

Spring 5-2010

## **A Longitudinal Study of Block Scheduling Versus Traditional Scheduling in Mississippi Schools: Utilizing the Mississippi Student Assessment System and Administrators' Perceptions**

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The University of Southern Mississippi

A LONGITUDINAL STUDY OF BLOCK SCHEDULING VERSUS TRADITIONAL  
SCHEDULING IN MISSISSIPPI SCHOOLS: UTILIZING THE MISSISSIPPI  
STUDENT ASSESSMENT SYSTEM AND ADMINISTRATORS' PERCEPTIONS

by

Linda Oettiker Smith

Abstract of a Dissertation  
Submitted to the Graduate School  
of The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy

May 2010

## ABSTRACT

# A LONGITUDINAL STUDY OF BLOCK SCHEDULING VERSUS TRADITIONAL SCHEDULING IN MISSISSIPPI SCHOOLS: UTILIZING THE MISSISSIPPI STUDENT ASSESSMENT SYSTEM AND ADMINISTRATORS' PERCEPTIONS

by Linda Oettiker Smith

May 2010

Accountability has become increasingly important in an era of financial stress coupled with the demand for continuous improvement, demonstrated through state mandated tests. In order to address the accountability issues associated with No Child Left Behind and in all probability the future Elementary and Secondary Education Act, it is critical to have current data regarding issues related to student achievement. For over a decade, school leaders have been encouraged to examine instructional time, or the use of scheduling formats, such as block scheduling.

This study was intended to provide school and district-level administrators with additional data relevant to the effect of block scheduling on the achievement of middle and high school students on state mandated tests. In addition, the study provided insight into the perceptions of building administrators who have worked under block scheduling.

A review of the literature suggested that few longitudinal studies of a state-wide nature have been conducted. In addition, the review uncovered limited studies of middle school test data related to achievement and schedule type.

The study utilized archival data from all four Mississippi Subject Area Exams, as well as the Mississippi Curriculum Tests for Language Arts and Math to examine the difference in achievement between students receiving instruction within any form of block and those receiving instruction within a traditional schedule. A five-year period was utilized. Data selected for use was obtained from lists provided by the Mississippi Department of Education. A survey of school administrators, whose schools had been identified as operating under a form of block for some time was also conducted in order to obtain perceptions relevant to block and achievement on the state-wide tests, and to the implementation and development of block.

The statistical analysis consisted of a series of mixed ANOVAS. Results indicated that at the middle school level block was significant only on the scores for 7th grade math. At the high school level, the effects of block were significant for Algebra and Biology. Analysis supported three of five hypotheses. School administrators somewhat agreed that block increased achievement on state-wide assessments. These results both supported and contradicted previous studies.

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## CHAPTER I

### INTRODUCTION

Since early in the Twentieth Century, the design of the school day in middle and high schools throughout the United States has been considered a means to address a variety of needs (Bush & Allen, 1964; Murphy, 1990; Steagall, 1968; Trump, 1959; Wright, 1950, 1958). In 1996, refueling the need for restructuring, the National Association of Secondary School Principals report *Breaking Ranks* reiterated the need for reform. The Commission cited two recommendations that have had direct impact on scheduling: teachers need daily contact with no more than 90 students on a daily basis and the schedule must provide a more flexible structure, in order to meet the requirements of the core curriculum.

In this decade, educational reform in the form of the federal No Child Left Behind Act of 2001 again raised issues related to accountability and school operations. The accountability focus of this act is entrenched in the mandate that states conduct annual assessments aligned with state established standards. In “The Alchemy of ‘Costing Out’ an Adequate Education,” Hanushek (2005) stated,

The standards and accountability movement focuses on how well students are achieving relative to the standards, or goals, for the students. A regular outcome is an explicit statement of the performance deficit – i.e., how many students have not reached proficiency on the state’s standards. (p.5)

In Mississippi, the impact of the accountability aspect of NCLB is quite clear. The *Mississippi Code of 1972* as amended in 2001 states in section 37-18-3-2:

Following a thorough analysis of school data each year, the State Department of Education shall identify those schools that are deficient in educating students and are in need of improvement. This analysis shall measure the individual school performance by determining if a school met its assigned yearly growth expectation and by determining what percentage of the students in the school are proficient. A school shall be identified as needing assistance or a Priority School if the school: (a) does not meet its growth expectation; and (b) has a percentage of students functioning below grade level, as designated by the State Board of Education. (p. 1)

In addition, once a school has been designated a Priority School, personnel found in need of improvement are identified and plans developed. This does not end the process. According to the *Mississippi Code of 1972* as amended in 2001 Section 37, Chapter 18-2b:

At the end of the second year, if a school continues to be a Priority School and a principal has been at that school for three (3) or more years, the administration shall recommend and the local school board shall dismiss the principal in a manner consistent with Section 37-9-59, and the State Board of Education may initiate the school district conservatorship process authorized under Section 37-17-6. (p.1)

With regard to teachers the Code allows one additional year on a specific professional development plan prior to dismissal, if the teacher's performance does not improve.

Throughout districts and schools in each state, accountability is assessed after reviewing the progress, as well as the lack of progress. It has been in examining the lack of progress that has allowed personnel to project why this may have occurred. Hanushek (2005) suggested that recent court cases related to accountability and adequacy in education seem to indicate that a dearth of resources exist to support mastery of the standards utilized in the accountability process.

With regard to school operations, resources, whether that means dollars, facilities or materials, are critical. The focus of the No Child Left Behind has been on the use of research based programs and methods, which would assist with student achievement. This aspect of the act seemed to suggest a strong relationship to scheduling reform as it holds the potential of funding

...to enable the schools to implement a comprehensive school reform program that -...integrates a comprehensive design for effective school functioning, including instruction, assessment, classroom management, professional development, parental involvement, and school management, that aligns the school's curriculum, technology, and professional development into a comprehensive school reform plan for school wide change designed to enable all students to meet challenging State content and student academic achievement standards and addresses

needs identified through a school needs assessment. (No Child Left Behind, Title I, Part F, pp. 4-5)

Block scheduling has been considered one organizational strategy, which may lead to improved achievement.

In many areas of the country, the number of schools utilizing some form of block scheduling, a component of school operations, has grown. In 1994, Cawelti's survey results indicated that almost 40 % of high schools within the country were utilizing some form of block scheduling. In some states, the use of block has grown rapidly. Zhang (2001) stated, "In North Carolina, high school block scheduling grew rapidly – from 6 schools (1.6 % of all high schools) in the 1992-93 school year to 288 schools (71.2 %) in the 1999-2000 school year" (p.1).

In Mississippi during the 2002-2003 school year, "records indicate[d] a considerable number of schools in all geographic regions of the state have [had] implemented some form of block scheduling" (Smith, 2004, p.4). An examination of the list of schools by schedule type, provided upon request by the Mississippi Department of Education, for the 2002-2003 school year revealed that the data listed schools under more than one schedule type. After reconciling the data so that schools were listed only once, either under normal or block, and excluding alternative schools and vocational centers, which were not included in the 2006-2007 data, the data indicated that 309 schools were identified under some form of block. Information from the Mississippi

Department of Education listing schools by schedule type for 2006-2007 indicated that 120 schools out of 918 indicated that they operated under some form of block schedule. This number reflected slightly more than 13% of public schools in the state of Mississippi. However, rather than increasing in schools utilizing block, the data indicated a 61% decrease in schools utilizing some form of block (MDE, 2007b).

Although No Child Left Behind (NCLB) has been the impetus for identifying assessments and setting achievement/proficiency levels, the National Assessment of Educational Progress (NAEP) has caused several states, including Mississippi to look in a different direction. After examining NAEP results from 2005, the Mississippi Department of Education presented the results in terms of the top 10 highest achieving states and the bottom 10, or lowest achieving states. In the categories of Mathematics, Reading and Science, Mississippi was in the one of the lowest, if not the lowest achieving state (Malone, 2007). These results raised concerns from Mississippi Governor Hailey Barbour with regard to the impact of these test results on business opportunities for the state. According to Governor Barbour, “When businesses decide where they want to locate their next plant, distribution center, retail outlet or office, they look at our NAEP scores to determine the quality of our educational system and the quality of our workforce” (Malone, ppt slide 19). In addition, the results raised concern because of the disparity between the NAEP scores and reported proficiency scores from the state assessment utilized to meet the demands of NCLB.

In 2005, 89% of fourth-graders in Mississippi were rated proficient in reading—the highest percentage in the nation. But when Mississippi youngsters sat for the rigorous NAEP--the closest thing to a national gold standard--they landed at the bottom: just 18% of fourth-graders made the grade in reading. (Wallis & Steptoe, 2007, p.1)

The response, according to the Mississippi Department of Education, included a two-pronged alignment between curriculum, instruction and assessment, and increased learning expectations. Canady and Rettig (1995) indicated that the schedule holds the power to assist with delivery of instruction, as well as facilitating various instructional practices.

Research studies related to student achievement within block scheduling models range from those that deal with the overall school program to those that have evaluated all of the public schools within a state or multiple states. Some have focused on the impact of different schedule formats within a specific subject area, while others have examined the effect on a number of variables. Numerous studies have reported improved achievement based on analysis of teacher-assigned grades, grade point average, or honor roll (Edwards, 1995; Hottenstein & Malatesta, 1993; Schoenstein, 1995). Conversely, during the initial phase of implementation of a form of block scheduling, schools might experience an increase in failures (Canady & Rettig, 1998).

With regard to achievement at the middle level, Trimble (2002) stated, "Traditionally, achievement is associated with high parental education and high income, while lower socio-economic status children, often termed at-risk, show

lower test scores” (p.1, ¶1). Faced with all of the developmental issues related to students at the middle level, Trimble cited documentation indicating that schools at the middle level have experienced a decline in achievement gains.

Prior to the No Child Left Behind Act of 2001, several studies examined achievement on standardized tests in relationship to schedule type (Arnold, 2002; Eineder & Bishop, 1997; Lockwood, 1995; Plisak, Harmston & Hackmann, 2001; Wronkovich, Hess & Robinson, 1997; Zhang, 2001). These studies yielded mixed results. Some studies, according to Veal and Scheiber (1999) “support the longer traditional schedule over the 4X4 block in science for example, yet support the block schedule in math and social studies” (p.3). While others, such as Lockwood, found no significant difference on standardized tests of algebra and geometry regardless of schedule format. Shortt and Thayer (1999), in their analysis of an extensive survey regarding block, which was conducted by the Virginia Department of Education, found that “Results of academic achievement differ when the data are disaggregated by type of schedule” (p. 25). This point suggested the need for additional research in several areas. This study added to the literature by examining one type of soft data in relationship to schedule type.

### Problem Statement

Block Scheduling and its variations evoke an array of views related to the efficacy of this reform method. The full-weight of No Child Left Behind, along with issues related to educational funding, heightens this debate. While numerous studies have been conducted related to the achievement of students

within block schedule, the results were inconclusive or inconsistent. This study was intended to add to the literature regarding student achievement under Block Scheduling and in particular as it related to state mandated testing.

#### Purpose of the Study

The general purpose of this study was to determine the difference in student achievement between students who received instruction within a traditional class schedule and those who received instruction in a Block schedule at the secondary and middle school levels. Test scores utilized covered the academic years from 2002-2003 to 2006-2007. The ultimate goal was to provide information directly related to student achievement, as indicated through the State mandated tests, which might aid school district personnel in decision making related to schedule type.

The specific purposes of this study were as follows:

1. To determine the difference in student achievement between secondary students who received instruction in English II, Algebra I, Biology and U.S History within a traditional class schedule and secondary students who received instruction in English II, Algebra I, Biology and U.S History within a Block class schedule.
2. To determine the difference in student achievement between middle school students who received instruction in Language Arts, Reading, and Math within a traditional class schedule and middle school students who received instruction in Language Arts and Math within a Block class schedule.



3. To determine if schools utilizing a form of Block scheduling had clear goals, this included increasing student achievement, when that format was initiated.
4. To determine the role of staff development in preparing staff to teach in the Block format.

#### Research Questions

1. With regard to high school students who received instruction on a block schedule verses a traditional schedule, was there a significant difference in their achievement on any of the Mississippi Subject Area Exams?
2. With regard to middle school students who received instruction on a block schedule verses a traditional schedule, was there a significant difference in their achievement on the Mississippi Curriculum Test for Language Arts and/or the Mississippi Curriculum Test for Math?
3. With regard to schools utilizing block was increased student achievement a clear goal, as perceived by school administrators who utilized block?
4. Did school administrators perceive that block contributed to increases on state or standardized test scores?
5. Did school administrators perceive that teachers and administrators had been specifically trained to appropriately utilize teaching time within block?

#### Hypotheses

This study tested the following hypotheses:

H<sub>1</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject

Area Exam in Algebra than students who receive instruction on a traditional schedule.

H<sub>2</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject Area Exam in English II than students who receive instruction on a traditional schedule.

H<sub>3</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject Area Exam in Biology than students who receive instruction on a traditional schedule.

H<sub>4</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject Area Exam in U.S. History than students who receive instruction on a traditional schedule.

H<sub>5</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Curriculum Tests for Language than students who receive instruction on a traditional schedule.

H<sub>6</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Curriculum Tests for Math than students who receive instruction on a traditional schedule.

#### Definition of Terms

1. Alternate (A/B) Block Schedule- Eight classes of 94 minutes, as prescribed by Mississippi State Codes, each are scheduled for students to attend. Four

classes are scheduled to meet on the first day, day A, while the other four classes are scheduled to meet the next day, day B. This alternating schedule continues throughout the entire school year.

2. Block Schedule – In this school day schedule format, four classes of 94 minutes, as prescribed by Mississippi State Code, meet daily for one semester. Four different classes begin on the first day of the second semester and continue until the end of the school year. This type of schedule is considered non-traditional.
3. Flexible Block Schedule – This integrated scheduling approach creates teams of teachers who focus on student-centered interests regardless of subject area lines. Further, this type of block scheduling is more feasible at the elementary and lower middle school level.
4. Hybrid Schedule – In this school day schedule format, some classes are held the block format, while others, depending on need or preference. Are held in the traditional format.
5. Instructional staff – Those adults who are certified by the Mississippi Department of Education and who are directly engaged in presenting curriculum concepts to individual or groups of students.
6. Middle School Student – Generally, students in this category are enrolled in grade 7 and two grades on either side of that grade: 6-8 or 7-9. In some instances, students in grades 5-8 may fall into this category. In this, study only students in grades 6-8 will represent this category of students.
7. MCT – This term is used to refer to Mississippi Curriculum Tests which

cover the areas of reading, language arts and mathematics in grades 2-8, and are part of the Mississippi Grade Level Testing Program.

8. MGLTP – Refers to the Mississippi Grade Level Testing Program. This program consists of a variety of tests. These include the following: MCT is reading, language and mathematics in grades 2-8; writing assessment in grades 4 and 7; and a norm referenced test in reading, language arts and mathematics.
9. MSATP – The Mississippi Subject Area Testing Program (MSATP) which consists of end-of-course tests in Algebra I, English II, Biology, and U.S. History. Passing each of these tests is required prior to graduation.
10. Scaled Score – This indicator provides a total-test score. It is constructed from the raw score in a range from 100 to 500.
11. Raw Score – This indicator identifies the number of correct student responses out of the total number of questions asked.
12. Secondary Students – Generally, students in this category are students in grades 9-12.
13. Selected Response - Test answers in this category are chosen by the student from a group of generally four items.
14. Student Achievement – Student achievement refers to the progress of middle and high school students as measured through the Mississippi Student Assessment programs and as identified in the raw and performance scores in the areas of selected response and, for some administrations of the tests, constructed response.

15. Traditional Schedule – This school day format schedules time in six, seven, or eight periods. In Mississippi, the number of periods is generally seven, and, as per Mississippi State Code, must be at least 43 minutes in length.

#### Assumptions

The following list of assumptions was considered for this study:

1. Student responses to questions on State tests accurately reflected the achievement of each individual.
2. In accordance with testing procedures established by the State of Mississippi, all students experienced the appropriate administration procedures within an acceptable and appropriate environment.
3. Students received appropriate instruction based on the Mississippi Frameworks established for each subject and grade level.

#### Delimitations

The delimitations of this study were as follows:

1. This study was delimited to the mean scores of public school students in grades 6-12 who were tested with the Mississippi Subject Area Exams for Algebra I, English II Multiple Choice, US History from 1867, and Biology, and/or with the Mississippi Curriculum Tests during the academic years selected for this study: 2003- 2007.
2. This study was delimited to students enrolled in various public schools located within each of the three geographic regions of the state: northern, southern and central.

### Justification of the Study

Schools throughout the nation have examined the schedule as a means of improving various aspects, with achievement chief among them. Countless studies have suggested that components of the school environment, such as attendance, discipline and student achievement, with respect to GPA and honor roll, have demonstrated significant improvement in schools that have implemented a block schedule (Canady & Retig, 1998; Edwards, 1995; Hottenstein & Malatesta, 1993, Schoenstein, 1995; Smith, 2004).

In contrast, when student achievement was examined in relationship to standardized tests, and more specifically state mandated tests, results were conflicting and limited. Few studies have been longitudinal. Most dealt with high school and ignored middle school.

Educational leaders throughout Mississippi have been held to a continuous achievement standard, as identified in the Mississippi Code of 1972, Section 37, as amended in 2001. Throughout the nation, No Child Left Behind has upheld this aspect of continuous achievement and added adequate yearly progress (AYP) to the stakes. Yet, with regard to state exams Smith (2004) citing an article released by the American Federation of Teachers in 1999 stated, "Fewer studies, however, have been conducted utilizing the results of state exams as a primary focus of whether students who have been instructed in block periods of time perform at higher levels on the exams" (p.10).

In Mississippi achievement has been assessed according to the results of the Mississippi Curriculum Tests at the elementary and middle school level

and the Mississippi Subject Area Tests at the high school level. Previous research by Handley (1997) and Smith (2004) focused on the relationship between scheduling format and the state assessments utilized at the high school level. Research is needed with respect to scheduling format at the middle school level in relationship to the state examinations. Such research will then offer data to educational leaders in Mississippi and other states from which critical decision-making may occur.

In addition, assessment in the State of Mississippi recently changed direction. Beginning in the 2007-2008 school year, State assessments were designed to focus on depth of knowledge, as defined by Webb (1997). Webb's levels have directly linked the complexity of the cognitive demands associated with content strands with the types of student interaction necessary to demonstrate understanding (MDE, 2007b). How schools respond to this change was a critical question.

It has been suggested that the focus of block scheduling is depth of knowledge (Chaika, 1999). The study provided administrators and others with additional information regarding the effectiveness of block scheduling in relationship to student achievement on state required tests, particularly in light of the new MCT2's which focus on depth of knowledge.

Finally, the study added a dimension that, according to Zhang (2001) has been missing: large-sample longitudinal data. Commenting on the findings of his study in relationship to other studies, Zhang stated, "Analyzing longitudinal data versus cross-sectional data might cause the differences" (p.11).

## CHAPTER II

### REVIEW OF RELATED LITERATURE

#### Introduction

Time is a critical component in education today. One approach to the issue of time, which is being utilized in many high schools today, is block scheduling. This chapter provides a review of the literature related to block scheduling, and student achievement/progress. In order to accomplish this task, the chapter was divided into the following sections:

- A brief history of scheduling
- A discussion of block scheduling: models, pros, cons, concerns related to implementation, and approaches to evaluation.
- Measuring progress/academic achievement and evaluating the program.
- Research related to student achievement/progress under block scheduling.

#### A Brief Review of the History of High School Scheduling

The rigidity of the high school schedule has not always existed. According to Canady and Rettig (1995), prior to 1892 and as late as 1910, the precursors to what is now the American high school, demonstrated some flexibility in their scheduling. Canady and Rettig cited the report of the Committee of Ten, which was completed in 1893, and the development of the Carnegie Unit in 1906 as the standardizing forces behind the traditional six- or seven-period high school schedule.

The works of Boyer (1983) and Gorman (1971) seem to support these claims. In discussing the results of the report of the Committee of Ten, Gorman



indicated that the impact “was to encourage every high school...to center the work of each student upon five or six academic areas in each of the four high school years”(p. 114). In addition, the committee established guidelines related to the beginning of instruction for each subject area and recommended the amount of time spent studying the subject. With respect to the development of the Carnegie Unit, the Carnegie Foundation was instrumental in clearly identifying the parameters of this unit. These parameters specified the total number of hours required per week over a specified length of time which when completed successfully would earn the student one unit, or credit: 120 hours; 36 to 40 hours; 1 unit. These parameters continue to be utilized throughout the county (Boyer). While some standard setting devices were necessary, as more young people enrolled in schools and more schools were opened, the focus of both the report of the Committee of Ten and the development of the Carnegie unit seems to have been on traditional studies which would typically lead to post-secondary education (Jantzie, 1998; Report of the Committee of Ten, 1893).

Initial attempts to redesign the school day seemed to be program, or need, specific. The first modification to the design of the school day began with vocational education at the high school. This was followed by efforts to address the developmental needs of young people through a new type of curriculum, referred to as “General Education, Unified Studies, Common Learnings, Basic Living, Social Living, Integrated Program, or simply as Core classes” (Wright, 1950, p. 1).

With regard to vocational education, the thrust for change in the way schools delivered instruction came in the form of legislation. The Smith-Hughes National Vocational Education Act of 1917 supported the use of time as an element to provide training in agricultural and related fields. This legislation required schools that provided agricultural instruction to ensure that students receiving such instruction have time for real work experience. This condition actually caused schools to provide extended time periods for instruction and work in the agricultural field while controlling the amount of time that students spent outside the vocational field. Specifically, schools wishing to receive Federal vocational funds were required to ensure that students spend 75 percent of their school day in agricultural work experience and related course work and only 25 percent of the day in academics. This funding criterion was utilized throughout the county for over 40 years. Over time this act, coupled with concerns expressed by business and industry, led to the development of cooperative education in other areas of vocational/ technical-career education.

Steagall (1968) provided data that demonstrates how this view for preparing America's workforce impacted scheduling throughout the 60's, in particular in business and office occupations. Steagall stated that a move to block of time scheduling within business and office education programs in the state of Ohio began in 1965-66 following the recommendation of the Ohio State Supervisor for Business and Office Education. Other data provided by Steagall illustrates the use of this block-of-time schedule within the business education and office occupations area as early as 1961 in Florida. In Ohio, the

recommendation to a block of time schedule was made “to develop the student to a level of vocational competence needed in today’s society of science and technology” (Steagall, p. 1). The block-of-time schedule, as proposed for this area, according to Steagall was intended to provide the opportunity to integrate concepts across the curriculum and provide time for practical application within the classroom.

Although different in focus, the second attempt at modification of the design of the school day developed alongside the vocational education movement. With the focus of this second initiative squarely on the developmental needs of the individual, there developed “an awareness that the traditional ways of organizing learning experiences were not always the best” (Wright, 1950, p. iii). This recognition influenced the time provided within the schedule for core classes. Wright (1958) defined Core classes in the framework of block-time classes. In order to understand the difference both definitions are provided:

Block-time classes:

All classes which meet for a block of time of two or more class periods and combine or replace two or more subjects that are required of all pupils and would ordinarily be taught separately.

Core classes:

Classes having the block-time organizational pattern and which also unify or fuse their content around units or problems which may be either subject-centered or experience-centered. (p. ix)

Wright (1950) suggested that the development of core classes at the high school level was promoted by the Educational Policies Commission publication of *Education for All American Youth* in 1944. While the Commission's intent was the development of "a continuous course in 'common learnings' to foster growth in personal living and civic competence from the seventh through the fourteenth year" (p.12), Wright indicated that very few schools had more than two grades involved in core classes. Further, Wright noted that only a small number of schools included core courses above the ninth grade. In fact, by 1950, Wright indicated that only 3.5% of the 24,000 secondary schools had adopted this approach.

In contrast, Wright (1958) revealed that as early as the 1927 the concept of longer periods of time, known then as "block of time," was utilized in middle school scheduling. Wright's data indicated that core programs began to develop in the late 30's, but by 1956 twice as many "block of time" programs existed. While the intent of the block-of-time approach, as reported by Wright, was to integrate core subjects, the reality is that individual subjects were taught in either a traditional time frame, or a block-of-time was utilized when the method of instruction, the learning activity or the learning needs required time. According to Anderson and Van Dyke (1963), by 1957 almost 50% of the junior highs across the nation utilized block-time classes.

Attempts to redesign the high school schedule, which encompassed all departments within a senior high, surfaced in the early 1960's, perhaps as a result of the work of J. Lloyd Trump (1959). Trump presented a view of the

future, which included a change in the standard, inflexible schedule: one group of students meeting at the same time for the same amount of time five days a week. His vision had all components varying, so that the organization of the school would be organized around three kinds of activities, which would allow variety in teaching methods and better meet the needs of individual pupils, as well as the content of a subject. The activities identified by Trump ranged from individual and large group instruction to small group discussion. Because of the various meeting times associated with each type of activity, Trump's schedule placed emphasis on student responsibility. Trump's design became known as Flexible Modular Scheduling. This design, according to Trump, would provide greater opportunity for education to meet the demands of quantity and quality, which he believed Democracy necessitated. Trump's work seemed to usher in the reform movement of the 1960's, which focused on meeting the achievement needs of all children (Firestone, Fuhrman, & Kirst, 1990).

Others echoed this call for a new design. Espousing a similar pattern made up of flexible modular units, Bush and Allen (1964) advocated that such a design change would address a multitude of differences. These differences included those between individual pupils, as well as those between teachers and subjects. "The new design," stated Bush and Allen, "offers reassurance to school leadership that responsibly planned schedule innovation can generate rich rewards in the quest for excellent secondary education" (p. 117).

More recently, it is the reform movement of the 1980's that placed emphasis on the restructuring and reorganization of schools. Murphy (1990)

suggested that this was only one movement of many which have had an impact on education in the United States. He further suggested that there was a significant difference between this movement and reforms of the past citing Guthre and Krist (1988); Krist (1984); and Mitchell (1984) as support for this claim. "For the first time in history," stated Murphy, "legislators made a serious incursion into the technical core operations of schools and other educational issues that formerly had been reserved for local boards" (p.6). Identifying the second area of difference, Murphy (1990) noted that educational reform would now be evaluated with a more outcome-based approach for accountability. Murphy indicated that many of the initiatives were passed into law in many states. Within the first wave of initiatives, Murphy presented two areas that directly impact scheduling: time and curriculum. Within these areas issues addressed included better use of time, increased student attendance, Core curriculum and increased graduation requirements.

By the mid-1980's, these initiatives were highly criticized by various reformers. "These reformers called for a major overhaul – a restructuring – of the current educational system" (Murphy, 1990, p. 26). The focus of this overhaul, according to Murphy, was to give more power to the local district in order to design solutions, which would address the needs of individual schools. Such change them could encourage the development of site-based management and empower teachers in their work with students. Murphy indicated that the third wave, which concentrated on children, started in 1988 again as a result of criticism. The focus of this wave, as presented by Murphy, was the

development and coordination of services which would enable children to meet the needs of a changing society and to become productive, contributing citizens.

In the early 1990's, the call for restructuring resounded with *Prisoners of Time*, a report by the National Education Commission on Time and Learning (1994). The Commission reported that learning in America is controlled by time, and questioned the ability of schools under such constraints to meet the needs of all students. The Commission stated,

If experience, research, and common sense teach nothing else, they confirm the truism that people learn at different rates, and in different ways with different subjects. But we have put the cart before the horse: our schools and the people involved with them – students, parents, teachers, administrators, and staff – are captives of clock and calendar. The boundaries of student growth are defined by schedules for bells, buses, and vacations instead of standards for students and learning. (p. 1)

Further, the Commission made eight recommendations all of which revolved around changing the design of schools to utilize time differently in order to address the learning needs of every student and to facilitate changes in teaching. It is the second recommendation entitled, "Fixing the Design Flaw: Use Time In New and Better Ways" which suggested the schedule as an area to consider. With this recommendation, the Commission focused on the effective use of time to enhance and expedite learning, rather than as a limitation. The Commission indicated that an examination of use of time would need to involve both state and local school boards. Further discussing this recommendation, the Commission

referred to the use of block scheduling as one approach, which could assist schools in correcting the design and providing the flexibility needed.

Supporting the call for restructuring, Cawelti (1994) identified three goals related to restructuring the school organization, which were prevalent in the schools he studied. These goals focused on decision-making and operations, use of instructional time, and the school environment. In addition, Cawelti cited five major components of high school reform: curriculum/teaching, school organization, community outreach, technology and monetary incentives. Elements contained within the first two components directly impact scheduling practices: Curriculum/teaching - interdisciplinary teaching; School organization- School-Within-A-School and Block Scheduling. With regard to Block Scheduling, Cawelti suggests that the benefits lie in teacher's flexibility to use various teaching activities within a class period to address varying student needs.

Block scheduling is only one element within one of the five components Cawelti (1994) presented as indicative of school reform/ restructuring. Can a single element be strong enough to result in significant change and increase student achievement? Cawelti indicated that it couldn't. Rather, Cawelti suggested a more systemic approach could have greater effect.

In 1996, refueling the need for restructuring the National Association of Secondary School Principals report *Breaking Ranks* reiterated the need for reform and provided six themes, which guide the recommendations offered. They included the following: personalization, coherency, time, technology, professional development and leadership. Within the area of time, the



Commission responsible for this report cited eight recommendations. These recommendations focus on the use of the school facility and faculty, as well as on the structure of the curriculum and the school day. While all eight recommendations hold a potential impact on scheduling, two would cause an immediate and direct impact on scheduling. The first of these two proposals suggests that the number of students a high school teacher instructs on a daily basis during a term be limited to 90. The second recommends that scheduled time be more varied in order to meet curricular needs. Within the report, discussion related to the first recommendation focused heavily on the need for teachers to have additional time which would enable the teacher to know the student better and thereby be able to address a program of individual needs within their courses, and provide the teacher with time “for such vital activities as advising, curriculum writing, instructional preparation, and professional development” (p. 47). With regard to the second recommendation, the report referred directly to two models: Block scheduling and the Copernican plan. In addition, it called for high schools to rethink the traditional school day and school year.

Educational reform in this decade in the form of the federal No Child Left Behind *Act* of 2001 has again raised issues related to school operations and accountability. This Act “embodies the four principles of President George W. Bush’s education reform plan: stronger accountability for results, expanded flexibility and local control, expanded options for parents, and an emphasis on teaching methods that have been proven to work” (Fact sheet, 2002, p. 1). With

an emphasis on teaching methods, scheduling models and practices may again be tested. Further, within the Act comprehensive systemic reform is specifically addressed. As referred to, such reform encompasses an effective school design which functions in all areas to meet student and school needs while addressing the challenges posed by state specified content and academic achievement standards. Further, this aspect of the Act seems to suggest a strong relationship to scheduling reform as it holds the potential of funding.

### A Discussion of Block Scheduling

Block scheduling, simply defined, is a reorganization of the day so that the time allotted for one course is longer than the traditional 45-55 minutes. Unlike the traditional schedule, the block schedule generally consists of three or four classes held in longer periods of time. In fact, the range of time varies from 80-120 minutes, dependent upon the type of schedule within which block is utilized (Cromwell, 1997; Lybbert, 1998). In Chaika (1999), Bolinger stated, "In block scheduling, the focus is on 'depth of learning,' not surface learning and low-level recall. We design longer periods of time for students to engage in learning" (p. 2). The guiding philosophy behind this form of reorganization can then be stated simply: Time, when used wisely to actively engage students and provide opportunities for active learning benefits all- the student, the teacher, the school, the community and the nation.

Canady and Rettig (1995) and Shortt and Thayer (1999) help define block by presenting the various schedules that utilize this concept. The two main forms are 4/ 4 (Semester) Block and Alternating Day. Other variations include

Embedded Schedule, Block with Intersession, and other intensive scheduling models.

Explaining the 4/4 schedule, Canady and Rettig (1995) suggested that this plan more closely resembles a college schedule. Under the 4/4 schedule students take four courses daily for one semester. During this time, teachers are required to teach for three of the four periods. Within this schedule, the four blocks of time are approximately 90 minutes in length. Likewise, courses that in a single-period daily schedule would be completed in one semester are completed in one quarter (45 days). This form of block has been labeled semester block or accelerated block. With regard to the development and implementation of a 4/4 plan, Canady and Rettig identified three separate areas of concern: matters related to instruction; matters related to students; and matters related to teachers. It should be noted that the area of instruction holds the greatest number of concerns, as well as those, which have been most hotly debated. Issues presented within this area include retention of material, course sequencing, and time spent per course, as well as those that deal with the impact of 4/4 on specific programs: Music, Advanced Placement and Special Education. The area of student issues covers transfer of students from one schedule type to another, credit requirements, attendance and discipline. Concerns presented related to teachers include planning time, course preparation, as well as contractual issues.

Based on this researcher's experience, every strategy offered to work with the music program raises opposition from one group or another, or poses

difficulty to implement dependent upon the size of the school. Experience has also demonstrated that in a high school having less than 150 students, it is extremely difficult to schedule an appropriate number of courses to pair with music without compromising teaching load or scheduling for other students. Further, schedule balance is also difficult to provide and maintain within this size school. However, it is critical that consideration of all of these areas be part of the development and implementation process, if successful change is to occur.

With respect to the semester schedule, Canady and Rettig identified the following benefits:

1. Increased “quality” instructional time.
2. Teachers are able to plan extended lessons.
3. The number of class changes is reduced.
4. Teaching with a variety of instructional models is encouraged.
5. Compared to single-period daily schedules, students have fewer classes, quizzes, tests and homework assignments on any one day,
6. Work missed because of student absence is easier to gather and monitor.
7. Itinerant teacher schedules can be simplified.
8. Teachers work with fewer students during any one semester.
9. Teachers prepare for fewer courses each day.
10. Teachers must keep record and grades for only 50-90 students per semester.

11. Students who have failed a course have an early opportunity to retake it; thus, they can regain the graduation pace of their peers.
12. Students have greater opportunities for acceleration.
13. Students may enroll in a greater number and variety of elective courses in comparison to traditional six- or seven-period schedules.
14. Fewer textbooks are required. (pp. 68-73)

In addition to these benefits, this schedule allows for remediation during the second half of the school year. This provides the opportunity to eliminate summer school remediation (Shortt & Thayer, 1999).

Perhaps an easier transition from a traditional, single-period schedule is the Alternate Day Block Schedule. The general format of the Alternate Day Block Schedule is that “students and teachers meet their classes every other day for extended time “block” or at different times during the day on a rotating basis”(Canady and Rettig, 1995, p. 23). Shortt and Thayer (1999) indicated that a typical daily A/B schedule generally is comprised of three 90-minute block classes and one 50-plus-minute block. This schedule configuration presents one way to utilize block in schools, which have had a traditional seven-period schedule. Other names given to the Alternate Day schedule include the following: A/B, Day 1 Day 2, Slide schedule, Alternating Week, the Atlee model, and the Alternating Ten-Day Cycle (Canady & Rettig; Shortt & Thayer). With regard to the development of an alternative plan, Canady and Rettig presented several areas of concerns which include the following: balancing the mixture of difficult, or heavy homework, classes with less difficult classes to be distributed

over both days; ensuring that some planning period for teachers is provided dealing with inclement with days by establishing a set Day 1, Day 2 schedule; and establishing a plan for reporting attendance, if a computer system is not utilized.

According to Canady and Rettig (1995), the alternate day plan has several benefits, as well as shortcomings, when compared to the 4/4 schedule. With respect to benefits, in addition to the first seven benefits listed for the 4 by 4 plan, the alternate day plan permits concentrated work in specialized programs. Canady and Rettig suggested that this could be accomplished by scheduling the half-day, currently utilized in some schools or districts for concentrated study in the vocational/technical/career areas, for all of Day 2 of the Alternate schedule. In addition, Shortt and Thayer (1999) suggest that the Alternate schedule makes it easier to work with students transferring in from traditional schedules, and it provides a longer time for homework assignments. When compared to the 4/4 plan, the Alternate schedule seems to have several shortcomings, which seem to derive from the fact that teachers still have the same number of students associated with the traditional schedule. This includes the number of grades and records that must be kept, as well as the number of preparations to which teachers may be assigned. The Alternate schedule also impacts students in the same way that the traditional schedule does with respect to homework, tests, and opportunities to make up failed courses. Some concern has also been expressed regarding continuity of instruction in certain curricular areas (Canady & Rettig, 1995)

The Embedded Schedule, which is presented by Shortt and Thayer (1999), is truly a mixed schedule format. Under such a schedule, some courses may be offered in block on a daily or alternating day basis, while others are scheduled for a traditional period. Names used for this schedule, according to Shortt and Thayer include “mixed, combination, and hybrid” (p. 12). Shortt and Thayer suggested that the embedded schedule enjoys the benefits found within both schedules, as well as possesses the ability to handle some of the concerns, such as those related to sequencing and reinforcement of instruction. While the hybrid schedule seems to offer a great deal of flexibility, anecdotal experience indicates that it is difficult to maintain a balance of block and traditional-period courses particularly in a small school of less than 150 students.

Shortt and Thayer (1999) described Block with Intersession as “a schedule that provides a short intersession of 10, 15, or 30 days of instruction for some specific purpose” (p.12). Canady and Rettig (1995) purposed an intersession of as few as 5 days. While placement of the intersession varies, the time characteristics of courses may be 4/4, alternating day or even traditional single-period schedules (Canady & Rettig; Shortt & Thayer). Determining the placement of an intersession is dependent upon the purpose. Scheduled in the middle of a term, an intersession may provide, as indicated by Canady and Rettig, a psychological break, additional instructional and learning time for those who need it, and/or enrichment activities. Further, utilizing a middle term intersession, even a short 5-day intersession, as a means of providing additional instructional and learning time, suggests an opportunity to prevent failure. When placed at

the end of a term, it would seem that intercessions would not be as useful in preventing failure. Canady and Rettig, however, suggested that some failures could be prevented. This suggestion relies on determinations made by the teacher. Canady and Rettig proposed

...that students whose mastery of objectives can be completed during the short term be awarded an 'I' for 'Incomplete' or an 'NY' for 'Not Yet.' In very short terms of only five or ten days, only students receiving an 'I' or 'NY' would be able to finish their unmastered objectives and thereby complete a course (p.143) .

This proposal gives time and assistance to students who given more time have the ability and motivation to complete the course.

In discussing intensive scheduling plans, Canady and Rettig (1995) reviewed four specific types: trimester, quarter-on/quarter-off, the intensive schedule, and the Copernican plan. Each of these plans addresses the school day, indeed the year, differently from the preceding plans. These strategies "are built around the concept that each school day represents a separate unit of time and can be grouped in various configurations and/or terms" (p. 116). Such scheduling can be utilized to address the variations in time needed for teaching and for learning. With regard to the success of such schedules, Hottenstein (1998) stated:

The common denominator for success with intensive scheduling continues to be how well the concept is implemented. The key to failure lies in the inability of educational stakeholders to gain



consensus on why there is a need for change. (p. ix)

The Trimester schedule has been utilized at varying levels of education. This schedule divides the school calendar into three, 60-day learning periods. According to Canady and Rettig (1995), the trimester model in full-block form would provide students with the opportunity to take two classes for an intensive period of instruction. Variations exist. "For example, several schools are operating trimester plans in which students take two core courses and related subjects every 60 days" (p.26). Such a plan provides time for those students who are in need of additional learning time by actually scheduling in a period for individual assistance. Many of the concerns suggested by Canady and Rettig with regard to the 4/4 plan also surface with regard to the Trimester plan. Discussing this further, Canady and Rettig suggested that the extended learning time provided by Trimester plans that include a scheduled period for individual assistance might require changes in the grading system. "Punitive grading will quickly erase the benefits that might accrue from a scheduling system designed to provide more time to learn for those who need it" (p. 128). Further, personal anecdotal experience with a Trimester schedule at the undergraduate level demonstrated one potential issue of concern: transfer student placement and credit determination

The Quarter-on/quarter-off plan, as presented by Canady and Rettig (1995), is actually an adaptation of the 4/4 plan. In the quarter-on/quarter off plan, students actually take eight courses: four each quarter. The courses taken during the first quarter are continued during the third quarter. Quarter two

courses are similarly completed during the fourth quarter. According to Canady and Rettig, courses should be arranged in clusters for students, such as humanities and science/mathematics. As in the Trimester plan, the quarter-on/quarter-off plan has the potential to provide additional learning time. For example, as Canady and Rettig suggest, a student who does not do well in a course taken first quarter could be provided remediation, or actually repeat the course during the second quarter. Successful intervention would then allow the student to rejoin the course for completion in third quarter. One question arises: What will this student do during fourth quarter for the course period which was taken for remediation during second quarter? This issue expresses many concerns associated with the quarter-on/quarter-off plan and suggests similar concerns expressed with the 4/4 plan: curriculum organization, athletic eligibility, minutes per course, and retention of learning.

Canady and Rettig (1995) presented one additional type of schedule: intensive scheduling. Under this type of schedule, students take one core class per quarter (45 days). In other words, during each quarter a student is scheduled for only one of the four core classes: English, Math, Science, or Social Studies. The student will meet for an extended period in the morning and in the afternoon for the core subject. In addition, two single period subjects will be taken one before and one after lunch. These periods may include foreign language, art or music. According to Canady and Rettig, this plan “has been implemented in selected private schools throughout the country, especially preparatory schools which serve students who typically had not done well in traditionally organized

high schools” (p.117).

One final plan discussed by Canady and Rettig (1995) is the Copernican plan, which is also considered a variation of intensive scheduling. Within this plan, classes are generally scheduled in blocks of 90 minutes for two to four hours of the day. These courses are taken for only part of the year. The length may vary from 30-90 days. Rettig cited work by Carroll (1990), the noted authority on the Copernican plan, which clarified Carroll’s original proposition. According to Rettig, Carroll’s plan not only included courses varying from two to four hours a day, but also included some classes, considered as enrichment or remediation, that were scheduled on alternate days for the entire year. With regard to advantages of this plan, those generally associated with other schedule variations discussed are also present. Canady and Rettig noted some differences, cited by Carroll (1994). These differences included the flexibility of the schedule, the additional learning opportunities offered through the year-long enrichment and remediation classes, and the assertion that the Copernican plan does not require additional funding.

One form, not previously discussed flexible block scheduling, seems to have become a trademark of middle level education, according to Wunderlich, Robertson, and Valentine (2000). This form of block utilizes teams of two to five teachers that ignore subject lines and focus on a problem or issue. Wunderlich, Robertson and Valentine indicate this approach to be more integrated and student centered. As presented by Wunderlich, Robertson and Valentine, this plan empowers the teacher teams to determine how to utilize time to attain

achievement. Within the flexible block schedule this means that time is altered as needed to provide varied educational experiences. Teaching is engaging and active. Learning is authentic.

Wunderlich, Robertson and Valentine (2000) offered the following sample to demonstrate how one school worked with this approach:

Sixth grade students at William Diamond Middle School in Lexington, Massachusetts, devote their time to intensive, independent learning projects, one each quarter in science, math, social studies, and English. Fridays are spent working only on this designated integrative project. At the end of the quarter, students move on to another core discipline project. (p.3)

Working within such an organizational structure requires planning, a clear set of common objectives, and collaboration. Planning would require a thorough review of the curriculum in order to ensure that state benchmarks would be addressed. Strong collaboration among team members would be essential, to ensure that varied activities occurred, that appropriate time was allotted for optimum student success, and to meet the common objectives.

One critical concern, which arises when examining the plans presented, is that of cost. Many of the plans offer students the opportunity to take more courses. This seems to suggest that more staff would be required, as well as additional textbooks and supplies. In addition, the need for appropriate time for staff development or training, and curriculum organization are issues raised in relationship to all of these plans. Training staff may require the greatest amount

of funding, due to the multiple areas of training required to ensure that the schedule plan implemented begins successfully (Shortt and Thayer, 1999).

With regard to the 4/4 plan, Canady and Rettig (1995) suggested that the determining whether a move to a plan, such as the 4/4, will positively impact the budget is directly related to the plan under which the school or district currently operates. Projecting the cost of such a move, Shortt and Thayer (1999) suggested “moving from a six-or seven-period day schedule to a 4/4 format will increase the personnel budget approximately 6 to 11 percent” (p. 102). In contrast, Lare, Jablonski, and Salvaterra (2002) indicated that a move to block scheduling could actually save a district money by decreasing the personnel budget. This would be dependent upon the number of periods for which teachers are currently scheduled and the size of the district.

In discussing block scheduling, several different models have been presented. It is not possible to place them all under one generic label and to say that they all do the same thing. Hottenstein (1998) summed up this issue stating,

Some naysayers would have you believe that all block schedules are created equal. Nothing could be further from the truth. Block scheduling is both complex and diverse. Depending on their design, different block schedules will yield a variety of benefits, and possibly some drawbacks. (p. 14)

#### Measuring Progress: Evaluating the Program

Reform movements seem to look at dropout rates, skill attainment, test scores, attendance/truancy, and discipline-violence as indicators that schools are

failing. Are these then the measures to be used to determine progress or evaluate a program? What aspects are utilized in order to determine student achievement or academic progress?

The answers to these questions are embedded in the process utilized to establish the program: the change process. Joseph Juran, (as cited in Shortt & Thayer, 1999) suggested that the strategies to implement change, such as a move to a form of block scheduling, come directly from planning, which begins the process. The planning portion of the change process offers an opportunity to investigate what needs to be changed, to determine what can be done to address those needs and to establish measurable goals and objectives, so that success can be determined through monitoring and problem-solving.

(Hottenstein, 1998; Shortt & Thayer; Fullan, 1991) However, Lare, Jablonski and Salvaterra (2002) stated, "When moving to block scheduling, most districts do not list explicit measurable outcomes that can guide the evaluation process" (p. 55).

The ability to demonstrate that a change has positive impact is of critical importance with respect to funding issues and public relations. Shortt and Thayer (1999) identify several measurable outcomes with which to monitor the block-scheduling format. These outcomes cover a wide range of data which is typically reported to state departments of education, such as dropout rates, pass/fail rates, post-secondary education plans, graduation rates, and attendance. In addition, Shortt and Thayer also suggest reviewing student achievement on standardized test scores and monitoring the instructional

methods utilized. Outcomes should be stated to reflect increase or decrease as appropriate.

In addition to measurable outcomes, a compilation of recent data related to the outcomes is helpful. This data forms a baseline that can be compared to similar data gathered from the new program (Canady & Rettig, 1995; Shortt & Thayer, 1999). When selecting the data to serve as a baseline, different types should be included in order to get a full and accurate view.

When using data, we have found that certain data tend to be more accurate predictors of how successful a change is. These data are usually derived from standardized tests such as Advanced Placement examinations, national normed tests, and norm-referenced tests. We refer to these as hard data, and they give one indication of how a reform is working. Other data that have variables which cannot be controlled or accounted for, we call soft data. These data consist of teacher-assigned grades, perceptions of change without supporting data, number of students on the honor roll, and grade point averages. (Shortt & Thayer, pp. 238-239)

Fullan (1991) cautioned that results from the initial one to two years after implementation may not really provide evidence of results, as the implementation process may not be complete. However, Shortt and Thayer (1995) saw monitoring as a critical component to program success. They noted that such monitoring provides data to clearly define what works and what does not.

Hottenstein (1998) suggested that if an area of weakness, one showing

decline, appears as part of an evaluation, a closer look is warranted. He also suggested that questions related to the frequency of occurrence and instances surrounding the occurrence serve as guides to find reasons for the decline, as well as solutions. Hottenstein's rationale for such an inquisition is simply stated, "Problems may be created by other issues besides scheduling or teacher delivery" (p. 75).

With respect to evaluating student progress, Kimbrough and Burkett, (1990) and Beswick (1990) recommend a systematic approach that utilizes a balanced, variety of components. The components suggested include tests ranging from teacher made to standardized, as well as student work and observations. While data from such components is readily available, defining academic achievement and determining growth for many local school districts seems to be problematic (Lare, Jablonski, & Salvaterra, 2000).

With regard to achievement, numerous reports suggest the use of grade point average, honor roll, and standardized/statewide tests to measure progress. Canady and Rettig (1995) created two distinct lists of achievement indicators: enabling indicators and final indicators. Achievement indicators focused on participation, practices, programs and relationships. They included student behaviors related to attention, discipline and attendance, as well as student-teacher relationships and stress. Canady and Rettig also included parental involvement as one of the enabling indicators. Final indicators included those aspects of education, which typically provide opportunity or movement: grades, credit earned, athletic eligibility and content mastery. Some indicators were



present in both lists, such as Advanced Placement and Dual Enrollment. The presence of such indicators in both lists seemed logical from the perspective that successful achievement in such a program as Dual Enrollment results in opportunity or movement.

In 1996, the National Association of Secondary School Principals' report *Breaking Ranks: Changing an American Institution*, the Commission offered several recommendations, which as part of the report were identified as

...the beginning, not the end, of a process that will endure for the rest of this decade and into the next to restructure high schools in ways that will contribute to the academic success – and, ultimately, the success in life – of young Americans. (p. 2)

Included within that process are several recommendations related to assessment and accountability. One such suggestion reiterated the use of a variety of components to obtain data, which provides a fuller picture of what the individual is able to do (Fletcher, 2002). Two of these proposals established a sequence to program evaluations. First, the Commission suggested an annual report to the community. Second, a review of progress from an external body at reasonable intervals was recommended. Stake (as cited in Fletcher, 2002) believed that the utility of such reports is essential. Fletcher further explained that these reports need to present both positive and negative findings, and should be presented in an understandable and usable way.

The entire planning, implementation and evaluation process is critical to the success of any new program. Block scheduling is no exception. In fact,

emphasizing this fact with regard to block scheduling Jenkins, Queen and Algozzine (2001) stated, "With thoughtful plans for organization, implementation, and evaluation, all stakeholders can help increase the chances of successful use of blocks scheduling" (p. 61).

#### Research Related to Block Scheduling and Student Achievement

Research studies related to student achievement within block scheduling models range from those that deal with the overall school program to those that focus on the impact within a specific subject area. Some extensive projects have evaluated all of the public schools within a state or multiple states. The following review of this research has been limited in number but it is hoped, not in scope. These studies are intended to present research findings that cover the ranges previously mentioned, whether positive, negative or inconclusive.

Following a review of the literature related to block scheduling and concerns of mathematics instructors, Kramer [1996] (as cited in Shortt and Thayer, 1999) offered four points related to student achievement. In general, Kramer indicated that planning and preparation prior to implementation had an adverse effect on achievement. Under the A/B schedule, Kramer found no substantial information. With regard to achievement under a 4/4 schedule Kramer indicated some success in maintaining achievement, but also noted some retention difficulties in math. Kramer suggested that this lack of recall may be inconsequential within the next course. Kramer's findings are of a general nature, despite the initial rationale behind his review. These points suggest the need for additional research in several areas.

In reviewing an extensive survey regarding block, which was conducted by the Virginia Department of Education, Shortt and Thayer (1999) cited several findings, which are relevant to student achievement. In general, Shortt and Thayer found that Block improved student achievement. The findings, however, suggested that this was dependent upon the type of block schedule utilized, and that students on the A-B schedule seemed to demonstrate the most success. Further, their review found that scheduling seemed to have no adverse impact on subject areas for which opposition is generally present, such as foreign languages and music. With regard to perceptions measured within this study, Shortt and Thayer found students in general held a lower perception of the impact of scheduling on such things as GPA and honor roll than did teachers and administrators. In contrast, Shortt and Thayer found that the perceptions of teachers and administrators yielded a positive view of block scheduling with regard to flexibility, test scores, positive impact on average ability students, and students who typically have difficulty within the traditional setting. According to the findings, both teachers and administrators more frequently indicated that block scheduling had a negative impact on low-achieving students.

Other studies have utilized standardized test scores. Arnold (2002) executed such a study utilizing mean scale scores from the Tests of Achievement and Proficiency (TAP). The TAP “gauges secondary school students’ progress toward commonly accepted goals in the basic skills and curricular areas” (p.43). The subjects of the study were all 11<sup>th</sup> grade students who took the TAP in 1996 and who attended any public high school in the state

of Virginia using a seven-period A/B block schedule or a seven-period traditional schedule. After an analysis of the data, “it was evident that block-schedule schools realized increases in mean scale scores during the implementation year of block scheduling, but that most of the increases diminished by the second year of block scheduling”(p. 51).

With regard to achievement as indicated on standardized tests, Kelly Mell stated,

...two extensive scientific studies are available that compare academic performance on the block versus traditional scheduling. Contrary to proponents rhetoric, David Bateson’s study , which examined all British Columbia 10<sup>th</sup>- grade students showed that full-year students out-performed semester students (Mell, 1996,p.2). (As cited in Lybbert, p. 70)

Mell’s statement seems to suggest that students under block scheduling models have not demonstrated improvement. Canady and Rettig (1998) cited more than 20 studies and concluded, “There are inconsistent data regarding the improvement of standardized test score under block scheduling” (p. 1).

One of the issues of concern previously identified is the placement of AP courses within block scheduling coupled with the issue of success on the Advanced Placement test for students in schools operating under one of the block plans. According to Shortt and Thayer (1999), a 1998 report issued by the Educational Testing Services provided an analysis of this situation. The results, as cited by Shortt and Thayer, indicated “... that students, on average, obtain

higher AP grades when instruction is given over the entire year [A-B or single-period day schedules] rather than in a semesterized block schedule format” (p.29).

SAT and ACT scores have also been a consideration raised during the planning and implementation stage of a block schedule model. In a study of public high schools in Illinois and Iowa, Plisak, Harmston, and Hackmann (2001) examined the relationship between the scheduling type utilized within the school and the average composite score of the school on the ACT. The three types of school schedules utilized by the 568 schools in the study included the 4/4 model, the A-B model, and the single-period eight-period day. Plisak, Harmston, and Hackmann stated, “Test takers in these states were selected for this study because 67 percent of graduating seniors in Illinois and 66 percent of graduating seniors in Iowa completed the ACT Assessment in 1999...” (p. 44). In addition the schools using the two block models were representative of national figures and had operated under these models for six to ten years. According to Plisak, Harmston, and Hackmann the results of the study demonstrated no significant difference in mean composite scores when reviewed based on school type.

In areas of a more general nature, such as GPA, honor roll, and homework completed, the results are mixed. Lare, Jablonski and Salvaterra (2000) cited a study conducted by Deuel (1999), which indicated, “Some studies have reported improvements in overall grades. Others have reported an increase in failure rates or a decline in standardized test scores [Lawrence & McPherson, 2000]” (p. 55). Canady and Rettig (1998) contended that studies

indicated increased GPA's and honor roll numbers. However, they noted an increase in failing grades during the initial year of a 4/4 schedule.). After reviewing seven studies related to homework completion by students in schools utilizing block scheduling, Canady and Rettig (1998) reported, "...there are inconsistent data relative to the amount of homework completed in block-scheduled schools" (pp. 3-4).

Many studies have been conducted within single school buildings or districts. Some of these studies have been undertaken internally, while others have engaged outside entities. In one such study, Lare, Jablonski, and Salvaterra (2002) were contracted to conduct a comprehensive review of a school district that had operated under a 4/4 schedule since 1994. One of the areas which Lare, Jablonski, and Salvaterra were asked to study was that of student performance and achievement. The outcomes revealed results similar to those of larger studies. Test scores had remained constant. Honor roll numbers had increased. College placement scores, as evaluated by mean scores, were similar to those prior to 1994.

In a similar study Veal and Schreiber (1999) analyzed student achievement within a single school operating three different schedule designs simultaneously: traditional, 4/4 and hybrid. According to Veal and Schreiber, standardized test scores for reading, language, and mathematics were obtained from the state-mandated test, Indiana Statewide Testing for Education Progress (ISTEP+) for all tenth-grade students. The results of this study, according to Veal and Schreiber, indicated no significant difference in student achievement

regardless of schedule type within the areas of reading and language. However, math-computation results indicated that student achievement was higher for those students in a traditional schedule. Veal and Schreiber acknowledge that their results confirm, as well as refute other studies. They concluded, "More research is needed to address the concern of 'time-of-discipline' (p. 14).

Other studies have focused on achievement within a particular subject. Shortt and Thayer (1999) conducted one such study. Their study of all Virginia schools encompassed a two-year time span: 1996 and 1997. Shortt and Thayer examined data from eleventh-grade norm-referenced tests for reading and math to determine if differences in achievement were associated with school schedule type. Shortt and Thayer utilized standardized test results for reading and mathematics as the comparative data. Results from the two years utilized "showed that students in schools on the A-B schedule made greater gains than students on the 4/4 or the single-period schedule. Results also indicated that students in schools on the 4/4 had higher gains than students in traditional schedules" (p. 26).

A 1997 study conducted by Wronkovich, Hess and Robinson utilized results from the Ohio Early Math Placement Test to study the relationship between the scores of students in schools on block schedules and students in schools with traditional schedules. Wronkovich, Hess and Robinson concluded that more studies of a longitudinal nature were needed, in order to determine if lapses of time in mathematics instruction would have an adverse effect.

Research related to the impact of block scheduling on special populations

is also present. A study by Bugaj (1998) focused on the impact implementation of intensive scheduling would have on special education students. In order to determine the effect, Bugaj surveyed administration and faculty from 11 other schools in the same state. The schools surveyed already operated under intensive scheduling, specifically semester block. While academic performance was not the only area of impact analyzed, it was the sole focus of his review. Bugaj found “that the goals/objectives of students’ IEPs were more readily attained... [and] The grade point average of special education students was reported by participants’ as having improved” (p. 37). These results seem to suggest a positive impact. However, in his recommendations Bugaj suggested that for the full benefits of implementation to be evident, more time would be needed. Canady and Rettig (1998) cited studies by Jones (1997) and Santos and Rettig (1998), which suggest that the semester block may be a better model to meet student needs.

### Conclusion

Throughout this limited review, it has become apparent that there are numerous foci and differing results with respect to the achievement of students within block schedule. With regard to research related to block, Lybbert (1998) stated,

The clash of studies will probably never prove convincing to those on opposite ends of this issue, and continued research is certainly warranted. Both side vigorously attack the methodologies and credibility of any study cited by the other side while overlooking any



deficiencies or stated limitations of their own sources. (p.72)

A review of the literature seems to demonstrate his point. Yet, more studies are necessary. Inconclusive or inconsistent results do not provide the data needed to make informed reform/restructuring decisions. "Systematic examinations of the effects of block scheduling are needed if research is to adequately inform reform movements and decisions" (Veal & Schreiber, 1999, p. 3).

## CHAPTER III

### METHODOLOGY

#### Introduction

The purpose of this study was to ascertain the effect of block scheduling on student achievement through the use of archival and descriptive data. A longitudinal comparison of group mean scores from the Mississippi Subject Area Exams and the Mississippi Curriculum Tests was used to study the relationship between students receiving instruction under a traditional schedule and those receiving instruction under any form of Block schedule. In addition, principals whose schools utilized any form of Block schedule between 2001-2002 and 2006-2007 were surveyed in order to examine the perceived impact of the relationship between schedule format and student achievement. For archival data, a period of five school years was examined: 2002-2003 through 2006-2007. The study was approved by The University of Southern Mississippi Institutional Review Board (IRB) (Appendix A).

#### Research Design

##### *Subjects of the Study*

First, in order to ensure data from a significant geographic representation of Block and traditional schools were utilized, the researcher conducted a review of the lists of schools by schedule type. These lists were obtained via e-mail from the Mississippi Department of Education. During this review, schools that did not include grade 6 and above, as well as schools specifically designed to educate students with disabilities or students under the jurisdiction of the

Department of Human Services, were removed from the lists. Schools for which no clear grade levels were evident were scrutinized by the researcher to reveal if they included students in grades 6-12 in any of the following configurations: K-12, middle school, high school, single grade, or 10-12. Second, schools were marked on a map of Mississippi in order to plot their location and provide a visual of concentration.

For the longitudinal comparison, the study required the researcher's selection of schools from lists of schools by schedule type. The schools selected were identified by the Mississippi Department of Education from 2002-2003 to 2006-2007 as continually utilizing a form of Block schedule. Schools that had utilized a traditional schedule consecutively during the same five-year period were selected to match Block schools geographically, as much as possible. In addition, the traditional schools were selected to address grade-level configurations, as closely as practical. Other factors, such as socioeconomic status and school size were not considered.

In order to obtain descriptive data regarding the perceptions of administrators, the researcher also selected schools from the lists of schools by schedule type, which, as indicated earlier, were obtained from the Mississippi Department of Education. Based on these lists, the participants for the descriptive study had been identified as serving as administrators in schools that had utilized a form of Block schedule for as least one year between 2001-2002 and 2006-2007.

### *Instrumentation*

State required testing, at the K-12 level, has a long history in Mississippi. Throughout the 1980's and 90's legislative attempts were made to increase the depth and scope of accreditation in Mississippi. This movement concluded with the Mississippi Student Achievement Improvement Act of 1999, which mandated

...a performance-based accreditation system for individual schools and school districts that included: high expectations for students, high standards for all schools, strong accountability for results, a process to implement accountability, and the development of a Comprehensive Student Assessment System (Mississippi Department of Education, 2004, p.9).

This piece of legislation required high school students to pass specified tests in order to graduate. To address this requirement, four new tests were developed within the Mississippi Subject Area Testing Program (MSATP): Algebra I, English II, Biology, and U.S. History (Harcourt Educational Measurement, 2001). With regard to the Mississippi Grade Level Testing Program (MGLTP), new criterion-referenced tests were designed for grade levels 2-8 in the areas of reading, language arts and mathematics (MDE, 2003).

Although the two programs utilized different testing companies, both programs took similar steps in test development in order to ensure test reliability and validity. Each program initiated development by forming a committee of teachers and administrators, who examined the Mississippi

Curriculum Framework in order to determine the skills to be assessed.

These committees were involved in determining test designs and blueprints.

“A test blueprint identifies the reporting categories, or assessment strands, of a test and the number of items assigned to each strand” (Harcourt Educational Measurement, 2001, p.5). Each committee examined and reviewed test items for use with each set of tests in Mississippi. Items were reviewed for bias, stereotyping and appropriateness in relationship to the identified curriculum. Test items for each of the four Subject Area Tests were piloted during the 2000-2001 and 2001-2002 school years. The Mississippi Curriculum Test items for each subject and grade level were piloted during the 2000-2001 school year. Standard setting for each test program occurred during the summer of 2001 (MDE, 2003, 2007).

For this study, archival data was extracted from the results of the Mississippi Curriculum Test (MCT) and the four tests which comprise the Mississippi Subject Area Testing Program (SATP). With regard to the MCT, only the results for Language and Mathematics were utilized, as Reading is not taught as a separate subject in all schools. This data was obtained from the Mississippi Assessment and Accountability Reporting System (MAARS), which is maintained by the Mississippi Department of Education.

Secondly, in order to obtain descriptive data, the researcher designed the survey instrument utilized. The instrument measured the principal’s perception of student achievement under any form of Block Schedule. In addition, the survey measured the principal’s perception of the school’s implementation, evaluation

and adjustment for the form utilized. Items on the survey were developed based on the literature review, as well as the researcher's personal experience. The survey design included a set of questions to obtain information of a demographic nature, as well as a series of 20 opposites. The opposites were developed for a 10-point semantic differential scale. Survey participants were asked to indicate their position to comparative statements by filling in the appropriate block on the scale: 9 as positive; 0 as negative.

In order to determine the validity of the survey instrument, the instrument was first examined by a four experts in the field of education. These individuals examined the instrument for validity. Specifically, these experts ensured that the survey questions addressed the questions posed within this study. A pilot study was then conducted in order to determine the reliability and usability of the survey instrument. The pilot study was conducted surveying 15 administrators, or their designees, from schools that had been identified as operating under some form of Block schedule for at least one year between the 2001-2002 and the 2006-2007. Mailing for the pilot study included the IRB approved cover letter (Appendix B), the approved survey instrument, and a stamped, self-addressed return envelope. The schools pilot utilized from all regions of the state. Upon receiving nine surveys, which represented a 60 percent response rate, the coefficient of reliability using Cronbach's Alpha revealed a .85 reliability. Based on this test, the full survey was conducted.

For the study, surveys were sent to all principals of schools that had previously been identified as a utilizing a form of block at some time between

2001-02 and 2006-07, and that remained on the compiled list of schools following the pilot study. Each participant was mailed a standard envelope containing a signed copy of the IRB-approved letter (Appendix B), a questionnaire (Appendix C), and a self-addressed, stamped envelope. Two-hundred-fifty-three envelopes were disseminated throughout the state of Mississippi.

### *Data Analysis*

The scope of this study required two different types of data analysis. The longitudinal study, which utilized archival data, required the use of mixed ANOVAS to evaluate the differences in mean scale scores between groups for each of the areas examined: block/non-block; years, and interaction. With regard to the perceptions of school principals, the descriptive data was reviewed for frequency of mean and standard deviation.

## CHAPTER IV

### RESULTS

#### Introduction

The general purpose of this study was to determine if significant differences in achievement existed in mean test scores on mandated state tests between students who received instruction in block and non-block schools in the state of Mississippi at the middle and secondary school levels. A further purpose was to measure the perceptions of public school administrators in block schools with regard to student achievement, as well as implementation goals and staff development. This chapter presents the data, both descriptive and archival, and further analysis of both data sets.

Survey participants were selected from lists of schools by schedule type, which were furnished by the Mississippi Department of Education, for the school years 2001-2002 through 2006-2007. Administrators in schools identified as utilizing some form of block and housing students in grades 6-12 were invited to participate. Two-hundred fifty-three surveys were sent to the principals of schools throughout Mississippi. The researcher received 86 completed responses for a return rate of 33.992%.

Candidates for archival data were also selected from the lists of schools by schedule type for the school years 2002-2003 through 2006-2007. Block schools selected were identified as having some form of block schedule for all five of these years. A comparable set of non-block schools for the same consecutive school years was also selected. To ensure stronger comparability,



non-block schools within the same geographic region of the state were selected as much as possible. Attempts were also made to select non-block schools of similar grade-level configurations, as much as practical. For the five-year period utilized, mean test scores for every spring administration of the Mississippi Subject Area Tests of Algebra, Biology, English, and U. S. History, as well as Mississippi Curriculum Tests for Language Arts and Math- grades 6-8, were collected using the Mississippi Department of Education's accounting system: Mississippi Assessment and Accountability Reporting System (MAARS).

The analysis of data is presented in five sections. The first section presents the descriptive data, and the second section addresses the survey responses in relationship to the research questions posed. Section three presents the archival data, and the fourth section describes the tests of the hypotheses. The fifth section presents a chapter summary.

#### Descriptive Data

A total of 86 surveys were received for analysis. Not all respondents completed all questions on the survey. Initially, survey respondents were requested to provide background data. This included self- identification of the position as principal, assistant principal, or counselor; number of years in this position; grades housed within the school, and building size.

With regard to block, background data requested included the form of block utilized as 4X4, 4X4 in AB days, modified block, mixed schedule, modules, or flexible; the number of years between 2001-2002 and 2006-2007

that a form of block was utilized; and the number of years since 2006-2007 that a form of block has been utilized. In addition, the respondent was asked to indicate whether he had experience in any other school(s) that utilized block, and the position or positions of their employment in those schools.

Two respondents failed to indicate their position; 74 identified themselves as principals (Table 1). Years of experience identified by the respondents ranged from one to 28; eight did not indicate their years of experience. Building size as reported by respondents ranged from 185 to 1800; eight did not indicate building size. With regard to school level or grades housed within the school, 77 respondents identified the grades while nine did

Table 1

*Position of Respondents*

	Frequency	Percent
Principal	74	86.0
Assistant Principal	7	8.1
Counselor	3	3.5
No Response/Missing	2	2.4
Total	86	100.0

not. Information on schedule type was identified by 69 of the respondents; 17 provided no response (Table 2). As reported, the number of years on block ranged from zero to ten, with 24 respondents indicating that a form of block had been utilized for six years; 16 respondents provided no response. With regard.

Table 2

*Schedule Type*

	Frequency	Percent
4X4	26	30.2
AB	19	22.1
Modified	10	11.6
Mixed Schedule	9	10.5
Flexible	3	3.5
Various	2	2.4
Unidentified	16	18.6
Missing	1	1.2
Total	86	100.0

to the use of block since 2006-2007, 69 respondents provided a range of one to three years; while 17 others provided no response. Fifty respondents noted experience with block in other schools; 29 respondents indicated that they had no experience in other schools, and seven provided no response. With regard to position(s) held within another school, 81 responded with 34 respondents providing no response; 20 indicated that they had been employed as teachers

#### Survey Response to Research Questions

Questions 1-20 were semantic differentials with a scale of nine through zero. Questions allowed respondents the opportunity to indicate their degree of agreement with opposing statements. A rating of nine was positive; while a

rating of zero was negative.

Questions one through three were specifically designed to determine whether administrators perceived that clear goals with regard to achievement were present when block was implemented, and reviewed and adjusted as needed (Table 3).

Q1. Clear, measurable goals were established when block was adopted vs. minimal, or no goals established.

Q2. Achievement data is evaluated continuously for goal accomplishment vs. data is evaluated only as required.

Q3. Adjustments have been made in course offerings for goal accomplishment vs. no need to adjust course offerings.

Table 3

*Response to Survey Q1, Q2 and Q3*

	N	Mean	Std. Deviation
Q3. Adjustments for goal	75	7.47	2.10
Q2. Achievement data is evaluated	76	7.24	2.21
Q1. Clear, measurable goals	76	6.76	2.33

Scale: 9 = positive; 0 = negative

With regard to Table 3, items were listed from highest mean to lowest mean.

The reported mean of 7.47 for Q3 and 7.24 for Q2 indicated that respondents not only believed that adjustments are made to course offerings to accomplish goals, but that achievement data is evaluated continuously for achievement.

As for Q1, the reported mean of 6.76 indicated that respondents were strong in their belief that clear, measurable goals were established when block was adopted.

Question 10 was designed to reveal whether administrators perceived that block contributed to increases on state and standardized test scores (Table 4).

Q10. Block contributes to an increase in state or standardized testing scores vs. Block has no effect on achievement.

Table 4

*Response to Survey Q10*

	N	Mean	Std. Deviation
Q10. Block contributes to increased scores	75	5.92	2.44

Scale: 9 = positive; 0 = negative

The reported mean of 5.92 for Q10 revealed respondents somewhat positively believe block contributes to an increase in scores on state or standardized tests.

Questions 4, 5 and 7 were designed to determine the role of staff development for administrators and teachers, particularly with regard to the utilization of teaching time within the block (Table 5).

Q4. I was specifically trained on how to best utilize teaching time in block vs. I was not specifically trained to utilize block.

Q5. Teachers were specifically trained to best utilize teaching time in block vs. Teachers were left to fend for themselves.

Q7. I am personally involved in professional, in-service training vs. I delegate in-service training to others.

These perceptions were ordered from highest to lowest in respondent order.

The reported mean of 7.47 for Q7 indicated that administrators were very positive in their belief that they are actively involved in professional development, in the form of in-service. With regard to training, the reported mean of 6.35 for Q5 revealed that administrators positive that training is provided for teachers to utilize teaching time in the block. However, the

Table 5

*Response to Survey Q7, Q4 and Q5*

	N	Mean	Std. Deviation
Q7. Administrators involved in training	76	7.47	2.19
Q5. Teacher were specifically trained	75	6.35	2.50
Q4. Administrators were specifically trained	76	5.61	2.26

Scale: 9 = positive; 0 = negative

reported mean of 5.61 for Q4 indicated that administrators were less positive that they received training to utilize teaching time on block.

#### *Ancillary Findings*

Additional survey questions addressed three areas: teacher satisfaction; learning; and soft data, such as honor roll, attendance, and school atmosphere. Further examination of responses in these areas provided additional information about administrators' perceptions.

Questions 6 and 8 were designed to reveal administrators' perceptions of teacher satisfaction. With means of 7.37 and 7.20 respectively, administrators were very positive in their belief that teachers wanted to remain in a block schedule and were encouraged to adopt styles best suited to block.

Q8. My teachers do not want to leave block schedules vs. my teachers want traditional scheduling back.

Q6. Teachers are encouraged to adopt style to best utilize instructional time vs. teachers did not have to change style.

With regard to learning, Questions 11 through 14 were designed to determine whether administrators' perceived that block contributed to various aspects of learning. These perceptions were ordered from highest to lowest in respondent order (Table 6).

Q11. Block contributes to a reduction in remediation vs. Block has no effect on achievement.

Q12. Block contributes to greater depth of knowledge teaching vs. no difference in subject matter taught.

Q13. Block contributes to better understanding for students with special needs vs. no difference in understanding.

Q14. Block contributes to better understanding for students with different learning styles vs. no differences in understanding.

With reported means for Questions 12-14 ranging from 6.50 to 5.92, a review of the data indicated that administrators were somewhat positive that block contributes to students learning. However, the reported mean of 5.61 for

Question 11 indicated that administrators were less positive that block reduces remediation.

Table 6

*Response to Survey Q11, Q12, Q13, Q14*

	N	Mean	Std. Deviation
Q12. Depth of knowledge teaching	76	6.50	2.32
Q14. Understanding of learning styles	76	6.47	2.24
Q13. Understanding for special needs	76	5.92	2.50
Q11. Reduction in remediation	75	5.61	2.16

Scale: 9 = positive; 0 = negative

With regard to elements known as soft data, Questions 9 and 15 through 20 were designed to examine administrators' perception of block on these elements. These perceptions were ordered from highest to lowest in respondent order (Table 7).

Q9. Block contributes to increase in honor rolls vs. no block has no effect on achievement.

Q15. Block decreases unexcused absences vs. no change in unexcused absences.

Q16. Block decreases overall absences vs. no change in overall absences.

Q17. Block decreases physical altercations vs. no change in physical altercations.



Q18. Block decreases overall discipline referrals vs. no change in overall discipline referrals.

Q19. Block decreases overall security concerns vs. no change in overall security concerns.

Q20. Block increases overall atmosphere of school day for students and teachers vs. no change in school atmosphere.

Questions 20, 9, 19, 17 and 18 reported mean scores that range from 6.47 to 5.54 respectively. These means indicated that administrators were somewhat positive that block increases school atmosphere and honor rolls; while decreasing security concerns, altercations and discipline referrals. The means for Table 7

*Response to Survey Q9, Q15, Q16, Q17, Q18, Q19, Q20*

	N	Mean	Std. Deviation
Q20. Increase school atmosphere	76	6.47	2.24
Q9. Understanding of learning styles	75	5.89	2.38
Q19. Decrease security concerns	75	5.73	3.00
Q17. Decrease physical altercations	76	5.72	3.17
Q18. Decrease discipline referrals	76	5.54	2.99
Q15. Decrease unexcused absences	76	4.36	2.87
Q16. Decrease overall absences	75	4.29	2.81

Scale: 9 = positive; 0 = negative

Questions 15 and 16, 4.36 and 4.29 respectively, however, indicated that administrators were somewhat negative in their perception that block contributes to a decrease in any type of absence.

#### Archival Data

Between 2002-03 and 2006-07, the Mississippi Department of Education reported 85 schools with grade configurations of varying types that utilized some form of block scheduling. Each school was present under one type of block or other for each of the five consecutive years utilized: 2002-2003 through 2006-2007. School building configurations included K-12, K-7, 4-6, 6-8, 7-8, 6-12, 7-12, 8-12, 9-12, 9, and 10-12.

Scale score distributions for the Mississippi Curriculum Tests for Language Arts and Math were set following the spring 2001 administration. These ranges from low to high vary from grade level to grade level and subject-

Table 8

#### *Mississippi Curriculum Tests: Lows to Highs Scale Distribution*

		Language Arts	Math
Grade 6	Low	275	295
	High	745	740
Grade 7	Low	295	320
	High	765	760
Grade 8	Low	310	340
	High	775	775

to- subject. As presented by the Offices of Research and Statistics and Of Student Assessment for the Mississippi Department of Education (2003), these ranges exist for students in grades two through 8. Table 8 presents the ranges identified for grades six through eight, which were utilized for this study. With regard to the Subject Area Testing Program, this encompasses Algebra, English II, Biology and U. S. History, scale scores range from 100 to 500 for all four tested areas.

### Test of Hypotheses

Mixed ANOVAS were used on the archival data for each grade level and each subject area to test the five hypotheses. The significance level was set at .05 for each hypothesis.

H<sub>1</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject Area Exam in Algebra than students who receive instruction on a traditional schedule.

An ANOVA was conducted to evaluate the hypothesis that in Mississippi students in block schools had higher mean scale scores on the Mississippi Subject Area Exam in Algebra than students in non-block schools. The test was significant,  $F(1,142) = 11.19, p = .001$ . For each year from 2002-2003 through 2006-2007, test scores for schools in block were significantly higher than the scores of non-block schools. The nature of this study was longitudinal. With that in mind, a second ANOVA was conducted to evaluate the hypothesis for years. This test was significant,  $F(4,139) = 49.266, p < .001$ . The general trend for both block and non-block schools was that mean scale scores increased

over time. A third ANOVA was conducted to evaluate the interaction between block and years. This test was not significant,  $F(4,139) = 2.208$ ,  $p = .071$ . The statistics for the mean scale scores in Algebra for five consecutive years are presented in Table 9. Hypothesis 1 was accepted.

Table 9

*Hypothesis 1 Algebra Mean Scale Scores*

Years	Non-Block (n=71)		Block (n=73)	
	Mean	Std. Deviation	Mean	Std. Deviation
2002-2003	331.63	21.85	338.45	21.13
2003-2004	342.22	18.80	352.00	20.67
2004-2005	346.93	22.17	354.77	21.57
2005-2006	339.25	20.10	351.82	18.68
2006-2007	341.82	20.08	355.46	20.74

H<sub>2</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject Area Exam in English II than students who receive instruction on a traditional schedule.

An ANOVA was conducted to evaluate the hypothesis that students in block schools had higher mean scale scores on the Mississippi Subject Area Exam in English II than students in non-block schools. The test was not significant,  $F(1,142) = .141$ ,  $p = .708$ . Although, test score differences were not significant, block schools scored slightly higher than non-block schools except in year one. A second ANOVA was conducted to evaluate the hypothesis for

years. This test was significant,  $F(4,139) = 20.762$ ,  $p < .001$ . The general trend for both block and non-block schools was that mean scale scores decreased over time. A third ANOVA was conducted to evaluate the interaction between schedule type and years. This test was not significant,  $F(4,139) = 1.437$ ,  $p = .225$ . The statistics for the mean scale scores in English II are presented in Table 10. Hypothesis 2 was rejected.

Table 10

*Hypothesis 2 English II Mean Scale Scores*

Years	Non-Block (n=72)		Block (n=72)	
	Mean	Std. Deviation	Mean	Std. Deviation
2002-2003	368.24	350.91	330.81	13.76
2003-2004	328.35	37.05	335.37	12.53
2004-2005	330.78	11.90	333.71	14.59
2005-2006	325.50	15.15	331.14	13.02
2006-2007	322.17	12.98	328.11	11.66

H<sub>3</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject Area Exam in Biology than students who receive instruction on a traditional schedule.

An ANOVA was conducted to evaluate the hypothesis that students in block schools had higher mean scale scores on the Mississippi Subject Area Exam in Biology than students in non-block schools. The test was significant,  $F(1,140) = 8.041$ ,  $p = .005$ . Test scores for schools in block were significantly

higher than the scores of non-block schools. A second ANOVA was conducted to evaluate the hypothesis for years. This test was significant,  $F(4,137) = 7.595$ ,  $p < .001$ . The general trend for both block and non-block schools was that mean scale scores increased over time. A third ANOVA was conducted to evaluate the interaction between block and years. This test was not significant,  $F(4,137) = .686$ ,  $p = .603$ . The statistics for the mean scale scores in Biology for five consecutive years are presented in Table 11.

Hypothesis 3 was accepted.

Table 11

*Hypothesis 3 Biology Mean Scale Scores*

Years	Non-Block (n=70)		Block (n=72)	
	Mean	Std. Deviation	Mean	Std. Deviation
2002-2003	347.95	44.54	355.78	24.00
2003-2004	348.84	20.17	359.62	21.19
2004-2005	352.65	19.30	361.68	20.65
2005-2006	356.39	21.40	364.37	20.39
2006-2007	354.41	22.46	365.42	23.57

H<sub>4</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject Area Exam in U.S. History than students who receive instruction on a traditional schedule.

An ANOVA was conducted to evaluate the hypothesis that students in block schools had higher mean scale scores on the Mississippi Subject Area

Exam in U.S. History than students in non-block schools. The test was not significant,  $F(1,142) = .018$ ,  $p = .893$ . Although, test score differences were not significant, block schools scored slightly higher than non-block schools except in 2005-06. A second ANOVA was conducted to evaluate the hypothesis for years. This test was significant,  $F(4,139) = 3.562$ ,  $p = 0.008$ . The general trend for both block and non-block schools was that mean scale scores increased over time. A third ANOVA evaluated the interaction between schedule type and years. This test was not significant,  $F(4,139) = .301$ ,  $p = .877$ . The statistics for the mean scale scores in U.S. History are presented in Table 12. Hypothesis 4 was rejected.

Table 12

*Hypothesis 4 U.S. History Mean Scale Scores*

Years	Non-Block (n=72)		Block (n=72)	
	Mean	Std. Deviation	Mean	Std. Deviation
2002-2003	357.07	17.76	363.72	17.03
2003-2004	360.73	17.83	367.13	17.91
2004-2005	359.87	16.94	366.99	18.45
2005-2006	402.78	352.92	369.17	17.38
2006-2007	358.56	20.84	366.17	18.07

H<sub>5</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Curriculum Tests for Language than students who receive instruction on a traditional schedule.

Beginning with students in grade six, an ANOVA was conducted to evaluate the hypothesis that students in block schools had higher mean scale scores on the Mississippi Curriculum Tests for Language Arts than students in non-block schools. The test was not significant,  $F(1, 34) = 1.72, p = .199$ . Although, test score differences were not significant, block schools scored slightly higher than non-block schools. A second ANOVA was conducted to evaluate the hypothesis for years. This test was significant,  $F(4, 31) = 3.67, p = 0.015$ . Although the mean scale score decreased, the general trend for block schools was that the second year, scores seemed to stabilize. A third ANOVA evaluated the interaction between schedule type and years. This test was not significant,  $F(4, 31) = .509, p = .729$ . The statistics for the mean scale scores in Language Arts grade 6 are presented in Table 13. Hypothesis 5 was rejected for grade 6.

Table 13

*Hypothesis 5 Grade 6 Language Arts Mean Scale Scores*

Years	Non-Block (n=18)		Block (n=18)	
	Mean	Std. Deviation	Mean	Std. Deviation
2002-2003	539.44	16.66	546.56	17.03
2003-2004	535.62	18.27	540.82	14.57
2004-2005	537.75	20.71	547.54	16.10
2005-2006	540.21	19.96	545.89	16.94
2006-2007	538.72	24.05	546.13	12.62



With regard to 7<sup>th</sup> grade, an ANOVA was conducted to evaluate the hypothesis that students in block schools had higher mean scale scores on the Mississippi Curriculum Tests for Language Arts than students in non-block schools. The test was not significant,  $F(1, 44) = 1.902, p = .175$ . Although, test score differences were not significant, block schools scored slightly higher than non-block schools. A second ANOVA was conducted to evaluate the hypothesis for years. This test was significant,  $F(4, 41) = 24.106, p < .01$ . The general trend for block schools was that while the mean scale score increased the second year, it seemed to stabilize over time. A third ANOVA evaluated the interaction between schedule type and years. This test was not significant,  $F(4, 41) = .343, p = .847$ . The statistics for the mean scale scores in Language Arts grade 7 are presented in Table 14. Hypothesis 5 was rejected for grade 7.

Table 14

*Hypothesis 5 Grade 7 Language Arts Mean Scale Scores*

Years	Non-Block (n=23)		Block (n=23)	
	Mean	Std. Deviation	Mean	Std. Deviation
2002-2003	550.19	16.95	555.16	13.94
2003-2004	561.34	14.85	566.20	14.85
2004-2005	550.41	20.68	557.41	14.68
2005-2006	548.83	16.82	554.42	12.10
2006-2007	548.75	15.98	555.92	14.52

With regard to 8<sup>th</sup> grade, an ANOVA was conducted to evaluate the hypothesis that students in block schools had higher mean scale scores on the Mississippi Curriculum Tests for Language Arts than students in non-block schools. The test was not significant,  $F(1, 44) = 2.857, p = .098$ . Although, test score differences were not significant, block schools scored slightly higher than non-block schools. A second ANOVA was conducted to evaluate the hypothesis over time. This test was not significant,  $F(4, 41) = .764, p = .555$ . A third ANOVA evaluated the interaction between schedule type and years. This test was not significant,  $F(4, 41) = 1.732, p = .161$ . The statistics for the mean scale scores in Language Arts grade 8 are presented in Table 15. Hypothesis 5 was rejected for grade 8.

Table 15

*Hypothesis 5 Grade 8 Language Arts Mean Scale Scores*

Years	Non-Block (n=23)		Block (n=23)	
	Mean	Std. Deviation	Mean	Std. Deviation
2002-2003	555.51	14.06	562.87	11.49
2003-2004	560.28	13.12	562.32	11.09
2004-2005	555.86	16.03	563.90	11.26
2005-2006	557.27	16.88	562.11	14.21
2006-2007	555.63	14.17	563.47	13.12

H<sub>6</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Curriculum Tests for

Math than students who receive instruction on a traditional schedule.

Beginning with students in grade six, an ANOVA was conducted to evaluate the hypothesis that students in block schools had higher mean scale scores on the Mississippi Curriculum Tests for Math than students in non-block schools. The test was not significant,  $F(1, 34) = 3.62, p=.066$ . Although, test score differences were not significant, block schools scored slightly higher than non-block schools. A second ANOVA was conducted to evaluate the hypothesis for years. This test was not significant,  $F(4, 31) = 2.52, p = 0.062$ . A third ANOVA evaluated the interaction between schedule type and years. This test was not significant,  $F(4, 31) = .549, p = .701$ . The statistics for the mean scale scores in Math for grade 6 are presented in Table 16. Hypothesis 5 was rejected for grade 6.

Table 16

*Hypothesis 6 Grade 6 Math Mean Scale Scores*

Years	Non-Block (n=18)		Block (n=18)	
	Mean	Std. Deviation	Mean	Std. Deviation
2002-2003	557.92	20.30	567.51	16.24
2003-2004	561.90	22.89	571.12	14.84
2004-2005	555.59	24.30	570.21	17.25
2005-2006	558.47	18.66	569.93	17.11
2006-2007	564.08	21.84	573.53	13.29

With regard to 7<sup>th</sup> grade, an ANOVA was conducted to evaluate the

hypothesis that students in block schools had higher mean scale scores on the Mississippi Curriculum Tests for Math than students in non-block schools. The test was significant,  $F(1, 44) = 4.12, p=.048$ . Test scores for block schools were significantly higher than non-block schools. A second ANOVA was conducted to evaluate the hypothesis for years. This test was significant,  $F(4, 41) = 6.05, p = .001$ . The general trend for block schools was that the mean scale score increased and stabilized. A third ANOVA evaluated the interaction between schedule type and years. This test was not significant,  $F(4, 41) = 1.35, p = .267$ . The statistics for the mean scale scores in Math grade 7 are presented in Table 17. Hypothesis 6 was accepted for grade 7.

Table 17

*Hypothesis 6 Grade 7 Math Mean Scale Scores*

Years	Non-Block (n=23)		Block (n=23)	
	Mean	Std. Deviation	Mean	Std. Deviation
2002-2003	565.71	22.24	573.31	15.71
2003-2004	571.39	21.28	578.60	18.25
2004-2005	569.10	21.18	579.67	14.56
2005-2006	568.92	20.74	577.57	15.36
2006-2007	570.42	18.89	584.62	17.32

With regard to 8<sup>th</sup> grade, an ANOVA was conducted to evaluate the hypothesis that students in block schools had higher mean scale scores on the Mississippi Curriculum Tests for Math than students in non-block schools. The

test was not significant,  $F(1, 44) = 3.368, p=.073$ . Although, test score differences were not significant, block schools scored slightly higher than non-block schools. A second ANOVA was conducted to evaluate the hypothesis for as years. This test was significant,  $F(4, 41) = 8.096, p = .000$ . The general trend for block schools was that mean scale scores increased. A third ANOVA evaluated the interaction between schedule type and years. This test was not significant,  $F(4, 41) = 1.897, p = .129$ . The statistics for the mean scale scores in Math grade 8 are presented in Table 18. Hypothesis 6 was rejected for grade 8.

Table 18

*Hypothesis 6 Grade 8 Math Mean Scale Scores*

Years	Non-Block (n=23)		Block (n=23)	
	Mean	Std. Deviation	Mean	Std. Deviation
2002-2003	580.08	18.28	588.21	16.37
2003-2004	590.54	18.54	594.62	12.55
2004-2005	582.03	19.82	594.14	15.21
2005-2006	588.65	19.62	592.34	21.21
2006-2007	583.42	18.53	593.42	10.70

## Summary

This chapter presented the descriptive data and analysis of that data collected from item responses provided by school administrators, or their designees, who participated in this study. In addition, this chapter presented

the archival data and the analysis of that data. Archival data covered a span of five consecutive years consisting of the mean scale scores of 85 block schools with varying grade levels and a comparable group of non-block schools. The general purpose of this study was to determine whether significant differences in achievement on state mandated tests exist between students receiving instruction on a block schedule and students who did not receive instruction on block. A further purpose was to measure the perceptions of public school administrators in schools identified as operating on a block format with regard to student achievement on block, as well as implementation goals and staff development.

With regard to the archival data, mixed ANOVAS were conducted. Analysis of the data yielded 11 findings of significance. The hypotheses related to Algebra and Biology were accepted. A third hypothesis regarding the Mississippi Curriculum Test for Math was accepted for one grade level only: grade 7.

An analysis of the data related to the perceptions of administrators indicated that they were somewhat positive in their perception that block contributes to achievement. Additional finding indicated administrators were positive clear goals were in place when block was implemented, and that adjustments are made to address those goals. Further findings indicated that administrators were somewhat positive that teachers received training to utilize teaching time in block, and that administrators had received slightly less training in this regard.

## CHAPTER V

### SUMMARY

#### Introduction

The purpose of this study was to evaluate the effect of block scheduling on achievement in the state of Mississippi through the use of archival and descriptive data. A longitudinal comparison of group mean scores for all four Mississippi Subject Area Exams, Algebra, English, Biology, and U.S. History, and the Mississippi Curriculum Tests for Language Arts and Math was used to examine the difference in achievement between students receiving instruction within any form of block and those receiving instruction within a tradition schedule. A five-year period was utilized. In addition, the study explored the perceptions of building level administrators, who had operated under a form of block, with regard to student achievement, implementation goals, and staff development.

#### Conclusions and Discussion

Six hypotheses and several research questions guided the study. The hypotheses focused on the comparison of group mean scores per tested area. A summary of the findings for the hypotheses, as well as discussion follow:

H<sub>1</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject Area Exam in Algebra than students who receive instruction on a traditional schedule

Significant differences in mean scale scores existed. Test scores for schools on block were significantly higher than non-block schools. The

hypothesis was accepted.

While the general trend for both block and non-block was that mean scale scores increased over time, there was no significant interaction between block and time. This test seemed to hold some possibility for interaction, but none occurred.

With regard to mean scale score differences, the results from this study contradicted those presented by Smith (2004). In his study of 30 schools, 15 block, 15 non-block, Smith compared scores for one single test administration, that of spring 2003. He concluded that, "the mean test scores of nonblock schools were slightly higher than block schools" (p. 50). This study also contradicted a study by Veal and Schreiber (1999) of one school for a five-year period, in which Veal and Schreiber found tenth-grade students achievement in math to be higher in a non-block schedule.

H<sub>2</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject Area Exam in English II than students who receive instruction on a traditional schedule.

Although there were no significant differences in mean scale scores, the mean scores of block schools were slightly higher than non-block schools, except for the first year. The hypothesis was rejected. The data when tested for years was significant. The general trend for both block and non-block schools was that mean scale scores decreased over time. Also, there was no significant interaction between block and years. These results seemed to support the work of Veal and Schreiber (1999) finding no significant



difference in the areas of reading and language arts regardless of schedule type.

H<sub>3</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject Area Exam in Biology than students who receive instruction on a traditional schedule.

In Biology, significant differences in mean scale scores existed. Test scores for schools in block were significantly higher than the scores of non-block schools. Hypothesis 3 was accepted. Further examination of the data tested for years was significant. The general trend for both block and non-block schools was that mean scale scores increased over time. There was no interaction between block and years.

With regard to mean scale score differences in Biology, the results from this study again contradict those presented by Smith (2004) and Marchette (2002), as cited by Smith. With regard to Biology, both studies yielded no significance. Smith again suggested that non-block schools scores were slightly higher than those of the comparison group.

H<sub>4</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Subject Area Exam in U.S. History than students who receive instruction on a traditional schedule.

With regard to mean scale scores for U.S. History, there were no significant differences. Except for one year, 2005-2006, block schools scored slightly higher than non-block schools. This hypothesis was rejected. An analysis

of the data for years indicated significance. The general trend for both block and non-block schools was that mean scale scores increased over time. There was no interaction between schedule type and years.

One study, Cantu (2002), which was cited by the University of Minnesota, Center for Applied Research and Educational Improvement(n.d), supported the findings of this study for Algebra, while refuting those of English II. Cantu utilized the Texas Assessment of Academic Skills to examine the achievement of tenth grade students on math and reading. Although the study was not longitudinal and was conducted using two schools: one block; one non-block. Cantu found the results of students on block “statistically significantly higher than the reading achievement and mathematics achievement of the tenth-grade students who participated in a traditional schedule” (p. 5, ¶1).

Hypotheses 5 and 6 utilized the Mississippi Curriculum Tests for Language Arts and Math as the areas of investigation. The comparison groups for these tests became more focused. For these tests, schools in either block or non-block that served students in grades 6, 7, or 8 were included. The middle school grade levels were selected due to the lack of research on block in this area. In addition, each of the two hypotheses was tested separately per grade level.

H<sub>5</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Curriculum Tests for Language than students who receive instruction on a traditional schedule.

For all three grades there were no significant differences in mean scale scores; however, for all three grades, mean scores for block schools were slightly higher than those for non-block schools. Hypothesis 5 was rejected for all three grades. When analyzed for years, significance was demonstrated in both grades 6 and 7. In grade 6, the general trend for block schools was that although the mean scale score decreased the second year, it seemed to stabilize over time. At the 7<sup>th</sup> grade level, the general trend for block schools was that while the mean scale scores increased the second year, they seemed to stabilize over time. At all three grade levels, there were no significant interactions between schedule type and years.

H<sub>6</sub>: Students who receive instruction within a Block Schedule will evidence significantly higher mean scale scores on the Mississippi Curriculum Tests for Math than students who receive instruction on a traditional schedule.

In the area of Math, there were no significant differences for mean scale scores for grades 6 and 8; however, significant differences in mean scale scores were present for grade 7. An analysis of mean scale scores for grade 7 indicated that scores for schools on block were significantly higher than those of non-block schools. The hypothesis was rejected for grades 6 and 8, but accepted for grade 7. Scores for 7<sup>th</sup> and 8<sup>th</sup> grade also demonstrated significant differences when analyzed for years. At both grade levels, mean scale scores for block and non-block schools increased over time. There was, however, no significant difference in the interaction between schedule type and years.

While perceptions of change may be considered soft data (Shortt & Thayer, 1999), this study solicited the perceptions of building administrators

with regard to three key areas: goals for student achievement; staff development for teachers and administrators; and increases on state or standardized scores. The results were interesting, and not always consistent with the literature review.

The perception of administrators with regard to the existence of clear goals for implementation and achievement was somewhat surprising. The results indicated that administrators were overall positive that goals were set prior to implementation and that achievement was a part of that. In contrast, the literature review suggested that such planning, while critical to success, rarely occurred (Jenkins, Queen, & Algozzine, 2001; Lare, Jablonski & Salvaterra, 2002). With regard to staff development, survey respondents perceived that teachers were specifically trained to utilize teaching time in block. Shortt and Thayer (1999) clearly stated the importance of teacher staff development and the commitment to such training for a period of time. In the researcher's experience, this is inconsistent and, even when present, insufficient. For administrators, respondents reported that they were positive that they had received less training than teachers. This seemed in conflict with administrators' perception that they clearly were involved in professional development, specifically in-service training.

Results related to the primary purpose of this study, does block increase student achievement, indicated that administrators somewhat positive in their belief that this is true. The rather mediocre degree of support was surprising considering that 39 of the respondents had been on block for five or more years and that achievement was one of the top five means at 7.47.

The literature review supported the ancillary finding that administrators were somewhat positive that block increases school atmosphere and honor rolls; while decreasing security concerns, altercations and discipline referrals. In contrast, the means associated with items related to teacher satisfaction indicated a strong positive perception that teachers are very satisfied with block schedule format. This sentiment is not as clear in the literature.

Comments from those who responded to the survey range from strong support for block to statements identifying areas of concern or less success. Demonstrating support of block, one respondent, commented, "The superintendent wanted to go to seven periods, and was told that it was best for students. The students and teachers are overloaded and hate it. Hopefully, next year we'll be back on the block again." Five other building administrators indicated that moves away from block were mandated by the district. Concerns expressed by administrators include the need to see the teacher every day; cost effectiveness; retention of material; and remediation. Many of the comments of concern echo the same concerns found within the literature review.

#### Limitations

Several limitations existed for the study. These limitations were associated with the archival data, primarily; but also, with the descriptive data.

The following is a list of the limitations:

1. The study was limited to the use of any block format. This precluded an analysis of the data based on specific block types: 4X4; A/B Day; or Hybrid.

2. The study was limited by the accuracy of reporting with regard to schedule type. This aspect caused the researcher great concern due to personal knowledge that the identification listed for two specific schools: one listed as block; the other as non-block, were not the same as the schedules utilized by both schools during the years reviewed.
3. The study was limited to the variables utilized. Variables related to teacher experience, attendance, graduation rate, dropout rate, pass/fail rate were not examined; yet, many of these variables are mentioned within the literature as outcomes which may be monitored to evaluate the success or failure of block.
4. The study was limited to the rate of response associated with the Survey. Some respondents may not have had accurate knowledge of the scheduling history of the school, as many indicated that their experience in the position was limited to less than three years. Therefore, they did not respond. In addition, some respondents indicated that their school had not been on block; yet, the Mississippi Department of Education lists by schedule type clearly identified the schools selected as having operated under some form of block between 2001-02 and 2006-07.
5. The study was limited by the analysis of descriptive data for frequency and standard deviation overall. Further analysis of this data by years on block; schedule type; additional experience; or the respondents years of experience in the position, may have offered a wider

perspective on administrators' perceptions.

6. The study was limited to the schools available within a given geographic region of the state. This made it difficult to find traditional schools or schools with the appropriate grade configurations to match with block schools in the given area.

### Recommendations for Policy and Practice

Based on this study, the researcher recommends the following for consideration:

1. Principals should look at all achievement data carefully. This data should include not only state required tests, but honor roll, grade point average, and, at appropriate grade levels, ACT and advanced placement test scores. Such an examination of the data would enable principals to make adjustments to the schedule, the staff, or with staff development.
2. Principals should work to ensure that they, as well as teaching staff, staff, receive the training and follow-up support related to strategies appropriate to block. A principal's understanding of how to utilize teaching time effectively within block provides the information needed to ensure that staff development meets staff needs. In addition, such knowledge enables the principal to formatively work with teaching staff having difficulty; thus providing follow-up support.
3. Principals should carefully review longitudinal data related to discipline referrals and attendance. Data for these areas is readily available,

and will provide another view of the effectiveness of the schedule.

4. Personnel from the Mississippi Department of Education (MDE) should audit the process associated with identification of schedule type in order to ensure accuracy in reporting. Ensuring accurate identification would enable MDE to assist schools and/or districts with more appropriate development opportunities of a more targeted nature. In addition, accurate reporting would enable MDE to conduct studies within the department.

#### Recommendations for Future Research

The following topics, which were suggested by the data analysis and the literature review, are offered for future research:

1. In light of this study, as well as the revised Mississippi Curriculum Test<sub>2</sub> and Subject Area Tests, another five-year longitudinal study should be conducted to determine whether schools in block demonstrate significance. This is particularly critical since the revised tests were created to test more depth of knowledge, a component associated with block.
2. With the continued focus on accountability related to achievement, it is recommended that studies in other states should be conducted to evaluate whether or not block scheduling improves students achievement on state mandated testing at the middle school level. Such studies would provide additional data and information to assist with adjustments.



3. It is recommended that similar research be conducted using attendance as a variable. One of the perceptions indicated by administrators was that attendance is not positively impacted by schools on block. Yet, according to research included in the literature review, attendance is an achievement indicator.
4. It is recommended that similar research be conducted using teacher training as a variable. How teachers effectively utilize time within the classroom has a direct bearing on student achievement, according to the literature reviewed. A study utilizing this variable could provide information which would be able to be utilized by our schools of higher education, as well as within schools, districts, and at the state level, to ensure that sufficient and appropriate teacher training is provided on a continuous basis.
5. With the role that teacher preparation programs have, it is recommended that research be conducted to determine whether current methods courses in teacher preparation programs provide an appropriate repertoire to deliver required curricula effectively in a block format. A study of this nature would provide information which would either validate curriculum found within current teacher preparation programs, or provide data to make adjustments to make such programs better.

## Summary

In part, this study was intended to measure the perceptions of school administrators, who had worked within a block schedule, with regard to goals associated with implementation, evaluation and adjustment of the schedule; as well as block as a means of increasing student achievement on state required tests. Another purpose of the study was to determine whether students in block schools had higher scores than students receiving instruction on the Mississippi Curriculum Tests and the Mississippi Subject Area Tests than students in non-block schools. The literature review associated with the study explored the history of high school scheduling; types of block scheduling; measuring progress and evaluating programs, and research related to achievement on block.

An analysis of the data collected from the survey instrument noted that administrators generally were positive that clear goals were presented when block was initiated, and that evaluation and adjustment occurs. Administrators specifically indicated that they were somewhat positive that block contributed to achievement. An analysis of archival data indicated that scores on the Mississippi Subject Area Test for Algebra and Biology were significantly higher for students on block than those on non-block. Additional data indicated scores on the Mississippi Curriculum Test in math were significantly higher for students in grade 7 receiving instruction on block than for 7<sup>th</sup> grade students not on block.

As indicated within the literature review, the study suggests more questions. Few longitudinal studies exist; more are needed. In addition, the ever-increasing push for accountability looms over all in education to find ways to be effective. Limited research with regard to block and achievement in middle schools should serve as an impetus for additional research.

## APPENDIX A

## HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE PERMISSION




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 THE UNIVERSITY OF SOUTHERN MISSISSIPPI
 

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Institutional Review Board

118 College Drive #5147  
 Hattiesburg, MS 39406-0001  
 Tel: 601.266.6820  
 Fax: 601.266.5509  
 www.usm.edu/irb

**HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE  
 NOTICE OF COMMITTEE ACTION**

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

**PROTOCOL NUMBER: 29073001**

**PROJECT TITLE: A Longitudinal Study of Block Scheduling vs Traditional Scheduling in MS Schools: Utilizing the Mississippi Student Assessment System and Administrators' Perceptions**

**PROPOSED PROJECT DATES: 07/28/09 to 11/28/09**

**PROJECT TYPE: Dissertation or Thesis**

**PRINCIPAL INVESTIGATORS: Linda R. Oetticker**

**COLLEGE/DIVISION: College of Education & Psychology**

**DEPARTMENT: Educational Leadership & Research**

**FUNDING AGENCY: N/A**

**HSPRC COMMITTEE ACTION: Expedited Review Approval**

**PERIOD OF APPROVAL: 09/29/09 to 09/2/10**

*Lawrence A. Hosman*  
 \_\_\_\_\_  
 Lawrence A. Hosman, Ph.D.  
 HSPRC Chair

*10-1-09*  
 \_\_\_\_\_  
 Date

## APPENDIX B

## LETTER REQUESTING SURVEY PARTICIPATION

Linda R. Oettiker  
6068 US HWY 98W, Suite 1-326  
Hattiesburg, MS 39402

February 22, 2009

Re: Perceptions Related to the Utilization of Block Scheduling in Mississippi Schools

Dear Principal:

As a principal in one of Mississippi's many schools, your assistance will be greatly appreciated through the completion of the enclosed survey. The enclosed survey is being sent to current principals of schools that indicated to the Mississippi Department of Education during at least one school year between 2001-2002 and 2006-2007 that the school operated under some form of Block Scheduling.

Your voluntary assistance is greatly appreciated. All responses are guaranteed to remain anonymous and all survey data will be shredded upon concluding the analysis. As you know, the greater the rate of response, the greater the opportunity to obtain meaningful conclusions. Your time and consideration regarding this request is greatly appreciated. If you wish further information, or would like to obtain a finished copy of the study, please make a request to the above address.

*"This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406, (601) 266-6820."*

Sincerely,

Linda R. Oettiker

## APPENDIX C

### SURVEY INSTRUMENT

#### Utilization of Block Scheduling in Mississippi Schools

I am the Principal, Assistant Principal, Counselor	Number of years in position within this school _____
Please circle the grades in your school: K 1 2 3 4 5 6 7 8 9 10 11 12	Building size (# pupils) _____
Please circle the form of block your school utilizes: 4 x 4 4 x 4 in AB days modified block mixed schedule modules flexible	For how many years since then _____
Between 2001-02 and 2006-07, how many years did your school utilize any form of block _____	
<b>If your school is no longer on block, please give a short explanation why block is no longer utilized:</b>	
Have you worked in other schools that utilized block?      Yes      No      In what position(s)? _____	

Please indicate your answer to the following comparative statements your school's experience by darkening one box on the scale. Leftmost box is most agreement with the first statement; the rightmost box is most agreement with the second statement:

- |   |                     |   |
|---|---------------------|---|
| 01. Clear, measurable goals were established when block was adopted                       | □ □ □ □ □ □ □ □ □ □ | minimal, or no goals established                |
| 02. Achievement data is evaluated continuously for goal accomplishment                    | □ □ □ □ □ □ □ □ □ □ | Data is evaluated only as required              |
| 03. Adjustments have been made in course offerings for goal accomplishment                | □ □ □ □ □ □ □ □ □ □ | No need to adjust course offerings              |
| 04. I was specifically trained on how to best utilize teaching time in block              | □ □ □ □ □ □ □ □ □ □ | I was not specifically trained to utilize block |
| 05. Teachers were specifically trained to best utilize teaching time in block             | □ □ □ □ □ □ □ □ □ □ | Teachers were left to fend for themselves       |
| 06. Teachers are encouraged to adopt style to best utilize instructional time             | □ □ □ □ □ □ □ □ □ □ | Teachers did not have to change style           |
| 07. I am personally involved in professional, in-service training                         | □ □ □ □ □ □ □ □ □ □ | I delegate in-service programs to others        |
| 08. My teachers do not want to leave block schedules                                      | □ □ □ □ □ □ □ □ □ □ | My teachers want traditional scheduling back    |
| 09. Block contributes to increase in honor rolls  | □ □ □ □ □ □ □ □ □ □ | Block has no effect on achievement              |
| 10. Block contributes to an increase in state or standardized testing scores              | □ □ □ □ □ □ □ □ □ □ | Block has no effect on achievement              |
| 11. Block contributes to a reduction in remediation                                       | □ □ □ □ □ □ □ □ □ □ | Block has no effect on achievement              |
| 12. Block contributes to greater depth of knowledge teaching                              | □ □ □ □ □ □ □ □ □ □ | No difference in subject matter taught          |
| 13. Block contributes to better understanding for students with special needs             | □ □ □ □ □ □ □ □ □ □ | No difference to special needs students         |
| 14. Block contributes to better understanding for students with different learning styles | □ □ □ □ □ □ □ □ □ □ | No difference in understanding                  |
| 15. Block decreases unexcused absences  | □ □ □ □ □ □ □ □ □ □ | No change in unexcused absences                 |
| 16. Block decreases overall absences  | □ □ □ □ □ □ □ □ □ □ | No change in overall absences                   |
| 17. Block decreases physical altercations   | □ □ □ □ □ □ □ □ □ □ | No change in physical altercations              |
| 18. Block decreases overall discipline referrals  | □ □ □ □ □ □ □ □ □ □ | No change in overall discipline referrals       |
| 19. Block decreases overall security concerns   | □ □ □ □ □ □ □ □ □ □ | No change in overall security concerns          |
| 20. Block increases overall atmosphere of school day for students and teachers            | □ □ □ □ □ □ □ □ □ □ | No change in school atmosphere                  |

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