class; more opportunities for independent projects; and higher teacher expectations for learning.
- Less classes to focus on and more concentrated assignments and homework.
- Class time available for the teacher to provide help on homework.
- Opportunity for more in-depth study of topics. (p. 321)

Students did report problems with block scheduling, including some teachers' inability to offer enough activities to keep students engaged. Students also noted a problem with substitute teachers, as often they would assign worksheets that would not keep students engaged. Another problem noted by students was that a "boring class" would be "twice as boring" with block scheduling (Evans et al., 2002).

In a study conducted at a large high school that included some block classes that utilized the Four-by-Four schedule and some traditional classes, Knight, DeLeon, and Smith (1999) compared perceptions of students who took a class on the block schedule versus students who took the same class taught by the same teacher on a traditional

schedule. Students on a block schedule reported significantly better study habits, greater involvement in class activities, and more positive learning environments than students in a traditional class. Eighty-three percent of the students in a block class indicated they would take another block class, and 59% said they wished all of their classes were block. Other advantages listed by the students on a block schedule consisted of a faster pace, less "busy work," more time to complete homework, and the ability of the teacher to give them additional help. On the contrary, students in AP block classes reported feeling less prepared, and they also expressed concern about the time lag of completing a class first semester and not taking the AP test until the spring. Students in the block schedule also reported concerns about not being able to catch up after an absence and transferring between schools and/or districts that did not use a similar schedule (Knight et al., 1999).

Marchant and Paulson (2001) conducted student surveys and focus group interviews at a large Midwestern high school that had been using a modified eight-block schedule for 3 years. From the results of their surveys, students were clustered into five groups:

> Cluster 1: Happy. Schedule-Dependent/Ability-Oriented Achievers (n = 317). This cluster contained 20 percent of the students and was 58 percent female. These students believed that school was important and they were pleased with their good grades. They attributed their level of success to their ability (rather than effort) and to the block scheduling of their courses.
>
> Cluster 2: Happy. Schedule-Independent/Effort-Oriented Achievers (n = 417). This cluster contained 26 percent of the students and was 57 percent female. Similar to Cluster 1, these students also believed school was important, and they

> were pleased with their good grades. However, they attributed their level of success to their effort and not to the way their courses were scheduled.
>
> Cluster 3: Displeased. Lower Achievers (n = 388). This cluster contained 24 percent of the students and was 55 percent male. These students were distinguished by their extreme displeasure over their low grades. They were relatively ambivalent regarding the role of the course schedule and the role of effort rather than ability influencing school success.
>
> Cluster 4: Schedule-Dependent/Effort-Oriented Students (n = 251). This cluster contained only 16 percent of the students and was 53 percent male. Like Cluster 1, these students believed school was important, and they attributed their level of success to effort and to the way their courses were scheduled. However, these students were only average achievers.
>
> Cluster 5: Apathetic, Lower Achievers (n = 232). This cluster contained only 14 percent of the students and was 55 percent female. This group included a disproportionate number of seniors (29 percent, almost twice that of the other clusters). These students were distinguished by their lower than average grades and the significantly lower importance they placed on being at school. (2001, p. 15)

Students in Clusters 1, 2, and 4 reported being the most satisfied with block scheduling and provided the following reasons in support of block scheduling: more time to cover content; better ability to finish labs during a class period; seems like the day goes by faster; less pressure because of having two days to complete homework. Students in Clusters 3 and 5 were less satisfied with block scheduling, and the reasons they gave for

their displeasure included the following issues: lack of concentration or attention; unable to take classes such as math or music every day; assigning of more homework by teachers because of the additional time between classes; teachers used lecturing too much, and it was overwhelming to a freshman (Marchant & Paulson, 2001).

Stokes and Wilson (2000) surveyed students at four high schools that used the Four-by-Four block. They found that students who reported being more satisfied with the block schedule also reported that their teachers had used a wider variety of instructional strategies than the teachers of students who were not satisfied with the block schedule. Students identified the opportunity to earn more credits toward graduation as the greatest advantage of block scheduling. Another advantage identified by students was the increase in the quality of the learning environment within their classes. Students reported the greatest disadvantage with block scheduling to be making up work when they had missed class because of the amount of material that was covered within a class period.

A study designed to gather information about student perceptions of block scheduling was conducted by Corley (2003). This survey was a follow-up to a survey conducted after one semester in a block schedule at the same high school. This survey required students to respond to questions using a Likert scale. Overall, respondents to the survey agreed they had more total learning time, more time to learn concepts better, more opportunities to work with other students, more individual help from teachers, more opportunity to complete homework in class, better grades, and more time to prepare for tests. Generally, the students liked block scheduling. Students were undecided, however, if they were more actively involved in learning events, enjoyed classes more, or liked their teachers more. Students were also asked to rate the frequency of variety of teaching

strategies used by their teachers. Their answers indicated that handout assignments and seatwork were rated by the students as being used very often. Lecture, group work and cooperative learning, individual projects and papers, large group discussions, and two to three activities per class were rated as often used. Hands-on activities and laboratory work, journaling, computers and Internet and presentations were rated as being used once in a while. Field trips, guest speakers, and the teacher using four or more activities per class were rated as not often.

Zepeda and Mayers (2006) analyzed 58 studies of block scheduling, which yielded some interesting student perceptions. In general, most students responded positively towards block scheduling. At the same time, responses indicated that the higher achieving students seemed to have a more favorable opinion of block scheduling and these same students indicated they were better prepared for college after having been exposed to block scheduling.

Effective Teaching Strategies

The survey instrument (see Appendix A) used in this study asked the participants about their use of particular teaching strategies. The following is a review of the current literature on the effectiveness of these teaching strategies.

Classroom discussion and asking questions of students is at the heart of what teachers do on a daily basis. The amount of classroom discussion was the subject of the first statement posed to the participants. Filippone (1998) found that teachers typically ask between 45 to150 questions every half hour in their classroom. With the amount of questions teachers use to support learning, it is important they ask the right types of questions to guide student learning. Risner, Nicholson, and Webb (1994) reported that

teachers often ask questions about information they think is unusual or about information they think will cause students to be interested in the topic instead of information that is critical to completely understanding the topic.

Wiggins and McTighe (2008) stated that most high school textbooks, and therefore, high school courses, focused on the acquisition of knowledge and skills. They further stated that high school curriculum should be focused on three tasks: "(1) acquire important information and skills, (2) make meaning of that content, and (3) effectively transfer their learning to new situations both within school and beyond it" (p. 36). These tasks not only provided students with the knowledge and skills they needed to be successful, they also provided opportunities for students to use the knowledge and skills in settings which they may face after they leave high school.

Wiggins and McTighe (2008) offered a sequence of instructional events that can be applied to any lesson:

> Begin with a hook problem, introduce essential questions, preview the culminating performance task, provide direct instruction, provide practice on the basics, provide opportunities for further discussion, provide an application task, lead a whole-class discussion, provide a small group application, revisit the original hook problem, assign the final performance task, and give students opportunities to reflect on the unit's essential questions. (pp. 36–37)

This sequence provided students the opportunity to see real-world applications before they received all of the information about a topic, which helped to provide them with motivation to learn the content so they could answer the real world questions set forth by the teacher.

The use of cooperative learning or group work has been identified by Marzano, Pickering, and Pollock (2001) as having a positive effect on student achievement. The second statement presented to the participants required them to report how often they use group work in their classroom.

Johnson and Johnson (1999) identified five elements that need to be in place for effective cooperative learning:

> Positive interdependence (a sense of sink or swim together). Face-to-face promotive interaction (helping each other learn, applauding success and efforts). Individual and group accountability (each of us has to contribute to the group achieving it goals). Interpersonal and small group skills (communication, trust, leadership, decision making, and conflict resolution). Group processing (reflecting on how well the team is functioning and how to function even better). (pp. 85–86)

Schools and Their Uses of Block Schedules

At the beginning of this study, several surrounding school districts had decided to abandon the block schedule at their high schools in favor of a traditional schedule. This portion of the literature review examines some schools that have made the switch from one schedule to the other, the reasons behind the changes and the accomplishments and challenges of the schools.

The Anne Arundel School System in northern Virginia switched from a six-period day to an A/B block schedule beginning in the 2003 school year (de Vise, 2005). The primary reason for the switch, according to Superintendent Eric Smith, was to offer students an opportunity to take more credits and allow them to be competitive with other

students in the college admission process. Block scheduling has accomplished this goal, because students take an additional eight credits over their high school career. The drawbacks from the change to a block schedule included a reduction in instructional time per class, "from about 9,000 minutes to 7,750" (de Vise, 2005, ¶ 22), and an increase in the number of students each teacher sees in a typical week. "A typical Anne Arundel high school teacher sees at least 180 students over the course of a week" (de Vise, 2005, ¶ 17).

Due to budget cuts, the schools in the Clark County School District in Nevada were changed from a block schedule to a six-period day in the 2009–10 school year (Vanderploeg, 2009). This change allowed the district to save $11 million dollars by eliminating the expense of additional teachers needed to staff schools with a block schedule compared to the cost of staffing schools with a six-period schedule. This cut was made even though some schools, such as Centennial High School, had shown gains with the block schedule. The graduation rate at Centennial High School had increased since block scheduling was implemented "from 60 percent the first year to 84 percent last year" (Vanderploeg, 2009, ¶ 8). Block scheduling gave students more opportunities to pass the 45 semesters of courses required to meet graduation requirements. "On a traditional schedule, students may take up to 48 semesters of classes. On a block schedule, though, that number goes up to 64 semesters" (Vanderploeg, 2009, ¶ 10).

Tolland High School in Connecticut implemented a Four-by-Four block schedule in the 1996–97 school year. The "school's Connecticut Academic Performance Test (CAPT) scores began improving four years into block scheduling" (Gelb, 2001, ¶ 5). Because the students took four classes each semester and a total of eight in a school year, they have benefited from the ability to take more courses during a school year. The

schedule allowed students to arrange their course load so they could "pair two difficult classes in a semester with two less challenging classes, thereby enabling them to devote more time to the harder classes than they would be able to under a period system" (Gelb, 2001, ¶ 6)

Watauga High School in Boone, North Carolina, adopted and implemented a composite schedule during the 2001–2002 school year (Childers & Ireland, 2005). The composite schedule allowed for certain classes to be scheduled as block classes, while the remainder of the classes were on a traditional schedule. Block classes met every day for two class periods for the semester, while traditional classes met every day for one class period for the entire school year. This schedule created some initial problems during the 2001–02 school year, "when only 52% of students had a complete schedule when school opened and students were still in counselors' offices three weeks after school began to work out problems in their schedules" (p. 48). After reviewing the process, the school administrative team and teachers decided to continue with the composite schedule and attempt to fix the problems. Parents and students were surveyed about the schedule and most of them expressed their satisfaction. Teachers expressed overwhelming support for the composite schedule as well, "only 4 of 130 teachers felt we should return to a traditional schedule or go to an all-block schedule. (p. 49)"

Summary

The review of the literature on block and traditional scheduling did not provide overwhelming evidence in support of the effect of either schedule on student achievement. Some classes, such as lab-based courses, naturally lent themselves to the extended time of a block schedule, while some courses, such as band and foreign

language, benefited from the daily contact offered by a traditional schedule. While the teaching strategies that are most effective are the same for both types of schedules, teachers in a block schedule must implement multiple teaching strategies within a class period and should receive professional development on implementing proper transitions from one teaching strategy to the next. Students and teachers generally shared a positive perception of the schedule that was currently in place in their school. In turn, teachers in schools that changed the type of schedule had a positive perception of the change when they were allowed input on the change process, and when they were provided with appropriate professional development for the change.

Chapter III – Methodology

Overview

The purpose of this study was to determine if there was a difference in the attitudes and teaching strategies of high school teachers in a block schedule compared to those in a traditional schedule. As the literature review indicated, teachers that teach on a block schedule must use different teaching strategies and techniques to take advantage of the longer class periods afforded to them by the block schedule. To gauge the teachers' use of different teaching strategies, participants were asked to respond to statements about the use of different teaching strategies using a Likert scale. According to Shane Hall (n.d.), a contributing author for the Web site *e*How, the Likert scale survey is a commonly used tool in survey research. This type of scale typically measures a respondent's level of agreement or attitude towards a particular question. The scale is usually set up with a range from strongly disagree to strongly agree. An example of this type of survey might be strongly *disagree* = 1, *disagree* = 2, *neutral* = 3, *agree* = 4, and *strongly agree* = 5.

In this study the responses of the teachers from a block schedule school were compared to the responses of teachers from a traditional schedule school to determine if there was a statistically significant difference between the responses of the two groups. The participants were also asked an open-ended question after each statement. This allowed the teachers to provide more information about the teacher's use of different teaching strategies and their attitude toward the schedule in place in their school.

Type of Research

Both qualitative and quantitative data were collected on teachers' use of teaching strategies and attitudes toward the type of schedule in their school. Quantitative data is "obtained when the variable being studied is measured along a scale that indicates how much of the variable is present" (Fraenkel & Wallen, 2000, p. 212). The quantitative data for this project was obtained through the use of survey statements that asked the participants to rate their agreement with the statements using a one through four scale. This allowed the researchers to compare the percent of desired responses to the percent of undesired responses by using the *z* test for proportions. Qualitative data attempts to describe, "in detail all of what goes on in a particular activity or situation rather than on comparing the effects of a particular treatment" (Fraenkel & Wallen, 2000, p. 502). The qualitative data for this project was collected through the use of open-ended questions that allowed the participants to provide more information relating to their response to each Likert scale question.

This mixture of a qualitative and quantitative process was selected for the variety of data it collected. The researcher not only answered the research questions by collecting quantitative data, but the researcher was also able to determine why the teachers responded in the way they did through the qualitative data. This process was used in similar research studies in the literature review.

Participants

The participants for this research were teachers from two high schools located within a 30-mile radius near the St. Louis metropolitan area. Large School B has used an A/B block schedule for the past 14 years. The schedule at Large School B was a modified

eight-block schedule that allowed students to earn eight academic credits and one academic lab credit per year for a total of nine credits per year and 36 credits over a four-year high school career. Graduates of Large School B were required to earn 31 credits. Large School T was opened as the fourth high school in a large suburban district for the 2007–08 school year. The schedule at Large School T was a traditional six-period day. Graduates of Large School T were required to earn 24 credits to graduate, which were the state-mandated minimum graduation requirements. The first class to graduate from Large School T was scheduled to be the class of 2010. All of the schools in the district used a traditional schedule of six periods per day. At the time of this writing, the school offered a zero hour before the normal school day began so that students could elect to take an additional course. Students are able to earn 24 credits during a four-year high school career, and they are required to earn 24 credits to graduate. A breakdown of the credits required for graduation at each school is provided in Table 5.

Table 5

Graduation Requirements of Participating Schools

	Large School B	Large School T
Language Arts	4	4
Math	3	3
Science	3	3
Social Studies	3	3
Fine Arts	1 ½	1
Physical Education	1 ½	1
Practical Arts	1 ½	1
Health	½	½
Personal Finance	½	½
Electives	12 ½	7
Total	31	24

Note. From Student Handbook of Large School B and Student Handbook of Large School T.

Large School B had an enrollment of 1,909 students during the 2008–09 school year, of which 93.3% were white, 4% were black, 1.6% were Hispanic, 0.9% were Asian, and 0.2% were Indian. Additionally, 23.7% of the students qualified for the National Free and Reduced Lunch Program. Large School T had an enrollment of 619 during the 2008–09 school year, of which 90.7% were white, 6.4% were black, 1.6% were Hispanic, 1.1% were Asian, and 0.2% were Indian. Fourteen and seven tenths percent of the

students at Large School T qualified for the National Free and Reduced Lunch Program. Large School T had an enrollment of 551 during the 2008–09 school year, of which 97.8% were white, 1.1% were black, 0.7% were Hispanic, 0.2% were Asian, and 0.2% were Indian. Figure 1 outlines the demographic make up of the two participating schools. Figure 2 displays the percentage of students at each school qualifying for the National Free and Reduced Lunch Program.

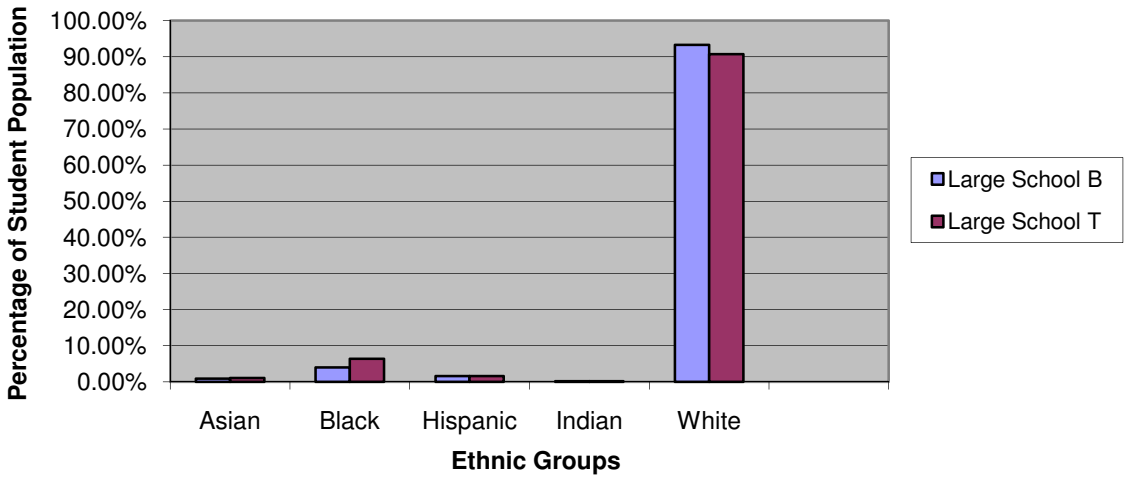


Figure 1. Demographic comparison of the student populations of the participating schools.

From dese.mo.gov (2009).

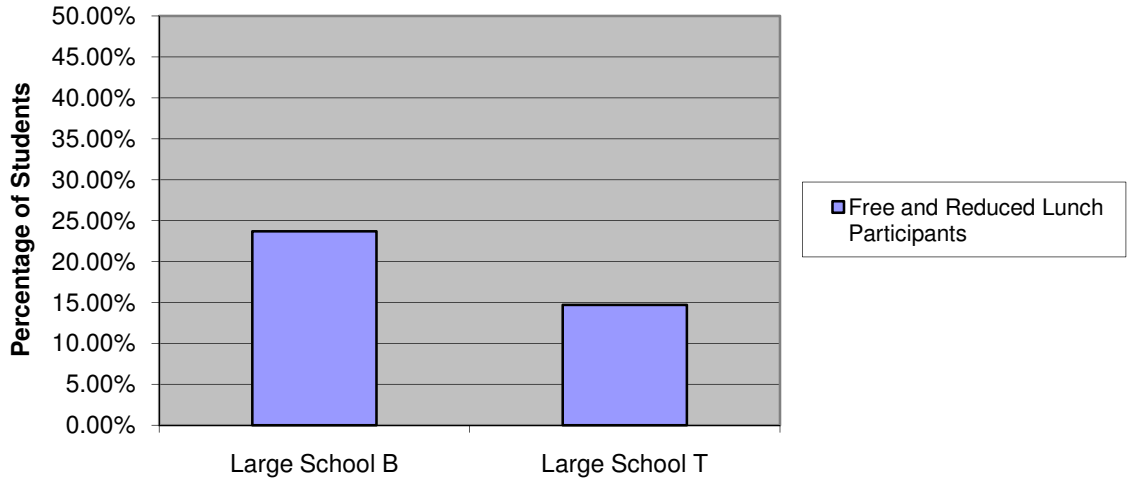


Figure 2. Percentage of Students Eligible for Free/Reduced Lunch.

From dese.mo.gov (2009).

To provide a comparison of the academic achievement of the schools involved with this study, the results of the 2009 End-of-Course Assessment (EOC) test are presented here. Students were tested after the successful completion of English II and Algebra I. Students who take the EOC test are classified into one of four groups: Advanced, Proficient, Basic, and Below Basic.

On the 2009 English II EOC examination, Large School B had 16.8% of the students classified as advanced, 56.6% classified as proficient, 22.5% classified as basic, and 4.1% classified as below basic. Large School T had 30% of the students classified as advanced, 53% classified as proficient, 14% classified as basic, and 4% classified as below basic. Small School T had 15.8% of the students classified as advanced, 64.4%

classified as proficient, 16.8% classified as basic, and 3% classified as below basic. Small School B had 12.2% of the students classified as advanced, 55.3% classified as proficient, 27.6% classified as basic, and 4.9% classified as below basic.

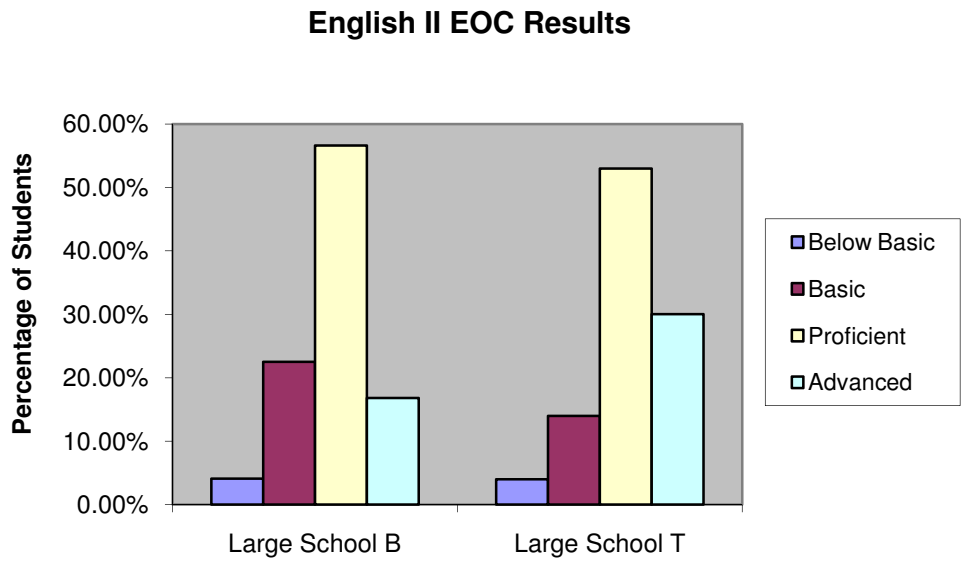


Figure 3. 2009 English II EOC Results.

From dese.mo.gov (2009).

On the 2009 Algebra I EOC examination, Large School B had 6.7% of the students classified as advanced, 35.6% classified as proficient, 46.9% classified as basic, and 10.8% classified as below basic. Large School T had 1% of the students classified as advanced, 43% classified as proficient, 49% classified as basic, and 7% classified as below basic.

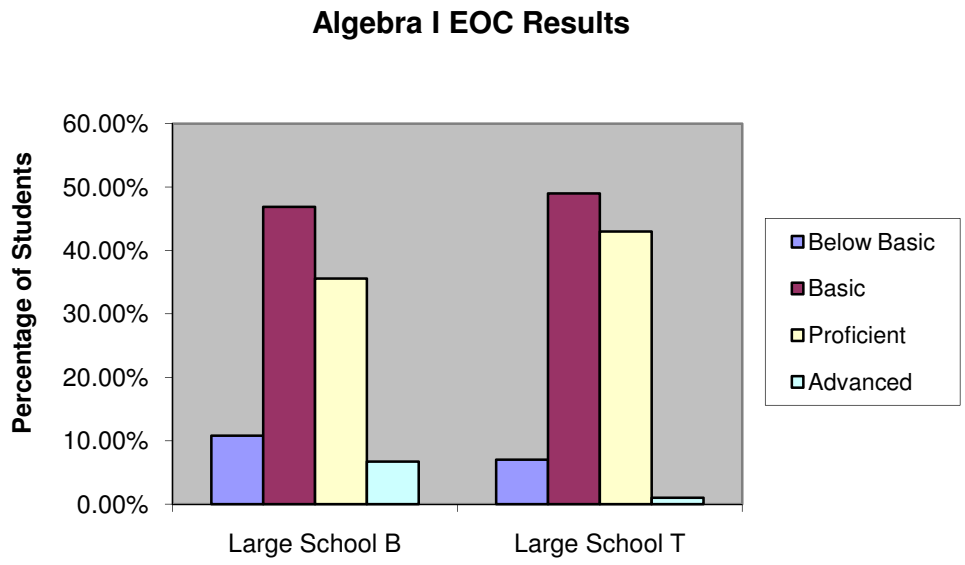


Figure 4. 2009 Algebra I EOC Results.

From dese.mo.gov (2009).

DESE collects numerous other types of data that may help give a perspective of a district. Figure 5 shows the ratio of classroom teachers to students at Large School B, which is 26:1; at Large School T it is 19:1. Figure 6 shows the teachers at Large School B have an average of 8.7 years of experience, while the teachers at Large School T have an average of 8.2 years of experience. Figure 7 shows 48.5% of the teachers at Large School B hold a degree above a bachelor's degree, and they earn an average salary of $43,070;56.4% of the teachers at Large School T hold a degree above a bachelor's degree, and they earn an average salary of $40,505.

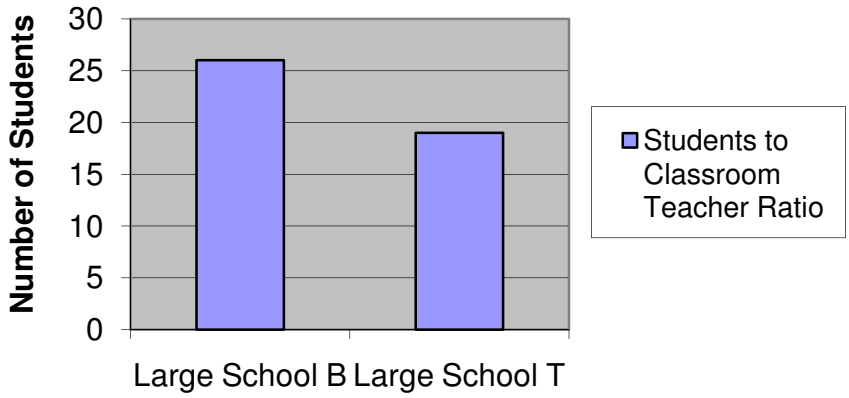


Figure 5. Students-to-Classroom Teacher Ratio.

From dese.mo.gov (2009).

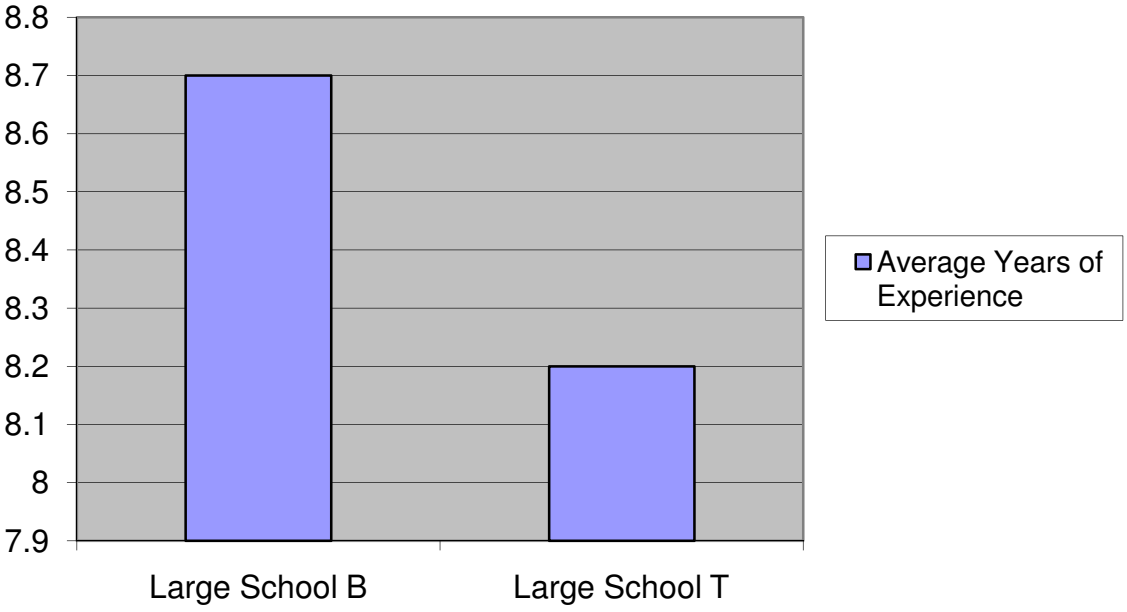


Figure 6. Average Years of Experience Per Classroom Teacher.

From dese.mo.gov (2009)

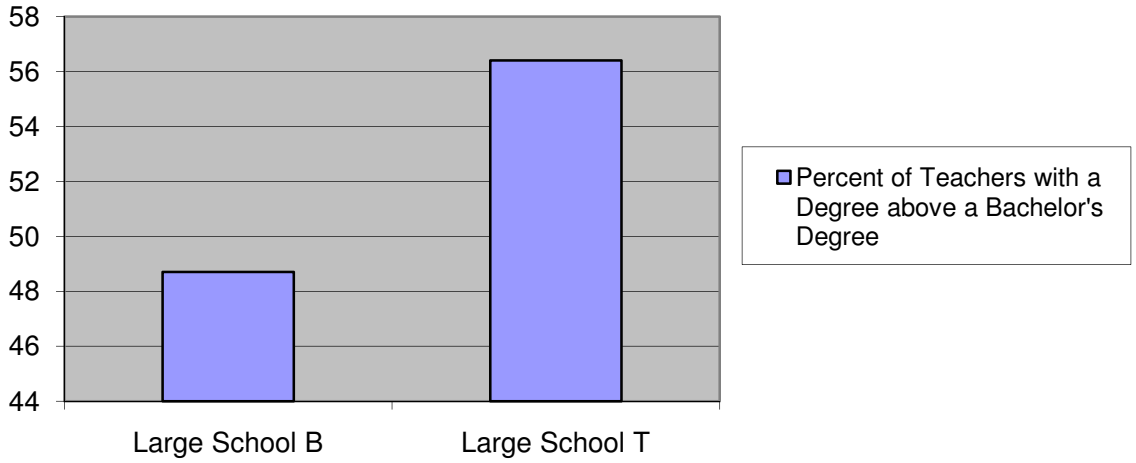


Figure 7. Percent of Teachers With a Degree Above a Bachelor's Degree.

From dese.mo.gov (2009).

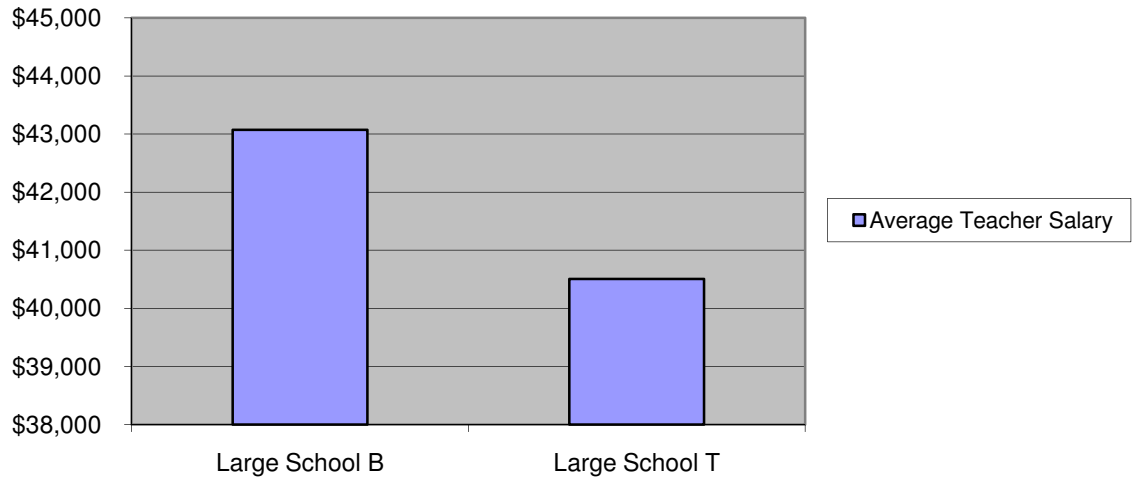


Figure 8. Average teacher salary.

From dese.mo.gov (2009).

The companion research to this study was conducted at two smaller rural schools, Small School T and Small School B, with similar demographics. One school operated with a block schedule, while the other used a traditional schedule. My fellow researcher gathered the same data for these schools that have been indicated on Figures 1–8. The information gathered for these schools showed several similarities.

All teachers at the participating schools were asked to participate in this research project. Teachers at Large School B and Large School T were given the opportunity to complete an online version of the survey. Teachers at Small School T and Small School B were given the opportunity to complete a written questionnaire and were asked to return it to the building office upon completion. There were a total of 74 possible participants at Large School B, 69 possible participants at Large School T, 38 possible participants at Small School T and 37 possible participants at Small School B. The rate of return for the surveys was 57.8%, of the 218 possible respondents, 126 completed the survey.

Validity

According to the Colosi (1997), validity is defined as "the strength of our conclusions, inferences or propositions" (¶ 7). This same article states that there are four types of validity commonly examined in social research, which are as follows:

1. Conclusion validity asks, is there a relationship between the program and the observed outcome?
2. Internal Validity asks, if there is a relationship between the program and the outcome we saw, is it a causal relationship?

3. Construct validity asks, is there a relationship between how I operationalized my concepts in this study to the actual causal relationship I'm trying to study? Overall, we are trying to generalize our conceptualized treatment and outcomes to broader constructs of the same concepts.
4. External validity refers to our ability to generalize the results of our study to other settings. (¶ 8)

The survey in this study was designed by the researchers and reviewed by the doctoral committee. The questions selected for the survey were designed to answer the research questions posed by the researchers:

1. Are there differences in attitudes and teaching strategies among teachers who teach in traditional schedule schools and those who teach in block schedule schools?
2. What are the differences in attitudes and teaching strategies among teachers who teach in traditional schedule schools and teachers who teach in block schedule schools?

With the type of study that the researchers are conducting the type of validity that will be relevant is external validity. This is because the researchers are attempting to determine if there are differences between teachers on a block schedule and a traditional schedule. This information would be important to the educational community if it can be translated to a larger population than just the participants of this study.

External Validity

External validity is defined as the ability to generalize the results of one study in a specific time, specific place, and/or specific people to other settings. A threat to external validity is an explanation of how the researcher might be wrong in making a generalization. There are three major threats to external validity because there are three ways the generalization could be wrong: A researcher could be wrong (1) with regard to people or (2) with regard to places, or (3) with regard to times. An example of this would be when outside readers of the study argue that the results obtained were due to the unusual type of people who were in the study or the unusual place the study was conducted or the peculiar time in which the study was conducted.

The sample size of this survey was relatively small, with a total of 143 eligible participants in this research study and 75 eligible participants in the companion research study; therefore, the results of this study could only be generalized to schools of similar size, demographic make up, and location. It would not be appropriate to generalize the results of this study to all teachers because of the size and scope limitations of the study. However this study does provide valuable information about the teaching strategies used in the participating schools and the attitudes of the teachers in these schools related to schedule type.

Research Design

This research collected both quantitative and qualitative data. The quantitative data was collected through the use of survey questions with Likert-type responses. The participants were asked 15 questions and they responded by selecting their response from the choices of: 1 (*Rarely*), 2 (*Sometimes*), 3 (*Mostly*), 4 (*Always*). The qualitative data

used for this research came from 15 open-ended questions that related to the questions which asked for a Likert-type response. These questions allowed the participants to provide additional information about how the processes in question affected their attitudes about the type of schedule used in their school and the teaching strategies used in their classroom.

This type of survey was selected to provide statistical data about the teachers' attitudes and teaching strategies used in their type of schedule. It also provided the researchers with more in depth information that would allow them to understand why the participants chose their particular answer to the question. From these responses, the researchers were able to compare the percent of desired responses to the percent of undesired responses. By using the *z* test for proportions, the companion researchers were able to complete the statistical comparison of the data.

Instrument

The research instrument used for this research was a survey designed by the researchers and approved by faculty consultants at Lindenwood University. The consultants (Dr. William Emrick and Dr. Susan Isenberg) verified that the questions of the survey were appropriate for the characteristics being studied. The survey was then provided to the participants in online and paper form. The survey asked the participants to identify themselves by the type of schedule (block or traditional) used at the high school where they were currently teaching.

The instrument consisted of 15 Likert-type questions that required the participants to select from the choices of: 1 (*Rarely*), 2 (*Sometimes*), 3 (*Mostly*), 4 (*Always*). Each of the questions was accompanied by an open-ended question relating to the selected

response question. The instrument contained a total of 30 questions that required a response from the participants.

Procedure

The researchers met with the faculty of the schools involved with the study. Jerry Raines (Assistant Principal of Large School B) met with the faculties of Large School B and Large School T, while Tim Reller (Principal of Small School T) met with the faculties of Small School T and Small School B. During these respective meetings the researchers explained the purpose of the study, how the data would be collected and analyzed, and how the results of the study would be reported back to the participants. They were informed that their participation was voluntary and that they would not be individually identified through their participation in the survey. The participants were also told that the answers they provided on the survey would in no way be used by the school district as a part of the evaluation process.

The participants at Large School B and Large School T were given the opportunity to complete an online version of the survey. The online survey service known as Zoomerang was used to disseminate the survey. Participants were given the login address for the survey. The participants accessed and completed the survey at their convenience. The survey was totally anonymous with no way for the researchers to track where the individual answers came from. It was explained to the participants that the window for taking the survey was a set number of days (30 days); if they did not complete the survey during that window, the link would not open for them to complete the survey. Between Large School B and Large School T, there were 143 possible teachers to complete the survey. Of the 143 possible teachers, 88 teachers completed the

online survey. The participants at Small School T and Small School B were given a paper copy of the survey after having it explained to them during a faculty meeting. They were then asked to return their completed survey to an envelope in their respective building office. Between Small School T and Small School B, 38 of the possible 75 teachers completed the survey.

Summary

Both qualitative and quantitative data about teachers' use of teaching strategies and attitudes toward the types of schedules in place in their school were collected. The data collected from the survey of the faculty at the schools involved were used to answer the following research questions:

1. Are there differences in attitudes and teaching strategies among teachers who teach in traditional schedule schools and those who teach in block schedule schools?
2. Does the size of a school on a traditional or block schedule make a difference between the attitudes and teaching strategies of teachers on each schedule?

Answers to these questions could be used to determine if a lack of differences in attitudes and teaching strategies among teachers from block and traditional schools is a reason why some schools have decided to move from a block schedule back to a traditional schedule. If teachers who teach on a block schedule have the same attitudes and use the same teaching strategies as their counterparts who teach on a traditional schedule, then the schools would not see the benefits of using a block schedule over a traditional schedule.

Chapter IV – Results

The participants of this study were asked to complete a survey that contained 15 statements about their attitudes toward the type of schedule used in their school and the types of teaching strategies they employ. The participants responded to these statements using to the following scale: 1 (*Rarely*), 2 (*Sometimes*), 3 (*Mostly*), and 4 (*Always*). All of the selected response survey questions were followed by an open-ended question designed to allow participants to share more information about the previous question. The survey was designed to answer the research questions posed by the companion researchers:

1. Does the type of school schedule make a significant difference in the attitudes and teaching strategies among teachers who teach in either traditional or block schedule high schools?
2. Does the size of a school on a traditional or block schedule make a difference between the attitudes and teaching strategies of teachers on each schedule?

The responses of the participants were divided into two categories, favorable and unfavorable. The favorable responses were 3 (*Mostly*) and 4 (*Always*), while the unfavorable responses were 1 (*Rarely*) and 2 (*Sometimes*). To determine if there was a significant difference in the percentage of favorable responses, a z test for proportions was calculated using the .05 confidence level. This was used to accept or reject the null hypothesis that teachers who teach on a block schedule will use strategies and display attitudes toward teaching that do not differ from teachers on a traditional schedule.

Each of the statements presented to the participants is divided into four parts. First, the quantitative results from Small School T and Small School B are presented. Second, the quantitative results from Large School B and Large School T are presented. Third, the combined quantitative results of the smaller schools, Small School T and Small School B, are compared to the combined quantitative results of the larger schools, Large School B and Large School T, to determine if there was a difference based on the size of the school. Finally, the participants' responses to the open-ended question are presented.

Statement #1

The first statement posed to the participants was, *Class discussion is an essential component of my lessons.* This statement was included because information from the literature review (Wiggins & McTighe, 2008; Risner et al., 1994) showed that class discussion is vital for students' understanding of the concept. Quality classroom discussion allows students to interact with the information they are working with and relate it to previously learned information.

Jerry Raines computed the results from Large School B and Large School T and evaluated them using the *z* test for proportions. Large School B had a total of 63 responses to this question while Large School T had a total of 16 responses. Of the 63 responses from Large School B, 45 were categorized as favorable while 9 of the 16 responses from Large School T were categorized as favorable. The *z* test for proportions produced a *z* value of 0.865 and a two-tail confidence level of 61.3%. This result allowed the researchers to accept the null hypothesis and prove that there was not a significant difference in the responses of teachers on a block schedule as compared to teachers on a traditional schedule. In the larger schools, Large School B and Large School T, there was

not a significant difference in the proportion of teachers using class discussion as an essential component of their lessons.

Tim Reller computed the results from Small School T and Small School B and evaluated them using the *z* test for proportions. Small School T had a total of 18 responses to this question while Small School B had a total of 19 responses. Of the 18 responses from Small School T, 5 were categorized as favorable while 14 of the 19 responses from Small School B were categorized as favorable. The *z* test for proportions produced a *z* value of 2.463 and a two tail confidence level of 98.6%. Using a .05 confidence level, this result allowed the researcher to reject the null hypothesis and prove there was a significant difference in the response of teachers on a block schedule compared to teachers on a traditional schedule. A statistically significant higher proportion of teachers on a block schedule reported using class discussion as an essential component of their lessons when compared to the teachers on a traditional schedule.

Tim Reller compared the results of the two larger schools involved in the study, Large School B and Large School T, to the two smaller schools, Small School T and Small School B, for the first statement. There were a total of 79 responses from the teachers at Large School B and Large School T; 54 of the responses were classified as favorable and 25 were classified as unfavorable. A total of 37 responses were received from Small School T and Small School B; 19 of the responses were classified as favorable, while 18 of the responses were classified as unfavorable. A *z* test for proportions was performed on the data and it produced a *z* value of 1.561 and a two-tail confidence level of 88.1%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of the

teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

The open-ended question presented to the participants was, *When do you most employ the strategy of class discussion?* Overall, the participants from Small School T indicated that classroom discussion was used more for a review of material or when there was a controversial topic that could be debated. The participants from the Small School B indicated that classroom discussion was used more frequently in their classrooms and they designed their lessons around the discussion.

In the two larger schools, Large School B and Large School T, the participants used classroom discussion throughout the lesson no matter under which schedule they taught. Overall the respondents from the block schedule school indicated that discussion was a key component of their daily lessons and planned for it accordingly when preparing lesson plans; whereas, the respondents from the traditional school used discussion mainly as an introduction method when starting a new topic.

Statement #2

The second statement posed to the participants was, *I schedule regular time for group work in my classes.* The information presented in the literature review indicated that group work or cooperative learning can have a positive effect on student achievement. Marzano et al. (2001) reported an average "effect size of .73 and a percentile gain of 27 percentile points" (p. 7) when using cooperative learning.

Jerry Raines collected the data from Large School B and Large School T and compared the teacher's responses using the *z* test for proportions. Large School B had a total of 63 responses to this question while Large School T had a total of 16 responses. Of

the 63 responses from Large School B, 25 were categorized as favorable while 4 of the 16 responses from Large School T were categorized as favorable. The *z* test for proportions produced a *z* value of 0.797 and a two-tail confidence level of 57.5%. At the .05 confidence level, these results indicated there was not a significant difference between the responses of the participants from the block schedule school and the traditional schedule school. This allowed the researchers to accept the null hypothesis that there would not be a significant difference between the responses of teachers from a block schedule and a traditional schedule.

Tim Reller collected the data from Small School T and Small School B and compared the teacher responses using a *z* test for proportions. Small School T had a total of 19 responses, of which 11 were categorized as favorable and 8 as unfavorable. Small School B had a total of 19 responses, of which 7 were categorized as favorable and 12 were categorized as unfavorable. The *z* test for proportion produced a *z* value of .975 and a two-tail confidence level of 67%. At the .05 confidence level, these results indicated there was not a significant difference between the responses of the participants from the block schedule school and the traditional schedule school. This allowed the researcher to accept the null hypothesis that there would not be a significant difference between the responses of teachers from a block schedule and a traditional schedule.

Jerry Raines compared the responses of the teachers from the larger high schools, Large School B and Large School T to the responses of the teachers from the smaller high schools, Small School T and Small School B, for the second statement. There were 79 responses from the teachers at the larger high schools, 29 of those responses were classified as favorable and 50 were classified as unfavorable. The smaller high schools

had 38 responses; 18 were classified as favorable and 20 as unfavorable. A *z* test for proportions was performed and it produced a *z* value of 0.9 and a two-tail confidence level of 63.2%. At the .05 confidence level, these results indicated there was not a significant difference in the responses. Therefore, the researcher accepted the null hypothesis that there would not be a difference in the responses of the teachers from a larger high school compared to the responses of teachers from a smaller high school.

The open-ended question presented to the participants was, *When is group work most effective?* Teachers from Small School T and Small School B indicated they used group work on large projects which allowed students to break up the material in smaller parts to aid in learning. The participants also indicated that group work helped students by allowing them to explain their answers to other students and hearing other students explain their answers to them.

In the two larger schools, Large School B and Large School T, the respondents indicated that group work was used mainly on project-based assignments with no bias/preference to the type of schedule they used. Respondents from both schools indicated that they would only use groups after the initial concept was mastered and that the project was more or less an extension to a real-world concept. Although the block schedule school had more time for these types of activities the respondents did not indicate that they used this type of instruction practice more often than their counterparts from the traditional schedule school.

Statement #3

The third statement posed to the participants was, *My lesson plans provide ample time for students to work on tasks relevant to the lesson's objective(s)*. This statement

was designed to gather data from the teachers about how they believed the amount of class time impacted their ability to meet the objectives of their lessons. Jerry Raines collected the data from Large School B and Large School T and compared the teacher responses using a *z* test for proportions. Large School B had a total of 63 responses, of which 59 were categorized as favorable and 4 were categorized as unfavorable. Large School T had a total of 16 responses and 14 were categorized as favorable. The *z* test for proportions produced a *z* value of 0.301 and a two-tail confidence level of 23.6%. Using the .05 confidence level, these results indicated there was not a significant difference between the responses of the teachers from Large School B and Large School T. Therefore, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of teachers from a block schedule and a traditional schedule.

Tim Reller collected the data from Small School T and Small School B and compared the teacher responses using a *z* test for proportions. Small School T had a total of 19 responses, of which 16 were categorized as favorable and 3 were categorized as unfavorable. Small School B had a total of 19 responses and all 19 were categorized as favorable. The *z* test for proportions produced a *z* value of 1.203 and a two-tail confidence level of 77.1%. Using the .05 confidence level, these results indicated there was not a significant difference between the responses of the teachers from Small School T and Small School B. Therefore, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of teachers from a block schedule and a traditional schedule.

Tim Reller compared the responses of the participants from the larger schools, Large School B and Large School T, to the responses of the participants from the smaller schools, Small School T and Small School B. The larger high schools had 79 responses, 73 which were classified as favorable and 6 which were classified as unfavorable. The smaller high schools had 38 responses, 35 which were classified as favorable and 3 which were classified as unfavorable. A z test for proportions produced a z value of 0.313 and a two-tail confidence level of 24.6%. Using the .05 confidence level, the researcher was able to accept the null hypothesis that there would not be a significant difference in the responses of teachers from larger high schools compared to teachers from smaller high schools.

The open-ended question posed to the participants was, *Which tasks are most effective in assisting your students' learning?* This question was included to allow the teachers to discuss what types of activities they believed were most effective in their classroom. This is important because some activities such as labs and large projects lend themselves to the extended time periods offered by the block schedule. Teachers from both Small School T and Small School B indicated their students benefited from the use of cooperative learning. The teachers also stated that students benefited from activities that required them to do something such as labs, hands-on activities, and independent practice. The responses did not appear to indicate a difference in the types of activities used by teachers from either schedule.

In the two larger schools, Large School B and Large School T, the respondents indicated a wide variety of activities used. The answers given did not show a preference

to any specific types of activities based on the type of schedule used by the individual respondent.

Statement #4

The fourth statement posed to the participants was, *Lecture, with student note-taking, is an essential component of my lessons.* This statement was included in the survey because lecture, with student note-taking, is a primarily teacher centered instructional strategy. According to the literature review, these types of strategies should be used sparingly in the block schedule (Kienholz, 2003; Queen, 2000; O'Brien, 2006). The longer class periods of the block schedule requires that teachers use student-centered instructional strategies. Teachers must also use a variety of instructional strategies within a class period to break up the longer periods of time into shorter, more manageable chunks of time (Queen, 2000).

Jerry Raines collected the data from Large School B and Large School T and compared the teacher responses using a *z* test for proportions. Large School B had a total of 63 responses, of which 24 were categorized as favorable and 39 were categorized as unfavorable. Large School T had a total of 16 responses, and 5 were categorized as favorable. The *z* test for proportions produced a *z* value of 0.217 and a two-tail confidence level of 17.2%. Using the .05 confidence level, these results indicated that there would not be a significant difference between the responses of the teachers from Large School B and Large School T. Therefore, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of teachers from a block schedule and a traditional schedule.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Small School T had a total of 19 responses, of which 5 were classified as favorable and 14 were classified as unfavorable. Small School B had a total of 18 responses, 7 which were classified as favorable and 11 which were classified as unfavorable. The *z* test for proportions produced a *z* value of .465 and a two-tail confidence level of 35.8%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of the teachers from a block schedule school to teachers from a traditional schedule school.

Jerry Raines compared the responses of the participants from the larger high schools, Large School B and Large School T, to the responses of the participants from the smaller schools, Small School T and Small School B. The larger high schools had 79 responses, 29 which were classified as favorable and 50 which were classified as unfavorable. The smaller high schools had 37 responses, 12 which were classified as favorable and 25 which were classified as unfavorable. The data was analyzed using a *z* test for proportions which produced a *z* value of 0.241 and a two-tail confidence level of 19%. Using the .05 confidence level, the researcher was able to accept the null hypothesis that there would not be a significant difference in the responses of teachers from larger high schools compared to the responses of teachers from smaller high schools.

The open-ended question presented to the participants was, *Why is lecture and note-taking important in your class lessons?* The responses from teachers from Small School T and Small School B were very similar. Most teachers indicated they used

lecture and note-taking when introducing new material to students. Teachers found it effective in helping filter information for students to insure they have the relevant information. Many teachers also emphasized that they tended to use more class discussion as opposed to lecture. Class discussion would shift away from a teacher centered activity to a student centered activity. It would also cause students to process the material at a higher cognitive level than taking notes from a teacher lecture.

In the two larger schools, Large School B and Large School T, the respondents indicated that note-taking was important for a variety of reasons. Teachers from block schedule and traditional schedule schools reported that note-taking was essential when delivering new material. They also indicated that it was the fastest and most efficient method for delivery of this information. One teacher indicated that note-taking was the best method to reach all learning styles at the same time. The teacher noted that if the teacher used a PowerPoint presentation or some other modality of visual aid, they were reaching the visual learners; while discussing the notes, they were reaching the auditory learner; and the actual act of copying the notes down would reach the kinesthetic learner.

Statement #5

The fifth statement posed to the participants was, *Learning center/research locations are an important part of my classroom lesson planning.* Learning center/research locations are an inquiry-based learning strategy. Inquiry-based learning strategies allowed students to discover material on their own, and it requires them to process the material at a higher cognitive level. The literature review indicated that these types of strategies could be more easily implemented in block schedule schools because

they often require more than one 50-minute period that is available in a traditional schedule classroom (Grosshans, 2006).

Jerry Raines collected and analyzed the data from Large School B and Large School T. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Large School B had a total of 63 responses, 5 which were classified as favorable and 58 which were classified as unfavorable. Meanwhile, Large School T had a total of 16 responses, 3 which were classified as favorable and 13 which were classified as unfavorable. The *z* test for proportions produced a *z* value of 0.816 and a two-tail confidence level of 58.5%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of teachers from a block schedule school and a traditional schedule school.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Small School T had a total of 18 responses, 2 which were classified as favorable and 16 which were classified as unfavorable. Meanwhile, Small School B had a total of 18 responses, 3 which were classified as favorable and 15 which were classified as unfavorable. The *z* test for proportions produced a *z* value of zero and a two-tail confidence level of 0%. Using the .05 confidence level, the null hypothesis that there would not be a significant difference in the responses of teachers from a block schedule school and a traditional schedule school was accepted.

Tim Reller compared the responses of the teachers from the larger high schools, Large School B and Large School T, to the responses of the smaller high schools, Small School T and Small School B. The larger high schools had 79 responses, 8 which were classified as favorable and 71 which were classified as unfavorable. Meanwhile, the smaller high schools had 36 responses, 5 which were classified as favorable and 31 which were classified as unfavorable. A *z* test for proportions was computed and it produced a z value of 0.273 and a two-tail confidence level of 21.5%. The researcher used an .05 confidence level and accepted the null hypothesis that there would not be a significant difference in the responses of the teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

The open-ended question asked of the participants was, *How and why are learning centers/research locations important to your students understanding?* Most of the teachers from Small School T and Small School B indicated that learning centers/research locations were not a widely used strategy. Those teachers who responded that they did use them indicated they were used to help students explore topics at a higher cognitive level. This indicates that this teaching strategy could be used effectively, but evidently, the teachers from both types of schedules did not feel comfortable implementing it in their classrooms.

In the two larger schools, Large School B and Large School T, the respondents again indicated that they did not use learning centers/research locations nearly as much as they would have liked. The biggest reason given for their lack of use was a lack of resources. A surprising result for this question was the teachers' lack of knowledge about learning centers/research locations. One teacher commented, "I'm not really sure what

learning center/research centers are." Of those that indicated that they used them, they overwhelmingly responded that they were used for student inquiry, enrichment, and differentiated instruction. There was no discernible difference between the block schedule teachers' responses to that of the traditional schedule teachers' responses.

Statement #6

The sixth statement presented to the participants was, *I have the time to use effectively a wide variety of teaching/instructional strategies in my classroom.* This statement was included in the study because teachers on a block schedule must use multiple teaching strategies per period to break up the longer time (Queen, 2000). This statement allowed the researchers to compare the responses of the teachers from the block schedule to the responses of teachers from the traditional schedule to see if the block schedule teachers were taking advantage of the longer class period by using a wider variety of instructional strategies.

Jerry Raines collected and analyzed the data from Large School B and Large School T. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Large School B had a total of 63 responses, 46 which were classified as favorable and 17 which were classified as unfavorable. Meanwhile, Large School T had a total of 16 responses, 9 which were classified as favorable and 7 which were classified as unfavorable. The *z* test for proportions produced a *z* value of 0.998 and a two-tail confidence level of 68.2%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of teachers from a block schedule school and a traditional schedule school.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. There were 18 responses from Small School T, 8 which were classified as favorable and 10 which were classified as unfavorable. Small School B had a total of 19 responses, 13 were classified as favorable and 6 were classified as unfavorable. A *z* test for proportions produced a *z* value of 1.14 and a two-tail confidence level of 74.6%. Using a .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of the teachers on a block schedule compared to teachers on a traditional schedule.

Jerry Raines compared the responses of the teachers from the larger high schools, Large School B and Large School T, to the responses of the smaller high schools, Small School T and Small School B. The larger high schools had 79 responses, 55 which were classified as favorable and 24 which were classified as unfavorable. The smaller high schools had 37 responses, 21 which were classified as favorable and 16 that were classified as unfavorable. The researcher used a *z* test for proportions to compare the data. This test produced a *z* value of 1.149 and a two-tail confidence level of 74.9%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of the teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

The open-ended question presented to the participants was, *Which instructional strategies are most effective in your classroom?* This question was included to elicit feedback from the teachers on the types of instructional strategies they found most

effective in their classroom. Cooperative learning was identified by participants in the Small School T and Small School B as a strategy they frequently use. Teachers from both schedule types in the smaller high schools also indicated that they used a wide variety of teaching strategies depending on the content the students were learning.

In the two larger schools, Large School B and Large School T, the respondents indicated that they use a wide variety of instructional methods. Most respondents indicated that they prefer hands on activities where the students apply content to real-life situations. Teachers from both schedule types replied that group work activities allowed them to get the most "bang for the buck."

Statement #7

The seventh statement presented to the participants was, *My lessons are designed to effectively deal with the differentiated learning styles and learning readiness of my students.* The purpose of including this statement in this research study was to determine if the teachers from the two schedules were effectively differentiating their instruction to meet the individual needs of the learners in their classroom. As mentioned in the literature review, teachers from block schedule schools reported they were able to get to know their students better and provide a more individualized instruction than their counterparts from traditional schedule schools (Evans et al. 2002).

Jerry Raines collected and analyzed the data from Large School B and Large School T. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Large School B had a total of 63 responses, 40 which were classified as favorable and 23 which were classified as unfavorable. Meanwhile, Large School T had a total of 16 responses, 8 which were

classified as favorable and 8 which were classified as unfavorable. The *z* test for proportions produced a *z* value of 0.7 and a two-tail confidence level of 51.6%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of teachers from a block schedule school and a traditional schedule school.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Small School T had a total of 17 responses, 12 which were identified as favorable and 5 which were identified as unfavorable. Small School B had a total of 18 responses, 12 which were classified as favorable and 6 which were identified as unfavorable. A *z* test for proportions produced a *z* value of -0.115 and a two-tail confidence level of -9.1%. Using the .05 confidence level, the researcher was able to accept the null hypothesis that there would be no significant difference in the response of teachers from a block schedule compared to teachers from a traditional schedule.

Tim Reller compared the responses of the teachers from the larger high schools, Large School B and Large School T, to the responses of the teachers from the smaller high schools, Small School T and Small School B. The larger high schools had 79 responses, 48 which were classified as favorable and 31 which were classified as unfavorable. The smaller high schools had 35 responses, 24 which were classified as favorable and 11 which were classified as unfavorable. A *z* test for proportions was performed on the data and it produced a *z* value of 0.587 and a two-tail confidence level of 44.3%. Using a .05 confidence level, the researcher accepted the null hypothesis that

there would not be a significant difference between the responses of teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

The open-ended question presented to the participants was, *How do you design your lessons to meet the learning styles and learning readiness of your students?* Teachers from Small School T and Small School B indicated they used a variety of lesson types and instructional strategies to meet the various learning styles of the students in their classes. The teachers also indicated they conducted assessments that allowed them to understand the learning styles of the students in the classroom. After identifying the learning styles of students, the teachers provided for these varied learning styles by incorporating activities and assignments aligned to the variety of learning styles in their classroom.

In the two larger schools, Large School B and Large School T, the respondents indicated that they were very cognizant of student learning styles when designing their lessons. The teachers also indicated that they implemented lesson activities that addressed each learning style (visual, auditory, and kinesthetic) whenever possible. Several teachers from both schedule types indicated they give students choices on activities and/or enrichment opportunities (differentiated instruction).

Statement #8

The eighth statement presented to the participants was, *I have the needed time to design lessons to meet the needs of all students.* This statement was included in the research study because an advantage of block scheduling identified in the literature review was more time in the school day for teachers to prepare for instruction (Hurley,

1997; Hannaford et al. 2000). The additional time comes from the longer class periods in a block schedule. Teachers in both schedules will typically have one period for planning each day. For teachers from a block schedule, that one period will be 75–90 minutes, while it will only be 45–55 minutes for teachers from a traditional schedule.

Jerry Raines collected and analyzed the data from Large School B and Large School T. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Large School B had a total of 63 responses, 35 which were classified as favorable and 28 which were classified as unfavorable. Meanwhile, Large School T had a total of 16 responses, 2 which were classified as favorable and 14 which were classified as unfavorable. The *z* test for proportions produced a *z* value of 2.802 and a two-tail confidence level of 99.5%. Using the .05 confidence level, the researcher rejected the null hypothesis that there would not be a significant difference in the responses of teachers from a block schedule school and a traditional schedule school.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Small School T had a total of 18 responses, 11 which were classified as favorable and 7 which were classified as unfavorable. Small School B had a total of 19 responses, 9 which were classified as favorable and 10 which were classified as unfavorable. A *z* test for proportions was calculated on the data and it produced a *z* value of 0.508 and a two-tail confidence level of 38.9%. Based on a .05 confidence level, the researcher was able to accept the null

hypothesis that there would not be a significant difference in the response of teachers from a block schedule compared to teachers from a traditional schedule.

Jerry Raines compared the responses of the teachers from the larger high schools, Large School B and Large School T, to the responses of the teachers from the smaller high schools, Small School T and Small School B. The larger high schools had 79 responses, 48 which were classified as favorable and 31 which were classified as unfavorable. The smaller high schools had 35 responses, 24 were classified as favorable and 11 were classified as unfavorable. A *z* test for proportions produced a *z* value of 0.878 and a two-tail confidence level of 62%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of the teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

There were two open-ended questions presented to the participants, *How is this time made available to you?* and *How is this time evident in your curriculum?* Teachers from Small School T and Small School B indicated they not only used the planning time in the schedule, but they also used time outside of the school day to plan their instruction. These results indicated that even though teachers from a block schedule were given more time in the school day, they still did not have enough time to complete all of their required tasks within the school day.

In the two larger schools, Large School B and Large School T, the respondents indicated that they primarily used their plan that is built into each type of schedule; however they also did a lot of planning outside of the regular school day (at home, during early out days, etc.).

Statement #9

The ninth statement posed to the participants was, *The scheduling of classes in my school fits my teaching style.* This statement was included in the survey to measure the teachers perceptions of the schedule used at their school. The literature review indicated that teachers from both block and traditional schedules thought that the schedule worked well in their school. This question allowed the researchers to determine if the participants in the study thought the schedule in place at their school fit their teaching style.

Jerry Raines collected and analyzed the data from Large School B and Large School T. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Large School B had a total of 62 responses, 49 which were classified as favorable and 13 which were classified as unfavorable. Meanwhile, Large School T had a total of 16 responses, 9 which were classified as favorable and 7 which were classified as unfavorable. The *z* test for proportions produced a *z* value of 1.539 and a two-tail confidence level of 87.6%. Using the .05 confidence level, the researcher accepted the null hypothesis that there was not a significant difference in the responses of teachers from a block schedule school and a traditional schedule school.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Small School T had 19 responses, 15 which were classified as favorable and 4 which were classified as unfavorable. Small School B had 19 responses, 16 which were classified as favorable and 3 which were classified as unfavorable. A *z* test for proportions was used to calculate a *z* value of zero

and a two-tail confidence level of 0%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of the teachers from a block schedule high school compared to the responses from the teachers from a traditional schedule high school.

Tim Reller compared the responses of the teachers from the larger high schools, Large School B and Large School T, to the responses of the teachers from the smaller high schools, Small School T and Small School B. The larger high schools had 78 responses, 58 which were classified as favorable and 20 which were classified as unfavorable. The smaller high schools had 38 responses, 31 which were classified as favorable and 7 which were classified as unfavorable. A *z* test for proportions was performed on the data and it produced a *z* value of 0.63 and a two-tail confidence level of 47.1%. Using a .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

The open-ended question posed to the participants was, *What, in your teaching style, do you find to be most effective?* The teachers from Small School T and Small School B indicated they found student centered instruction, such as projects and hands-on activities, to be most effective for their students. It appeared that the teachers used similar teaching strategies regardless of the type schedule used in their high school.

In the two larger schools, Large School B and Large School T, the respondents indicated that they needed to be flexible with their teaching style regardless of the type of schedule they used. They indicated that to reach all students, differentiation of the

material was an absolute necessity. Most teachers also replied that it was necessary to be able to switch gears midstream when something wasn't working or going as planned. Teachers from the block schedule school indicated that having more time available during the class period lent itself to these characteristics, whereas the teachers from the traditional schedule school felt that did not have enough time to go into as much detail as they might have if they had more time available.

Statement #10

The tenth statement posed to the participants was, *My initial training (teacher preparation) has been beneficial in assisting me as a teacher in my present situation.* This statement was included in the survey because the literature review indicated that teachers were often not adequately prepared in their initial teacher training for teaching in a block schedule (Zepeda & Mayers, 2001; Schultz, 2000). By including this statement, it was the intent of the researchers to determine if the teachers from the traditional schedule felt more or less prepared than their counterparts from the block schedule.

Jerry Raines collected and analyzed the data from Large School B and Large School T. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Large School B had a total of 62 responses, 29 which were classified as favorable and 33 which were classified as unfavorable. Meanwhile, Large School T had a total of 16 responses, 9 which were classified as favorable and 7 which were classified as unfavorable. The *z* test for proportions produced a *z* value of 0.396 and a two-tail confidence level of 30.8%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not

be a significant difference in the responses of teachers from a block schedule school and a traditional schedule school.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Small School T had 19 responses, 11 which were classified as favorable and 8 which were classified as unfavorable. Small School B had 19 responses, 10 which were classified as favorable and 9 which were classified as unfavorable. A *z* test for proportions was used to calculate a *z* value of zero and a two-tail confidence level of 0%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of the teachers from a block schedule high school compared to the responses from the teachers from a traditional schedule high school.

Jerry Raines compared the responses of the teachers from the larger high schools, Large School B and Large School T, to the responses of the teachers from the smaller high schools, Small School T and Small School B. The larger high schools had 78 responses, 38 which were classified as favorable and 40 which were classified as unfavorable. The smaller high schools had 38 responses, 21 which were classified as favorable and 17 which were classified as unfavorable. A *z* test for proportions was performed on the data and it produced a *z* value of 0.463 and a two-tail confidence level of 35.7%. Using a .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

The open-ended question posed to the participants was, *What was the most beneficial part of your teacher-preparation training?* Teachers from the Small School T and Small School B indicated the most beneficial part of their training was learning how to deal with classroom management issues and organizational tasks that help make a teacher effective. A larger number of the responses from the block teachers indicated that their student teaching was the most beneficial part of their training. This could be due to the fact that they completed their student teaching in a school using a block schedule, and therefore, they learned the techniques needed to be successful when teaching in a block schedule.

In the two larger schools, Large School B and Large School T, the respondents indicated overwhelmingly that their student teaching experience was the most beneficial part of their teacher preparation program, regardless of the type of schedule. Teachers from the block schedule school also indicated that being able to collaborate with colleagues (sharing ideas and teaching strategies) was beneficial when they were just getting started.

Statement #11

The eleventh statement presented to the participants was, *I have received and am still receiving in-service training to assist me in my present educational assignment.* This statement was included in this research study because of the importance of on-going professional development. Stokes and Wilson (2000) and Schultz (2000) both indicated the importance of professional development for teachers in a block schedule. The professional development should be focused on the use of a variety of teaching strategies that teachers would need to implement in the longer class periods.

Jerry Raines collected and analyzed the data from Large School B and Large School T. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Large School B had a total of 62 responses, 38 which were classified as favorable and 24 which were classified as unfavorable. Meanwhile, Large School T had a total of 15 responses, 10 which were classified as favorable and 5 which were classified as unfavorable. The *z* test for proportions produced a *z* value of 0.089 and a two-tail confidence level of 7.1%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of teachers from a block schedule school and a traditional schedule school.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Small School T had 19 responses, 13 which were classified as favorable and 6 which were classified as unfavorable. Small School B had 19 responses, 11 which were classified as favorable and 8 which were classified as unfavorable. A *z* test for proportions was used to calculate a *z* value of 0.337 and a two-tail confidence level of 26.4%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of the teachers from a block schedule high school compared to the responses from the teachers from a traditional schedule high school.

Tim Reller compared the responses of the teachers from the larger high schools, Large School B and Large School T, to the responses of the teachers from the smaller high schools, Small School T and Small School B. The larger high schools had 78

responses, 48 which were classified as favorable and 30 which were classified as unfavorable. The smaller high schools had 38 responses, 24 which were classified as favorable and 14 which were classified as unfavorable. A *z* test for proportions was performed on the data and it produced a *z* value of -0.035 and a two-tail confidence level of -2.8%. Using a .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

The open-ended question posed to the participants was, *How has this training been helpful?* Teachers from the Small School T and Small School B both indicated they learned new teaching strategies from their professional development. They have implemented the new teaching strategies in their classrooms and it helped to keep them current in the latest instructional practices.

In the two larger schools, Large School B and Large School T, the respondents indicated that in-service/professional development activities have not been very useful, unless it was a conference (in their content area) that they could choose to attend rather then something the entire building did together. They indicated that the use of mentors for teachers as they learn and practice new strategies was not consistently effective based on the training of and expectations for mentors.

Statement #12

The twelfth statement presented to the participants was, I am able to teach the necessary content for my courses in the time allotted during the daily schedule and the time allotted during the school year. The purpose of this question was to determine if the

teachers from both schedules felt they were able to cover the necessary curriculum in the time available. From the literature review, Thomas (2001) reported that courses on the block schedule have less instructional time in a school year than their counterparts on a traditional schedule.

Jerry Raines collected and analyzed the data from Large School B and Large School T. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Large School B had a total of 62 responses, 53 which were classified as favorable and 9 which were classified as unfavorable. Meanwhile, Large School T had a total of 16 responses, 11 which were classified as favorable and 5 which were classified as unfavorable. The *z* test for proportions produced a *z* value of 1.189 and a two-tail confidence level of 76.6%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of teachers from a block schedule school and a traditional schedule school.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Small School T had 18 responses, 15 which were classified as favorable and 3 which were classified as unfavorable. Small School B had 19 responses, 16 which were classified as favorable and 3 which were classified as unfavorable. A *z* test for proportions was used to calculate a *z* value of -0.374 and a two-tail confidence level of -29.1%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference

between the responses of the teachers from a block schedule high school compared to the responses from the teachers from a traditional schedule high school.

Jerry Raines compared the responses of the teachers from the larger high schools, Large School B and Large School T, to the responses of the teachers from the smaller high schools, Small School T and Small School B. The larger high schools had 78 responses, 64 which were classified as favorable and 14 which were classified as unfavorable. The smaller high schools had 37 responses, 31 which were classified as favorable and 6 which were classified as unfavorable. A *z* test for proportions was performed on the data and it produced a *z* value of -0.035 and a two-tail confidence level of -2.8%. Using a .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

The open-ended question asked of the participants was, *How does your curriculum fit with the current schedule?* Teachers from Small School T and Small School B both reported that they were able to fit the necessary curriculum in the time available to them. The responses indicated that the faculties from both schools were happy with the type of schedule currently in place in their school.

In the two larger schools, Large School B and Large School T, the respondents were split on their responses to whether their curriculum fit their schedule. Teachers from the block schedule school wanted to meet daily with their students, to prevent "curriculum evaporation," as one teacher put it. Teachers from the traditional schedule school indicated that they would like more time to go into greater detail on topics.

Statement #13

The thirteenth statement presented to the participants was, *My current school's schedule presents limitations to my teaching for student success.* This statement followed the previous statement in an attempt to ascertain how teachers on both schedules viewed the schedule currently in place in their school. The statement allowed the researchers to determine if there was a difference in the attitudes towards the type of schedule by the teachers from each schedule.

Jerry Raines collected and analyzed the data from Large School B and Large School T. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Large School B had a total of 62 responses, 4 which were classified as favorable and 58 which were classified as unfavorable. Meanwhile, Large School T had a total of 15 responses, 10 which were classified as favorable and 5 which were classified as unfavorable. The *z* test for proportions produced a *z* value of 2.46 and a two-tail confidence level of 98.6%. Using the .05 confidence level, the researcher rejected the null hypothesis that there would not be a significant difference in the responses of teachers from a block schedule school and a traditional schedule school.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Small School T had 19 responses, 18 which were classified as favorable and 1 which was classified as unfavorable. Small School B had 19 responses, 19 which were classified as favorable and zero which were classified as unfavorable. A *z* test for proportions was used to calculate a *z* value

of -0.001 and a two-tail confidence level of 0%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of the teachers from a block schedule high school compared to the responses from the teachers from a traditional schedule high school.

Tim Reller compared the responses of the teachers from the larger high schools, Large School B and Large School T, to the responses of the teachers from the smaller high schools, Small School T and Small School B. The larger high schools had 78 responses, 69 which were classified as favorable and 9 which were classified as unfavorable. The smaller high schools had 38 responses, 37 which were classified as favorable and 1 which was classified as unfavorable. A *z* test for proportions was performed on the data and it produced a *z* value of 1.252 and a two-tail confidence level of 79%. Using a .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

The open-ended question posed to the participants was, *What limitations do you experience from the type of schedule utilized in this school?* Some of the teachers from the Small School T indicated that sometimes their class periods were too short to complete certain projects or assignments. Even with this limitation, the teachers did not report that the schedule was a limiting factor in student success. The block schedule teachers from the Small School B did not report concerns with their schedule.

In the two larger schools, Large School B and Large School T, the respondents were split on their answers as the block schedule teachers wanted to meet every day and

the traditional schedule teachers wanted more time and content opportunities. Some of the limitations the block schedule teachers listed were (a) not meeting every day, (b) loss of content between classes, (c) the effect of student absences, and (d) loss of curriculum coverage because there were not as many instructional minutes.

Statement #14

The fourteenth statement posed to the participants was, *My school's schedule presents positive benefits for instruction and student learning.* This statement was a continuation of the theme of the previous two questions. It was included to allow the researchers to determine if the teachers viewed their schedule as having positive effects on instruction and student learning.

Jerry Raines collected and analyzed the data from Large School B and Large School T. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Large School B had a total of 62 responses, 48 which were classified as favorable and 14 which were classified as unfavorable. Meanwhile, Large School T had a total of 14 responses, 9 which were classified as favorable and 5 which were classified as unfavorable. The *z* test for proportions produced a *z* value of 0.683 and a two-tail confidence level of 50.5%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of teachers from a block schedule school and a traditional schedule school.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Small School T had 19 responses, 13

which were classified as favorable and 3 which were classified as unfavorable. Small School B had 19 responses, 16 which were classified as favorable and 3 which were classified as unfavorable. A *z* test for proportions was used to calculate a *z* value of 0.763 and a two-tail confidence level of 55.5%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of the teachers from a block schedule high school compared to the responses from the teachers from a traditional schedule high school.

Jerry Raines compared the responses of the teachers from the larger high schools, Large School B and Large School T, to the responses of the teachers from the smaller high schools, Small School T and Small School B. The larger high schools had 78 responses, 57 which were classified as favorable and 21 were classified as unfavorable. The smaller high schools had 38 responses, 29 which were classified as favorable and 9 which were classified as unfavorable. A *z* test for proportions was performed on the data and it produced a *z* value of 0.148 and a two-tail confidence level of 11.8%. Using a .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

The open-ended question presented to the participants was, *What are the positive benefits from the type of schedule utilized in this school?* The responses from the teachers of the Small School T indicated that students benefited from seeing the teacher every day. They also indicated that the 50-minute time frame fit with their students' attention spans and it was easy to keep them engaged for the entire 50 minutes without the students getting bored. Additionally, they indicated they were still able to give students time to

have guided and independent practice during their lessons. The teachers from the Small School B did not respond to this question.

In the two larger schools, Large School B and Large School T, the respondents indicated that both types of schedules have positives and negatives. Block schedule teachers responded that students are allowed to take a diversified schedule with more exposure to electives and a deeper exposure to content. They also indicated that the block schedule works well for college bound students. Traditional schedule teachers indicated that students have time to work on their assignments in class, but not too much time, which might lead to them getting into trouble. They also stated that with 55-minute periods they have enough time for reinforcement and assessment.

Statement #15

The final statement presented to the participants was, *There are changes I would suggest to the daily schedule which would positively impact instruction and student learning*. This statement was in conjunction with the three previous statements about how teachers viewed the schedule currently in place at their school. This would allow the researchers to determine if the teachers believed there should be changes made to the schedule to benefit students.

Jerry Raines collected and analyzed the data from Large School B and Large School T. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Large School B had a total of 59 responses, 13 which were classified as favorable and 46 which were classified as unfavorable. Meanwhile, Large School T had a total of 14 responses, 7 which were classified as favorable and 7 which were classified as unfavorable. The *z* test for

proportions produced a *z* value of 1.776 and a two-tail confidence level of 92.4%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference in the responses of teachers from a block schedule school and a traditional schedule school.

Tim Reller collected and analyzed the data from Small School T and Small School B. The proportion of favorable responses from each school was compared for statistical differences using a *z* test for proportions. Small School T had 18 responses, 1 which was classified as favorable and 17 which were classified as unfavorable. Small School B had 19 responses, 2 which were classified as favorable and 17 which were classified as unfavorable. A *z* test for proportions was used to calculate a *z* value of -0.049 and a two-tail confidence level of -3.9%. Using the .05 confidence level, the researcher accepted the null hypothesis that there would not be a significant difference between the responses of the teachers from a block schedule high school compared to the responses from the teachers from a traditional schedule high school.

Tim Reller compared the responses of the teachers from the larger high schools, Large School B and Large School T, to the responses of the teachers from the smaller high schools, Small School T and Small School B. The larger high schools had 78 responses, 20 which were classified as favorable and 58 which were classified as unfavorable. The smaller high schools had 37 responses, 3 which were classified as favorable and 34 were classified as unfavorable. A *z* test for proportions was performed on the data and it produced a *z* value of 1.946 and a two-tail confidence level of 94.8%. Using a .05 confidence level, the researcher accepted the null hypothesis that there would

not be a significant difference between the responses of teachers from the larger high schools compared to the responses of the teachers from the smaller high schools.

The open-ended question posed to the participants was, *What changes would you make to the daily schedule currently utilized in your school?* Teachers from Small School T and Small School B did not indicate they would make any changes to the schedule currently in place at their school.

In the two larger schools, Large School B and Large School T, the respondents indicated that they would like to implement some type of schedule that incorporated the positives of each type of schedule. Many of the responses suggested a hybrid schedule that allows some classes to meet daily (for those that need daily reinforcement) and others to follow a block-like format (for those that require more time but meet every other day).

Summary

Overall, there were very few differences found in the responses of the teachers from the block schedule compared to the teachers from the traditional schedule. Teachers from the smaller block schedule school reported a significant difference in their use of class discussion compared to the teachers from the traditional schedule. A significant difference in the teachers from the larger block schedule school reported having the needed time to design lessons to meet the needs of their students compared to the teachers from the larger traditional schedule school. There was a significant difference in the number of teachers from the larger traditional schedule school who agreed with the statement that the schedule presents limitations for student success compared to the teachers from the larger block schedule school. In addition, a significant number of

teachers from the larger traditional schedule school reported they would make changes to the schedule currently in place in their school compared to the teachers from the larger block schedule school. These results suggest there are some differences between the attitudes of teachers from traditional and block schedule schools, but that these differences are not consistent among all teachers. The results also suggest that teachers from both types of schedules tend to use the same teaching strategies regardless of the type of schedule in place at their school.

Chapter V – Discussion

The purpose of this study was to determine differences in teaching strategies and attitudes between teachers who work in schools that operate with a traditional class schedule and those who work in schools that operate with a block class schedule. The study collected data from teachers at four different high schools, two, which used a traditional seven-period day, and two of which used a block schedule. The researchers conducted this study because the type of schedules in place at high schools has been a topic of discussion among educators as they look for ways to improve student achievement.

Overview of the Study

The study was conducted at four high schools near the St. Louis metropolitan area. Large School B is a large high school operating on a block schedule, Large School T is a large high school operating on a traditional schedule, Small School T is a smaller high school operating on a traditional schedule, and Small School B is a smaller high school operating on a block schedule.

The research questions that this study attempted to answer were as follows:

1. Does the type of school schedule make a significant difference in the attitudes and teaching strategies among teachers who teach in either traditional or block-scheduled high schools?
2. Does the size of a school on a traditional or block schedule make a difference between the attitudes and teaching strategies of teachers on each schedule?

The researchers developed a survey instrument designed to measure participants' level of agreement with 15 statements. The instrument also included an open-ended question after each of the 15 survey statements. Each open-ended question corresponded to the preceding statement and asked participants to explain their survey response. The survey instrument was designed to measure the teachers' attitudes toward the schedule used in their school and the teaching strategies used in their classrooms.

Jerry Raines conducted the research at Large School B and Large School T. He met with the faculty of each school and explained the purpose of the study and the procedure to complete the study. He collected and analyzed the data from the two larger schools in the study. Tim Reller conducted the research at Small School T and Small School B. He met with the faculty of each school and explained the purpose of the study and the procedures they should use to complete the study. He collected and analyzed the data from the two smaller schools in the study. The researchers worked together to compare the results of the larger schools to the smaller schools to determine if there was a difference based on the size of the school.

Summary of Major Findings, Implications of Findings, and Conclusions

From the perspective of Jerry Raines, this study attempted to determine if there were differences in the responses of teachers from Large School B, a large block-scheduled school, compared to Large School T, a large school that used a traditional schedule. The researcher did not find many statistically significant differences in the responses of the two groups.

There were 2 statements of 15 that elicited a statistically significant different answer. The first statement that was significantly different was, *I have the needed time to*

design lessons to meet the needs of all students. The teachers from Large School B responded to this statement favorably, with 55.56% of the teachers either responding with (*Mostly*) or (*Always*). Meanwhile only 12.5% of the teachers from Large School T responded with either (*Mostly*) or (*Always*). These results produced a statistically significant difference between the answers of the two groups and indicated that teachers from the block-scheduled school, Large School B, felt that they had enough time to design lessons to meet the needs of all students more so than their counterparts from the traditional-scheduled school, Large School T. This difference may be attributed to the longer class periods available to the teachers on the block schedule. Teachers on the block schedule have 80-minute class periods as compared to 55-minute class periods, which allows teachers to go into greater detail and plan lessons that are more diverse and enriching. Teachers on the traditional schedule felt that the time they had, 55 minutes per period, was only enough to cover the base material and nothing more.

The second statement that garnered a statistically significant different response was, *My current school's schedule presents limitations to my teaching for student success*. Over 93% of the teachers from Large School B responded that they disagreed with this statement, whereas 33.33% of the teachers from Large School T responded favorably to this statement. These results produced a z value of 2.46 and a two-tail confidence level of 98.6%, thus indicating a statistically significant difference in their answers. As with the first statement that produced a statistically different answer, the reason may have to do with the time factor. The block-scheduled teachers disagreed because they felt they had plenty of time to plan and implement lessons that fit the needs

of a diverse population, whereas the traditional-scheduled teachers agreed with the statement because they felt constricted by the shorter periods.

Recall in chapter II that instructional time was compared in block-scheduled and traditional-scheduled high schools in a study conducted by Gullatt (2006). Gullatt's study also determined no significant difference between the types of instructional practices used in the classrooms of block- and traditional-scheduled schools. Interestingly, the only questions that showed a significant difference in the responses had to do with the time aspect associated with each type of schedule. Teachers from the block-scheduled school wanted to meet with their students more often than every other day, while the traditional-scheduled teachers wanted more time to explore certain topics at a higher cognitive level. The interest in changing to a block schedule on the part of the traditional-scheduled teachers is in direct conflict with a study conducted by Thomas (2001), who found that block scheduling did not provide more time in the school year for the study of a subject and in most cases actually reduced the amount of class time that students spent on an individual subject. Gullatt (2006) stated that a revised schedule alone does not improve the quality of the teacher and student interaction, but the types of teaching strategies make a huge impact.

From the perspective of Tim Reller, this study attempted to determine if there were differences in the responses of teachers from Small School T, a smaller traditional-scheduled school, compared to Small School B, a smaller block-scheduled school. The researcher did not find many statistically significant differences in the responses of the two groups.

The one statement that resulted in a statistically significant answer was, *Class discussion is an essential component of my lessons*. The teachers from Small School B responded to this statement favorably, with 73.68% of the teachers either responding with (*Mostly*) or (*Always*). Meanwhile only 27.78% of the teachers from Small School T responded with either (*Mostly*) or (*Always*). These results produced a statistically significant difference between the answers of the two groups and indicated that teachers from the block-scheduled school, Small School B, used class discussion as an essential component of their lessons more than their counterparts from the traditional-scheduled school, Small School T. This difference may be attributed to the longer class periods available to the teachers on the block schedule. The block schedule gives teachers the time to incorporate class discussion into their daily lessons. Class discussion can be important to students' understanding of concepts because it allows them to interact with the material they are learning and have meaningful discussions with their teacher and other classmates.

The fact that the rest of the statements posed to the participants did not elicit statistically significant responses indicates to the researcher that the teachers from the block schedule and the traditional schedule have favorable attitudes toward their schedule and they use similar teacher strategies. This finding is important for educational leaders because it means that administrators should spend more time focusing on ensuring that teachers are using the correct instructional strategies in their classrooms and less time focusing on manipulating the schedule. From the perspective of teachers, effective instruction can take place using either schedule. Therefore, educational leaders should

ensure their teachers have the proper training to deliver effective instruction to their students regardless of the type of schedule in place at their school.

This does not mean that the type of schedule should be totally ignored by educational leaders. Recall from chapter II that certain subjects naturally lend themselves to the block schedule and certain subjects naturally lend themselves to the traditional schedule (Trenta & Newman, 2002; Schultz, 2000). Therefore, educational leaders should examine the schedule they currently have in place to determine if there are ways they could manipulate the schedule to the benefit those subjects which naturally lend themselves to a block or traditional schedule. For example, an educational leader of a school that uses a traditional schedule may try to manipulate the schedule so that certain classes, such as science, art, and technology, are offered using a block schedule. This would allow those classes that could benefit from the block schedule to do so while allowing those classes that benefit from a traditional schedule to remain on a traditional schedule.

In comparing the differences between the large schools (Large School B and Large School T) and the small schools (Small School T and Small School B), the researchers did not find any statistical differences. This adds to the conclusion that effective teaching can take place independent of the schedule type or size of school. Again, the most important interaction in a school is the one that takes place daily in the classroom between a teacher and their students. Educational administrators must understand that there are differences between large and small school, such as more electives offered at larger schools and smaller class sizes at smaller schools, but the

interactions between teachers and students should look the same regardless of the size of school or type of schedule in place.

Recommendations for Future Research

The teachers' perceptions of the teaching strategies they used in their classrooms were investigated. It may be beneficial to the educational community to conduct research through classroom observations to determine the actual teaching strategies used by teachers in the various schedules and compare them to determine if there are differences between the types of strategies employed by teachers on a traditional schedule compared to teachers on a block schedule.

Additional research could also be conducted to determine which content areas benefit from the use of a block schedule and which subjects benefit from a traditional schedule. This information would help administrators as they build schedules that combine traditional classes and block classes. The Copernican schedule (trimester) may well be the type of schedule that satisfies the characteristics that teachers and administrators alike are seeking. Educational leaders would have the necessary information to determine which subjects should be offered in a block schedule and which subjects should be offered in a traditional schedule.

The literature review indicated that block scheduling could produce a better atmosphere for students because it reduced the number of classes that students took each day (Evans et al. 2002). This positive atmosphere may encourage more students to stay in school and graduate. Additionally, because students are able to earn more credits in a block schedule, they may be more likely to graduate. Therefore, it would be worthwhile

to compare the graduation rates of students from a block schedule to a traditional schedule to determine if the schedule type has had an impact on the graduation rate.

Final Reflections

One innate human trait seemed to come to the forefront during this study. This trait comes from the old saying, "The grass is always greener on the other side of the fence." Overall, the teachers from each type of schedule were satisfied with the schedules used at their schools, but there were aspects of the other schedule that they coveted. The teachers from the block schedule wanted to meet with their students more often (daily contact), whereas the teachers from the traditional schedule wanted more time to work with their students (longer class periods). From the block-scheduled teacher's point of view, the thought process might go something like, "If I were in a traditional schedule, I would be able to cover more content, and my students will be all the better for it." From the traditional-scheduled teacher's point of view, the thought process might go something like, "If I were teaching in a block schedule, I could go into greater detail and expand my students' knowledge base on the core topics of my curriculum." Although the teachers in this study thought their schedule met their students' needs, they still wanted something else. Perhaps it is just the nature of a teacher to strive to get the best for their students, and thus they are always looking for ways to improve ("The grass is always greener on the other side of the fence").

References

Anthony, S. (2007, January 19). Schedule shift a massive change. Chief's plan: Ensure reading, math and science are taught every day. Critics say: Benefits of switch from block schedules questionable. *St. Louis Post-Dispatch,* p. D1.

Arnold, D. E. (2002). Block schedule and traditional schedule achievement: A comparison. *NASSP Bulletin, 86,* 42–53.

Baker, A. J., & Bowman, K. (2000). Attitudes and perceptions toward block scheduling in rural Kentucky agricultural programs. Rural Educator, *22*(1), 26-30.

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, 92*(3), 191–208.

Benton-Kupper, J. (1999). Teaching in the block: Perceptions from within. *NASSP Bulletin, 83,* 26–34.

Bottge, B. J., Gugerty, J. J., Serlin, R., & Moon, K. S. (2003). Block and traditional schedules: Effects on students with and without disabilities in high school. *NASSP Bulletin, 87,* 2–14.

Bush, M. J. , & Johnstone, W. G. (2000, April). *An observation evaluation of high school A/B block classes: variety or monotony?* Paper presented at the annual meeting of the American Educational Research Association. New Orleans, LA.

Calvery, R., Sheets, G., & Bell, D. (1999, November). *Modified block scheduling: An assessment of teacher's and student's perception.* Paper presented at the annual meeting of the Mid-South Educational Research Association. Point Clear, AL. (ERIC Document Reproduction Service No. ED438269)

Canady, R. L., & Rettig, M. D. (1995). *Block scheduling: A catalyst for change in high schools*. Gardiner, NY: Eye on Education.

Canady, R. L., & Rettig, M. D. (2001). Block scheduling: more benefits than challenges. Response to Thomas (2001). *NASSP Bulletin, 85,* 78–86.

Carnegie Council on Adolescent Development. (1989). Preparing American youth for the 21st century. Waldorf, MD: Carnegie Council on Adolescent Development.

Childers, G. L., & Ireland, R. W. (2005). Mixing block and traditional scheduling. *Principal Leadership, 43*(7), 43–49.

Colosi, L. (1997). Reliability and validity: What's the difference? Retrieved August 17, 2009, from http://www.socialresearchmethods.net/tutorial/Colosi/lcolosi2.htm

Corley, E. L. (2001, October). *Block scheduling: Three years later*. Paper presented at the annual meeting of the Mid-Western Educational Research Association. Chicago, IL. (ERIC Document Reproduction Service No. ED479333)

Corley, E. L. (2003, October). *A quantitative look at student attitudes/perceptions about block scheduling*. Paper presented at the annual meeting of the *Mid-Western Educational Research Association.* Columbus, OH. (ERIC Document Reproduction Service No. ED481679)

Danielson, C. (2002). Enhancing student achievement: A framework for school improvement. Alexandria, VA: Association for Supervision and Curriculum Development.

Deuel, L.-L. S. (1999). Block scheduling in large, urban high schools: Effects on academic achievement, student behavior, and staff perceptions. *The High School Journal, 83(1), 14–25.*

de Vise, D. (2005, September, 1). Block schedule endures, but results are unclear. *Washington Post.* Retrieved January 8, 2009, from *www.washingtonpost.com/ wp-dyn/content/article/2005/08/24/AR2005082400630.html*

Dexter, K. M., Tai, R. H., & Sadler, P. M. (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.

Dugan, J. J., Lewis, C. W., & Winokur, M. A. (2005). The effects of block scheduling on high school academic achievement. *NASSP Bulletin, 89,* 72–87.

Evans, W., Tokarczyk, J., Rice, S., & McCray, A. (2002). Block scheduling: an evaluation of outcomes and impact. *The Clearing House, 75* (6) 319–23.

Filippone, M. (1998). *Questioning at the elementary level.* Master's thesis, Kean University. (ERIC Document Reproduction Service No. ED417431)

Flynn, L., Lawrenz, F., & Schultz, M. J. (2005). Block scheduling and mathematics: enhancing standards-based instruction? *NASSP Bulletin, 89,* 14–23.

Fraenkel, J. R., & Wallen, N. E. (2000). *How to design and evaluate research in education*. (4th ed.). New York: McGraw-Hill Higher Education.

Gardner, D. P. (and others). (1983). *A nation at risk: The imperative of education reform. An open letter to the American people. A report to the nation and the Secretary of Education* (Report by National Commission on Excellence in Education). Washington, DC: U.S. Government Printing Office.

Gebeke, D. (1991). Understanding and working with youth. *HE-484.* Fargo: North Dakota State University Extension Service

Gelb, J. (2001). *Educational effects of block scheduling*. Hartford, CT: General Assembly, Office of Legislative Research. . Available from http://www.cga.state .ct.us/2001/rpt/olr/htm/2001-R-0090/htm

Goodlad, J. I. (1984). *A place called school: Prospects for the future.* New York: McGraw-Hill.

Grosshans, K. (2006). Science teachers' understanding and use of instructional strategies within the 4 x 4 block schedule. Ed.D. dissertation, Virginia Polytechnic Institute and State University. Retrieved January 4, 2009, from Dissertations & Theses: A&I database. (Publication No. AAT 3241131)

Gruber, C. D., & Onwuegbuzie, A. J. (2001). Effects of block scheduling on academic achievement among high school students. *The High School Journal, 84*(4), 32–42.

Gullatt, D. E. (2006). Block scheduling: The effects on curriculum and student productivity. *NASSP Bulletin, 90*(3), 250–266.

Hackmann, D. G., & Waters, D. L. (1998). Breaking away from tradition: the Farmington High School restructuring experience. *NASSP Bulletin, March 1998,* 83–92.

Hall, S. (n.d.). How to use the Likert scale in statistical analysis. Retrieved Jan. 10, 2009, from http://www.ehow.com/ how_4855078_use-likert-scale-statistical-analysis.html

Hamdy, M., & Urich, T. (1998). Perceptions of teachers in south Florida toward block scheduling. *NASSP Bulletin, 82,* 79–82.

Hannaford, B., Fouraker, M., Dickerson, V. (2000). One school tackles the change in block scheduling. *Phi Delta Kappan, 82*(3) 212–213.

Harvey, M. M. (2008). The effects of type of schedule on high school performance on criterion-referenced achievement tests. Ed.D. dissertation, University of Massachusetts–Lowell. Retrieved January 4, 2009, from Dissertations & Theses: A&I database. (Publication No. AAT 3305183).

Hess, C., Wronkovich, M., & Robinson, J. (1999). Measured outcomes of learning under block scheduling. *NASSP Bulletin, 83(611),* 87–95.

Hurley, J. C. (1997). The 4X4 block scheduling model: What do teachers have to say about it? *NASSP Bulletin*, 81(593), 53–63.

Jenkins, E., Queen, A., & Algozzine, B. (2001). What's new on the block? *NASSP Bulletin, 85*(625), 56–61.

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.

Johnson, D. W., & Johnson, R. T. (1999). *Learning together and alone: Cooperative, competitive, and individualistic learning.* Boston: Allyn & Bacon.

Kenney, L. C. (2003). Back from the block—or not? *School Administrator, 60*(9), 21–2, 23–5.

Khazzaka, J. (1998). Comparing the merits of a seven-period school day to those of a four-period school day. *High School Journal, 81*(2), 11–21.

Kienholz, K. (2003). The block: Implications for secondary teachers. *Kappa Delta Pi Record, 39*(2), 62–65.

King-Sears, M. E. (2007). Designing and delivering learning center instruction. *Intervention in School and Clinic*, *42*(3), 137–147.

Knight, S., DeLeon, N., & Smith, R. (1999). Using multiple data sources to evaluate an alternative scheduling model. *The High School Journal, 83*(1), 1–13.

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),* 178–82.

Marchant, G. J., & Paulson, S. B. (2001). Differential school functioning in a block schedule: A comparison of academic profiles. *The High School Journal, 84*(4), 12–20.

Marzano, R. J., Pickering, D. J., & Pollock, J. E. (2001). *Classroom instruction that works*. Alexandria, VA: Association for Supervision and Curriculum Development.

Missouri Department of Elementary and Secondary Education (2007). Graduation requirements for students in Missouri public schools. Retrieved June 29, 2009, from http://www.dese.mo.gov/divimprove/sia/Graduation_Handbook_2010.pdf

Missouri Department of Elementary and Secondary Education (2009). Missouri assessment program: A guide to interpreting results. Retrieved August 17, 2009, from http://www.dese.mo.gov/divimprove/sia/dar/girspring2009.pdf

Missouri Department of Elementary and Secondary Education. (2009). 2008–2009 School Accountability Report Card, Bowling Green-I School District (082100), Bowling Green High School. Retrieved September 13, 2009, from http://dese.mo.gov/planning/profile/building/arsd0821001050.html

Missouri Department of Elementary and Secondary Education. (2009.) 2008–09 School Accountability Report Card, Ft. Zumwalt R-II School District (092087), Ft.

Zumwalt East High. Retrieved September 13, 2009, from http://dese.mo.gov/planning/profile/building/arsd0920871080.html

Missouri Department of Elementary and Secondary Education. (2009). 2008–09 School Accountability Report Card, Troy R-III School District (057003), Troy Buchanan High School. Retrieved September 13, 2009, from http://dese.mo.gov/planning/profile/building/arsd0570031050.html

Missouri Department of Elementary and Secondary Education. (2009). 2008–09 School Accountability Report Card, Winfield R-IV School District (057004), Winnfield High. Retrieved September 13, 2009, from http://dese.mo.gov/planning/profile/building/arsd0570041050.html

Mowen, G. G. (2004). To block schedule or not. *The Education Digest, 69*(8), 50–53.

National Education Commission on Time and Learning. (1994). *Prisoners of time*. Washington DC: U.S. Government Printing Office.

Nichols, J. D. (2005). Block scheduled high schools: Impact on achievement in English and language arts. *Journal of Educational Research, 98*(5), 299–309.

No Child Left Behind Act of 2001, 20 U.S.C.A. § 6301 *et seq.* (West 2003).

O'Brien, M. (2006). Block scheduling: A study of teaching strategies found in one public high school in south central Pennsylvania. Ed.D. dissertation, Immaculata College–Pennsylvania. Retrieved January 4, 2009, from Dissertations & Theses: A&I database. (Publication No. AAT 3193401).

Queen, J. A. (2000). Block scheduling revisited. *Phi Delta Kappan, 82*(3), 214–222.

Queen, J. A. (2008). *The block scheduling handbook*. Thousand Oaks, CA: Corwin Press.

Queen, J. A., Algozzine, R., & Isenhour, K. G. (1999). First year teachers and 4 x 4 block scheduling. NASSP Bulletin, *83*(603), 100-3.

Rettig, M. D., & Canady, R. L. (2003). Block scheduling's missteps, successes and variables. *School Administrator, 60*(9), 26–31.

Rikard, G. L., & Banville, D. (2005). High school physical education teacher perceptions of block scheduling. *The High School Journal, 88*(3), 26–35.

Risner, G. P., Nicholson, J. I., & Webb, B. (1994). *Levels of comprehension promoted by the Cooperative Integrated Reading and Composition (CIRC) Program.* Florence: University of North Alabama. (ERIC Document Reproduction Service No. ED381751)

Schultz, R. A. (2000). Examining the effects of block scheduling on gifted and talented students. *Gifted Child Today 23*(5), 24–33.

Slate, J. R., & Jones, C. H. (2000). Students perspectives on block scheduling: Reactions following a brief trial period. *High School Journal, 83(3),* 55–66.

Stader, D. L., & DeSpain, B. C. (1999, August). *Block scheduling in Missouri: A study of administrator and teacher perceptions*. Paper presented at the annual meeting of the National Council of Professors of Educational Leadership (pp. 1–17). Jackson, WY. (ERIC Document Reproduction Service No. ED444269)

Staunton, J. (1997). A study of teacher beliefs on the efficacy of block scheduling. NASSP Bulletin, *81,* 73-80.

Stokes, L. C., & Wilson, J. W. (2000). A longitudinal study of teachers' perceptions of the effectiveness of block versus traditional scheduling. *NASSP Bulletin, 84*(619), 90–9.

Student Handbook of Bowling Green High School (2009, August).

Student Handbook of Fort Zumwalt East High School (2009, August).

Student Handbook of Troy Buchanan High School (2009, August).

Student Handbook of Winfield High School (2009, August).

Tan, S. L, Callahan, J., Hatch, J., Jordan, T., Eastmond, & N., Burnham, B. (2002). An evaluation of the Millard High School block schedule. Department of Instructional Technology, Utah State University. (ERIC Document Reproduction Service No. ED477714)

Thomas, C. (2001). What is wrong with block scheduling? *NASSP Bulletin, 85,* 74–77.

Trenta, L., & 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), 54–71.

Vanderploeg, F. (2009, February, 17). Budget cuts force schools to drop block scheduling. *Las Vegas Sun.* Retrieved July 28, 2009, from www.lasvegassun .com/news/2009/feb/17/budget-cuts-force-schools-drop-block-scheduling/

Veal, W. R., & Flinders, D. J. (2001). How block scheduling reform effects classroom practice. *The High School Journal, 84*(4,) 21–31.

Veal, W. R., & Schreiber, J. (1999). Block scheduling effects on a state mandated test of basic skills. *Education Policy Analysis Archives*, *7*(29). (ERIC Document Reproduction Service No. EJ598407)

Wiggins, G., & McTighe, J. (2008). Put understanding first. *Educational Leadership, 65*(8), 36–41.

Wilson, J. W., & Stokes, L. C. (2000). Students' perceptions of the effectiveness of block versus traditional scheduling. *American Secondary Education, 28*(3), 3–12.

Zepeda, S. J., & Mayers, R. S. (2001). New kids on the block schedule: Beginning teachers face challenges. *The High School Journal, 84*(4), 1–11.

Zepeda, S. J., & Mayers, R. S. (2006). An analysis of research on block scheduling. *ProQuest Pschology Journals, 76*(1), 137–170.

Appendix A – Survey Instrument

Completion of this survey and questionnaire is on a voluntary basis. Your participation and answers to the questions will in no way be used for or related to your work performance.

1. My school functions with a: (choose one)

_____ traditional schedule of course offerings

_____ a block-schedule of course offerings.

PLEASE INDICATE YOUR JUDGMENT OF WHERE YOU ARE ON THE ACCOMPANYING SCALE AFTER EACH STATEMENT BY CIRCLING ONE OF THE FOLLOWING:

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

2. Class discussion is an essential component of my lessons.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

When do you most employ the strategy of class discussion?

3. I schedule time for regular group work in my classes.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

When is group work most effective?

4. My lesson plans provide ample time for students to work on tasks relevant to the lesson's objective(s).

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

Which tasks are most effective in assisting your students' learning?

5. Lecture, with student note-taking, is an essential component of my lessons.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

Why is lecture and note-taking important in your class lessons?

Appendix A – Continued

6. Learning center/research locations are an important part of my classroom lesson planning.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

How and why are learning centers/research locations important to your students' understanding?

7. I have the time to use effectively a wide variety of teaching/instructional strategies in my classroom.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

Which instructional strategies are most effective in your classroom?

8. My lessons are designed to effectively deal with the differentiated learning styles and learning readiness of my students.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

How do you design your lessons to meet the learning styles and learning readiness of your students?

9. I have the needed time to design lessons to meet the needs of all students.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

How is this time made available to you? How is this time evident in your curriculum?

10. The scheduling of classes in my school fits my teaching style.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

What, in your teaching style, do you find to be most effective?

11. My initial training (teacher preparation) has been beneficial in assisting me as a teacher in my present situation.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

What was the most beneficial part of your teacher-preparation training?

Appendix A – Continued

12. I have received and am still receiving in-service training to assist me in my present educational assignment.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

How has this training been helpful?

13. I am able to teach the necessary content for my courses in the time allotted during the daily schedule and the time allotted during the school year.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

How does your curriculum fit within the current schedule?

14. My current school's schedule presents limitations to my teaching for student success.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

What limitations do you experience from the type of schedule utilized in this school?

15. My school's schedule presents positive benefits for instruction and student learning.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)

What are the positive benefits from the type of schedule utilized in this school?

16. There are changes I would suggest to the daily schedule which would positively impact instruction and student learning.

1 (Rarely) 2 (Sometimes) 3 (Mostly) 4 (Always)
What changes would you make to the daily schedule currently utilized in your school?

Thank you for your time in completing this survey. When everyone has completed, an envelope will be passed around the room, please put your completed survey in the envelope.

Appendix B – Permission Letters

LINCOLN COUNTY R-IV SCHOOL DISTRICT

Office of the Superintendent
701 Elm Street, Winfield, MO 63389
Phone: (636)-668-8188 - Fax: (636)-668-8641

October 27, 2008

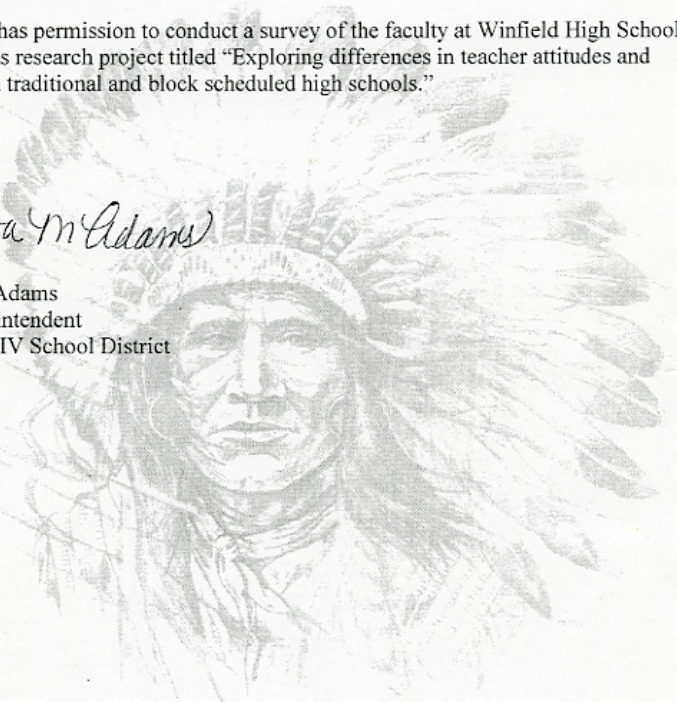
To Whom It May Concern:

Tim Reller has permission to conduct a survey of the faculty at Winfield High School related to his research project titled "Exploring differences in teacher attitudes and strategies in traditional and block scheduled high schools."

Sincerely,

Martha McAdams

Martha McAdams
Asst. Superintendent
Winfield R-IV School District



Appendix B – Continued

November 5, 2008

To Whom It May Concern:

Tim Reller has permission to conduct a survey of the faculty at Bowling Green High School related to his research project titled "Exploring differences in teacher attitudes and strategies in traditional and block scheduled high schools."

Sincerely,

Darin Powell

Darin Powell
High School Principal
Bowling Green High School

Appendix B – Continued

November 5, 2008

To Whom It May Concern:

Tim Reller has permission to conduct a survey of the faculty at Bowling Green High School related to his research project titled "Exploring differences in teacher attitudes and strategies in traditional and block scheduled high schools."

Sincerely,

Darin Powell

Darin Powell
High School Principal
Bowling Green High School

Appendix B – Continued

November 5, 2008

To Whom It May Concern:

Tim Reller has permission to conduct a survey of the faculty at Bowling Green High School related to his research project titled "Exploring differences in teacher attitudes and strategies in traditional and block scheduled high schools."

Sincerely,

Darin Powell

Darin Powell
High School Principal
Bowling Green High School

Appendix C – IRB

LINDENWOOD UNIVERSITY

Application for IRB Review of Research Proposal Involving Human Subjects

1. Title of Project:
Exploring differences in teacher attitudes and strategies in traditional and block scheduled high schools.

Project # _____
(To be filled out by IRB chairman)

2. Faculty Advisor:	Department:	Extension:	e-mail:
Dr. Bill Emrick	**Education**	636-949-4937	bemrick@lindenwood.edu

3. Primary Investigator(s):	Department:	Local phone:	e-mail:
Jerry Raines	**HS Principal**	636-528-4618	rainesj@troy.k12.mo.us
Tim Reller	**HS Principal**	636-668-8130	timreller@winfield.k12.mo.us

4. Anticipated starting date for this project:
October 15, 2008

5. Anticipated ending date for this project:
February 1, 2009

6. State the hypothesis of the proposed research project:

a. There will be differences in attitudes and use of teaching strategies between teachers working in small schools with a traditional schedule and those working in a small schools with a block schedule.

b. There will be differences in attitudes and use of teaching strategies between teachers working in large schools with a traditional schedule and those working in large schools with a block schedule.

c. There will be differences in attitudes and use of teaching strategies between teachers operating in a traditionally scheduled high school and those operating in a block scheduled high school.

7. State the purpose (objectives) and rationale of the proposed project. Include any questions to be investigated.

One of the benefits to block scheduling is the ability of teachers to use a variety of teaching strategies due to the increased amount of class time. Some schools that had moved to a block schedule are now beginning to move away from the block schedule back to a traditional schedule. Schools that have made this switch, often do so for financial reasons. This research will investigate whether the teachers in a block schedule have changed their teaching practices to fit the longer class periods.

Appendix C – Continued

This research will present quantitative and qualitative data examining teacher attitudes and teaching strategies in schools using traditional scheduling and those using block scheduling. Attitudes and teaching strategies will be compared. Two high schools with a large student population (1500+) and two high schools with a smaller student population (less than 600) will be compared as four schools operating on two different course schedules. Additionally, the two smaller schools will be compared (for teacher attitudes and strategies) as one operates on a traditional schedule and the other on a block schedule; and, the two large schools will also be compared on the same premise.

Identical surveys will be administered to sample groups from each of the four schools. (the survey is contained in this proposal). Each participant will receive a detailed explanation of the survey components from the researchers. Quantitative data will be collected using the results obtained from a Likert rating scale, which is contained in the fifteen (15) statements survey. Qualitative data will be collected using the results from open-ended questions, which follow each of the original fifteen statements containing the Likert rating scale. These open-ended questions ask the respondent to explain and/or elaborate on the rating provided for each of the fifteen statements.

The researchers will determine similarities and differences of attitudes and teaching strategies in all four schools based on the type of scheduling used. The results of the qualitative phase will give direction to the quantitative method, and the qualitative results will be used to validate or extend the qualitative findings.

Research Questions:

a. Does the type of school schedule make a significant difference in the attitudes and teaching strategies among teachers who teach in either traditional or block scheduled high schools?

b. Does the size of a school on a traditional or block schedule make a difference between the attitudes and teaching strategies of teachers on each schedule?

8. Has this research project been reviewed or is it currently being reviewed by an IRB at another institution? If so, please state when, where and disposition (approval/non-approval/pending).

No

9. Participants involved in the study:

a. Indicate how many persons will be recruited as potential participants in this study.

LU participants	_____	Undergraduate students
	_____	Graduate students
	_____	Faculty and/or staff
Non-LU participants	_____	Children
	_____	Adolescents
	~250	Adults (Teachers at Troy Buchanan High School, Ft. Zumwalt East High School, Winfield High School , and Bowling Green High School)
	_____	Seniors
	_____	Persons in institutional settings (e.g. nursing homes, correctional facilities, etc.)

Other (specify):

Appendix C – Continued

Surveys will be collected from teachers at four high schools. (Ft. Zumwalt East, Troy Buchanan, Winfield, and Bowling Green)

b. From what source(s) will the potential participants be recruited?

_____ LU undergraduate and/or graduate classes
_____ LU Human Subject Pool (LU HSP)
_____ Other LU sources (specify) _____
__x__ School boards (districts) **(Ft. Zumwalt East, Troy Buchanan, Winfield, and Bowling Green)**
_____ Greater St. Charles community
_____ Agencies (please list) _____
_____ Businesses (please list) _____
_____ Health care settings, nursing homes, etc. (please list) _____

Other (specify):

c. If any persons within the selected group(s) are being excluded, please explain who is being excluded and why. (Note: According to the Office of LU HSP, all students within the LU Human Subject Pool must be allowed to participate, although exclusion of certain subjects may be made when analyzing data.)

N/A

d. Describe how and by whom the potential participants will be recruited. Provide a copy of any materials to be used for recruitment (e.g. posters, flyers, advertisements, letters, telephone and other verbal scripts).

The purpose of the study will be explained to the teachers during a staff meeting at the participating schools by the investigators/researchers. They will be asked to complete an anonymous survey.

e. Where will the study take place?

_____ On campus – Explain:

__X__ Off campus – Explain: **Teachers will complete the surveys at their respective school campus. They will return the surveys anonymously to their building principal.**

10. Methodology/procedures:

a. Provide a sequential description of the procedures to be used in this study.
The two investigators/researchers will meet with the teacher sample in the four schools (one researcher will meet with the two small schools and the other with the two large schools) to explain and administer the anonymous sixteen (16) statements/questions survey. Teachers will complete the surveys and return them to their respective building

Appendix C – Continued

principal. One investigator/researcher will focus on collecting and analyzing the quantitative data; the other will analyze the qualitative data from the open-ended portion of the survey. Both investigators/researchers will collaborate to report findings based on comparisons involving all four target schools. One investigator/researcher, an administrator at one of the two smaller high schools, will collate findings from comparison of attitudes and teaching strategies between the two small schools. The other investigator/researcher, an administrator at one of the larger schools, will collate findings from comparison of attitudes and teaching strategies between the two larger schools. There will be testing differences in large schools versus small schools on particular survey questions where tabulations suggest real differences exist.

b. Which of the following procedures will be used? Provide a copy of all materials to be used in this study.

_____ Survey(s) or questionnaire(s) (mail-back)-Are they standardized?
__X__ Survey(s) or questionnaire(s) (in person)-Are they standardized?
_____ Computer-administered task(s) or survey(s)-Are they standardized?
_____ Interview(s) (in person)
_____ Interview(s) (by telephone)
_____ Focus group(s)
_____ Audiotaping
_____ Videotaping
_____ Analysis of secondary data (no involvement with human participants)
_____ Invasive physiological measurement (e.g. venipuncture, catheter insertion, muscle biopsy, collection of other tissues, etc.) Explain:

_____ Other (Specify):

11. How will results of this research be made accessible to participants? Explain and attach a copy of any forms that will be used.

Upon completion of the project, the investigators/researchers will provide a copy of the results of the study to the principal of each building involved with the survey.

12. Potential Benefits and Compensation from the Study:

a. Identify and describe anticipated benefits (health, psychological or social benefits) to the participants from their involvement in the project.

Teachers and administrators will be able to see how teaching strategies are used in a block and traditional type schedule. This will allow them to have discussions about effective teaching strategies for their particular type of schedule, which may cause them to positively impact student achievement.

b. Identify and describe any known or anticipated benefits to society from this study.

When teachers more effectively use the class time that is allotted to them within the particular schedule, they are able to provide a higher quality education to students. Society will benefit from students who have received a higher quality education and are prepared to be successful in the workplace.

Appendix C – Continued

c. Describe any anticipated compensation (monetary, grades, extra credit, other) to participants.

None.

13. Potential Risks from the Study:

a. Identify and describe any known or anticipated risks to participants involved in this study. Include physiological, psychological, emotional, social, economic, legal, etc. risks/stressors. A study-specific medical screening form must be included when physiological assessments are used and associated risk(s) to participants are greater than what would be expected in normal daily activities.

Some of the questions in the study may cause stress to teachers because they will be asked about their use of effective teaching strategies. Teachers who do not use these strategies or who do not know what they are may feel stress.

b. Will deception be used in this study? If so, explain the rationale.

No.

c. Does this project involve information about sensitive behavior, such as sexual behavior, drug/ alcohol use, or illegal behavior? If so, explain.

No.

d. Are vulnerable populations (children, institutionalized persons, pregnant women, persons with impaired judgment) used as subjects for this study? If so, explain.

No.

e. Describe the procedures or safeguards in place to protect the physical and psychological health of the participants in light of the risks/stresses identified above. Include procedures in place for handling any adverse events, referral services, etc.

N/A

14. Informed Consent Process:

a. What process will be used to inform the potential participants about the study details and to obtain their consent for participation?

_____ Information letter with written consent form for participants or their legally authorized agents; provide a copy.
__**X**__ Information letter with written or verbal consent from director of institutions involved; provide a copy.
_____ Information letter with written or verbal consent from teachers in classrooms or daycare; provide a copy.

Other (specify):

Appendix C – Continued

b. What special provisions have been made for informed consent for non-English speaking persons, mentally disabled or other populations for whom there may be difficulty in providing informed consent?

N/A

15. Anonymity of Participants and Confidentiality of Data:

a. Explain the procedures to be used to ensure anonymity of participants and confidentiality of data both during the research and in the release of the findings.

At the end of the staff meeting when teachers have completed the survey and questionnaire, an envelope will be passed around to allow teachers to turn them in anonymously.

b. How will confidentiality be explained to participants?

Participants will be told verbally and in writing that their participation will in no way be used for or be related to their work performance. Any reported data will be de-identified.

c. Indicate the duration and location of secure data storage and the method to be used for final disposition of the data.

Paper Records
_____ Confidential shredding after _____ years.
__**x**__ Data will be retained indefinitely in a secure location.
_____ Data will be retained until completion of specific course and then destroyed.

Audio/video Recordings
_____ Erasing of audio/video tapes after _____ years.
_____ Data will be retained indefinitely in a secure location.
_____ Data will be retained until completion of specific course and then destroyed.

Electronic Data
_____ Erasing of electronic data after _____ years.
__**x**__ Data will be retained indefinitely in a secure location.
_____ Data will be retained until completion of specific course and then destroyed.

Other:

Specify Location:

The analysis and statistical study of this specific data will be kept on file with Lindenwood University Education Division.

Appendix C – Continued

16. Researchers must ensure that all supporting materials/documentation for their applications are submitted with the signed, hard copies of the IRB Research Proposal Form. Please check below all appendices that are attached as part of your application package. Submission of an incomplete application package will increase the duration of the IRB review process.

__**x**__ Recruitment materials: A copy of any posters, fliers, advertisements, letters, telephone or other verbal scripts used to recruit/gain access to participants (see 9d).
__**x**__ Materials: A copy of all surveys, questionnaires, interview questions, interview themes/sample questions for open-ended interviews, focus group questions, or any standardized tests used to collect data (see 10b).

_____ Feedback letter (see 11).
_____ Medical screening Form: Must be included for all physiological measurements involving greater than minimal risk, and tailored for each study (see 13a).
_____ Information letter and consent forms used in studies involving interaction with participants (see 14a).
_____ Information/Cover letters used in studies involving surveys or questionnaires (see 14a).
_____ Parent information letter and permission form for studies involving minors (see 14a).
_____ Other:

Vitae

Jerry R. Raines

Jerry has been involved in education since 1992 either as a teacher, coach, and/or administrator. He began his career as a secondary math teacher and coach in the Paris R-III School District. After 2 years he moved on to the Troy R-III School District. From 1994 until 2003 he taught math and coached at the high school level. In the fall of 2003 he made the move into administration with the district and has been an assistant principal at the secondary level for the district ever since. He currently works at the district's new Ninth Grade Center.

Jerry earned his bachelor's degree in mathematics and secondary education from Columbia College in the spring of 1992. He went on to earn his master's degree from Lindenwood University in the spring of 2001 and his doctoral degree from the same institution in the winter of 2010.