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# The Impact of 4 X 4 Block Scheduling at an Urban High School

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THE IMPACT OF  
4 X 4 BLOCK SCHEDULING AT  
AN URBAN HIGH SCHOOL

by

Paul Edward Montgomery

A dissertation submitted to the  
Doctoral Program Faculty in Educational Leadership  
in partial satisfaction of the requirements  
for the degree of

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in Educational Leadership

UNIVERSITY OF NORTH FLORIDA  
COLLEGE OF EDUCATION AND HUMAN RESOURCES

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## ABSTRACT

The primary purpose of this study was to examine whether attendance, academic achievement, school climate, student stress, and teacher burnout improved in an inner city, predominantly African American high school after the implementation of a 4 x 4 block schedule. Data concerning student academic achievement and absenteeism in 14 classrooms were gathered from the school's Annual Scholastic Reports. Data concerning the instructional practices of eight teachers were gathered through the teacher version of the *Instructional Practices Survey* and compared to a student version of the *Instructional Practices Survey* to determine whether student perception of instructional practices coincided with the teachers' perceptions. Classroom climate was examined by administering the *Classroom Environment Survey* to seven teachers and 130 of their students. Student stress levels were examined from the results of the *School Situation Survey* returned by 106 students. The *Maslach Burnout Inventory* was used to gather data concerning the burnout levels of 13 teachers.

This study found that increases in grade point average and decreases in absenteeism were not achieved after three years of block scheduling. Instructional practices of the teachers involved in this study did not change significantly. School climate, student stress levels, and teacher burnout were found to be in the average range.

## CHAPTER ONE

### INTRODUCTION AND BACKGROUND TO THE STUDY

A twenty-year crisis concerning the confidence of the American public in their schools began when A Nation at Risk (Gardner, 1983) warned of a "rising tide of mediocrity" in the American educational system. In Prisoners of Time, the National Education Commission on Time and Learning (1994) stated that the public perception of the quality of education was not favorable. The Commission pointed to a 1993 Gallup Poll in which only 19% of the respondents gave the American educational system an A or a B. Twenty-one percent gave the educational system a D or an F. Similarly, in a 1993 poll by Parade magazine, the Commission found that 63% of the respondents rated the American educational system as fair or poor. Data exist that refute the basis of the attacks on today's education system and indicate that today's educational crisis is manufactured and based on a disinformation campaign, usually focused on SAT scores, intended to attack American schools (Berliner & Biddle, 1995; Bracey, 1995; Bracey, 2002). Berliner and Biddle, as well as Bracey, provided an abundance of data to show that SAT scores over the years were not as bad as the "disinformation campaign" would have us believe. Even if the "disinformation campaign" was true, Wadsworth (1998) pointed out that the public was concerned with the idea of metal detectors at



school doors, students hanging out in the parking lot instead of in classrooms, and the sales clerks that lacked the skills to count change.

The 32nd Annual Phi Delta Kappa/Gallup Poll showed that public dissatisfaction with schools was based on a myth (Rose & Gallup, 2000; Wadsworth & Johnson, 2001). The results showed an all time high in satisfaction. Seven in 10 parents graded the school their oldest child attended as an A or B. Fifty nine percent of respondents believed reforming the existing system was better than finding an alternative system. Similar results were found in the 33rd Annual Phi Delta Kappa poll (Rose & Gallup, 2001). The Sixth Phi Delta Kappa poll of teachers found that 64% of teachers rated the public schools as A or B (Langdon & Vesper, 2000).

Whatever the cause, real or manufactured, the public was losing confidence in public education (Dworkin, 1987) and this loss of confidence had brought about a loss of parental respect for the profession, the lack of which forced teachers to rely less on their classroom authority and more on their classroom influence in order to gain compliance from students. Teachers who can gain compliance through use of their authority are less likely to become exhausted from stress than teachers who must use their influence to gain compliance (Dworkin, 1987). Perhaps this trend will reverse if the public regains confidence in the public schools, as the later polls suggest.

Headline writers love to write about educational failures (Berliner & Biddle, 1998), and politicians use

educational failures to shift the responsibility of blame, but the schools that have received the failure label have to accept it. Teachers, administrators and students then must find ways to improve, especially when improvement is mandated, yet not funded, by state legislatures.

Some American schools are labeled as "failing." Myers and Goldstein (1997) question the meaning of the term failing. Just what is a failing school? Myers and Goldstein (1997) claimed that failure, in some form or another, exists in all educational systems. They asked whether the problem was one of failing schools or failing systems. Defining the concept of a failing school is difficult at best when, quite often, the term, "failure" is also used to mean "ineffective." Myers and Goldstein (1997) have pointed out that a school that may be effective for white middle-class girls may be ineffective for black working-class girls. The term "troubled" was preferred by Myers and Goldstein. Troubled schools do have different characteristics and often are troubled for different reasons. It is therefore difficult to identify specific characteristics of troubled schools and even more difficult to prescribe specific remedies.

Myers and Goldstein broke troubled schools into three categories, each describing different school climates or learning environments. "Striving" schools were those characterized as troubled, but in which the administration and faculty were determined to improve the school. "Swaying" schools were those that were characterized as "touch and go" as to whether the school would survive, let alone improve.

"Sliding" schools were identified as those that were in a seemingly never ending downward spiral. In the sliding schools, attempts were made to improve the school by improving student disaffection and behavior, both of which are part of a school's climate and culture. The faculties were often found to be cynical of new attempts at improvement, especially after previous attempts were made inconsistently and done in a haphazard method. Such a school climate (environment) must surely have an effect on the stress levels of students, teachers and administrators.

Educators have long recognized the importance of school climate as a determinant of student success (Miller, 2000; Moos, 1979; Sanacore, 2000). Administrative choices and decisions concerning policies also have an impact on the school environment. Norton (1984) wrote that a school's environment sets the tone for the school's approach to meeting stated goals and resolving problems. He also stated that effective communication fosters a good school climate by building trust, mutual respect and clarity of function. Climate sets the conditions for creativity as well as determining the attitudes toward personal growth. Norton (1984) argued that a school's environment served a crucial role in determining what the school is and what it might become.

Improving school environment has been approached through a variety of reforms. Reform efforts have taken into account the public's perception, according to opinion surveys, of today's high schools. This perception includes the problems

of poor attendance, low academic achievement, poor school climate and negative stress levels for students and teachers (National Education Commission of Time and Learning, 1994; Rose & Gallup, 2000; Rose & Gallup, 2001). One effort to improve schools involved the implementation of block scheduling. Despite the fact that various states have already implemented block scheduling in many of their high schools, there are just as many school boards who remain reluctant to do so because they are not sure the proclaimed benefits of block scheduling actually do occur.

#### Purpose of the Study

The primary purpose of this study was to examine whether attendance, academic achievement, school climate, student stress, and teacher burnout improved in an inner city, predominantly African American high school after the implementation of a 4 x 4 block schedule. The proponents of block scheduling have claimed that with this type of schedule, improvements can be made in all of the variables listed above. These variables were studied as they were used by the general public to determine the success of a school.

#### Research Questions and Hypotheses

The research questions for this study were the following:

1. Did grade point averages (GPAs) change after the implementation of a 4 x 4 block schedule?
2. Did student absentee percentages (APs) change after the implementation of a 4 x 4 block schedule?
3. What were the instructional practices during block

scheduling?

4. How did teachers and students perceive school climate in the 4 x 4 block schedule as measured by the *Classroom Environment Survey*?

5. What were the student stress levels in the 4 x 4 block schedule as measured by the *School Situation Survey*?

6. What were the teacher burnout levels in the 4 x 4 block schedule as measured by the *Maslach Burnout Inventory*?

The following hypotheses guided this study:

1. A comparison of pre and post 4 x 4 block scheduling will show a statistically significant improvement in student grade point averages.

2. Student absentee percentages (APs) will show a statistically significant decrease after implementation of block scheduling.

3. Teachers' instructional practice will change in order to accommodate the additional class time.

4. School climate will provide a supportive and organized structure for teaching and learning when compared to the norm group of the *Classroom Environment Survey*.

5. Stress levels of students will fall into the low to medium range based on the norms of the *School Situation Survey* after the implementation of block scheduling.

6. Burnout levels of teachers will be at the low to average levels as determined by the *Maslach Burnout Inventory* after the implementation of block scheduling.

#### Definition of Terms

1. Block scheduling. A system of class scheduling in

which fewer classes are taken (four in this study) per semester but are taken for a longer duration (90 minutes in this study) per day. A traditional year-long course was completed in one semester using block scheduling.

2. Four-by-four Block Schedule. A block schedule in which students will take four courses in semester one and four different courses for semester two. Normally only two academic core classes are taken in a semester.

3. Seven period day. The traditional schedule in which classes are 50 minutes in length and last the entire 180 day school year.

4. School Attendance. The number of days a student was officially present for class. Attendance was calculated from the Annual Scholastic Report based on roll taken by teachers in each class on a daily basis. Attendance was recorded in the form of an absence percentage.

5. Absentee Percentage (AP). Since a student attends a block schedule for only 90 days instead of the usual 180 days of the traditional seven period day, attendance was put in percentage form for comparison. Twenty days absent on the traditional schedule would not be the same as twenty days absent on a block schedule. Twenty days absent on the traditional schedule is  $20/180$  or 11.1% absence. Twenty days on the block schedule is  $20/90$  or 22.2% absence. This technique permitted a more logical method for comparison of attendance between the two different schedules.

6. Academic Achievement. For the purpose of this study academic achievement was measured by computing the grade

point averages (GPAs) for the students in each teachers' classroom.

7. Grade point average (GPA). For the purpose of this study, grade point average was determined by averaging the grades earned by all students in a given class period for a particular teacher for a specified school year.

8. Classroom Environment. The comprehensive structure of a school made up of culture, physical appearance, organizational structure, social relationships, and individual behaviors. This concept was measured using the *Classroom Environment Survey*.

9. Stress. A complex pattern of reactions to real or perceived threats (stressors) to one's sense of well-being that motivates adjustment (responses) in order to avoid high levels of anxiety. Student stress was measured using the *School Situation Survey* and teacher burnout was measured using the *Maslach Burnout Inventory*.

10. Stress Levels. Stress levels refer to the numerical results of the participating students perception of stress as indicated on the *School Situation Survey*. The survey manual includes scale averages ( $\bar{n} = 1607$ ) by grade level cluster for determining stress levels of the respondents.

11. Teacher Burnout. Burnout is a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who work with people in some capacity.

12. Instructional Practice. The actual methods and strategies that teachers used in the classroom teaching their

lessons, for example, the use of lecture or the Paideia method.

13. Paideia Instruction. A teaching method based on the work of Mortimer Adler using the Socratic method. Paideia methodology educates by asking instead of telling, combining didactic instruction with academic coaching and seminar discussions (Adler, 1977).

#### Significance of the Study

The results of this study will add to the knowledge base of the effects of block scheduling on absenteeism, academic achievement, school climate, student stress and teacher burnout. The findings can be used by schools in determining whether or not to implement block scheduling for the purpose of improving absenteeism, academic achievement, school climate, or for lowering teacher/student stress levels.

#### Limitations and Delimitations of the Study

This study assessed the results of a 4 x 4 block schedule at one large, urban high school. Due to the nature of the sample and due to the type of data collected, care must be taken when generalizing the study's results. No data relative to school climate, student stress, and teacher burnout were collected before the implementation of the 4 x 4 block schedule. It was therefore not possible to determine whether block scheduling improved or impaired the previous levels of school climate, student stress or teacher burnout. These variables, however, were examined, and their current levels were used as an indicator of what to expect during the implementation period of block scheduling. Data for academic



achievement and absenteeism were collected before and after the implementation of block scheduling.

The small sample size is a limitation of the study. Sixteen teachers, 28% of the faculty, were asked to participate in the study concerning academic achievement and absenteeism. These sixteen teachers were chosen because they were at the study site before and after the implementation of block scheduling. Fourteen teachers, 25% of the faculty, agreed to participate in this part of the study. Of these 14 teachers, only eight, 14% of faculty, returned the *Instructional Practices Survey*.

The examination of school climate included data returned from 12% of the faculty and 10.5% of the student body. One hundred six students, 8.6% of the student body, returned the *School Situation Survey forms*. The *Maslach Burnout Survey* was distributed to 25% of the faculty. Of these 14 teachers, 13 returned the survey forms.

The study was limited to one high school because of the lack of availability of high school block scheduling in the district. There were no high schools in the district using block scheduling during the 1993-1994 school year. Two high schools implemented block scheduling for the 1995-1996 school year. The teachers selected for the study had been at the school during the entire 1993-1998 period. The study of grade point averages and attendance included the same 14 teachers in the two-year period before block and the second and third years after block was implemented. Although every teacher did not have the same course schedule every year, most taught a

sufficient number of the same courses in order to make a valid comparison for the purpose of examining changes. The *Instructional Practices Survey* was used to determine if the instructional practices used by the teachers had changed since the conversion to the 4 x 4 block schedule.

### Organization of the Study

Chapter One is an introduction which presents the background of the study, the purpose of the study, research questions and hypotheses, and the significance of the study. This chapter began with a view of public education by the general public as reported in several studies. The public view tends to demonstrate a dissatisfaction with the current trends in education. Block scheduling was presented as an alternative, not a panacea, to the current woes in our educational system.

Chapter Two reviews the literature related to block scheduling and the dependent variables being studied. This chapter examines reasons for examining ways to improve education as well as some of the flaws that may be built into the current use of time in our schools today. The concept of the 4 x 4 schedule is examined as a possible method to better use time in our schools. The philosophy of the 4 x 4 block is discussed in terms of what it is supposed to do as well as what its opponents claimed would not happen with its implementation. This chapter also examines the claims that the 4 x 4 block would do harm in the field of mathematics. Mathematics instructors are one of the most vocal groups who speak out against the use of block scheduling. School climate

and the effects of stress in the school are also reviewed.

Chapter Three discusses the research design and methodology. Included in this chapter are the procedures and methods of conducting the study, as well as the research questions and hypotheses. The research instruments used in the study are discussed relative to their reliability and validity. A description of the population and sample is included in the chapter along with a description of how the data were collected and analyzed. The limitations and delimitations of the study close the Chapter.

Chapter Four is a presentation of the analysis of the data and the findings.

Chapter Five examines the results and findings and discusses several implications of the study.

The study also contains appendices which include letters sent to the study site faculty and copies of the instruments used in the study.

CHAPTER TWO  
REVIEW OF THE LITERATURE

Introduction

The past twelve years have witnessed many attempts at reforming the educational system, some of which included year-round-school, longer school days, and even a longer school year. Berliner and Biddle (1995) have argued that most school reform did not work because it was attempting to fix a nonexistent problem. If one examined schools as individual entities, one could see that many schools have room for improvement. Berliner and Biddle (1995) and Bracey (2002) may be correct in asserting that American schools are not as bad as the public is being led to believe. However, a school does not have to be sick in order to get better. Efforts at improvement are necessary for some schools. The problem lies in deciding what actually needs to be "fixed." A flaw in the use of time is one area that has been examined as a way to improve schools.

The 4 x 4 Block Schedule

Harold Howe (1993) claimed the typical school day, which is usually divided into periods of forty to fifty minutes in length, handicapped teachers and students. Howe (1993) found the typical class period of most secondary schools often allowed teachers to do little more than get a lesson started before it was time to change classes, not allowing teachers the necessary time to develop a lesson and follow up with an

adequate student/teacher discussion. Teachers have claimed that block scheduling permitted them time to conduct activities more efficiently (Shortt & Thayer, 1998-1999), which improved student performance. Howe went further in stating that taking the student out of the classroom usually infringed upon the time from another teacher's class, thereby decreasing possible engaged time in other classes. Seifert and Beck (1984) found that only 28 minutes of each 55 minute period in secondary schools were used for instruction. Karweit's study (1976) pointed out that it was not necessarily the fault of the school or teachers that time was misused. The problem was simply part of the nature of group instruction as well as the multiple goals of schools. Karweit (1976) also maintained that the nature of young learners sets limits on how much of the school day can be used for instruction. These concepts support Howe's statement that secondary teachers barely get a lesson started when it is time to leave.

Proponents of block scheduling have claimed that a logical way to handle the reforming of school time is to implement a form of block scheduling (Canady & Hotchkiss, 1984; Canady & Rettig, 1993; Dougherty, 1998; Gifford & Stanley, 1999; Marshak, 2000; Robbins, Gregory, & Herndon, 2000). Merely changing the daily schedule, however, will not guarantee an improvement in student attendance or academic achievement (Marshak, 2000; Rettig, 1999). Quality instructional strategies must be used. By dividing the high school day into four blocks of time ranging from 90 to 120

minutes each (4 x 4 block) daily time-on-task can be increased, if the additional time is consumed with quality instruction. Researchers have claimed the block-scheduled classroom has allowed teachers to implement practices that resulted in student outcomes exceeding those of the traditional classroom (Shortt & Thayer, 1998-1999). Block scheduling created a situation in which old teaching methods might not work, but it should not be assumed that new methods would be implemented (Canady & Rettig, 1993; King, Clements, Enns, Lockerbie, & Warren, 1975; Marshak, 2000; Oneil 1995). The block schedule did, however, provide opportunities for students to earn even more credits than possible with the seven period day (Canady & Rettig, 1993; Gifford & Stanley, 1999; Veal & Schreiber, 1999). Each 18-week semester permitted students to take four different classes, bringing the total credits for the year to eight. The longer class periods in block scheduling have the potential to increase the time available for learning without increasing the length of the school year or the school day and with no additional demands on the school budget. Part of the time saved came by eliminating the start, stop, start that occurred when classes change. After the extended class started, which took no more time than a short class, the students were there for a longer period.

Canady and Rettig (1993) and Rettig and Canady (1996) claimed the 4 x 4 block was relatively easy to implement, but using the additional class time with varied, high quality activities was a must. As for remediation time for students

who need additional help, there were block schedules that have it built in. Canady and Rettig (1993) advocated the use of a schedule that had days blocked in a 75-15-75-15 scheme. The schedule still had the usual 180-day school year. An entire course was taught in 75 days, with fewer but longer class periods each day. The 15-day session was used for remediation or for enrichment activities.

The 4 x 4 block also gave the teacher more time for out of class activities which often required time from other classes. Out of class activities, on the block schedule, take time away from only one other academic subject.

In the typical 4 x 4 block schedule, a student would take two core academic classes and two elective classes per semester. If the two academic courses were paired properly, such as social studies classes paired with language arts classes and math classes paired with science classes, interdisciplinary planning could connect the disciplines and not take time from either academic class (Canady & Rettig, 1993; Marshak, 2000; Robbins, et al. 2000).

#### Block Scheduling and Time

The concept of time seemed to be recognized as critical to education and was, no doubt, important in the educational process as studies of time-on-task have shown. Time was one of the variables that was relatively fixed but, unlike socioeconomic status, a variable that could be controlled and manipulated by teachers (Karweit & Slavin, 1981; Robbins et al. 2000; Wang, 1979) and also by educational systems with very little added expense. In Prisoners of Time (1994), the

National Education Commission on Time and Learning found that one of the problems in education today was a design flaw in the use of time. This flaw was described by Howe (1993) when he referred to our educational system as a "Procrustean bed." Just as Procrustes' main concern was that everyone fit the same bed, educators' concerns revolved around fitting all students into the same time schedule. The school or classroom schedule often did not allow for the fact that different students required different amounts of time for learning. An example of Howe's Procrustean bed in education was when at least half of the students in a class were reading below grade level, but were reading from the same book as those that were on grade level (Stewart, 1990).

Wang (1979) and Robbins et al. (2000) maintained that in order for educational systems to provide every child with an equal opportunity for success in school, an adequate amount of time must be made available for students and teachers. Wang was not saying that students need to be grouped by ability in order to give the "slow learner" more time as the more adept students move on. John Goodlad (1984), in A Place Called School, stated that the continuation of grouping should have been abolished by law so that those who were ill-informed would refrain from using the practice. Canady and Reina (1993) stated that tracking and the curricular and instructional inequalities that go with it may actually foster mediocrity in the classroom experiences of most children, especially the experiences of poor, black and Hispanic students. There were ways, however, in which time



could be scheduled for remediation while assuring that students who do not need remediation were not held back. According to Canady and Rettig (1993), Marshak, (2000), and Robbins et al. (2000), a system of block scheduling, specifically the 4 x 4 schedule, could provide for remediation time, provided proper instructional practices were in place.

Wang (1979) believed that teachers could increase learning by increasing motivation. Perseverance was related to motivation as a factor in the degree of learning. One would assume that if teachers increased a student's willingness to persist at a task, shorter learning time would result. According to Millman, Bieger, Klag and Pine (1983), that assumption may be incorrect. Millman, et al. (1983) found that J. B. Carroll (1963) was correct when he stated that even when the perseverance level was increased, students who were already willing to persevere to the extent needed for learning a task would not alter their degree of learning nor the time needed for learning. When disregarding the perseverance factor, time became even more important. Karweit (1976) and Robbins, et al. (2000) felt that many educators simply misunderstood the research on time and therefore they concluded that more time equals more learning, even though the research relating opportunity time (days and hours) to achievement did not support that approach. When many school districts increased the time allotted for education in an attempt to improve academic achievement, they worked in terms of more courses. An example of increasing time was the number

of districts that have increased high school class schedules from a six-period-day to a seven period-day. Was this better use of time? The philosophy of the seven period day warranted examination. If students were not doing well in six periods per day, how would increasing the schedule to include a seventh period be of any benefit? This type of reform fell into the category of "doing the same old thing, but expecting different results."

Improving educational systems through longer school days, longer school years, and by adding a seventh period to student schedules has been rationalized by many districts. Some states have attempted to improve education by increasing the number of credits required for graduation. The seven period day appeared to have been made for this reform. Students were given the opportunity to acquire at least three more credits, over three years, without an increase in the length of the school day or the school year. In actuality, the seven period day did not increase time-on-task; it merely added "more of the same." This reform, however, has not provided the desired improvements. The seventh period may actually have increased the workload that was not being met.

Time appears to be one of the most important variables in the search for improvement. The problem was one of finding a way to use time to its maximum potential for improving the educational system. When time was used well in schools, not only did school climate improve, but the opportunity for learning increased as well (Robbins, et al. 2000; Shortt & Thayer, 1998-1999). The previously mentioned reforms have

been aimed at improvement, but have missed the target. Students were being asked to do too much in terms of course load. A seven-period day provided the extra courses for meeting increased graduation requirements, but it also increased student responsibility by increasing their already full workload, which may also have increased student stress levels. Proponents of block scheduling have claimed that it has provided a way to relieve the student workload, increase class time, improve attendance, decrease discipline problems and at the same time earn one more credit per year than the seven period day permitted (Buckman 1995; Canady & Reina, 1993; Canady & Rettig, 1993, 2001; Conti-D'Antonio, Bertrando, & Eisenberger, 1998; Marshak, 2000).

Increasing time in school. The issue concerning time did not appear to be the number of years of schooling, nor was it the number of days in a school year, it was the actual amount of time in school and the way it was used. Fredrick and Walberg (1980) cited the study by Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld and York (1966) in which the time variables, including hours of homework and attendance rate accounted for only 4 percent of the variance in achievement gain by black students and 1.5 percent of the variance in achievement gain for white students. The Coleman study found the frequency of homework, days in session, part-day attendance and length of academic day to have even less influence in predicting academic outcome, making the results of schooling questionable. Wiley and Harnischfeger (1974) disputed the Coleman study by suggesting that educators

should not have been asking if there were any effects of schooling, but rather should have been asking how effective schooling really was.

Karweit and Slavin (1981) and Robbins et al. (2000) believed the variable of time needed for learning was an important variable missing in much of the research. Gettinger (1989) agreed and added that the amount of time a learner needed for learning was largely dependent on what was taking place in terms of instructional presentation and the quality of instruction.

The way time was used in the classroom appeared to be a major factor in the amount of learning that would take place. Wiley and Harnischfeger (1974) claimed a 24 percent increase in schooling would increase the average gain in reading comprehension by two thirds and math achievement and verbal skills by one third. Wiley and Harnischfeger (1974), by extrapolation, projected that increases in the length of the school year, or in the attendance rate or in the length of the school day could each show an increase in student performance. Karweit (1976), in a reanalysis of both the Coleman and the Wiley studies, found them both suspect. In reevaluation of the Coleman study, Karweit found that school policies and sample differences, rather than time, may have accounted for differences in achievement. This finding was reflected in the work of other researchers (Conti-D'Antonio, et al. 1998; Smith, 2000).

Increased class time and the block schedule. Karweit and Slavin (1981) believed that an individual's learning time was

dependent upon his/her engaged time with the material. Engaged time was dependent upon such factors as interest in the material, aptitude for the subject, and presentation methods used by the teacher. When considering instructional presentation and student interest as factors determining engaged time, lengthening the class period as suggested by Rettig and Canady (1996, 2001) and others would have required teachers to use a variety of presentation methods in order to maintain student interest and still be able to advance adequately through a lesson. A 4 x 4 block schedule that has students taking only two core academic classes per semester, but for longer class periods, provides more time for discussion and lesson development (Gifford & Stanley, 1999). Seifert and Beck (1984) found a significant positive relationship between achievement gain and teacher lecture/discussion strategy as compared to achievement gain and a seat work strategy. The secondary schedule used by most schools minimizes student discussions and as Howe (1993) pointed out, that was what Goodlad (1984) said made school dull, the teacher does all of the talking. A longer class period allowed the teacher to develop a lesson more thoroughly and not infringe upon time allotted for other courses. A longer class period also allowed more time for lesson development through a combination of seat work and discussion.

School programs rob learning time. Absenteeism was not the only factor robbing schools of learning time. Karweit and Slavin (1981) stated that non-academic programs and/or

competing academic programs take school time also. An example of this encroachment on time was band rehearsals that occur during the regular school day or pull-out programs that take students away from the classroom. These academic intrusions were considered to be legitimate in most schools. Gettinger (1989) cited research that substantiated the idea that the degree of learning would be lower if adequate teaching was not provided or if students could not devote a sufficient amount of time for learning. How time was taken away did not matter; the fact that students were off task was what was important. Time needed for learning must be adequate or learning will suffer (Conti-D'Antonio, et al. 1998; Marshak, 2000, Nichols, 2000; Rettig & Canady, 2001; Smith, 2000).

#### Student Achievement

Time was not the only area of gain with the implementation of block scheduling. Since the block schedule reduced the number of courses for which students prepared homework, it also reduced a source of stress (Blom, Cheney, & Snoddy, 1986) by allowing more concentration in fewer areas of study which could improve daily attendance and grade point average (Buckman, 1995; Hackman, 1995). Student grades have been found to improve in most schools that have implemented the block schedule; some schools, however, have reported no change in grades (Williams, 1999). Gifford and Stanley (1999) and Nichols (2000) found significant gains in the number of students failing two or more classes and claimed that the block schedule may have been harmful, particularly for students who were already struggling. It was noted that

grades may not reflect an increase in learning, especially in the cases where students covered less material in block scheduled programs (Kramer, 1997).

Hinman (1992) found that implementation of block scheduling in an English speaking middle school in Puerto Rico resulted in fewer discipline referrals, which contributed to higher student achievement. Attendance and discipline were related to achievement in that both were factors that increased time-on-task and influenced higher student achievement. Farber and Finn (2000) found that student engagement in classwork, time-on-task, to be an essential element for student achievement.

Most research findings do not point to success. Schrieber, Veal, Flinders, and Churchill (2001) conducted a study of two independent cohorts of tenth grade students in a mid-western high school. The high school used a combination of schedules, including a traditional schedule, a block schedule, and a hybrid schedule. These researchers found that the type of schedule was not an influential factor in male or female student achievement. Similarly, Lawrence and McPherson (2000) found that student scores on the North Carolina End-of-Course tests for Algebra I, Biology, English I, and U.S. History were consistently higher before block scheduling than during the two years following block scheduling. Creamean and Horvath (2000) found block scheduling strategies that resulted in effective instructional practices, time management, staff development and an opportunity for innovation, showed an increase in attendance, a decrease in

discipline problems, but no significant change in percentage of grade distribution.

All of these studies directly relate to the present study examined block scheduling or one of the variables related to block scheduling. Some studies identified improvement in achievement related to block scheduling. Other research failed to identify differences. Clearly, more research on block scheduling and student achievement is needed. In addition, further study is needed of other factors related to block scheduling including student attendance and absenteeism.

#### Attendance and Absenteeism

The literature revealed academic achievement suffered when students or teachers were absent. Karweit (1976) found that an increase in the length of the school year resulted in an increase in absenteeism. Karweit found the effect of attendance on achievement to be quite strong, but in other studies attendance did not account for much of the variance. It appeared that increasing student attendance and better use of time would be of great benefit. Block scheduling was reported to decrease absenteeism and discipline problems, both of which infringed upon time-on-task (Canady & Rettig, 1993; Rettig & Canady, 2001). In a study of block scheduling in two high schools, Buckman (1995) found that daily attendance and GPA improved. Buckman also found an improvement in the school climate in terms of safety, success, involvement, commitment, interpersonal relationships and satisfaction. Canady and Hotchkiss (1984) also found that



using block scheduling increased the time-on-task by improving student attendance rates and was done without an increase in budget. Studies conducted with students in grades third to sixth, sixth to eighth, and ninth to twelfth, found that the number of days present, number of unexcused absences, tardiness and dropouts had the most significant effects on achievement. One study also found that five additional tardies or absences resulted in about half a month less academic growth for twelfth grade students. It was also found that tardiness affected the high achiever more than the average achiever (Frederick & Walberg, 1980). Overall, it can be concluded that block scheduling may improve attendance.

#### The Cost Factor of Increasing the School Year

Increasing class time is not just a matter of lengthening the school year or the school day. The cost of such a change must be considered. Lengthening the school year or the school day requires an increase in the school budget. Wiley and Harnischfeger (1974) demonstrated this cost factor by pointing out that attendance rates varied widely from state to state. Iowa, for example, had an average school year of 180 days and an Average Daily Attendance (ADA) rate of 94.5%. Missouri had an average school year of 174 days and an ADA of 84%. Iowa students received an average of 16.4% more schooling than Missouri students. Wiley and Harnischfeger calculated Missouri would have to spend \$135 million dollars to lengthen the school year and raise ADA so that students would receive the same amount of schooling as those in Iowa. It was not likely that many states would spend the additional

funds to increase schooling time. Simply altering the way the school day was divided, however, was within the current school budget constraints of most American high schools (Canady & Rettig, 1993; Carroll, 1994; Nichols, 2000; Rettig & Canady, 2001). Therefore, block scheduling is an attractive option to many school leaders.

#### The 4 x 4 Block and Mathematics

Canady and Rettig (1993) stated that mathematics teachers were consistently among the major opponents of block scheduling, the complaint being that block scheduling did not allow time for proper dissemination of math concepts. Math teachers often believed their curriculum would not fit well into long blocks of time and were often no more than tolerant of the block schedule (Gilkey & Hunt, 1998; Kramer, 1997). They believed that too much was compressed into too little time. Their beliefs were supported by Lawrence and McPherson (2000), who found that students taking Algebra I on a block schedule had consistently higher failure rates than Algebra I students on a traditional schedule.

One factor in low standardized test mathematics scores may have been attributable to the way time was allotted for mathematics study. Schools may not be scheduling mathematics instructional time wisely, even under current scheduling practices. Karweit and Slavin (1981) found that the time scheduled weekly for the study of math ranged from 240 to 300 minutes. This meant that over a 36 week period (one school year) some students were scheduled for 36 hours less math than other students in the same district.

When Karweit and Slavin (1981) examined the actual time spent on math, the weekly time ranged from 176 to 308 minutes, which meant that some students received 79 fewer hours of math than other students. A high school using the typical 4 x 4 block schedule would have 90 minute classes for an 18 week period. This schedule permitted 450 minutes of mathematics per week which was 8100 minutes for an entire course. Traditional six-period day schedules had students in classes for 300 minutes per week for 36 weeks which amounted to 10,800 minutes per course. Even though students taking mathematics classes had more time in math class per week, they had to cover more material during that time, if indeed teachers covered the same amount of materials covered on a traditional schedule. This was the situation that led to the claims in the Kramer study (1997) that mathematics did not fit well into long blocks of time.

A study by Veal and Schreiber (1999) supported the view of teachers that mathematics and long blocks of time do not go together. Veal and Schreiber (1999) claimed that block scheduling was good for students who wanted to take more mathematics classes and obtain more credits, but it did little to enhance their understanding of mathematical concepts. This finding was corroborated in a study by Cobb, Abate, and Baker (1999) who found that students taking mathematics on a 4 x 4 block schedule scored significantly lower on standardized tests than did students using a traditional school schedule.

Many studies examined how schools allotted time for

mathematics, but few considered teacher competence and instructional mode in determining how the available time was actually utilized for instruction (Karweit & Slavin, 1981). No matter how time was scheduled, competent teachers and effective methodology have to be considered (Gilkey & Hunt, 1998).

### School Climate and Student Achievement

The classroom's psychological environment, or climate, was found to make a difference in student achievement and motivation (Black, 2001; Fyans & Maehr, 1997; Hoy & Sabo, 1998; Miller, 2000). The social climate of a school is made up of the norms, beliefs, and attitudes evidenced in the conditions, events, and practices of a school (Kelley, 1980). In making the above statement, Kelley claimed climate referred to the normative conditions which were relatively enduring over time and it was these conditions that distinguished one climate from another. Any single environmental climate may have its own patterns, practices, and conditions which could improve satisfaction and accomplishment, while, at the same time, have patterns, practices, and conditions that frustrated satisfaction and accomplishment. Differing values and perceptions held by different individuals and groups as to what has meaning and value would indicate there would be differences in determining what climate conditions or outcomes were important. If difficulty existed in determining what was or was not important in a social climate, could it be as difficult to determine what aspects of a school climate

affected student achievement?

In a 1973 study, Brookover, Gigliotti, Henderson, and Schneider identified four student factors that accounted for the differences in levels of school achievement. These four factors were (a) student perceptions of the present evaluation-expectations of "others" (parents, teachers, and friends); (b) student perceptions of the future evaluations-expectations of "others" (parents, teachers, and friends); (c) student perceptions about the level of feelings of futility (sense of control); and (d) student perceptions of those academic norms stressing academic achievement in their school system. Six teacher factors were identified. These were (a) teacher present evaluations-expectations of their students; (b) teacher future evaluations-expectations of their students; (c) teacher perceptions of parent-student push for education achievement; (d) teacher-reported push of individual students; (e) teacher satisfaction; and (f) teacher perceptions of the social system belief in student improvability. It was also found that a low sense of futility existed in schools that had high teacher evaluation-expectations. Findings from studies by Pierce (1994) and Pellerin (2000) supported those by Brookover, et al. (1973). Both studies found that schools with a lower student-reported sense of futility also had a more positive student perception of academic norms stressing achievement. A teacher who showed care, respect, and physical closeness decreased the feeling of futility and increased the student's sense of security and safety, which helped to increase the student's level of

academic achievement. Also, when teachers felt good about teaching, student performance improved (Black, 2001).

High expectations appeared to be an important factor in achievement. Teachers with low expectations for students helped to create poor students and were making failure a self-fulfilling prophecy. Teachers perceived as caregivers showing warmth and friendliness helped students to have more confidence in themselves which, indirectly, led to higher academic achievement (Hatchman & Rolland, 2001; Juarez, 2001). A case in point was the Rosenthal and Jacobson (1968) study where teachers were told they had academic bloomers when, in fact, they did not, and academic performance improved. The teacher could also contribute to this scenario negatively by unknowingly making negative connotations concerning student abilities, as easily as restricting academic material or even reducing the instructional time (Juarez, 2001). Teachers who taught fewer students on a daily basis developed and maintained more personalized environments for their students, which led to better school climate and higher academic achievement. Several studies have demonstrated that when block scheduling reduced the number of students a teacher taught on a daily basis, typically in the 80-90 range instead of 150 or more, school climate and student achievement in some courses improved (Queen, Algozzine, & Eaddy, 1997; Shore, 1995; Stader, 2001).

The research showed that school environment was important in determining a school's effectiveness. Schools in which the "normative condition" did not support learning,

where students felt they could not master the social system, and in which they perceived that teachers did not care whether they succeeded or not, had the lowest school achievement levels (Brookover, et al. 1973; Miller, 2000).

### Stress in Schools

High levels of stress affect teachers just as schools with poor classroom climates affect students (Kyriacou, 2001). Teaching has been described as a low-commitment occupation. Many teachers choose their careers late, they enter and exit the profession throughout the life cycle, and many combine teaching with second jobs (Conley & Cooper, 1991). It seemed, though, that today's urban schools with the high dropout rates, poor attendance, and low achievement were in need of teachers with an especially high commitment to teaching. Teachers who worked in large urban school systems either left the job early or suffered from extreme levels of burnout (Henderson & Henderson, 1996). Abel and Sewell (1999) found greater stress levels in urban school teachers than in rural school teachers. Sources of stress, such as student misbehavior, maintaining class discipline, completing paperwork, and the lack of time to spend with individual students were just as stressing for rural teachers as they were for urban teachers. The high stress levels found in urban teachers came from poor working conditions, such as overcrowded classrooms, shortage of supplies, and sparsely distributed funds. Regardless of where burnout originated, it was a very devastating deterrent to successful teaching in any classroom (Byrne, 1998; Kyriacou, 2001; Murray-Harvey,

Slee, Lawson, Silins, Banifield, & Russel, 2000).

There is a normal stress level in any school. These stress levels come from the everyday tasks that need to be completed, including the acquisition of new information and learning new skills, paper work, mandated testing, and are not necessarily unhealthy. Stress is a necessary part of life and when properly managed, could provide the challenge for living (D'Aurora & Fimian, 1988; Murray-Harvey, et al. 2000; Torsheim & Wold, 2001) and teaching. According to some researchers, unhealthy levels of stress have created problems and have eroded the effectiveness of schools (Hollingsworth, 1996; Kyriacou, 2001; Lutz & Maddirala, 1990). Excessive stress in the classroom has presented a problem because it has impeded the teaching/learning process (Murray-Harvey, et al. 2000; Swick, 1987). High levels of stress have had negative effects on teacher physiology and have created high levels of sociopsychological anxiety in groups. Swick (1987) stated that disruptive and aggressive behavior patterns increased anxiety levels of everyone in the profession. High levels of negative stress patterns created a school burnout cycle in which students and teachers spent a lot of their energy on conflicts that raise levels of anxiety.

Teachers and students bring psychological stress from outside sources into the classroom (Amen & Reglin, 1992; Kyriacou, 2001). Stressors from outside sources are usually beyond the control of school personnel. Stress from within the school may or may not be within the control of school personnel. Sources of stress from within the school include



teacher behavior, academic pressures, classroom organization, curriculum focus, student relationships, enforcing dress codes (Swick, 1987), supervising the cafeteria, the various forms of paperwork and testing, and a lack of empowerment by teachers (Sweetland & Hoy, 2000). Kyriacou (1989, 2001) added poor student motivation, student discipline, time pressures, poor working conditions, low status, and conflicts with colleagues to the list of stressors for teachers. The ever increasing amount of paper work associated with increased class sizes also caused stress among teachers (Jenkins & Calhoun, 1991).

Canaday and Rettig (1993, 2001) make the claim that implementing a form of block scheduling will reduce student stress levels. There may be a relationship of reduced stress and the use of block scheduling since it does seem logical that taking fewer classes would reduce academic stress, but no empirical research showing that relationship is available.

#### Chapter Summary

In the past decade the public school system in this country has fallen prey to attacks by politicians, parents, and educators who seem to have lost confidence in their schools. Many plans and innovations have been implemented in an effort to improve the public school system. One of the plans for improvement that has become popular over the last few years is the 4 x 4 block schedule. This 4 x 4 block schedule trend has become popular in some school districts, but remains untested in many others. The block schedule operates on the idea that "less is more." Students take

fewer classes at any given time, but the classes last longer. The supporters of block scheduling maintain that the 4 x 4 block allowed teachers to develop lessons more thoroughly and actually accomplish more than when using the previous six or seven period day.

The 4 x 4 block schedule, however, does not come without opposition. Math, foreign language, and band teachers usually oppose block scheduling. Teachers on 4 x 4 block schedules must teach their subject matter in one half of a school year, creating the claim from math and foreign language teachers that too much material must be compressed into too little time. They are not referring to the length of a class period, but to the length of the course itself, because a 4 x 4 block schedule supported classes only half of the year. Math and foreign language teachers argued that the 4 x 4 block schedule did not give students time to learn and work with a major concept before the next major concept had to be presented. They claimed to need a full year to properly teach their courses. They felt part of their curriculum had to be omitted. Band directors claimed that block scheduling would decrease the number of children taking band. Since a course only lasts half a year, in order for students to take band all year long, they would end up with eight credits in band. Many schools using the 4 x 4 block not only did this but encouraged it.

The proponents of the 4 x 4 block schedule claimed that studies showed an increase in academic performance, an increase in student attendance, a decrease in student

discipline problems, and could cite research to support their views. Few teachers would oppose the possibility of such improvements in their classrooms. There are studies, however, that have shown no improvements in the above areas.

The research on the 4 x 4 block schedule included many studies concerning academic achievement, absenteeism and discipline. There appeared to be a shortage of research concerning the change in school environment after the implementation of 4 x 4 block scheduling. Research shows that stress, regardless of the cause, could be a detriment to job performance. There is a need for research to determine if implementing the 4 x 4 plan will reduce the stress levels in teachers and students.

This chapter provided a review of the literature and previous studies of 4 x 4 block scheduling. The next chapter will focus on research design and methodology.

CHAPTER THREE  
RESEARCH DESIGN AND METHODOLOGY

Design of the Study

This decision-oriented study was designed to provide a summative evaluation of the outcomes resulting from the 4 x 4 block schedule in an urban high school. Summative evaluations determine the effectiveness of a program and can be conducted when a program is fully developed (McMillan and Schumacher, 2001).

Of the different types of decision-oriented evaluation studies (needs assessment, program and input, implementation, process, outcome and product), the design of this study is based on both process and outcome. McMillan and Schumacher, (2001) described them this way:

Process evaluation provides information on the relative success of the various components of the program and the extent to which the objectives and products are achieved. The evaluator collects data that will lead to immediate program improvement. Data collection may require testing procedures and other methods. This kind of evaluation could also focus on the impact of program or other processes or programs. Process evaluation results in program modification. Outcome or product evaluation assesses the extent to which objectives were achieved. The data obtained include objective-based evaluation and other information from earlier evaluations. Previous information explains why the objectives were or were not achieved, and it helps the decision-maker to eliminate, modify, retain, or expand the program for wider use. The general worth of the program is determined by the way the outcomes it produces relate to the decisions regarding program certification and adoption (p.537).

Consequently, this study focused on (a) "relative

successes" of 4 x 4 block scheduling relative to student attendance, student achievement, school climate, student stress, and teacher burnout, (b) the extent to which a 4 x 4 block schedule positively influenced these four variables, and (c) the general worth of 4 x 4 block scheduling at the study site. Specifically, an ex-post facto design was used to examine academic achievement, absenteeism, and instructional practices. Academic achievement and student absenteeism data came from one source, Annual Scholastic Reports, which all schools receive at the end of a school year. Data concerning teacher instructional practices were examined after questionnaires were administered to students and teachers. The data from student instructional questionnaires were used to compare student perceptions of instructional practices with those of teachers. Questionnaires and surveys were also administered for the purpose of evaluating school climate, student stress, and teacher burnout levels.

The data collection steps in this study included: (a) examining academic achievement and absenteeism of students using grade audit reports from the 1993 to 1998 school years, (b) administering the *Instructional Practices Survey* (IPS) to students and teachers to see how instructional practices had changed, (c) surveying students and teachers using the *Classroom Environment Survey* (CES) to evaluate perceptions of school climate, (d) administering the *School Situation Survey* (SSS) to students in order to evaluate their stress levels, (e) measuring teacher burnout through use of the *Maslach Burnout Inventory* (MBI), and (f) interviewing teachers as to

their beliefs about the decision to implement block scheduling.

### Research Questions and Hypotheses

The research questions for this study were the following:

1. Did grade point averages (GPAs) change after the implementation of a 4 x 4 block schedule?
2. Did student absentee percentages (APs) change after the implementation of a 4 x 4 block schedule?
3. What were the instructional practices during block scheduling?
4. How did teachers and students perceive school climate in the 4 x 4 block schedule as measured by the *Classroom Environment Survey*?
5. What were the student stress levels in the 4 x 4 block schedule as measured by the *School Situation Survey*?
6. What were the teacher burnout levels in the 4 x 4 block schedule as measured by the *Maslach Burnout Inventory*?

The following hypotheses guided this study:

1. A comparison of pre and post 4 x 4 block scheduling will show a statistically significant improvement in student grade point averages.
2. Student absentee percentages (APs) will show a statistically significant decrease after implementation of block scheduling.
3. Teachers' instructional practice will change in order to accommodate the additional class time.
4. School climate will provide a supportive and

organized structure for teaching and learning when compared to the norm group of the *Classroom Environment Survey*.

5. Stress levels of students will fall into the low to medium range based on the norms of the *School Situation Survey* after the implementation of block scheduling.

6. Burnout levels of teachers will be at the low to average levels as determined by the *Maslach Burnout Inventory* after the implementation of block scheduling.

### Methodology

In this section of the dissertation, the procedures used to execute the study will be explained relative to (a) the population and sample, (b) instrumentation, (c) collection of the data, and (d) analysis procedures.

### Population and Sample

The site selected for this study was an urban, inner city high school with 1,228 students in grades 9 through 12. At the beginning of the study, the student body consisted of 971 (79.1%) African American students and 227 (20.9%) white students. The composition of the student body was relatively stable.

The faculty of the study site consisted of 20 (31.2%) African American and 44 (68.8%) white teachers. Table 1 shows the population and sample size used in each area of the study. The teachers used in one part of the study were not necessarily used in other parts of the study, however, the teachers who participated in the *Instructional Practices Survey* were also involved in the examination of GPA.

Table 1.

Population and Samples Selected for the study

	Population	Sample	Percentage
Student Body			
Instructional Practices Survey (S)	1228	480	39.0%
Classroom Environment Survey (S)	1228	200	16.0%
School Situation Survey	1228	200	16.0%
School Faculty			
Teacher's Grade Point Average	64	16	25.0%
Instructional Practices Survey (T)	64	16	25.0%
Classroom Environment Survey (T)	64	10	15.6%
Maslach Burnout Inventory	64	20	31.2%
Interviews	64	14	21.8%
S denotes student      T denotes teacher			

Teachers selected for the evaluation of grade point average were selected at random from faculty members that had been at the school for the window period, 1993-1994 through 1996-1997. Teachers for this part of the study were from the language arts, social studies, mathematics, science, and exceptional student education departments.

Instrumentation

This study used six instruments to measure instructional practice (teacher and student versions), classroom



environment (teacher and student versions), student stress, and teacher burnout. Table 2 shows the overall return rate and usable number of surveys that were returned. It should be

TABLE 2.

## Overall Return Rate and Usable Surveys

Survey	Surveys Dist.	Surveys Returned	% Returned	Usable Surveys	% of Surveys Usable
IPS (T)	16	9	56	8	89
IPS (S)	480	209	44	201	96
CES (T)	10	7	70	7	100
CES (S)	200	132	66	130	98
SSS	200	114	57	106	93
MBI	20	14	70	13	93
Total	926	485	52	466	96

S denotes student    T denotes teacher

noted that the *Instructional Practices Survey (S)*, *Classroom Environment Survey (S)*, and the *School Situation Survey* were to be completed by students, but the surveys were sent to teachers. When a teacher chose not to participate in the study, the return rate for the student version, as well as the teacher version of the survey, was reduced.

Validity and reliability of instruments. The *Instructional Practices Survey (IPS)* was developed by the researcher for this study to determine if instructional practices had changed after the implementation of block scheduling at the study site. One goal of implementing the

4 x 4 schedule was to train the faculty in ways to better use class periods that were 35 minutes longer than the previous class periods of 55 minutes. During the year prior to the implementation of block scheduling, the study site faculty were trained in the use of the Paideia Method, computers for instruction, and cooperative learning. The IPS was developed to provide a measure of those methods as well as other instructional strategies commonly used by teachers. The survey has one form for teachers and one form for students. Except for perspectives (i.e., teacher or student) the survey items are identical.

The IPS consisted of 44 items concerning instructional practices of teachers. Fifteen items related to strategies of Paideia, five items related to cooperative learning, two items concerning the use of computers, 10 items associated with the top 10 teaching strategies, five items relate to common teaching methods, and seven items related to higher order thinking skills. The IPS for teachers and for students can be found in Appendices B and C.

Content validity of the *Instructional Practices Survey* was established by taking items and constructs from experts in their fields of instructional practice as well as from research on instructional practices used in teaching. Sixteen items on the IPS were designed to address the Paideia Method. These items were based on a questionnaire developed by Dr. Robert Brazil, principal at Sullivan High School in Chicago (Brazil, 1987). After receiving extensive training in the Paideia Method, Dr. Brazil decided to implement the Paideia

Method at Sullivan High School. His questionnaire was designed to assess classroom instructional practices before and after the implementation of the Paideia Method at Sullivan High School. In addition, items for the IPS were taken from Holden and Bunte (1995), who described the use of the Paideia Method in their classrooms.

The five IPS items concerning cooperative learning were based on what cooperative learning is and isn't from research on cooperative learning (Borstein, 1995; James, 1989; Johnson & Johnson, 1989-1990; Slavin, 1987).

Survey items were used to determine the utilization of teaching strategies that Hootstein (1995) identified as the top ten motivational strategies used by teachers.

The seven remaining survey items were designed to determine the utilization of Higher Order Thinking Skills were based on the research of McCartney & Schrag (1990), Newman (1990a, 1990b), Onosko (1990), and Stevenson (1990).

The IPS(T) was pilot tested for reliability using randomly selected teachers from a nearby high school. Thirty teachers, all with a minimum of five years teaching experience, were asked to complete the IPS(T). Twenty teachers completed and returned the IPS(T). Reliability, using the split-half method was .93. The student version of the IPS(S) was pilot tested by administering the survey to 100 students in the same school where the teacher version was tested. Four randomly selected teachers were asked to administer the IPS(S) to twenty-five of their students. These 100 students represented grades 9 through 12. Eighty-five

students responded by returning the survey. Using the split-half method, the instrument's reliability was .85.

School climate was measured by having randomly selected teachers and their students complete the *Classroom Environment Survey* (Trickett & Moos, 1995). The CES is a 90 item questionnaire with nine social climate subscales. Test-retest reliability of individual scores on the nine subscales were obtained on 52 students in four classrooms. The students took the CES twice over a six week period. Reliability ranged from a low of .72 on the Rule Clarity subscale to a high of .90 on the Innovation subscale. Construct validity was examined by conducting interviews with teachers in 38 classes representatively sampled from two suburban schools. Data were obtained over a one month period on the amount of free class time and on the frequency with which student suggested topics were discussed. The CES authors also monitored the use of special materials and teaching aids. They also objectively identified methods of reward and punishment (Trickett & Moos, 1995).

Teacher burnout was measured using the *Maslach Burnout Inventory-Educators Survey* (MBI-ES). The MBI-ES was adapted from the MBI-HSS by changing the word "recipient" to "student". Maslach, Jackson, and Leiter (1996) estimated the internal consistency of the *Maslach Burnout Inventory - Human Services Survey* (MBI-HSS) using Cronbach's coefficient alpha ( $\underline{n} = 1316$ ). The reliability coefficients for the subscales were: .90 for Emotional Exhaustion, .79 for Depersonalization, and .71 for Personal Accomplishment.

Reliability data were also gathered using a test-retest method. Earlier studies by Jackson, Schwab and Schuler (1986), who used a sample of 248 teachers and a one year interval between tests, found the following test-retest reliabilities: .60 for Emotional Exhaustion, .54 for Depersonalization, and .57 for Personal Accomplishment. A study by Lee and Ashforth (1993), found test-retest correlations of .74, .72, and .65 respectively for the three subscales, after an eight month interval. A study by Leiter (1990) found test-retest coefficients of .59, .50, and .63 on a six month interval. Leiter and Durup (1996) found test-retest reliability coefficients of .75, .64, and .62, respectively, for a three month interval. There appeared to be a high degree of consistency within each subscale that did not diminish significantly from a period of three months to one year.

Convergent validity of the MBI-HSS was demonstrated in several ways. First, individual MBI-HSS scores were correlated with behavioral ratings made independently by someone who knew the individual well, such as a spouse or co-worker. Second, MBI-HSS scores were correlated with the presence of certain job characteristics that were expected to contribute to experienced burnout. Earlier studies by Iwanicki and Schwab (1981) and Gold (1984) used the three subscale structure of what became the MBI-ES. The Iwanicki and Schwab study found reliability, using Cronbach alpha estimates of .90 for Emotional Exhaustion, to be .76 for Depersonalization, and .76 for Personal Accomplishment.

Gold's study found estimates of .88, .74, and .72, respectively. These results paralleled the MBI-HSS reliability coefficients.

The *School Situation Survey* (SSS) is a 34-item instrument designed to assess school related stress in students in grade 4 - 12. The SSS consists of seven scores, four measure "sources" of stress and three measure "manifestations" of stress. Internal reliability of the seven measures ranged from .68 to .80 ( $\bar{n} = 7,036$ ). Test-retest reliability of .71 was determined over a three week period using a sample of seventh to ninth grade students ( $\bar{n} = 621$ ). Content validity was established by examining relevant literature and discussion with groups of students, parents, educators and specialists. Construct validity was established by factor analysis of 56 items with 907 students. Another factor analysis was done with 1,111 students. Seven factors were found to replicate the original constructs. The factors identified as sources of stress were teacher interactions, academic stress, peer interactions, and academic self-concept. Three factors showing manifestations of stress were emotional, behavioral, and physiological reactions. These seven factors and their 34 items constitute the SSS (Helms & Gable, 1989).

#### Collection of the Data

The data for this study concerning instructional practices, classroom environment, student stress and teacher burnout were gathered using questionnaires. The data for determining teacher grade point averages and attendance were

taken from the Annual Scholastic Report, yearly audit sheets provided by the school system at the end of each school year. The Annual Scholastic Reports showed the letter grade and the number of absences for each student in the class for all teachers in the school. A problem arose in locating Annual Scholastic Reports for the first year of block scheduling. Since the Annual Scholastic Reports are quite bulky, saving them from past years was not a high priority at the study site. Data from the Annual Scholastic Reports for the first year of block scheduling were not available. However, data from the second and third years of block scheduling were available.

Teacher grade point average data were collected for each of the teachers involved in the study. Their GPA for two years before block scheduling and GPA for two years during block scheduling were analyzed for statistical differences. These data were examined to determine whether students' grade point average by teacher changed significantly after the implementation of the 4 x 4 block schedule.

During the third year following the implementation of 4 x 4 scheduling, the *School Situation Survey* was provided, by the researcher, to 10 teachers who were asked to have 20 of their students complete the survey. The *Classroom Environment Survey* was similarly given to 14 teachers and 200 students. Twenty members of the faculty were asked to complete the *Maslach Burnout Inventory*.

Changes in instructional practice were examined by administering the *Instructional Practices Survey* to teachers

to determine their teaching practices before and two years after the implementation of block scheduling. Teachers were instructed, through professional development workshops, on how to use the Paideia Method, cooperative learning and computers prior to the implementation of block scheduling. Students in the classes of teachers selected for the study completed a similar survey in an attempt to determine if these instructional approaches were used in the classrooms.

After three years of 4 x 4 block scheduling, fourteen teachers were interviewed in order to obtain data concerning their perceptions of the study site following the implementation of block scheduling as well as their perceptions of block scheduling itself. These teachers were chosen at random based on the location of their school mailboxes. Mailboxes were numbered in order and numbers from a table of random numbers were selected. The mailboxes that matched the order of random numbers were the teachers chosen for interviews. The interviews were very informal and were held in the teachers' classroom after school hours. The interview followed the list of nine questions found in Appendix I. Data was collected by hand in note form for each question asked.

Near the end of the third year of block scheduling, the *Instructional Practice Survey (IPS)*, was administered to teachers selected to participate in the study who had been at the study site during the window period from 1993-1998. Their students were selected for administration of the student version of the IPS(S). The IPS(T) results served two



purposes. First, the results were compared with the results of the IPS(S) version to see if the students agreed with what the teacher believed was happening concerning classroom instructional practices. Second, teacher results were used to determine whether instructional practices had changed since the implementation of block scheduling.

During the last grading period of the third year on 4 x 4 block scheduling, ten teachers and twenty of their students were asked to complete the *Classroom Environment Survey*. Twenty teachers were asked to complete the *Maslach Burnout Inventory*. These teachers were selected at random by the alphabetical position of their names in the cabinet for teacher mailboxes. Two lists of numbers were selected from a random number table. The surveys were then put into the mailboxes of the teachers according to the numbers selected. The first mailbox starting with the top left was designated number one. The box below it was number two. This method was used until all of the surveys were distributed among the teachers. Some teachers were asked to do both surveys and some teachers were asked to do no surveys.

Student stress was measured using Helm's and Gable's (1989) *School Situation Survey* (SSS). This instrument was administered to 200 students by asking ten teachers to conduct the survey in their classes.

#### Analysis Procedures

Grade point average data were analyzed using the Macintosh version of MyStat statistical program. Data were first analyzed by comparing the GPA means derived from the

traditional schedule (seven period day) with the GPA means after the implementation of the 4 x 4 block schedule. Independent t-tests were used to determine if any of the differences in means were statistically significant. The results of the t-tests were interpreted to ascertain if there was a difference between pre- and post-block grade point averages.

Descriptive data, in the form of frequencies and means, from the surveys on instructional practices, stress, classroom environment, and teacher burnout were analyzed to evaluate stress levels and school climate.

As previously stated, fourteen teachers, six male and eight female, were interviewed in their classrooms after school hours in order to obtain their perspectives on block scheduling. Teacher responses to nine structured questions found in Appendix I were hand recorded. Responses were separated and categorized by question. Responses to each question were then arranged according to major themes and patterns. Conclusions were then drawn from the patterns and themes of teacher responses to individual questions.

Table 3 shows the methods of data collection and analysis for all variables examined in the study.

Table 3.

Methods of Data Collection and Analysis

Data	Population	Collection	Analysis
Academic Achievement	All Students	Annual Scholastic Report	Descriptive Data Independent T-test
Absenteeism	All Students	Annual Scholastic Report	Descriptive Data Independent T-test
Instructional Practices	Random Selection, 14 teachers	Survey (IPS)	Descriptive Data
School Climate	Random Selection, 10 teachers	Survey (CET)	Descriptive Data
Student Stress	200 students of randomly selected teachers	Survey (SSS)	Descriptive Data
Teacher Burnout	20 randomly selected teachers	Survey (MBI)	Descriptive Data
Teacher Satisfaction	14 randomly selected teachers	Interviews	Data reduced & organized by patterns & themes

Chapter Summary

This study examined the impact of block scheduling at an urban secondary school. The focus of the study was on six variables - grade point average, absenteeism, instructional practices, school climate, stress levels, teacher burnout, and teacher satisfaction with block scheduling.

Academic achievement and absenteeism data were obtained from the end of the year Annual Scholastic Reports for those

teachers who participated in the study.

Four valid and reliable instruments were used to collect data on four variables - instructional practices, school climate, stress levels, and teacher burnout. The *Instructional Practices Survey* was used to determine if teacher instructional methods changed after the implementation of block scheduling. Data from a student version of the survey were analyzed and compared to the post-block data from the teacher survey. School climate was examined by administering *Classroom Environment Survey* to teachers and students. Student stress data were obtained from the *School Situation Survey*. The *Maslach Burnout Inventory* was used to measure and evaluate burnout among participating teachers. Teachers were interviewed to find if they were satisfied with the implementation of block scheduling.

This chapter focused on the statistical tests that were conducted to determine the impact of the 4 x 4 block schedule at an urban secondary high school. The next chapter will present an analysis of the data collected during the study.

CHAPTER FOUR  
PRESENTATION AND ANALYSIS OF DATA

Introduction

The purpose of this study was to conduct an evaluation of the impact of 4 x 4 block scheduling at an urban high school in northeast Florida. Block scheduling at the study site was evaluated in terms of changes in academic achievement, absenteeism, teacher instructional practices, and student attendance. The study also examined school climate, stress levels of students, as well as teacher burnout levels. The following research questions formed the basis for the study:

1. Did grade point averages (GPAs) change after the implementation of a 4 x 4 block schedule?
2. Did student absentee percentages (APs) change after the implementation of a 4 x 4 block schedule?
3. Have instructional practices changed since the implementation of block scheduling?
4. How did teachers and students at the study site perceive school climate in the 4 x 4 block schedule?
5. What were the student stress levels in the 4 x 4 block schedule?
6. What were the teacher burnout levels in the 4 x 4 block schedule?

Table 4 shows a breakdown of the population that provided the data for this study. Fourteen teachers

participated in the study of GPA, AP, and instructional practices, however only eight of the fourteen teachers returned data on their instructional practices.

Eight teachers participated in the *Classroom Environment Survey*. One of those eight teachers did not return the teacher survey. CES results include data from eight classes, but only seven teachers.

The results of the *School Situation Survey* were based on data gathered from eight teachers and 106 of their students. The portion of the study concerning teacher burnout came from the fourteen teachers who returned their *Maslach Inventory*. These fourteen teachers were not the same teachers who participated in the study of GPA and AP.

The data for this study covered the period of time from 1993- 1998. This period included the two school years (1993-1994 and 1994-1995) before the implementation of block scheduling and will be referred to as Year 1 and Year 2, or pre-block when used in combination. Data were not available for the first year following the implementation of block scheduling. These data were missing from the schools records. The second and third years (1996-1997 and 1997-1998) following the implementation of block scheduling were examined in order to detect any changes in the variables being studied. The second and third years following the use of block scheduling are referred to as Year 3 and Year 4 individually or as post-block when referred to in combination.

Table 4.

Research population used in the study of block scheduling

	Number of Teachers	Pre-block Students	Post-block Students
<i>GPA &amp; AP</i>			
Math	4	792	610
Social Studies	2	506	227
Exceptional Special Education	2	211	168
English	2	385	288
Science	4	849	653
Total	14	2,743	1,946
<i>Instructional Practices Survey</i>			
Math	3		80
Social Studies	1		21
ESE	1		8
English	1		25
Science	2		37
Total	8		171
<i>Classroom Environment Survey</i>			
	a7		130
<i>School Situation Survey</i>			
Grade 9	1		43
Grade 10-12	7		63
Total	8		106
<i>Maslach Burnout</i>			
	14		-

<sup>a</sup>One teacher did not return teacher survey.

An ex-post facto design was used to examine academic achievement, absenteeism, and instructional practices. Academic achievement and student absenteeism data came from one source, Annual Scholastic Reports, which all schools receive at the end of a school year. Data concerning teacher instructional practices were examined after questionnaires were administered to students and teachers. The data from student instructional questionnaires were used to describe student and teacher perceptions of instructional practices. Questionnaires and surveys were also administered for the purpose of evaluating school climate, student stress, and teacher burnout levels.

#### Academic Achievement Findings

##### Grade Point Averages for Math Teachers

Math Teacher 1. Table 5 shows the GPA for all of the classes taught by Math Teacher 1. The research hypotheses for GPA stated there would be no change in GPA after the implementation of block scheduling. All statistics used an alpha level of .05. The GPA for all of Math Teacher 1's classes taught during the study period shows the pre-block mean GPA to be 1.30. Math Teacher 1's post-block GPA fell to 1.24. An independent two-tailed t-test found this decline not to be statistically significant,  $t(325) = .444$ ,  $p = .658$ .

Math teacher 2. The data for Math Teacher 2 came from 186 pre-block students and 177 post-block students, as shown in Table 5. The pre-block GPA for all classes taught was 1.06. The post-block GPA fell to .86. This decline was not found to be a statistically significant change,  $t(361) =$



1.67,  $p = .096$ .

Math Teacher 3. Data for Math Teacher 3 also showed a decline in GPA for the pre-block and post-block periods. Table 5 indicates GPA decreased from 1.38 to 1.22. Results of a two-tailed independent t-test found this decline not to be statistically significant,  $t(277) = 1.455$ ,  $p = .147$ .

Table 5.

Grade Point Averages for Math Teachers

	Pre-block			Post-block			Change
	Y1	Y2	Total	Y3	Y4	Total	
<u>Math Teacher 1</u>							
<u>n</u>	93	76	169	82	76	158	
Mean GPA	1.28	1.32	1.30	1.12	1.37	1.24	-0.06
<u>Math Teacher 2</u>							
<u>n</u>	76	110	186	94	83	177	
Mean GPA	0.86	1.20	1.06	1.02	0.69	0.86	-0.20*
<u>Teacher 2 (Algebra I)</u>							
<u>n</u>		10	10	94	93	177	
Mean GPA		1.70	1.70	1.02	0.69	0.86	-0.84*
<u>Math Teacher 3</u>							
<u>n</u>	74	117	191	44	44	88	
Mean GPA	1.57	1.27	1.38	1.36	1.07	1.22	-0.16
<u>Teacher 4</u>							
<u>n</u>	120	126	246	80	107	187	
Mean GPA	1.96	1.95	1.95	1.16	1.22	1.19	-0.76*

\*Significant difference at  $p < .05$

Math Teacher 4 . Table 5 indicates that Math Teacher 4 had results similar to the other three teachers in the study. Overall GPA for pre-block courses decreased from 1.95 to 1.19 for post-block GPA. An independent t-test with alpha at .05, showed this to be a statistically significant change,  $t(431) = -6.433$ ,  $p < .0005$ ,  $d = -.60$ .

#### Grade Point Averages for Social Studies Teachers

Social Studies Teacher 1. Students of Social Studies Teacher 1 made no improvement in GPA as shown in Table 6.

The overall GPA for all classes taught by Social Studies Teacher 1 actually decreased from 1.81 to 1.63. This overall decrease was not found to be a statistically significant change,  $t(328) = 1.223$ ,  $p = .221$ , at the .05 level. In American History, a slight increase in GPA was not found to be a statistically significant change,  $t(130) = .413$ ,  $p = .680$ .

Social Studies Teacher 2. The data for Social Studies Teacher 2 show that the pre-block and post-block GPAs were identical at 1.86.

Table 6.

#### Grade Point Averages for Social Studies Teachers

	Pre-block			Post-block			Change
	Y1	Y2	Total	Y3	Y4	Total	
<u>Social Studies Teacher 1</u>							
<u>n</u>	118	101	219	65	46	111	
Mean GPA	1.76	1.87	1.81	1.49	1.83	1.63	-0.18

(table continues)

Table 6.(Continued)

Grade Point Averages for Social Studies Teachers

	Pre-block			Post-block			Total Change
	Y1	Y2	Total	Y3	Y4	Total	
Social Studies Teacher 1							
<u>n</u>	143	144	287	51	65	116	
Mean GPA	1.68	2.05	1.86	1.82	1.89	1.86	0

\*Significant difference at  $p < .05$

In summary, the results for Social Studies were mixed. for the two teachers involved with the study. Social Studies Teacher 1 showed a slight drop, .18, in GPA. Social Studies Teacher 2 showed no change in GPA.

Grade Point Averages for Exceptional Student Education (ESE) Teachers

ESE Teacher 1. ESE teachers seemed to show consistent results in terms of GPA. Table 7 shows that the GPA for all classes taught by ESE Teacher 1 increased from 1.65 during the pre-block period to 1.89 in the post-block period. This increase, however, was not found to be a statistically significant increase,  $t(172) = 1.13$ ,  $p = .261$ .

ESE Teacher 2. Table 7 indicates that courses taught by ESE Teacher 2 showed very little change in GPA from the pre-block period to the post-block period. This teacher's GPA went from 1.61 to 1.54, which was not a statistically significant change,  $t(203) = .334$ ,  $p = .739$ .

Table 7.

Grade Point Averages for ESE Teachers

	Pre-block			Post-block			Change
	Y1	Y2	Total	Y3	Y4	Total	
ESE Teacher 1							
<u>n</u>	58	46	104	28	42	70	
Mean GPA	1.86	1.39	1.65	1.94	1.83	1.89	+0.24
ESE Teacher 2							
<u>n</u>	49	58	107	21	77	98	
Mean GPA	1.59	1.62	1.61	3.24	1.08	1.54	-0.07

\*Significant difference at  $p < .05$

Grade Point Average for English Teachers

English Teacher 1. Table 8 shows that overall GPA in English Teacher 1's courses decreased slightly from 1.40 to 1.37, which was not a statistically significant change,  $t(214) = .223$ ,  $p = .830$ .

Table 8.

Grade Point Averages for English Teachers

	Pre-block			Post-block			Change
	Y1	Y2	Total	Y3	Y4	Total	
English Teacher 1							
<u>n</u>	47	47	94	78	44	122	
Mean GPA	1.57	1.23	1.4	1.37	1.36	1.37	-0.03
English Teacher 2							
<u>n</u>	153	138	291	67	99	166	
Mean GPA	2.08	2.12	2.10	1.73	1.92	1.70	-0.40*

\*Significant difference at  $p < .05$

English Teacher 2. The overall GPA for English Teacher 2 decreased from 2.1 to 1.70, as shown in Table 8. The decrease in GPA was found to be statistically significant,  $t(455) = 3.689$ ,  $p < 0.0005$ ,  $d = .36$ .

#### Grade Point Averages for Science Teachers

Science Teacher 1. Table 9 shows that Science Teacher 1 had nearly the same overall GPA during both periods of study. The pre-block GPA was 1.30 while the post-block GPA was 1.29.

Science Teacher 2. Table 9 shows that the overall GPA for Science Teacher 2 made a slight increase from 1.65 to 1.71, which was not a statistically significant increase.

Science Teacher 3. Table 9 indicates a drop in overall GPA for Science Teacher 3. The pre-block GPA of 1.62 fell to 1.27. This drop was found to be statistically significant,  $t(377) = 3.029$ ,  $p = .003$ ,  $d = .31$ .

Science Teacher 4. Table 9 shows that Science Teacher 4's overall GPA for the period of study decreased from 1.78 to 1.36. A two-tailed independent t-test found this drop in GPA to be statistically significant,  $t(427) = 3.005$ ,  $p = .003$ ,  $d = .29$ .

Table 9.

## Grade Point Averages for Science Teachers

	Pre-block			Post-block			Change
	Y1	Y2	Total	Y3	Y4	Total	
Science Teacher 1							
<u>n</u>	88	112	200	74	59	133	
Mean GPA	1.51	1.34	1.30	1.15	1.48	1.29	-0.01
Science Teacher 2							
<u>n</u>	59	114	203	80	78	158	
Mean GPA	1.62	1.68	1.66	1.91	1.50	1.71	-0.05
Science Teacher 3							
<u>n</u>	126	92	218	79	82	161	
Mean GPA	1.70	1.50	1.62	1.23	1.32	1.27	-0.35*
Science Teacher 4							
<u>n</u>	93	135	228	102	99	201	
Mean GPA	1.77	1.48	1.78	1.66	1.06	1.36	-0.42*

\*Significant difference at  $p < .05$

In summary, the data for all math teachers in the study show decreases in GPA. The decreases ranged from a scant .06 to a high of .76.

The results for the two social studies teachers found one teacher with a .18 drop in overall GPA. The other social studies teachers had no change in overall GPA.

The ESE teachers in the study showed small changes, which were not statistically significant, in their overall GPAs. Grade point average for one teacher increased from 1.65 to 1.89 while the other fell from 1.61 to 1.54.

The data for the two English teachers show a decrease in the overall GPA of their courses. The decrease for English Teacher 1 was only .03. The GPA decrease for English Teacher 2 was statistically significant.

The data for the science teachers indicate that their GPAs all decreased. Science Teachers 1 and 2 had decreases that ranged from .01 to .05, both of which were statistically insignificant. Science Teachers 3, and 4 had statistically significant GPA decreases ranging from .35 to .45.

### Absenteeism

#### Absentee Percentages for Math Teachers

Math Teacher 1. Table 10 shows the AP for all of the classes taught by Math Teacher 1. The research hypotheses for AP stated there would be no change in AP after the 4 x 4 block scheduling was implemented. Absentee percentage for the pre-block period was 15.3%. Post-block absenteeism increased to 18%, which was not a significant increase,  $t(325) = -1.68, p = .092$ .

Math Teacher 2. Absenteeism for all classes taught by Math Teacher 2 increased from 21.10% to 27.70%. This increase in absenteeism was found to be statistically significant,  $t(361) = -3.294, p = .001, d = -.17$ .

Math Teacher 3. Table 6 indicates AP for all courses taught by this teacher increased from 11.30 during the pre-block period to 16.30 during the post-block period. This increase in absentee percentage was found to be significant,  $t(277) = -2.984, p = .003, d = -.38$ .

Table 10.

Absentee Percentage for Math Teachers

	Pre-block			Post-block			Change
	Y1	Y2	Total	Y3	Y4	Total	
<u>Math Teacher 1</u>							
<u>n</u>	93	76	169	82	76	158	
Mean AP	15.60	15.30	15.00	16.50	19.60	18.00	+2.70
<u>Math Teacher 2</u>							
<u>n</u>	76	110	186	94	83	117	
Mean AP	23.50	19.40	21.10	24.50	31.90	27.70	+6.60*
<u>Math Teacher 3</u>							
<u>n</u>	74	117	191	44	44	88	
Mean AP	11.30	11.30	11.30	15.50	17.00	16.30	+5.00*
<u>Math Teacher 4</u>							
<u>n</u>	120	126	246	80	107	187	
Mean AP	18.02	13.51	15.71	23.51	21.79	22.52	+6.81*

\*Significant difference at  $p < .05$

Math Teacher 4. Table 10 indicates that absenteeism increased for Math Teacher 4 also. An independent t-test, with alpha at .05, found the rise in absenteeism for all classes, from 15.71% to 22.52% to be statistically significant,  $t(431) = -4.55$ ,  $p < .0005$ ,  $d = -.42$ .

Absentee Percentages for Social Studies Teachers

Social Studies Teacher 1. Two social studies teachers participated in the study. Table 11 shows there was an overall increase of absenteeism for the classes taught by Social Studies Teacher 1. This increase, 17.93% to 18.66%,



was not found to be statistically significant,  $t(328) = .373$ ,  $p = .710$ .

Social Studies Teacher 2. Table 11 shows absenteeism increased from 18.62% to 27.43%. Using an independent t-test, the increase was found to be significant,  $t(401) = 4.144$ ,  $p < 0.0005$ ,  $d = .45$ .

Table 11.

Absentee Percentage for Social Studies Teachers

	Pre-block			Post-block			Change
	Y1	Y2	Total	Y3	Y4	Total	
<u>Social Studies Teacher 1</u>							
$n$	118	101	219	65	46	111	
Mean AP	18.78	16.94	17.93	18.83	18.41	18.66	+0.73
<u>Social Studies Teacher 2</u>							
$n$	143	144	287	51	65	116	
Mean AP	21.31	15.95	19.62	29.95	25.42	27.43	+7.81*

\*Significant difference at  $p < .05$ .

Absentee Percentages for Exceptional Student Education (ESE) Teachers

ESE Teacher 1. Table 12 shows that absenteeism for ESE Teacher 1 increased from 26.55% to 32.62%. This increase was not found to be significant,  $t(172) = 1.78$ ,  $p = .076$ .

ESE Teacher 2. Table 12 indicates the absentee rate during the pre-block years was 23.12%. The post-block absentee rate rose to 32.69%, which was a statistically significant increase,  $t(203) = 3.280$ ,  $p = .001$ ,  $d = .46$ .

Table 12.

Absentee Percentages for ESE Teachers

	Pre-block			Post-block			Change
	Y1	Y2	Total	Y3	Y4	Total	
<u>ESE Teacher 1</u>							
<u>n</u>	58	46	104	28	42	70	
Mean AP	25.69	27.57	26.52	34.09	31.64	32.62	+10.10
<u>ESE Teacher 2</u>							
<u>n</u>	49	58	107	21	77	98	
Mean AP	26.91	27.92	27.44	32.89	47.78	37.14	+9.70*

\*Significant difference at  $p < .05$

Absentee Percentages for English Teachers

English Teacher 1. Table 13 shows the overall absentee percentage for this teacher rose from 18.82% to 24.07%, which was found to be a significant change,  $t(214) = 2.068$ ,  $p = .040$ ,  $d = .27$ .

English Teacher 2. The overall AP for English Teacher 2 rose from 13.20 during pre-block to 23.16 after the implementation of the block schedule. This increase in absenteeism was found to be significant,  $t(455) = 6.712$ ,  $p < .0005$ ,  $d = .65$ .

Table 13.

Absentee Percentage for English Teachers

	Pre-block			Post-block			Change
	Y1	Y2	Total	Y3	Y4	Total	
<u>English Teacher 1</u>							
<u>n</u>	47	47	94	78	44	122	
Mean AP	18.68	18.97	18.82	26.51	19.75	24.07	+5.25*
<u>English Teacher 2</u>							
<u>n</u>	153	138	291	67	99	166	
Mean AP	14.79	11.45	13.20	20.28	25.11	23.16	+9.96*

\*Significant difference at  $p < .05$

Absentee Percentages for Science Teachers

Science Teacher 1. Table 14 shows that Science Teacher 1 had an increase in absenteeism from 18.82% to 29.18% for all classes overall. This increase was statistically significant,  $t(331) = 5.115$ ,  $p < 0.0005$ ,  $d = 57$ .

Science Teacher 2. Table 14 shows that the overall absentee rate for Science Teacher 2 increased from 14.65% to 16.90%. This increase in absenteeism was not found to be a statistically significant increase.

Science Teacher 3. The data for Science Teacher 3, shown in Table 14, indicate that overall absenteeism for courses taught by Science Teacher 3 increased from 14.54% to 20.82%, which was found to be statistically significant,  $t(377) = 3.806$ ,  $p < 0.0005$ ,  $d = .40$ . The absentee rates for Biology I (Honors) and Chemistry I courses, 9.07% and 9.04%, were well below the pre-block overall mean of 14.54 %.

Science Teacher 4. Table 14 shows that Science Teacher 4's overall absentee rate increased from 20.05% during the pre-block period to 25.00% during the post-block period. This increase was found to be significant,  $t(427) = 2.580$ ,  $p = .010$ ,  $d = .25$ .

Table 14.

Absentee Percentages for Science Teachers

	Pre-block			Post-block			Change
	Y1	Y2	Total	Y3	Y4	Total	
<u>Science Teacher 1</u>							
<u>n</u>	88	112	200	74	59	133	
Mean AP	18.00	19.47	18.82	29.99	28.17	29.18	+10.36*
<u>Science Teacher 2</u>							
<u>n</u>	89	114	203	80	78	158	
Mean AP	17.20	12.66	14.65	17.17	16.62	16.90	+2.25
<u>Science Teacher 3</u>							
<u>n</u>	126	92	218	79	82	161	
Mean AP	14.14	15.10	14.54	19.63	21.97	20.82	+6.28*
<u>Science Teacher 4</u>							
<u>n</u>	93	135	228	102	88	201	
Mean AP	17.58	21.75	20.05	24.19	25.84	25.00	+4.95*

\*Significant difference at  $p < .05$

In summary, absenteeism increased for all four math teachers in the study. Not one math course that was taught during the pre- and post-block period showed a decrease in absenteeism. Absenteeism for both social studies teachers increased, also. One teacher had a slight .73% increase while

the other had a rather substantial increase of 8.81%.

Two ESE teachers were included in this part of the study. Both teachers' courses showed an increase in absenteeism. ESE Teacher 1 had absenteeism increase by 6.5% and ESE Teacher 2 had an increase in absenteeism of 6.1%.

Data from two English teachers show a significant increase in absentee rates overall.

The Science data for absenteeism indicate that all four science teachers had an increase in absenteeism in their pre and post-block courses. The increases for three of these teachers were statistically significant.

#### Instructional Practices

The fourteen teachers whose classes were included in the study of GPA and absenteeism were asked to complete an *Instructional Practices Survey* for themselves and to have one of their classes to do so also. The *Instructional Practices Survey* for teachers and students can be found in Appendices B and C. Eight teachers returned the survey. For comparison purposes, those teachers were Math Teachers 1, 2, and 4, Social Studies Teacher 1, Exceptional Student Education Teacher 2, English Teacher 4, and Science Teachers 1 and 4.

The instructional practices of the teachers involved in the study were measured using the *Instructional Practices Survey* (IPS). The IPS consisted of 44 items related to strategies of Paideia (15), cooperative learning (5), computers (2), the top 10 teaching strategies (10), five common teaching methods (5), and higher order thinking skills (7).

Teacher and student responses ranged from 1 to 5. A response of 1 indicated the teacher "never" used that practice, 2 shows the practice was used 'rarely' and 3 indicated the practice was used "sometimes." Four indicated that a practice was used "most of the time" and a 5 indicated a practice was used "always."

Math teacher 1. Table 15 shows that, overall, Math Teacher 1 made small changes in methodology after implementing block scheduling, but none of the changes appear to be dramatic changes. After block scheduling was implemented, this teacher used the Paideia method slightly more often. Student IPS results show that they perceive Paideia was used somewhat less than what the teacher claimed. Cooperative learning was used more often after the change to block scheduling. Use of the top ten strategies remained at less than "rarely." The use of the common methods remained in use "most of the time." The use of higher order thinking methods increased in usage to more than "some of the time." There was not a great difference between the teacher's perception of methodology used and that of the students.

Table 15.

Instructional Practices Data for Math Teacher 1

Method	Teacher		Student Perception <u>n</u> = 28
	Pre- Block	Post- Block	
<u>Paideia</u>			
Subscale Mean ( <u>M</u> )	2.93	3.26	3.12

(table continues)

Table 15. (table continued)

Instructional Practices Data for Math Teacher 1

Method	Teacher Pre- Block	Post- Block	Student Perception <u>n</u> = 28
Cooperative Learning			
Subscale Mean ( <u>M</u> )	1.40	2.20	2.14
Computers			
Subscale Mean ( <u>M</u> )	1.50	1.00	1.26
Top Ten Strategies			
Subscale Mean ( <u>M</u> )	1.40	1.40	1.62
Common Methods			
Subscale Mean ( <u>M</u> )	4.00	4.00	3.69
Higher Order Thinking			
Subscale Mean ( <u>M</u> )	2.85	3.43	3.41

Math teacher 2. Table 16 shows that the instructional practices of Math Teacher 2 changed very little after the implementation of block scheduling. The students of this teacher appear to agree with the teachers perception of the methodology being used. The use of cooperative learning increased from "never" to "rarely." Cooperative learning was one of the areas in which teachers were trained prior to implementing the block schedule. High order thinking skills remained in use, but only less than "sometimes."

Table 16.

<u>Instructional Practices Data for Math Teacher 2</u>			
Method	Teacher Pre- Block	Post- Block	Student Perception $\underline{n} = 23$
Paideia			
Subscale Mean ( $\underline{M}$ )	3.00	3.06	2.47
Cooperative Learning			
Subscale Mean ( $\underline{M}$ )	1.00	2.00	2.09
Computers			
Subscale Mean ( $\underline{M}$ )	1.00	1.00	1.36
Top Ten Strategies			
Subscale Mean ( $\underline{M}$ )	1.00	1.00	1.50
Common Methods			
Subscale Mean ( $\underline{M}$ )	2.80	2.60	2.87
Higher Order Thinking			
Subscale Mean ( $\underline{M}$ )	2.71	2.71	2.62

Math teacher 4. Table 17 shows the results of the *Instructional Practices Survey* for Math Teacher 4. This teacher made some increases in the use of the methods on the survey, but claimed to be using Paideia and cooperative learning more than "sometimes" before using block scheduling. The common methods and higher order thinking were used "always" and "most of the time" respectively.

The frequency of the use of Paideia, cooperative



learning, common methods, and higher order thinking claimed by Math Teacher 4 were not supported by student data. Teacher and students were closest in agreement only in the use of computers.

Table 17.

Instructional Practices Data for Math Teacher 4

Method	Teacher Pre- Block	Post- Block	Student Perception <u>n</u> = 29
Paideia			
Subscale Mean ( <u>M</u> )	3.53	4.00	2.64
Cooperative Learning			
Subscale Mean ( <u>M</u> )	3.60	4.20	2.58
Computers			
Subscale Mean ( <u>M</u> )	1.00	3.00	3.26
Top Ten Strategies			
Subscale Mean ( <u>M</u> )	1.00	1.60	2.02
Common Methods			
Subscale Means ( <u>M</u> )	5.00	5.00	2.86
Higher Order Thinking			
Subscale Mean ( <u>M</u> )	4.0	4.43	2.89

Social Studies Teacher 1. Table 18 shows data compiled for Social Studies Teacher 1. The use of Paideia and cooperative learning increased. The use of computers and the common methods were the only methodologies that did not show an increase in usage. The use of the common methods actually decreased. The use of higher order thinking increased beyond "most of the time", although students felt it was used only more than "sometimes."

Table 18.

Instructional Practices Data for Social Studies Teacher 1

Method	Teacher		Student Perception <u>n</u> = 21
	Pre-Block	Post-Block	
Paideia			
Subscale Mean ( <u>M</u> )	3.26	4.00	3.45
Cooperative Learning			
Subscale Mean ( <u>M</u> )	2.40	3.20	3.51
Computers			
Subscale Mean ( <u>M</u> )	1.00	1.00	1.31
Top Ten Strategies			
Subscale Mean ( <u>M</u> )	1.50	1.80	2.07
Common Methods			
Subscale Mean ( <u>M</u> )	4.40	3.00	2.86
Higher Order Thinking			
Subscale Mean ( <u>M</u> )	4.00	4.57	3.63

ESE Teacher 2. Table 19 shows data gathered from ESE Teacher 2. The student information came from a Science and Employability Skills class for Special Education students. Eight students and ESE Teacher 2 were surveyed.

Table 19.

Instructional Practices Data for ESE Teacher 2

Method	Teacher Pre- Block	Post- Block	Student Perception <u>n</u> = 8
Paideia			
Subscale Mean ( <u>M</u> )	3.47	3.67	3.00
Cooperative Learning			
Subscale Mean ( <u>M</u> )	3.40	3.60	2.80
Computers			
Subscale Mean ( <u>M</u> )	1.00	1.00	1.06
Top Ten Strategies			
Subscale Mean ( <u>M</u> )	2.90	3.40	2.38
Common Methods			
Subscale Mean ( <u>M</u> )	3.40	3.80	3.40
Higher Order Thinking			
Subscale Mean ( <u>M</u> )	3.71	3.85	3.30

The data show that increases were made in all of the methodologies surveyed except computers. Computers were not

available for the classes of ESE Teacher 2, therefore no change was indicated. Student survey results supported the responses of the teacher.

This teacher reported to use the top ten strategies more than "sometimes" after block scheduling was implemented, but students felt they were used less than "sometimes." Higher order thinking and the common methods were used more than "sometimes" before block scheduling and both increased slightly after the start of block scheduling.

English teacher 4. Table 20 shows data compiled from the *Instructional Practice Survey* completed by English Teacher 4. Student data came from the returned surveys of twenty-five 9th grade students taking English I.

The instructional practices of English Teacher 4 changed very little after the implementation of block scheduling. This lack of change appears to be due to the high amount of use of the surveyed practices even before block scheduling.

According to English Teacher 4, Paideia methodology was used quite often before and after implementing block scheduling. The students appear to agree that instructional practices of Paideia were in use after the implementation of block scheduling.

English Teacher 4 did not change instructional practice concerning cooperative learning. The students reported, however, that cooperative learning was used more often than did the teacher.

The teacher did not use computers. A note on the teacher survey stated that there were not enough computers for

classes of 38 and 39 students to use them. Student data support the teacher's response of using no computers.

Table 20.

Instructional Practices Data for English Teacher 4

Method	Teacher		Student
	Pre-Block	Post-Block	Perception <u>n</u> = 8
Paideia			
Subscale Mean ( <u>M</u> )	4.06	4.13	4.22
Cooperative Learning			
Subscale Mean ( <u>M</u> )	3.20	3.20	3.79
Computer			
Subscale Mean ( <u>M</u> )	1.5	1.0	1.00
Top Ten Strategies			
Subscale Mean ( <u>M</u> )	2.60	2.70	3.34
Common Methods			
Subscale Mean ( <u>M</u> )	4.20	4.20	4.04
Higher Order Thinking			
Subscale Mean ( <u>M</u> )	4.42	4.42	4.05

According to English Teacher 4, the top ten strategies were used more than "rarely" but less than "sometimes." Student responses showed the top ten strategies to used more than "sometimes."

This English teacher indicated no changes in the use of the common methods listed on the survey. The common methods were used more than "most of the time", although students reported slightly less use of these methods.

Survey results indicated that English Teacher 4 used higher order thinking more than "most of the time" before and after the implementation of block scheduling.

Science teacher 1. Table 21 shows *Instructional Practice Survey* results for Science Teacher 1. The class surveyed was an Earth Science class. Fifteen students returned survey forms. Of those 15 students, most were 9th graders, but there were some of all grades in the class.

Results of the *Instructional Practice Survey* indicated that Science Teacher 1 made more use of Paideia methodology. after the implementation of block. The students agreed that Paideia was used, but not to the extent claimed by the teacher.

Science Teacher 1 increased the use of cooperative learning to "most of the time", although students felt it was used less often.

This science teacher made no changes concerning the use of computers. Computers were used just more than "sometimes" before and after implementing block scheduling. Students were in agreement with the teacher concerning the use of computers.

This teacher increased the use of the top ten strategies subscale. Students felt these methods were used less often than what the teacher indicated.

Table 21.

Instructional Practices Data for Science Teacher 1

Method	Teacher Pre- Block	Post- Block	Student Perception <u>n</u> = 15
Paideia			
Subscale Mean ( <u>M</u> )	3.80	3.93	3.44
Cooperative Learning			
Subscale Mean ( <u>M</u> )	3.80	4.00	3.49
Computer			
Subscale Means ( <u>M</u> )	3.50	3.50	3.43
Top Ten Strategies			
Subscale Means ( <u>M</u> )	3.20	3.70	3.26
Common Methods			
Subscale Means ( <u>M</u> )	2.40	2.40	2.76
Higher Order Thinking			
Subscale Means ( <u>M</u> )	4.57	4.57	3.77

An examination of the survey results concerning the use of common methods for this teacher indicated no change after the implementation of block scheduling. Students reported slightly more use of the common methods than did the teacher.

In the area of higher order thinking, Science Teacher 1 made no changes in instruction. The subscale mean was 4.57, which is more than "most of the time." The students reported higher order thinking skills to be used only more than

"sometimes."

Science teacher 4. Table 22 shows Instructional Practice Survey results for Science Teacher 4. The class surveyed was a Biology class made up of 15 ninth graders and 7 tenth graders.

Science Teacher 4 used all of the surveyed subscales, except for computer use, less often after the implementation of block scheduling. Computers were not used before or after block scheduling.

Teacher and students were in agreement concerning the amount of Paideia methods used. Both reported Paideia in use only slightly more than "sometimes".

Science Teacher 4 used cooperative learning to some degree before scheduling. After the implementation of block scheduling, cooperative learning was "never" used for instruction, according to this teacher. Students reported cooperative learning techniques to be used, but only a slightly more than "rarely." Cooperative learning was one of the areas of training provided for teachers before starting block scheduling.

This science teacher claimed to use the top ten strategies less than "rarely", but the students thought these methods were used more than "rarely."

Science Teacher 4 indicated a decrease in the use of the common methods. The decrease went from mean of 3.40 to 3.20 for this subscale. The students reported a subscale mean of 3.47.



Table 22.

Instructional Practices Data for Science Teacher 4

Method	Teacher Pre- Block	Post- Block	Student Perception <u>n</u> = 22
Paideia			
Subscale Mean ( <u>M</u> )	3.47	3.20	3.21
Cooperative Learning			
Subscale Mean ( <u>M</u> )	2.40	1.00	2.25
Computer			
Subscale Mean ( <u>M</u> )	1.00	1.00	1.50
Top Ten Strategies			
Subscale Mean ( <u>M</u> )	2.50	1.80	2.29
Common Methods			
Subscale Mean ( <u>M</u> )	3.40	3.20	3.47
Higher Order Thinking			
Subscale Mean ( <u>M</u> )	4.57	4.57	3.36

Higher order thinking methodology was an area where Science Teacher 4 made no changes. The subscale mean remained at 4.57. Student data indicate a subscale mean of 3.36, which means they feel higher order thinking skills are used less than the teacher indicates.

Summary of IPS results. Eight teachers participated in the examination of instructional practices. The *Instructional Practices Survey* was divided into six subscale methods of

Paideia, cooperative learning, computers, top ten strategies, common methods, and higher order thinking. Teachers and students were asked to rate the usage of the different items in each subscale as 1 (never), 2 (rarely), 3 (sometimes), 4 (most of the time) and 5 (always). The entire *Instructional Practices Survey* is shown in Appendix B.

The *Instructional Practices Survey* contained six subscales and was completed by eight teachers, for a total of 48 areas that could show change. Teacher instructional practices increased in 25 of the areas, decreased in eight of the areas, and remained the same in 15 areas. The school faculty received training in the use of Paideia, classroom computers, and cooperative learning prior to the implementation of block scheduling. The IPS results found increases in the use Paideia and cooperative learning. The use of computers did not increase after the implementation of the block schedule, except for one teacher.

Five teachers increased their use of the top ten strategies, but only two teachers used them more than "sometimes."

The common methods of instruction showed little increase in usage. All but one teacher were using these methods before block scheduling. Two teachers used the common methods "most of the time" and one used them "always."

Survey results indicate little change in the subscale of higher order thinking. This was due to the fact that most of the teachers were already using the higher order thinking methods before beginning the use of the block schedule.

### School Climate

School Climate was evaluated using the Classroom Environment Scale developed by Trickett and Moos (1995). Kelley (1980) stated that social climate in a classroom to be the norms, beliefs, and attitudes that are evidenced in the condition, events and practices of a school. Any school or any classroom may have its own patterns and conditions that will affect learning in positive or perhaps negative ways. Brookover, Gigliotti, Henderson, and Schneider (1973) identified four student factors that accounted for the differences in levels of school achievement. These four factors were (1) student perceptions of the present evaluation-expectations of "others" (parents, teachers, and friends); (2) student perceptions of the future evaluations-expectations of "others" (parents, teachers, and friends); (3) student perceptions about the level of feelings of futility (sense of control); and (4) student perceptions of those academic norms stressing academic achievement in their school system. Six teacher factors were identified. These were (1) teacher present evaluations-expectations of their students; (2) teacher future evaluations-expectations of their students; (3) teacher perceptions of parent-student push for education achievement; (4) teacher-reported push of individual students; (5) teacher satisfaction; and (6) teacher perceptions of the social system belief in student improbability.

The Classroom Environment Scale contains three subscales: (1) relationship dimensions, (2) personal

growth/Goal Orientation dimensions, and (3) system maintenance and change dimensions. The dimension of relationship has three subscales. The subscales are described in Table 23. The subscales of the CES seem to fit fairly well with the variables identified by Brookover, Gigliotti, Henderson, and Schneider (1973).

Table 23.

CES Subscales and Descriptions

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Relationship Dimension

1. Involvement - the extent to which students are attentive and interested in class activities, participate in discussions, and do additional work on their own.
2. Affiliation - the friendship students feels for each other, as expressed by getting to know each other, helping each other work with homework, and enjoying working together.
3. Teacher Support - the help and friendship the teacher shows toward students; how much the teacher talks openly with students, trusts them, and is interested in their ideas.

Personal Growth/Goal Orientation

4. Task Orientation - the emphasis on completing planned activities and staying on the subject matter.
  5. Competition - how much students compete with each other for grades and recognition and how hard it is to achieve good grades.
- 

(table continues)

Table 23. (continued)

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CES Subscales and Descriptions


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## System Maintenance and Change Dimensions

6. Order and Organization - the emphasis on students behaving in an orderly and polite manner and on the organization of assignments and activities.
  7. Rule clarity - the emphasis on establishing and following a clear set of rules and on students knowing what the consequences will be if they do not follow them; the extent to which the teacher is consistent in dealing with students who break rules.
  8. Teacher Control - how strict the teacher is in enforcing the rules, the severity of punishment for rule infractions, and how much students get into trouble in the class.
  9. Innovation - how much students contribute to planning classroom activities, and the extent to which the teacher uses new techniques and encourages creative thinking.
- 

Classroom Environment Survey - Teachers & Students.

Table 24 shows a summary of the CES results for all the students and teachers involved in the study of classroom environment. The students rated their classes as above the norm in all but three areas. Those areas were Affiliation, Teacher Support, and Innovation. Even though these three subscales were below average, on the standard scales, they were still very near the norm.

The teachers rated the classrooms above average in only three areas, Task Orientation, Competition, and Rule Clarity.

The areas, though, were still very near the average on the standard scale. The lowest scale score for the teachers was 44 in the area of Innovation, which would seem to be a reflection on themselves and their methods of teaching.

The teachers felt their students were adequately on task and oriented and that the rules were made clear, which may have accounted for their high rating in teacher control.

Table 24.

CES Form R Means and Standard Scores Students & Teachers

	<sup>a</sup> Raw Score Means		<sup>b</sup> Standard Score Means	
	Students ( $\underline{n} = 130$ )	Teacher ( $\underline{n} = 7$ )	Students	Teacher
Involvement	5.4	6.0	51	47
Affiliation	6.4	7.0	49	49
Teacher Support	6.4	7.7	48	49
Task Orientation	6.8	7.9	53	54
Competition	5.4	6.0	51	51
Order and Organization	5.9	5.9	50	46
Rule Clarity	6.9	9.3	57	56
Teacher Control	5.2	6.6	59	63
Innovation	4.8	3.9	49	44

<sup>a</sup>Norm = 5. <sup>b</sup>Norm = 50.

### Stress in the School Environment

Students spend one-third of their waking hours in school, thereby making school a significant part of their lives. Certain aspects of school can cause stress, tension, or anxiety and comes from situations that threaten the self-esteem, security and safety of students (Helms & Gable, 1989). Everyone connected to a school brings stress into the classroom. Students and teachers both bring stress to school. Sources of stress that come from outside the school are often out of the control of the school. The sources of stress within the school, however, may or may not be controllable by school personnel. Regardless of whether the stress can be controlled or not, it could be harmful to the learning and teaching process. How parents and teachers help students cope with stress could make a difference in the self-esteem of the student which, in turn, could affect the academic performance of students (Swick, 1987). Many of the results stemming from stress are considered to be poor behavior in the school setting. Students who are having a hard time dealing with stress often become inattentive in class, sarcastic, and lash out in some way at their teachers and peers. Some students may even exhibit physical ailments such as headaches and fatigue. The sources of stress, if determined, may be able to be corrected or at least dealt with in some way (Helms & Gable, 1989).

The *School Situation Survey* (SSS) was designed to help determine sources of stress within the school. The SSS is comprised of two scales, the sources of stress and the

manifestations of stress. The sources of stress are further divided into four subscales, teacher interaction, academic stress, peer interaction, and academic self-concept. The manifestations of stress are divided into three subscales measuring emotional, behavioral and physiological reactions to stress. Students responded to school situations described in the survey by indicating the regularity (i.e., 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Always) the situations apply to them.

Two hundred SSS forms were distributed to ten teachers for administration in their classroom. Six teachers returned 106 (53%) usable surveys taken by students in grades nine through twelve. The results were examined by grade level and by gender in each grade level. Students in grade nine have a different set of norms than do students in grades ten through twelve. The categorization of SSS scores by grade-level cluster can be found in Appendices G and H.

School Situation Survey for 9th grade. Table 25 shows the results of the SSS for 9th grade students. The teacher interaction subscale assesses the student's perception of their teachers' attitudes toward them. The participating 9th grade student scores fell into the upper medium range of stress from teacher interactions. Stress from teacher interactions for male and female students was also in the upper medium range of stress.

The 9th graders, as a group, fell into the lower level of the medium range for stress caused by academic pressures. This finding held true for male and female 9th graders.



Table 25 indicates that stress from peer interactions for 9th graders, as a group, was in the top of the medium range. Their mean score was 2.18, with 2.33 being the top of the medium range. The scores in this category was in the upper medium range for 9th graders when broken down by gender.

The SSS scores in academic self-concept for the 9th grade were 2.45 in the medium range of 2.25 to 3.00. Academic self-concept for males was 2.26. The medium range for males began at 2.25. The female medium stress range for Academic Self-Concept was 2.25 to 3.00. The 9th grade females had a mean score of 2.56, which placed their stress level, in this area, a little higher than that of 9th grade males.

The SSS results for emotional manifestations of stress for 9th graders fell into the middle medium range of scores. This level held true for males and females.

The average scores for the behavioral manifestations of stress were at the top of the medium level for 9th graders. When broken down by gender, behavioral manifestations were still at the upper medium level for male and female.

The 9th grade averages for the psychological manifestations of stress were in the middle of the medium range for the group as well as for male and female students.

School Situation Survey for 10th - 12th grade. The 10th - 12th grade students seemed to handle the stress of school better than the 9th graders. Table 25 shows that stress from teacher interaction for these students was 2.23, which was at the lower medium level. Breaking the scores down by gender

Table 25.

Mean Results of the School Situation Survey for Grades 9 and  
10 - 12

Scale	Grade 9		
	Total <u>n</u> = 43	Male <u>n</u> = 16	Female <u>n</u> = 27
<b>Sources of Stress</b>			
Teacher Interactions	2.53	2.51	2.54
Academic Stress	2.98	2.88	3.04
Peer Interactions	2.18	2.24	2.15
Academic Self-concept	2.45	2.26	2.56
<b>Manifestations of Stress</b>			
Emotional	2.40	2.48	2.35
Behavioral	2.27	2.36	2.22
Physiological	2.64	2.44	2.75
<b>Grades 10 - 12</b>			
Scale	Total <u>n</u> = 63	Male <u>n</u> = 22	Female <u>n</u> = 41
<b>Sources of Stress</b>			
Teacher Interactions	2.23	2.28	2.21
Academic Stress	2.83	2.76	2.87
Peer Interactions	2.16	2.20	2.13
Academic Self-concept	2.27	2.11	2.35
<b>Manifestations of Stress</b>			
Emotional	2.12	2.15	2.10
Behavioral	1.93	1.91	1.00
Physiological	2.29	1.98	2.48

found similar results, lower medium levels of stress. Similar results were found concerning academic stress. The 10th - 12th grade students were still in the lower medium level regardless of gender.

The stress levels from peer interaction were higher for the 10th - 12th graders. The average was in the very high portion of the medium level of stress. This level held true regardless of gender. The stress from academic self-concept for the group of the 10th - 12th grade group was barely into the medium range. Breaking these results down by gender, found male students at the upper level of the low stress range and female students at about a very low level of the medium range.

The emotional manifestations of stress for the 10th - 12th grade group were just into the medium stress level. Male students were in the medium level, but higher than the overall group. Female students were at the upper low to low medium level, indicating a lower level of the emotional manifestations of stress.

The behavioral manifestations of stress fell into the middle of the medium stress level when broken down as a group and when broken down by gender. The results of the SSS found similar levels of the psychological manifestations of stress.

In summary, 9th grade students showed higher stress levels than did their 10th - 12th grade counterparts. Even so, the stress levels of all students were in the middle to upper range of the medium level as indicated by the SSS. The only exception to this finding was the stress level of 10th -

12th grade females in the area of manifestations of stress. Their stress results were in the upper range of the low level.

#### Burnout Within the Faculty at the Study Site

Burnout is brought on by emotional exhaustion, depersonalization, and reduced personal accomplishment that occurs among those who work with people. Teachers certainly fall into that category. Today's teachers are expected to perform duties that go well beyond the normal duties of what was once expected of them in the classroom. No longer are they just a teacher, in many instances they are parent, disciplinarian, policeman and teacher. Being asked to do more and more with less support can easily lead to a drain of one's emotional well being. Depersonalization is another characteristic of the burned out teacher. A negative attitude may develop toward students. Students may come to be seen as the cause of any problems within the classroom or perhaps even deserving of their lack of academic skills. The burned out teacher often exhibits a reduced sense of personal accomplishment. The teacher in this position tends to evaluate themselves negatively, especially in terms of their work with students. The feeling of unhappiness with themselves and a dissatisfaction with accomplishments in the classroom are signs of the burned out teacher.

Maslach Burnout Inventory results. Table 26 shows the results of the *Maslach Burnout Inventory* (MBI) based on the forms returned by 13 teachers. All teachers did not complete the demographics portion of the survey. Of those that did,

two were male and ten were female. Only two of the teachers were African American. The average age of the teachers was 42.6 years. The range in years of teaching experience was one year to 30 years. The average years of teaching experience was 11.6. Five of the teachers had earned Masters Degrees, while the others held Bachelor Degrees. Only one teacher taught more than 100 students daily. Seven teachers had student loads that fell in the 76 - 100 per day range. Four teachers reported that they taught less than 50 students on a daily basis.

Table 26 shows that five teachers rated themselves as "high" in one or more areas of the MBI. All five of these teachers had high ratings in the area of Emotional Exhaustion. The years of experience of these five teachers were 30, 28, 18, 6, and 1. Teacher 13, teaching in her first year, recorded high scores in all levels of burnout. The 18 and 6 year teachers were high only in the area of Emotional Exhaustion. Teacher 6 not only was high in Emotional Exhaustion, but also in Depersonalization of students. Teacher 3, with 30 years of experience, was high in Emotional Exhaustion as well as Personal Accomplishment.

In summary, even though five teachers did have scores that were high in one or more area of the MBI, as a group these teachers were average in the Emotional Exhaustion part of the survey. Their mean score was 21.07. Average for this area ranged from 17-26. The mean score for Depersonalization was 7.46, which fell into the low burnout range of 0 - 8. The low range for Personal Accomplishment is 37+. The mean score

for the thirteen teachers was 39.08.

Table 26.

Maslach Burnout Inventory Results for Teachers 1 - 13

	Teachers 1 - 7						
	T1	T2	T3	T4	T5	T6	T7
Gender	M	F	F		F	F	F
Ethnic	B	W	W		W	W	B
Age	31	45	53		43	50	56
Exper	3	4	30	5	3	28	6
Subject	SS	Bus	Eng	SS	SS	SS	Health
Degree.	Ba	Ba	M	M	M	M	Ba
Grade	9	9	12	11	11	10	9
<sup>a</sup> Class Load	3	2	3	1	4	3	1
<sup>b</sup> Emotion. Exhaus.	11 L	17 A	28 H	14 L	22 A	28 H	29 H
<sup>c</sup> Deperson.	9 L	3 L	13 A	0 L	13 A	18 H	5 L
<sup>d</sup> Personal Accomp.	37 L	35 A	28 H	43 L	41 L	39 L	36 A
	Teachers 8 - 13						
	T8	T9	T10	T11	T12	T13	
Gender	F	F	F	F	M	F	
Ethnic	W	W	W	W	W	W	
Age	44		55	23	46	23	

(table continues)

Table 26. (continued)

Maslach Burnout Inventory Results for Teacher 1 - 13

	Teachers 8 - 13					
	T8	T9	T10	T11	T12	T13
Exper	22	18	13	1	18	1
Subject	Math	Eng		SS	Voc	Bus
Degree.	M	Ba	Ba	Ba	Ba	Ba
Grade	10	10	9	11	10	9
<sup>a</sup> Class Load	3	3	1	3	3	1
<sup>b</sup> Emotion. Exhaus.	14 L	16 L	10 L	15 L	35 H	35 H
<sup>c</sup> Deperson.	7 L	1 L	1 L	2 L	9 A	16 H
<sup>d</sup> Personal Accomp.	40 L	43 L	41 L	46 L	40 L	28 H

<sup>a</sup>Class Load - 1 = <50, 2 = 51 - 75, 3 = 76 - 100, 4 = >100

<sup>b</sup>Emotional Exhaustion

High 27+  
Average 17 - 26  
Low 0 - 13

<sup>c</sup>Depersonalization

High 14+  
Average 9 - 13  
Low 0 - 8

<sup>d</sup>Personal Accomplishment

High 0 - 30  
Average 31 - 36  
Low 37+

## Qualitative Analysis of Faculty Perspectives on Block Scheduling

Fourteen members of the school's faculty were asked for their perspectives on block scheduling. A structured interview protocol was followed. The structured questions can be found in Appendix I.

All fourteen teachers claimed that block scheduling was beneficial for them. When asked how they liked block scheduling, all teachers liked it, but two said they "loved" it. One teacher explained that she was assigned to the school at the beginning of the implementation period, had received no prior training, but loved block scheduling anyway. The teachers all agreed they had more time to complete lessons. An English teacher liked block because the longer class periods permitted completion of many literature assignments, such as short stories, in one class period. Another teacher liked block because more time was available to help with struggling students and to check for comprehension. One teacher felt the school day was less "rushed" and having only three classes to teach was somewhat relaxing as compared to the traditional schedule. Another teacher felt there was more planning time and lessons could be developed more fully.

All fourteen of these teachers felt block scheduling was beneficial for their students, as well. Their reasoning was that lessons could be completed in class without interruption, there were fewer classes to contend with, fewer books to deal with, and students had more time to receive individual help when necessary.



When asked if block scheduling had met the expectations they were given before implementation, most of the teachers felt that it had. The only area that block scheduling seemed to not meet expectations was in the area of class loads. Two teachers said the faculty was promised class loads in the range of 25-30, but 35-40 became reality in some classes. They felt this many students was too many to teach in one class on any kind of schedule, but block made it easier than the traditional schedule they had abandoned. Not one of the teachers said they would care to return to the six-period day. The additional time for planning and teaching was the common reason. One teacher just stated that teaching three classes is better than teaching five classes anytime.

One of the reasons for implementing block scheduling was students could earn more credits toward graduation. Florida requires 24 credits to graduate. On the six period day, four years of high school equals 24 credits. Block scheduling permitted students to earn 8 credits per year, which meant students could conceivably have 24 credits upon completing their 11th grade year. Teachers were asked if this created problems in the classroom because students in some cases felt that they did not need the class for graduation. One group of teachers said it was a problem. One of these teachers said the same problem existed on the traditional schedule, though, and they would just have to deal with it. Other teachers said they did not have a problem with it because students chose the class as an elective and wanted to be there. Other teachers felt that by increasing the GPA for

graduation to 2.0, the Department of Education eliminated some of the problem. Students could not afford to fail a class just because they did not need the credit. They do need the 2.0 GPA for graduation. Teachers of required courses appeared to be the teachers who saw no problem with students feeling they did not need the course credit.

Band directors were one of the groups who were traditionally anti-block scheduling, claiming the block schedule harmed their program because students, quite often, do not take band both semesters of the school year. Students taking band both semesters of the year, on a block schedule, would earn eight credits in band by the time they completed high school. Students not taking band the whole year do not learn to perform as well as those who do take band all year. The teachers were asked if they felt block scheduling had caused a hardship for some students, such as those in the band or chorus. The band director did not participate in this part of the study. The teachers who did, however, either stated a flat out "no" or said they were not sure, because they were not involved with either of those areas. One teacher did mention that the needs of the forty members of the band should not dictate what the rest of the school did. Another teacher felt block scheduling did cause a hardship for band and chorus, but would not elaborate. Forty band members in a school of 1300 students does not seem like a large band. Perhaps block scheduling has had an adverse affect on the band.

When asked if adjusting to block scheduling had been

easy, 13 teachers said yes. The fourteenth teacher said it was not easy, but gave no further comment. The thirteen who stated they had no problem adapting gave several reasons, the most common being that it was easy to plan two or three mini-lessons for the longer class. Two teachers felt the training they had received prior to implementation prepared them quite adequately for moving to the block schedule. One teacher, whose class included a lab, said adapting was not a problem for her or her students, the additional time in the lab made it possible to finish projects.

When asked what advice they would give to a school considering changing to block scheduling, typical responses were "Go for it!," "Try it, you'll like it!," and "Do it or be a loser!" One teacher's advice was to visit a school already on block scheduling and talk with the teachers there. Another teacher advised to get "all the training" you can. These teachers felt one needed to have an open mind and have a positive outlook because the benefits outweigh the negatives.

In summary, the teachers who participated in this part of the study were in favor of block scheduling. Several teachers did point out that all of their expectations were not met, especially in the area of class size. The main reason given for liking the block schedule was more time to start and complete lessons. Several teachers also claimed they were able to give more individual attention to students who needed it. Not one of the teachers wanted to return to the traditional six period day.

### Chapter Summary

Organized around six general research questions, this study evaluated the impact of block scheduling at a large urban high school. A question by question summary of the findings is presented below and shown in Table 35.

Question 1. Did grade point averages (GPAs) change after the implementation of a 4 x 4 block schedule? The goal of improving the academic achievement of students, as measured by class grade point averages, was not reached. Fourteen teachers participated in this part of the study. Although there were several instances where individual course GPAs did increase slightly, there were no statistically significant increases. Only two teachers, ESE Teacher 1 and Science Teacher 2, showed an increase in mean GPA of all of the classes during the post-block period. The GPA increase was not statistically significant for either teacher. All other teachers showed decreases in GPA. Math Teacher 4, English Teacher 2, Science Teacher 3, and Science Teacher 4 all had significant decreases in GPA.

Question 2. Did student absentee percentages (APs) change after the implementation of a 4 x 4 block schedule? The goal of reducing absenteeism by implementing block scheduling was not reached. Not one of the fourteen teachers studied showed a decrease in mean absentee percentage for their classes after the move to block scheduling. Eleven teachers had increases in absentee percentages that were statistically significant.

Question 3. What were the instructional practices during

block scheduling? According to teachers surveyed, instructional practices were changed. These changes, however, were not always substantiated by the student version of the IPS. The *Instructional Practices Survey* (IPS), which consisted of six subscales, was used to examine the teaching methods used by eight teachers during the pre-block period and the post-block period. With eight teachers and six subscales, there were 48 points where changes could be measured. These eight teachers claimed increases in 25 subscale means. Of these 25 increases, student subscale means were significantly lower six times. Three of the discrepancies were with Math Teacher 4 and two of the discrepancies were with ESE Teacher 2.

There were eight instances where teachers showed a decrease in subscale means on the IPS. In three of these subscales, the students reported an increase in usage.

There were 15 instances where teachers showed no change in a subscale mean. Teacher and student results were in agreement 10 times. Twice students indicated an increase and three times students indicated a decrease.

The subscale that exhibited the greatest number of statistical differences was the use of higher order thinking. Four teachers claimed increases and four teachers claimed no change. Students indicated less use of higher order thinking for five teachers. There was no statistically significant difference in four of the five instances.

Question 4. How did teachers and students perceive school climate in the 4 x 4 block schedule as measured by the

*Classroom Environment Survey?* The Classroom Environment Scale (CES) was used to evaluate school climate after the implementation of block scheduling. The CES is made up three subscales which are divided into 9 dimensions. Eight teachers and 130 of their students returned survey forms. The standard score norm for the CES was 50. Students rated school climate at or above the norm in six of the dimensions. The other three dimensions had scores of 48, 49, and 49. Teachers rated school climate above the norm in only four dimensions. The other five dimension scores ranged from 44 to 49. The lowest rated dimension by teachers was in the area of innovation. Based on these findings, teachers and students find school climate acceptable.

Question 5. What were the student stress levels in the 4 x 4 block schedule as measured by the *School Situation Survey*? Student stress was evaluated with *School Situation Survey* (SSS). The stress levels of all grades surveyed fell into the medium level of stress.

Question 6. What were the teacher burnout levels in the 4 x 4 block schedule as measured by the *Maslach Burnout Inventory*? Five of the 13 teachers surveyed showed some signs of burnout in one or more area of the MBI. The group of teachers were average in the subscale Emotional Exhaustion and below average in the subscales Depersonalization and Personal Accomplishment.



Table 27. (continued)

Summary of the Findings of the Study

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Question 5 - Student Stress*School Situation Survey*

43 - Grade 9 students	Medium range on all 7 subscales
63 - Grade 10 - 12 students	Medium range on 6 subscales
	Low range on 1 subscale

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## Question 6 - Teacher Burnout

13 teachers returned

*Maslach Burnout Inventory*

(3 subscales)

1 teacher high on 3 subscales
2 teachers high on 2 subscales
5 teachers high on 1 subscale
8 teachers average to low on all subscales

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<sup>a</sup>48 chances to show change (6 subscales x 8 teachers).<sup>b</sup>Students were statistically lower for 2 teachers on 6 subscales.<sup>c</sup>Norm equals 50.

In conclusion, the goals of improving academic achievement and student absenteeism were not realized through the implementation of block scheduling. There were some changes in the instructional practices of teachers. Teachers used 25 methods more often after block scheduling and 15 methods of presenting instructional materials were used less



often.

Even though academic achievement and absenteeism did not improve, student stress, classroom environment, and teacher burnout were found to be at acceptable levels, in the middle range based on the norms of the surveys involved. The *Maslach Burnout Inventory* found only five of 13 teachers surveyed showed any sign of burnout. Of those five teachers, only two scored high in two of the three subscales on the MBI and one scored high in all three subscales.

The 14 teachers who participated in the interviews were very much in favor of block scheduling. Not one of them would be willing to go back to the six-period day. They liked the extra time for completing lessons and labs. All 14 made it clear that preparation and training were key to being able to successfully implement the block schedule. These teachers also recommended block scheduling for other schools.

While this chapter focused on the treatment and analysis of the data, the next chapter will summarize the study, present several conclusions, and end with some recommendations for educational policymakers and researchers.

CHAPTER FIVE  
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter Five includes three parts: A summary, conclusions, and recommendations.

Summary

Review of the Study

Block scheduling has been seen as one method for improving education. Some educational change agents claim that the view of public education held by many Americans is not a favorable one. A Nation at Risk (Gardner, 1983) warned that our educational system was headed toward mediocrity. Gallop Polls and polls by Phi Delta Kappa found that a large segment of the American public believe schools are not as effective as they should be. On the other hand, Berliner and Biddle (1995) claim the educational crisis is manufactured and blown out of proportion. Other researchers such as Gerald Bracy (1995, 2002) have found support for the views of Berliner and Biddle.

In many parts of the nation, block scheduling has been implemented as a way to better utilize time in the classroom. The 4 x 4 block schedule is reported to increase class time, therefore increasing time on task. Canaday and Rettig (1996) and Canady and Rettig (2001) explain how block scheduling can also provide more time for remediation, if necessary.

Block scheduling, especially the 4 x 4 block, reduces the number of courses a student takes in any one grading period. Blom, Cheney, and Snoddy (1986) and Kyriacou (2001) maintain that fewer courses will reduce the amount of stress facing students, which can improve attitudes and academic success. Kyriacou (2001) also claims poor student motivation, poor discipline, and poor working conditions detract from learning and many of those problems in the schools are caused by stress. Lowering stress will therefore improve learning.

The principal of the study site decided to implement block scheduling because of the claims that it improved academic achievement and attendance, as well as school climate and teacher and student stress levels.

Block scheduling has not been found to always improve grades. Bateson (1990) found that science in all-year courses outperformed students in semester block schedule courses. Buckman (1995) found that block scheduling helped improve school attendance, but not grades. Wasson, Colorado School District found that the number of honor roll students increased but standardized test scores decreased after implementing block scheduling (Mell, 1996). Schreiber, Veal, Flinders, and Churchill (2001) found no benefits of block scheduling over the six period traditional schedule in terms of grade point averages.

The purpose of this study was to evaluate the impact of block scheduling at the study site to find if it did indeed bring improvement in the areas of academic achievement, attendance, school climate, and stress levels of teachers and

students. Seven research questions and hypotheses were developed for the study.

Academic achievement and student absenteeism were examined through data collected from each school's Annual Audit List. The methodology used by teachers before and after the implementation of block scheduling was examined by administering the *Instructional Practices Survey* to teachers and students. School climate was examined by administering the *Classroom Environment Scale* to teachers and students. Student stress was evaluated by having students complete the *School Situation Survey*. Burnout among the faculty was evaluated by administering the *Maslach Burnout Inventory*. To determine the satisfaction of the faculty with block scheduling, faculty members were interviewed using a structured interview protocol.

Research Questions. The research questions for this study were as follows:

1. Did grade point averages (GPAs) change after the implementation of a 4 x 4 block schedule?
2. Did student absentee percentages (APs) change after the implementation of a 4 x 4 block schedule?
3. What were the instructional practices during block scheduling?
4. How did teachers and students perceive school climate in the 4 x 4 block schedule as measured by the *Classroom Environment Survey*?
5. What were the student stress levels in the 4 x 4 block schedule as measured by the *School Situation Survey*?

6. What were the teacher burnout levels in the 4 x 4 block schedule as measured by the *Maslach Burnout Inventory*?

Research Hypotheses. The following hypotheses were developed as guides for this study:

1. A comparison of pre and post 4 x 4 block scheduling will show a statistically significant improvement in student grade point average.

2. Student absentee percentage (AP) will show a statistically significant decrease after implementation of block scheduling.

3. Teachers' instructional practice will change in order to accommodate the additional class time.

4. School climate will provide a supportive and organized structure for teaching and learning when compared to the norm group of the *Classroom Environment Survey*?

5. Stress levels of students will fall into the low to medium range based on the norms of the *School Situation Survey* after the implementation of block scheduling.

6. Burnout levels of teachers will be at the low to average levels as determined by the *Maslach Burnout Inventory* after the implementation of block scheduling.

### Summary of Findings

The findings of this evaluation study are presented in the following sections. Each research question is answered and the findings for each hypothesis is discussed.

### Research Questions Answered

Question One - Did grade point averages (GPAs) change after the implementation of a 4 x 4 block schedule? Teacher

grade point average did not improve after the implementation of block scheduling, except in seven individual classes. None of the teachers in this part of the study showed an increase in their total GPA.

Question Two - Did student absentee percentages (APs) change after the implementation of a 4 x 4 block schedule?

The absentee percentage did not improve for any teacher in the study. In only the one World History Honors class did the absentee percentage improve.

Question Three - What were the instructional practices during block scheduling? The *Instructional Practices Survey*

did show changes in teaching methodology. However, the changes indicated by teachers were not substantiated by student results on the IPS in six cases. Most instructional methods changes, whether they increased or decreased, were substantiated by student data.

Question Four - How did teachers and students perceive school climate in the 4 x 4 block schedule as measured by the

Classroom Environment Survey? The data collected from the *Classroom Environment Scale* indicates that the school climate is at or near the standard score for the CES. This is true for students and teachers, although teachers appear to be slightly more critical of school climate.

Question Five - What were the student stress levels in the 4 x 4 block schedule as measured by the

School Situation Survey? After having students complete the *School Situation Survey*, it was found that the study site students were in the "medium" range for stress. The 9th graders exhibited a higher

stress level than did the 10th-12th graders.

Question Six - What were the teacher burnout levels in the 4 x 4 block schedule as measured by the Maslach Burnout Inventory? Thirteen teachers completed the *Maslach Burnout Inventory*. Five teachers showed some symptoms of burnout in various subscales of the MBI; however, only one teacher scored "high" in all subscales of the inventory.

#### Hypotheses

Hypothesis One - A comparison of pre and post 4 x 4 block scheduling will show a statistically significant improvement in student grade point averages. Hypothesis One was not supported by the data. Grade Point Averages for classes of the teachers involved in the study did not improve following the implementation of the 4x4 block schedule. A few cases were found where several teachers had a class that did improve, but overall, Grade Point Averages did not improve with block scheduling.

Hypothesis Two - Student absentee percentages (APs) will show a statistically significant decrease after implementation of block scheduling. Hypothesis Two was not supported by the data. The absentee rates of the teachers in this study did not improve following the implementation of a 4x4 block schedule. Absenteeism at the study site actually worsened for the teachers involved in the study.

Hypothesis Three - Teachers' instructional practice will change in order to accommodate the additional class time. The reliability of data to support Hypothesis Three is questionable. Overall, there were no major changes made in

the presentation of instruction. This should not be interpreted to mean the methods used on the survey were not in use. Several teachers made few changes because they claimed most of the methods were in use before starting the block schedule. One teacher indicated no change and another teacher actually indicated less use of the methods after starting block scheduling. This was true even for methods in which the faculty received specific training prior to block scheduling. When teachers did indicate an increase in a particular method, it was not substantiated by the students, which is not uncommon. It does, however, raise question as to whether the instructional practices were as the teachers say they were.

Hypothesis Four - School climate will provide a supportive and organized structure for teaching and learning when compared to the norm group of the *Classroom Environment Survey*. Hypothesis four was supported by the data. The *Classroom Environment Survey* revealed all but three teachers above the norm in all categories. The data revealed only one teacher to be below the norm in all categories of the survey. Two teachers were below the norm in two categories.

Hypothesis Five - Stress levels of students will fall into the low to medium range based on the norms of the *School Situation Survey* after the implementation of block scheduling. Hypothesis Five was supported by the data. Student stress levels were in the low to medium range according to the *School Situation Survey*. These levels are acceptable by the standards for the *School Situation Survey*



was based. Since the stress levels prior to implementation of block scheduling were not measured, it cannot be assumed that the move to block scheduling has reduced stress. Based on these results, however, it appears that the block scheduling has done no harm in the area of stress.

Hypothesis Six - Burnout levels of teachers will be at the low to average levels as determined by the Maslach Burnout Inventory, after the implementation of block scheduling. Data were found to support Hypothesis Six. The MBI data revealed only one teacher in the "high" burnout range. Four other teachers were in the "high" range in one area of the survey. Since burnout was not measured before the beginning block scheduling, it cannot be stated that the high scores were due to block scheduling. It should also be noted that the low scores cannot be attributed to block scheduling either. It does appear, though, that block scheduling has not been harmful, overall, to the stress levels of the teachers involved in the MBI portion of this study.

#### Conclusions

The principal of the study site stated, in a an interview before the study began, that his purpose for implementing block scheduling was to improve academic achievement, reduce absenteeism, and to reduce stress among students and teachers. The proponents of block scheduling have made claims that those goals were attainable through implementation of the 4 x 4 block schedule. However, the results of this study indicate that block scheduling did not improve academic achievement. The grades of fourteen

teachers, approximately 25% of the faculty, were examined for changes in their students' academic achievement. Student academic achievement for thirteen teachers actually decreased, four of which were significant, as evidenced by lower grade averages in their classes. The only teacher whose students' grade averages increased was an ESE teacher and the changes were not statistically significant. Even though this teacher's GPA improved, overall absenteeism increased by 6%.

The desire to reduce absenteeism with block scheduling was not realized. The total days absent in a course did decrease, but that was because a course lasted one-half as many days on the block schedule as it would on the traditional schedule. When the days absent were changed to percentages, absenteeism increased in most cases. A Social Studies teacher's absenteeism rates decreased in American History, World History (Honors), and World Geography. However, eight teachers' class absenteeism rates increased by as much as 10%.

When considering implementing a block schedule, the experts argue that a change in instructional practice should occur. Teachers at the study site received training in Paideia, cooperative learning, and the use of computers. Results of the *Instructional Practices Survey*, which had 44 items concerning teaching methods, indicated that very little change took place in teaching methodology. The results given by several teachers indicated they used few of the methods before or after block scheduling. All teachers claimed to be using the Paideia and cooperative learning methods at least

"some of the time" before block scheduling, therefore, little change was shown by their survey responses. All teachers did indicate changes in a few areas. Surveys showing some increases in the use of Paideia, cooperative learning, and the other methods on the survey seems to be realistic. No one uses all of the methods. In the instances where teachers claimed an increase in the use of a particular methodology, the student version of the IPS did not support the teachers post-block claim of an increase in the use of that particular method.

Based on the results of the *Instructional Practices Survey*, there were no major changes in instructional practice. But this may not be the sole reason for the decrease in academic achievement. Increases in absenteeism are partly to blame for the low grades. No matter what instructional practice a teacher uses, if students are not present, learning will not take place.

The *Classroom Environment Survey* was used to assess the learning climate within classrooms. The teachers in this part of the study seemed to fair very well. Eight teachers participated. Only one teacher was rated below the norm in all categories. The other teachers were all near or above the norm. Two of the most common areas in which students (and some teachers themselves) rated below the norm were Innovation and Teacher Support. If students can recognize a lack of innovation, their teachers are apparently using the same instructional methods regularly. Several teachers rated themselves low in Innovation.

Since the CES was not administered before block scheduling, it is not known what effect the new schedule actually had on classroom environment. It does appear that the 4 x 4 block schedule did no harm to school environment.

The *School Situation Survey* (SSS) was used to assess the stress levels of students. Results for the SSS are divided into low, medium, and high levels of stress. The SSS results revealed that all areas of the survey were rated in the medium stress level, with two exceptions. These exceptions indicated low stress levels for 10th-12th grades males in their academic self concept as a source of stress and low stress levels 10th-12th females in their emotional manifestations of stress.

Stress was not measured before implementing block scheduling, therefore the new schedule may not have contributed to reduced stress levels. The student stress levels were in the medium range and appeared to be normal after two years of block scheduling. It is confusing, however, that absenteeism increased and Grade Point Averages went down, but, students do not seem to be under high amounts of stress.

The *Maslach Burnout Inventory* (MBI) assessed burnout in 13 teachers. Eight of these teachers were rated at low or average in every phase of the MBI. Five teachers scored high stress levels in Emotional Exhaustion. Age and years of experience appear to be the common denominator for teachers who scored high in Exhaustion. The only exception to this finding was a 23 year-old female in her first year of

teaching. The implementation of block scheduling may not be the blame for burnout in this case. If block scheduling were the cause, then younger teachers with less experience may have exhibited higher levels of burnout. A beginning teacher may exhibit burnout simply because of all the stress and requirements resulting from being in the first year and having to complete the requirements of the Beginning Teacher Program.

The teachers at the study site seem to be pleased with the implementation of block scheduling. Of those who responded to a questionnaire, none was displeased with block scheduling, overall. Some expressed dissatisfaction with the fact that all of the promises that were made to implement block scheduling were not kept. For instance, class sizes were not as low as they were told they would be. It was noted that some teachers taught only two courses per semester so that they could perform other duties necessary to the day-to-day management of the school. When this occurred students were placed in other classes which meant larger class sizes for those teachers. On a positive note, however, not one teacher was willing to switch from the block schedule to the traditional six-period day.

In summary, the proponents of block scheduling claim that it can improve academic achievement and absentee rates. This study found the opposite. Grade point averages for all but one teacher decreased and student absenteeism for all teachers studied increased.

Block scheduling has been reported to improve student

and teacher stress. This study found student and teacher stress to be at acceptable levels based on results and norms of the *School Situation Survey* and the *Maslach Burnout Inventory*. These surveys were administered after implementing block scheduling, therefore the true effects of block scheduling on stress at the study site are not known.

Block scheduling literature shows that teachers like the block schedule. This was found to be true at the study site. Teachers were not satisfied with every aspect of block scheduling, but not one of those surveyed wanted to return to the traditional schedule.

### Recommendations

#### Recommendations for Educational Policy Makers

High schools need to examine very closely what they want to achieve when deciding to implement block scheduling. Many schools that have implemented block scheduling claim to have done so in order to increase academic achievement, reduce absenteeism, and to reduce stress. The results of this study indicate that block scheduling neither increased academic achievement, nor reduced absenteeism. According to the results of this study, the solution to improving grades and absenteeism may have to be found in another school reform approach and not just changing the schedule of a school. However, Shortt and Thayer (1997) have indicated that the first years of block scheduling could be demanding on teachers and students and may account for lower academic achievement when first implementing the block schedule. Consequently, when schools boards formulate policies to

regulate school schedules, they should understand that positive effects resulting from a fully implemented block schedule may take several years to materialize.

A high school wishing to experience the benefits articulated by block scheduling proponents may want to consider a configuration different from the 4 x 4 block schedule. When fully implemented, however, block scheduling does make it possible for students to earn more credits. Thirty-two credits can be earned as opposed to only 24 on the traditional schedule. This means students can have more electives and can take more Advanced Placement and Honors courses in preparation for college. The 4 x 4 block schedule also reduces the number of courses a teacher teaches per semester. Even though teachers teach fewer courses per semester, it cannot be guaranteed that class size will decrease. Interviews with teachers found that the faculty was told a benefit of block scheduling was lower class sizes.

The teachers at the study site appear to be satisfied with their role in the block schedule. A high teacher satisfaction rating of the school schedule may translate into higher teacher job satisfaction, but, in this case, it did not translate into higher academic achievement and it does not mean there will be lower absentee rates for students.

In summary, policy makers and school administrators considering a move to block scheduling must be sure of the goals they wish to achieve. Implementing a block schedule for the purpose of improving academic achievement and lowering absentee rates may not be successful from the very beginning.

It may take time to see the desired improvements. If, however, the goal is to create a schedule that most teachers will find satisfactory and one that will provide students with opportunity to take a greater variety of courses, thus earning more credits for graduation, the improvement can be seen almost immediately.

#### Recommendations for Future Research

A large number of studies have been conducted on block scheduling, with mixed results as to its success. Future studies may want to pay closer attention to individual students as opposed to mean results of entire classes. A study of this nature may find block scheduling to be beneficial or detrimental to students who are at various academic levels. If it were determined that one group benefited from the block schedule, but another group did not, it may be advisable to implement a block schedule on the basis of lessons learned from successful group.

Researchers who examine teacher instructional practices may want to actually visit classrooms on a regular basis or, at least, look at teacher lesson plans. Using a survey to determine instructional practices has its limitations. Teachers know what should be happening and can respond accordingly, but that does not mean they actually do what they say.

In order to determine the effects of block scheduling on student and teacher stress, true experimental studies or evaluative assessment should be conducted before, during, and after implementation. Interviews with students may reveal why



there is only medium stress levels in a school where academic achievement is declining and absenteeism is increasing. Researchers will need to find schools that are considering the block schedule and begin the research and evaluation processes before block scheduling is implemented. Measuring teacher stress and burnout at the school before and after implementation may reveal more than just surveying a group of teachers after the fact.

As we progress through the 21st century, school reformers need to focus on initiatives that provide measurable and verifiable results in student achievement. While block scheduling has yielded mixed results over the years, it may still be one approach to improving schooling that could help school leaders and teachers in their continuing struggle to help students learn. Accountability in education will remain at the forefront of education reform. While not comprehensive, this study may provide some insight into some of the factors that define a well-planned and implemented block schedule, and in so doing provide another view of what it means to be truly accountable.

## Appendix A

Letter to (the study site) Faculty

TO: Faculty Member  
FROM: Paul Montgomery  
RE: Research on Block Scheduling  
DATE: Feb. 15, 1998

I am in the process of evaluating certain aspects of school life after the implementation of block scheduling. I am inviting the entire faculty to participate in some, but not all aspects of the research. All faculty members will have the opportunity to complete the Maslach Burnout Inventory and selected faculty members, and their students, will be asked to complete three other surveys:

Instructional Practices Survey  
(teacher & students -44 items, approx. 20  
minutes)

School Situation Survey  
(students only - 34 items, approx. 10 minutes)

Classroom Environment Survey  
(teacher and students - 90 items, approx. 25-35  
minutes)

At no time will I enter a classroom, ask to look at lesson plans, or disturb a class in any way, other than having the teacher administer the surveys. The research period will be during the month of March. This will allow each teacher to have a one week period for each survey to be completed and returned.

You have my assurance that absolutely NO ONE will have access to materials returned to me. NO ONE will be able to put teacher names with results. Materials will be delivered through teacher mailboxes and returned to me through school mail. The overall results of the research will be made available to anyone who wants it, but no names will ever be included in the final treatment of data.

Paul Montgomery

## Appendix B

## Instructional Practice Survey (Teacher)

## Directions:

- 1.) Complete this IPS (T) yourself, it is marked 'Teacher'. You will actually be doing the survey twice, once for "pre-block" and once for "after implementation". Responses will go on the same sheet.
  - 2.) Have one of your classes complete the IPS (S).
  - 3.) Have each student doing the survey bubble in their grade, gender, and race at the top of the survey. DIRECTIONS are printed on the student answer form.
  - 4.) When you have collected all of the IPS answer sheets, place them in the envelope and drop it in the school mail. The survey statements can go in the trash. I would like to have the results back before Spring Break if possible.
- 
1. I encourage the students to share their ideas in class.
  2. I expect students to ask questions about the topics of study.
  3. I expect students to answer other students questions as a way of maintaining class discussions.
  4. I give special help to individual students who need it.
  5. I provide practice on new material before assigning it for homework.
  6. I enjoy teaching.
  7. I seat the class in a circle for discussions.
  8. I allow students to lead discussions.
  9. I use discussions as a method of teaching.
  10. I schedule discussions of controversial topics as a way of learning the process of problem solving.
  11. I put comments on student papers in order to show students how to improve their work.
  12. I use real life experiences to demonstrate the value of lessons the class.

13. I ask my students to explain how they arrived at their answers.
14. I want my students to state their opinions.
15. I use a variety of teaching methods.
16. I use students working in small groups as a method of instruction.
17. I give members of a group "the same" grade for the completed product when working on a group assignment.
18. I assign group activities in order to promote peer interaction.
19. I have students, working in groups, quiz and prepare each other for competition with other groups.
20. I instruct all students, while working in small groups, to participate in decision making, contribute to the assignment and to voice their opinions.
21. I use a computer lab to enhance classroom instruction.
22. I individualize lessons according to student need by use of computerized instruction.
23. I use the expertise of guest speakers from the community to speak to students as a way of enhancing the lessons.
24. I use field trips as a source of information to enhance lessons and learning.
25. I have students view video tapes in order to get a better understanding of the lesson being taught.
26. I assign students projects in order to add a hands on approach to the unit being studied.
27. I make assignments requiring students to write a research report using of a library as a source of information.
28. I make assignments for which students are required to complete a written or an oral report after having read a book for class.
29. I make assignments which require students to act out historical, scientific, or literary roles as a way to make the course more interesting and educational.

30. I use games for the purpose of adding interest and action to make a lesson more exciting and understandable.
31. I use game show formats such as Jeopardy as a way to increase interest and learning for students when reviewing lessons.
32. I require students to use newspapers as a resource in order to add more "value" to my lessons.
33. I use teacher lecture as a method of getting information to students.
34. I assign worksheets to be completed as a way to learn information from the textbook.
35. I write questions on the board or the overhead projector for students to answer as daily assignments.
36. I use questions at the end of chapters and chapter sections as assignments to be completed for a grade.
37. I assign homework as a way of reinforcing lessons covered in class.
38. I design some unit lessons that provide shallow coverage of many topics but some units are more involved and go into greater depth.
39. I design lessons that are easily understood and follow a logical sequence.
40. I allow time for students to think in order to prepare responses to oral questions
41. I press individual students to justify or clarify their answers to questions.
42. I show an interest in students' answers and the reasoning they used to reach answers and alternative problem solving approaches.
43. I do not believe that all assertions and answers coming from authoritative sources are certain and encourage students to be critical of sources of information.
44. I want the students to assume the role of questioner and critic when examining new material.

## INSTRUCTIONAL PRACTICE SURVEY (T)

TEACHER'S NAME \_\_\_\_\_

COURSE \_\_\_\_\_

\*\*\*\*\*

Degree of use during the "pre-Block" school years, '93-'94 & '94 -'95.						Degree of use since the implementation of "Block", '95-'96 to present.					
Never	Rarely	Sometimes	Most of the Time	Always		Never	Rarely	Sometimes	Most of the Time	Always	
1.	(1)	(2)	(3)	(4)	(5)	1.	(1)	(2)	(3)	(4)	(5)
2.	(1)	(2)	(3)	(4)	(5)	2.	(1)	(2)	(3)	(4)	(5)
3.	(1)	(2)	(3)	(4)	(5)	3.	(1)	(2)	(3)	(4)	(5)
4.	(1)	(2)	(3)	(4)	(5)	4.	(1)	(2)	(3)	(4)	(5)
5.	(1)	(2)	(3)	(4)	(5)	5.	(1)	(2)	(3)	(4)	(5)
6.	(1)	(2)	(3)	(4)	(5)	6.	(1)	(2)	(3)	(4)	(5)
7.	(1)	(2)	(3)	(4)	(5)	7.	(1)	(2)	(3)	(4)	(5)
8.	(1)	(2)	(3)	(4)	(5)	8.	(1)	(2)	(3)	(4)	(5)
9.	(1)	(2)	(3)	(4)	(5)	9.	(1)	(2)	(3)	(4)	(5)
10.	(1)	(2)	(3)	(4)	(5)	10.	(1)	(2)	(3)	(4)	(5)
11.	(1)	(2)	(3)	(4)	(5)	11.	(1)	(2)	(3)	(4)	(5)
12.	(1)	(2)	(3)	(4)	(5)	12.	(1)	(2)	(3)	(4)	(5)
13.	(1)	(2)	(3)	(4)	(5)	13.	(1)	(2)	(3)	(4)	(5)
14.	(1)	(2)	(3)	(4)	(5)	14.	(1)	(2)	(3)	(4)	(5)
15.	(1)	(2)	(3)	(4)	(5)	15.	(1)	(2)	(3)	(4)	(5)
16.	(1)	(2)	(3)	(4)	(5)	16.	(1)	(2)	(3)	(4)	(5)
17.	(1)	(2)	(3)	(4)	(5)	17.	(1)	(2)	(3)	(4)	(5)
18.	(1)	(2)	(3)	(4)	(5)	18.	(1)	(2)	(3)	(4)	(5)
19.	(1)	(2)	(3)	(4)	(5)	19.	(1)	(2)	(3)	(4)	(5)
20.	(1)	(2)	(3)	(4)	(5)	20.	(1)	(2)	(3)	(4)	(5)
21.	(1)	(2)	(3)	(4)	(5)	21.	(1)	(2)	(3)	(4)	(5)
22.	(1)	(2)	(3)	(4)	(5)	22.	(1)	(2)	(3)	(4)	(5)
23.	(1)	(2)	(3)	(4)	(5)	23.	(1)	(2)	(3)	(4)	(5)
24.	(1)	(2)	(3)	(4)	(5)	24.	(1)	(2)	(3)	(4)	(5)
25.	(1)	(2)	(3)	(4)	(5)	25.	(1)	(2)	(3)	(4)	(5)
26.	(1)	(2)	(3)	(4)	(5)	26.	(1)	(2)	(3)	(4)	(5)
27.	(1)	(2)	(3)	(4)	(5)	27.	(1)	(2)	(3)	(4)	(5)
28.	(1)	(2)	(3)	(4)	(5)	28.	(1)	(2)	(3)	(4)	(5)
29.	(1)	(2)	(3)	(4)	(5)	29.	(1)	(2)	(3)	(4)	(5)

(table continued)

Degree of use during the "pre-Block" school years, '93-'94 & '94 -'95.						Degree of use since the implementation of "Block", '95-'96 to present.					
		Most of						Most of			
<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>the Time</u>	<u>Always</u>	<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>the Time</u>	<u>Always</u>		
30.	(1)	(2)	(3)	(4)	(5)	30.	(1)	(2)	(3)	(4)	(5)
31.	(1)	(2)	(3)	(4)	(5)	31.	(1)	(2)	(3)	(4)	(5)
32.	(1)	(2)	(3)	(4)	(5)	32.	(1)	(2)	(3)	(4)	(5)
33.	(1)	(2)	(3)	(4)	(5)	33.	(1)	(2)	(3)	(4)	(5)
34.	(1)	(2)	(3)	(4)	(5)	34.	(1)	(2)	(3)	(4)	(5)
35.	(1)	(2)	(3)	(4)	(5)	35.	(1)	(2)	(3)	(4)	(5)
36.	(1)	(2)	(3)	(4)	(5)	36.	(1)	(2)	(3)	(4)	(5)
37.	(1)	(2)	(3)	(4)	(5)	37.	(1)	(2)	(3)	(4)	(5)
38.	(1)	(2)	(3)	(4)	(5)	38.	(1)	(2)	(3)	(4)	(5)
39.	(1)	(2)	(3)	(4)	(5)	39.	(1)	(2)	(3)	(4)	(5)
40.	(1)	(2)	(3)	(4)	(5)	40.	(1)	(2)	(3)	(4)	(5)
41.	(1)	(2)	(3)	(4)	(5)	41.	(1)	(2)	(3)	(4)	(5)
42.	(1)	(2)	(3)	(4)	(5)	42.	(1)	(2)	(3)	(4)	(5)
43.	(1)	(2)	(3)	(4)	(5)	43.	(1)	(2)	(3)	(4)	(5)
44.	(1)	(2)	(3)	(4)	(5)	44.	(1)	(2)	(3)	(4)	(5)

## Appendix C

## Instructional Practice Survey (Student)

PLEASE BUBBLE IN THE FOLLOWING INFORMATION:

Grade: (9) (10) (11) (12) Gender: (M) (F)Race: Af.-Am. ( ) White ( ) Hispanic ( ) Asian ( )  
Other ( )

## DIRECTIONS:

Read each of the survey statements and respond as to the frequency which you believe your teacher uses the described instructional practice. For example, if you feel a practice is used often, then you would bubble in the (5) under "often".

Please remember you ARE NOT grading your teacher. No teacher uses all of the described methods all of the time. Just respond according to how often you feel the listed instructional practices are used.

	<u>Never</u>	<u>Rarely</u>	<u>Some- times</u>	<u>Most of the Time</u>	<u>Always</u>		<u>Never</u>	<u>Rarely</u>	<u>Some- times</u>	<u>Most of the Time</u>	<u>Always</u>
1.	(1)	(2)	(3)	(4)	(5)	23.	(1)	(2)	(3)	(4)	(5)
2.	(1)	(2)	(3)	(4)	(5)	24.	(1)	(2)	(3)	(4)	(5)
3.	(1)	(2)	(3)	(4)	(5)	25.	(1)	(2)	(3)	(4)	(5)
4.	(1)	(2)	(3)	(4)	(5)	26.	(1)	(2)	(3)	(4)	(5)
5.	(1)	(2)	(3)	(4)	(5)	27.	(1)	(2)	(3)	(4)	(5)
6.	(1)	(2)	(3)	(4)	(5)	28.	(1)	(2)	(3)	(4)	(5)
7.	(1)	(2)	(3)	(4)	(5)	29.	(1)	(2)	(3)	(4)	(5)
8.	(1)	(2)	(3)	(4)	(5)	30.	(1)	(2)	(3)	(4)	(5)
9.	(1)	(2)	(3)	(4)	(5)	31.	(1)	(2)	(3)	(4)	(5)
10.	(1)	(2)	(3)	(4)	(5)	32.	(1)	(2)	(3)	(4)	(5)
11.	(1)	(2)	(3)	(4)	(5)	33.	(1)	(2)	(3)	(4)	(5)
12.	(1)	(2)	(3)	(4)	(5)	34.	(1)	(2)	(3)	(4)	(5)
13.	(1)	(2)	(3)	(4)	(5)	35.	(1)	(2)	(3)	(4)	(5)
14.	(1)	(2)	(3)	(4)	(5)	36.	(1)	(2)	(3)	(4)	(5)
15.	(1)	(2)	(3)	(4)	(5)	37.	(1)	(2)	(3)	(4)	(5)
16.	(1)	(2)	(3)	(4)	(5)	38.	(1)	(2)	(3)	(4)	(5)
17.	(1)	(2)	(3)	(4)	(5)	39.	(1)	(2)	(3)	(4)	(5)
18.	(1)	(2)	(3)	(4)	(5)	40.	(1)	(2)	(3)	(4)	(5)
19.	(1)	(2)	(3)	(4)	(5)	41.	(1)	(2)	(3)	(4)	(5)
20.	(1)	(2)	(3)	(4)	(5)	42.	(1)	(2)	(3)	(4)	(5)
21.	(1)	(2)	(3)	(4)	(5)	43.	(1)	(2)	(3)	(4)	(5)
22.	(1)	(2)	(3)	(4)	(5)	44.	(1)	(2)	(3)	(4)	(5)



## INSTRUCTIONAL PRACTICE SURVEY (Student)

1. My teacher encourages students to share their ideas in class.
2. My teacher wants us to ask questions about the topics we are studying.
3. My teacher lets me answer other students questions as a way of maintaining class discussions.
4. My teacher gives special help to individual students who need it.
5. My teacher provides explanations of new material before assigning it for homework.
6. My teacher seems to enjoy teaching.
7. My teacher has the class seated in a circle when discussions are taking place.
8. My teacher allows students to lead discussions.
9. My teacher uses class discussions as a teaching method.
10. My teacher teaches problem solving skills by using controversial topics for which there is no one correct answer.
11. My teacher puts comments on graded papers as a way to show students how to improve their work.
12. My teacher uses real life experiences to demonstrate the value of lessons in the class.
13. My teacher asks students to explain how they arrived at their answers.
14. My teacher asks students to voice their opinions.
15. My teacher uses of variety of different teaching methods.
16. My teacher has students work in small groups as a method of instruction.
17. My teacher gives members working in groups "the same" grade for the completed assignments.
18. My teacher assigns group activities which help promote student interaction and discussion.

19. My teacher has students, working in groups, quiz and prepare each other for competition with other groups.
20. My teacher instructs students to work together as a group, making decisions by agreement, completing assignments together, and making sure all members contribute their suggestions.
21. My class uses a computer lab to improve classroom instruction.
22. My teacher uses computers to individualize instruction according to the needs of students.
23. My teacher uses the knowledge of guest speakers from the community to speak to students as a way of enhancing the lessons.
24. My teacher uses field trips as a source of information to enhance lessons and learning.
25. My teacher has students view video tapes in order to get a better understanding of the lesson being taught.
26. My teacher assigns student projects in order to add a hands on approach to the unit being studied.
27. My teacher assigns out of class research reports in order to add detail which can not be included in class with the time available.
28. My teacher makes assignments for which students are required to read a book then complete a written or an oral report.
29. My teacher makes assignments which require students to act out historical, scientific, or literary roles as a way to make the course more interesting and educational.
30. My teacher uses games for the purpose of adding interest and action to make a lesson more exciting and understandable.
31. My teacher uses "TV games" lessons (Jeopardy) to make test and unit review a more effective method of getting students involved in studying.
32. My teacher assigns reports and projects based on articles taken from newspapers.
33. My teacher gets information about the lesson to students by lecturing while students take notes.

34. My teacher assigns worksheets to teach information from the textbook.
35. My teacher writes questions on the board or the overhead projector for students to answer as assignments.
36. My teacher uses questions at the end of chapters and chapter sections as assignments to be completed for a grade.
37. My teacher assigns homework that is collected in class the next day.
38. Some lessons in this class seem to cover topics very lightly and some lessons seem to go into a topic in great depth and detail.
39. Lessons in this class are easily understood and follow a logical sequence.
40. My teacher allows time for students to think in order to prepare responses to oral questions.
41. My teacher tries to get students to explain how they arrived at answers to questions.
42. My teacher shows an interest in the way students use reasoning and problem solving skills in order to reach an answer.
43. My teacher believes that answers coming from the textbook and other sources are not always certain and encourages students to create their own ideas and answers, even if different from the textbook.
44. My teacher wants students to be critical thinkers and question material presented in class.

## Appendix D

Letter to Faculty Concerning School Situation Survey

Faculty Member,

I am in the process of gathering data for evaluating the implementation of the 4x4 block schedule at (the study site). I have enclosed twenty forms of the School Situation Survey, to be completed by students. I hope that you have time to get twenty of your students to complete the SSS, it should only take a few minutes. If a student says they did it in another class, please ask someone else to do it. I know your time is valuable and I hate to be an interruption to your procedures. For that reason, you have no idea how much I appreciate your help. If you do not have the time to have your students do the SSS, please pass it on to another teacher that may have the time to do so.

I need for you to do the following:

- 1.) Have twenty students complete the survey according to instructions on the survey itself.
- 2.) Place the completed surveys in the envelope and drop in the school mail.
- 3.) Names are not necessary on the survey, however, if you would like the results I will need your name in order to return your students' results.

Once again, I thank you very much for the time and effort you have contributed. You have no idea how much I appreciate your cooperation.

Paul Montgomery

## Appendix E

Letter to Faculty Concerning Classroom Environment Survey

Faculty Member,

Last week I put notices in teacher mail boxes that I would be asking some of you to help me gather data that hopefully will become part of a doctoral dissertation. The time for phase one is here. I hope that you have time to get one of your classes to complete the enclosed survey. I know your time is valuable and I hate to be an interruption to your procedures. For that reason, you have no idea how much I would appreciate your help.

I need for you to do the following:

- 1.) Complete a survey yourself, it is marked 'Teacher'.
- 2.) Have one of your classes complete the survey.
- 3.) Have each student doing the survey put their grade and the subject at the top of the survey.
- 4.) DIRECTIONS for completing the Classroom Environment Survey:

Make all your marks on the separate answer sheet. If you think a statement is True or mostly True of your classroom, make an X in the box labeled T (true). If you think the statement is False or mostly False, make an X in the box labeled F (false).

- 5.) When you have collected all of the CES answer sheets, place them in the envelope and drop it in the school mail. The survey statements can go in the trash.
- 6.) I do not need any names, however, if you would like to see the results, you will need to include you name in the items returned.

Once again, I thank you very much for the time and effort you have contributed. You are gratefully appreciated.

Paul Montgomery

## Appendix F

## Classroom Environment Survey

Raw Score to Standard Score Conversion Table

Raw Score	Involvement		Affiliation		Teacher Support		Task Orientation		Competition	
	Stdnt Norm	Tchr Norm	Stdnt Norm	Tchr Norm	Stdnt Norm	Tchr Norm	Stdnt Norm	Tchr Norm	Stdnt Norm	Tchr Norm
10.0	76	62	79	62	70	61	73	63	88	69
9.5	73	60	75	59	67	59	70	61	84	67
9.0	70	59	70	57	64	56	67	59	80	65
8.5	68	57	66	55	61	53	64	57	76	62
8.0	65	55	62	53	58	50	60	55	72	60
7.5	62	53	58	51	55	47	57	53	68	58
7.0	60	51	54	49	52	44	54	51	64	56
6.5	57	49	50	47	49	41	51	49	60	53
6.0	54	47	46	44	46	38	48	47	56	51
5.5	52	45	41	41	41	35	45	45	52	49
5.0	49	44	38	40	39	32	42	46	48	47
4.5	46	42	34	38	36	29	39	41	44	46
4.0	44	40	29	36	33	26	36	39	40	42
3.5	41	38	25	34	30	23	32	37	36	40
3.0	38	36	21	31	27	20	29	35	32	38
2.5	36	34	17	29	24	17	26	33	28	36
2.0	33	32	13	27	21	14	23	31	24	33
1.5	30	30	9	25	18	11	20	29	20	31
1.0	28	29	5	23	15	8	17	27	16	29
0.5	25	27	1	21	12	5	14	25	12	27

## Classroom Environment Survey

Raw Score to Standard Score Conversion Table

Raw Score	Order and Organization		Rule Clarity		Teacher Control		Innovation	
	Stdnt Norm	Tchr Norm	Stdnt Norm	Tchr Norm	Stdnt Norm	Tchr Norm	Stdnt Norm	Tchr Norm
10.0	72	63	79	60	88	77	79	68
9.5	69	61	75	58	85	75	76	66
9.0	67	59	72	55	82	73	73	64
8.5	64	57	68	53	79	71	70	62
8.0	61	55	65	51	76	68	67	60
7.5	59	53	61	48	73	66	64	58
7.0	56	51	58	46	70	64	62	56
6.5	53	49	54	44	67	62	59	54
6.0	51	47	51	41	64	60	56	53
5.5	48	45	47	39	61	58	53	51
5.0	45	43	43	37	58	55	50	49
4.5	43	41	40	34	54	53	47	47
4.0	40	39	36	32	51	51	44	45
3.5	37	37	33	29	48	49	41	43
3.0	35	35	29	27	45	47	38	41
2.5	32	33	26	25	42	45	36	39
2.0	29	31	22	22	39	43	33	38
1.5	27	29	19	20	36	41	30	36
1.0	24	27	15	28	33	38	27	34
0.5	22	26	12	15	30	36	24	32

## Appendix G

## School Situation Survey - 9th Grade

Perceived stress level averages by grade-level cluster

Scale	Total n = 2,331	Male n = 338	Female n = 319
<b>Sources of Stress</b>			
Teacher Interactions			
Low	1.00-1.67	1.00-1.67	1.00-1.38
Medium	1.83-2.67	1.83-2.67	2.00-2.67
High	2.83-5.00	2.83-5.00	2.83-5.00
Academic Stress			
Low	1.00-2.33	1.00-2.33	1.00-2.67
Medium	2.67-4.00	2.67-4.00	3.00-4.33
High	4.33-5.00	4.33-5.00	4.67-5.00
Peer Interactions			
Low	1.00-1.33	1.00-1.50	1.00-1.50
Medium	1.50-2.33	1.67-2.33	1.67-2.17
High	2.50-5.00	2.50-5.00	2.33-5.00
Academic Self-concept			
Low	1.00-2.00	1.00-2.00	1.00-2.00
Medium	2.25-3.00	2.25-3.00	2.25-3.00
High	3.25-5.00	3.25-5.00	3.25-5.00
<b>Manifestations of Stress</b>			
Emotional			
Low	1.00-1.50	1.00-1.50	1.00-2.00
Medium	1.67-2.67	1.67-2.67	2.17-2.83
High	2.83-5.00	2.83-5.00	3.00-5.00
Behavioral			
Low	1.00-1.33	1.00-1.50	1.00-1.37
Medium	1.50-2.33	1.67-2.33	1.50-2.17
High	2.50-5.00	2.50-5.00	2.33-5.00
Physiological			
Low	1.00-1.33	1.00-1.33	1.00-1.67
Medium	1.67-2.67	1.67-2.33	2.00-3.00
High	3.00-5.00	2.67-5.00	3.33-5.00



## Appendix H

## School Situation Survey - 10th-12th Grade

Perceived stress level averages by grade-level cluster

Scale	Total n = 1,607	Male n = 215	Female n = 176
<b>Sources of Stress</b>			
Teacher Interactions			
Low	1.00-1.83	1.00-1.83	1.00-2.00
Medium	2.00-2.83	2.00-2.83	2.17-2.83
High	3.00-5.00	3.00-5.00	3.00-5.00
Academic Stress			
Low	1.00-2.33	1.00-2.33	1.00-2.67
Medium	2.67-4.00	2.67-4.00	3.00-4.33
High	4.33-5.00	4.33-5.00	4.67-5.00
Peer Interactions			
Low	1.00-1.50	1.00-1.50	1.00-1.50
Medium	1.67-2.17	1.67-2.33	1.67-2.17
High	2.33-5.00	2.50-5.00	2.33-5.00
Academic Self-concept			
Low	1.00-2.00	1.00-2.00	1.00-2.25
Medium	2.25-3.00	2.25-3.00	2.50-3.00
High	3.25-5.00	3.25-5.00	3.25-5.00
<b>Manifestations of Stress</b>			
Emotional			
Low	1.00-1.83	1.00-1.50	1.00-2.00
Medium	2.00-2.83	1.67-2.67	2.17-3.00
High	3.00-5.00	2.83-5.00	3.17-5.00
Behavioral			
Low	1.00-1.50	1.00-1.67	1.00-1.50
Medium	1.67-2.50	1.83-2.67	1.67-2.33
High	2.67-5.00	2.83-5.00	2.50-5.00
Physiological			
Low	1.00-1.67	1.00-1.33	1.00-2.00
Medium	2.00-2.67	1.67-2.33	2.33-3.00
High	3.00-5.00	2.67-5.00	3.33-5.00

## Appendix I

Structured Interview Questions

1. Do you feel block scheduling has been beneficial to you?  
If so, in what way(s)?
2. Do you feel block scheduling has been beneficial to your students in terms of academic achievement? If so, in what ways?
3. Has block scheduling met the expectations you were given before implementation? Examples?
4. Would you want to revert back to a 6 period day? Why/why not?
5. Has students being able to meet most of their graduation requirements by th time they enter the twelfth grade been a problem? (i.e. - "I don't need this class?")
6. Has the implementation of block scheduling caused a hardship for some of your school's programs, such as band and chorus?
7. Has block scheduling been easy to adapt to as far as utilizing the additional time per class period? If not, what made adjusting difficult?
8. What advice would yo give to a school considering implementing block scheduling?
9. What advice would you give to teachers whose schools are about to implement a form of black scheduling?

## Appendix J

Classroom Environment Survey  
Form R

Edison J. Trickett &amp; Rudolf H. Moos

There are 90 statements about high school and junior high school classrooms on this survey. You are to decide which of these statements are true of your classroom and which are false.

1. Students put a lot energy into what they do here.
2. Students in this class get to know each other really well.
3. This teacher spends very little time just talking with students.
4. Almost all class time is spent on the lesson for the day.
5. Students don't feel pressured to compete here.
6. This is a well-organized class.
7. There is a clear set of rules students to follow.
8. There are very few rules to follow.
9. New ideas are always being tried out here.
10. Students daydream a lot in this class.
11. Students in this class aren't very interested in getting to know other students.
12. The teacher takes a personal interest in students.
13. Students are expected to stick to classwork in this class.
14. Students try hard to get the best grade.
15. Students are almost always quiet in this class.
16. Rules in this class seem to change a lot.
17. If a student breaks a rule in this class, he's sure to get in trouble.
18. What students do in class is very different on different days.

(CES continues)

## CES (continued)

19. Students are often "clockwatching" in this class.
20. A lot of friendships have been made in this class.
21. The teacher is more like a friend than an authority.
22. We often spend more time discussing outside student activities than class-related material.
23. Some students always try to see who can answer questions first.
24. Students fool around a lot in this class.
25. The teacher explains what will happen if a student breaks a rule.
26. The teacher is not very strict.
27. New and different ways of teaching are not tried very often in this class.
28. Most students in this class really pay attention to what the teacher is saying.
29. It's easy to get a group together for a project.
30. The teacher goes out of his way to help students.
31. Getting a certain amount of classwork done is very important in this class.
32. Students don't compete with each other here.
33. This class is often in an uproar.
34. The teacher explains what the rules are.
35. Students can get in trouble with the teacher for talking when they're not supposed to.
36. The teacher likes students to try unusual projects.
37. Very few students take part in class discussion or activities.
38. Students enjoy working together on projects in this class.
39. Sometimes the teacher embarrasses students for not knowing the right answer.

(CES continues)

CES (continued)

40. Students don't do much work in this class.
41. A student's grade is lowered if he gets homework in late.
42. The teacher hardly ever has to tell students to get back in their seats.
43. The teacher makes of point of sticking to the rules he's made.
44. Students don't always have to stick to the rules in this class.
45. Students have very little to say about how class time is spent.
46. A lot of students "doodle" or pass notes.
47. Students enjoy helping each other with homework.
48. This teacher "talks down" to students.
49. We usually do as much as we set out to do.
50. Grades are not very important in this class.
51. The teacher often has to tell students to calm down.
52. Whether or not students can get away with something depends on how the teacher is feeling that day.
53. Students get in trouble if they're not in their seats when the class is supposed to start.
54. The teacher thinks up unusual projects for students to do.
55. Students sometimes present something they've worked on to the class.
56. Students don't have much of a chance to get to know each other in this class.
57. If students want to talk about something this teacher will find time to do it.
58. If a student misses class for a couple of days, it take some effort to catch up.
59. Student here don't care about what grades the other students are getting.

(CES continues)

CES (continued)

60. Assignments are usually clear so everyone knows what to do.
61. There are set ways of working on things.
62. It's easier to get in trouble here than in a lot of other classes.
63. Students are expected to follow set rules in doing their work.
64. A lot of students seem to be only half awake during this class.
65. It takes a long time to get to know everybody by his first name in this class.
66. This teacher wants to know what students themselves want to learn about.
67. This teacher often takes time out from the lesson plan to talk about other things.
68. Students have to work for a good grade in this class.
69. This class hardly ever starts on time.
70. In the first few weeks the teacher explained the rules about what students could and could not do in this class.
71. The teacher will put up with a good deal.
72. Students can choose where they sit.
73. Students sometimes do extra work on their own in this class.
74. There are groups of students who don't get a long in class.
75. This teacher does not trust students.
76. This class is more a social hour than a place to learn something.
77. Sometimes the class breaks up into groups to compete with each other.
78. Activities in this class are clearly and carefully planned.
79. Students aren't always sure if something is against the rules or not.

(CES continues)

CES (continued)

80. The teacher will kick a student out of class if he acts up.
81. Students do the same kind of homework almost every day.
82. Students really enjoy this class.
83. Some students in this class don't like each other.
84. Students have to watch what they say in this class.
85. The teacher sticks to classwork and doesn't get sidetracked.
86. Students usually pass even if they don't do much.
87. Students don't interrupt the teacher when he's talking.
88. The teacher is consistent in dealing with students who break the rules.
89. When the teacher makes a rule, he means it.
90. In this class, students are allowed to make up their own projects.

## Appendix K

## School Situation Survey

Barbara Helms &amp; Robert Gable

**Directions:**

A number of statements that students can use to describe themselves are listed. Please read each statement and decide how often it seems to describe you. For each statement darken the appropriate circle to indicate your answer, using the following choices:

1 = Never    2 = Rarely    3 = Sometimes    4 = Often    5 = Always

1. I enjoy doing things with my classmates.
2. I feel that some of my teachers don't like me very well.
3. I get into fights.
4. I feel upset.
5. I worry about not doing well in school.
6. I get headaches.
7. I do well in school and get good grades.
8. Other students make fun of me.
9. I feel that some of my teachers expect too much of me.
10. I talk in class when I should be quiet.
11. I feel mixed up.
12. I get along well with my classmates.
13. Some of my teachers call on me when they know I am not prepared just to embarrass me.
14. I pick on other students.
15. I feel frustrated.
16. I am afraid of getting poor grades.
17. I feel sick to my stomach.
18. I feel that I learn things easily.

(SSS continues)



SSS (continued)

19. I am among the last to be chosen for teams.
20. I feel that some of my teachers don't really care about what I think or how I feel.
21. I yell at my classmates.
22. I feel like crying.
23. I enjoy talking to my classmates.
24. I feel that my teachers treat me fairly.
25. I talk back to my teachers.
26. I feel nervous.
27. I worry about taking tests.
28. I get stomach aches.
29. I do good work in school.
30. I have many friends.
31. Some of my teachers yell at me for no reason.
32. I try to get attention by acting silly in class.
33. I feel angry at school.
34. School work is easy for me.

## Appendix L

Maslach Burnout Inventory  
Educators SurveyChristina Maslach  
Susan Jackson  
Michael Leiter

## Educators Survey

How often:						
0	1	2	3	4	5	6
Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

1. \_\_\_ I feel emotionally drained from my work.
2. \_\_\_ I feel used up at the end of the workday.
3. \_\_\_ I feel fatigued when I get up in the morning and have to face another day on the job.
4. \_\_\_ I can easily understand how my students feel about things.
5. \_\_\_ I feel I treat some students as if they were impersonal objects.
6. \_\_\_ Working with people all day is really a strain for me.
7. \_\_\_ I deal very effectively with the problems of my students.
8. \_\_\_ I feel burned out from my work.
9. \_\_\_ I feel I'm positively influencing other people's lives through my work.
10. \_\_\_ I've become more callous toward people since I took this job.
11. \_\_\_ I worry that this job is hardening me emotionally.
12. \_\_\_ I feel energetic.

(MBI continues)

## MBI (continued)

13. \_\_\_\_ I feel frustrated by my job.
14. \_\_\_\_ I feel I'm working too hard on my job.
15. \_\_\_\_ I don't really care what happens to some students.
16. \_\_\_\_ Working with people directly puts too much stress on me.
17. \_\_\_\_ I can easily create a relaxed atmosphere with my students.
18. \_\_\_\_ I feel exhilarated after working closely with my students.
19. \_\_\_\_ I have accomplished many worthwhile things in this job.
20. \_\_\_\_ I feel like I'm at the end of my rope.
21. \_\_\_\_ In my work, I deal with emotional problems very calmly.
22. \_\_\_\_ I feel students blame me for some of their problems.

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