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# The effects of intensive block scheduling on high school mathematics

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THE EFFECTS OF INTENSIVE BLOCK SCHEDULING  
ON HIGH SCHOOL MATHEMATICS

by  
Anna Elena Bogardus  
Eileen Star DuBois

A Thesis

Submitted in partial fulfillment of the requirements of the  
Master of Arts Degree in the Graduate Division  
of Rowan College in Mathematics Education  
1996

Approved by  
John Spoy

Date Approved May 1996

## ABSTRACT

A. Elena Bogardus and Eileen Star DuBois, *The Effects of Intensive Block Scheduling on High School Mathematics*, 1996, J. Sooy, Mathematics Education

The purpose of this study was to compare intensive block scheduling to the traditional scheduling used in the high school setting, especially focusing on the areas of mathematics achievement and the patterns of higher level mathematics course selection.

Surveys were sent to 67 high schools throughout the United States and Canada which are currently using intensive block scheduling. Mathematics supervisors were asked questions regarding: school population, percentage of college bound students, higher level mathematics courses offered, and the sequence of mathematics courses taught leading to Advanced Placement Calculus. The remaining part of the survey requested specific data comparing standardized test results and enrollments in higher level mathematics classes before and after the inception of block scheduling.

It was determined that there are significant relationships between the adoption of block scheduling and increased student enrollment in higher level mathematics courses. The findings also indicated that there was no significant increase in achievement on the SAT or the AP Calculus test scores, but the ACT test scores increased significantly after block scheduling was introduced.

## MINI-ABSTRACT

A. Elena Bogardus and Eileen Star DuBois, *The Effects of Intensive Block Scheduling on High School Mathematics*, 1996, J. Sooy, *Mathematics Education*

The purpose of this study was to compare intensive block scheduling in the area of mathematics. The results indicated that there is no significant difference with respect to mathematics achievement. However, there are significant relationships between the adoption of block scheduling and increased student enrollment in higher level mathematics courses.

## TABLE OF CONTENTS

Chapter 1 - Introduction to the Study.....	1
Chapter 2 - Review of Related Literature.....	5
Chapter 3 - Procedures.....	15
Chapter 4 - Analysis of the Data.....	19
Chapter 5 - Summary, Conclusions, and Recommendations.....	26
Appendices.....	29
Bibliography.....	50

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## CHAPTER 1

### Introduction to the Study

#### Background:

Presently, there is interest in block scheduling by many high schools throughout the country, but relatively little research has been done on the subject. There is a need for additional information, specifically in the area of mathematics. At the present time many high schools struggle with discipline problems, poor attendance, high failure and drop-out rates, and apathy amongst their students. In theory, block scheduling provides a solution for these dilemmas.

"When a proposal comes along which increases students 'time on task', reduces class size, sharply reduces the daily numbers of students with whom each teacher must interact, simultaneously reduces the number of classes with which a student deals each day and establishes a class structure which supports what research seems to be telling us about better instruction, one is most impressed. Since this proposal can be implemented without increasing per pupil expenditures, often a stumbling block to reform, one must take this proposal seriously" (Carroll, 1994, p. iii).

#### Statement of the Problem

The purpose of this study is to compare intensive block scheduling to the traditional scheduling used in the high school setting. Specifically, the researchers were interested in determining (1) if there is a significant difference in the levels of mathematics achievement and (2) if there is a significant difference in the patterns of higher level mathematics course selection when intensive block scheduling is used.

### Justification of the Problem

Many local high schools in the southern New Jersey area are considering changing to block scheduling in the next few years, which makes this a timely subject to study. Education is moving away from the traditional styles of teaching. Therefore, the student is now becoming an active participant in the learning process. More classroom time is required for the student to develop and discover an understanding of concepts that were once teacher initiated. A variety of activities pertaining to a topic often requires more time to complete than traditional scheduling allows. Therefore, there is a need to extend the length of the class period. Block scheduling is a viable alternative.

### Limitation of the Study

Due to the fact that block scheduling is a relatively new phenomenon, there is a lack of published information and material. Therefore, the majority of our information relied on dissertation abstracts and articles published in journals as well as internet information. The published articles are restricting because they discuss block scheduling in general, and do not address mathematics specifically. The availability of the data was determined by the response received from the survey and the varied data that was collected by the participating schools. The variance of different types of student populations and high schools has also provided some limitations

In addition to the previous limitations, the researchers incurred some restrictions. These were limited to the number of contacts and their response to the surveys. This study dealt exclusively with high schools, thereby eliminating available data involving middle schools. Also, each individual high school has its own varied measure of success, which made it difficult to compare the supplied data. There is also a lack of long term effects and usage. This study was further restricted by the fact that it dealt entirely with Intensive Block Scheduling. Therefore, the researchers had to omit any data received that



referred to modified or alternate block scheduling. The focus of this study was not on observation, but strictly based on response to our survey.

Our population consists of the names of specific high schools throughout the country that the researchers have gathered from articles, internet, and personal contacts. Those who responded to our survey often supplied us with additional information and contacts.

### Definition of Terms

**Block Scheduling:** Students are scheduled into classes with larger blocks of time than traditional for part or all of the school day. Each class of students may have only one teacher or may be taught by a team of teachers. The main types of block scheduling are intensive/semester block, alternate block, and modified block

- A) **Intensive Block Scheduling/Semester Block:** schedules consist of four ninety minute periods each day. The classes meet daily for a semester, and a year's credit is awarded at the end of the semester. Intensive Block Schedules allow the student to earn the equivalent of one year's credit in one semester.
- B) **Modified Block Scheduling:** schedules are built using a combination of other types of block scheduling and/or traditional scheduling in a fixed or flexible pattern throughout the school year.
- C) **Alternate Block Scheduling:** schedules consist of four approximately ninety minute blocks on each of two days. The two days alternate continuously throughout the school year providing for an equal number of class periods for each course.

Traditional Scheduling: where the school day is divided into seven or eight class periods of equal length, (approximately 43 minutes) that meet every day. Each class is generally one period in length, although occasionally there is a two period lab block (Carroll, p. x).

Higher Level Mathematics: for the purpose of this study, any mathematics course that is typically scheduled after Algebra II and geometry.

### Procedures

In order to obtain the results necessary to complete the study, the researchers first gathered information and contacts. Then the researchers designed, assembled, tested, and validated the survey. A general postcard survey was sent to all sources gathered, in order to distinguish the schools using intensive block scheduling from those using alternate or modified block scheduling. Once the postcard was returned, a more extensive survey was sent to high schools throughout the country identified as having implemented intensive block scheduling. As results were returned, the researchers tabulated and computed the data. Sometimes it became necessary to make a follow-up phone interview, if questions about the data transpired. Finally, conclusions were made from the data and the findings were reported.

\*\*\*Please Note: This study deals solely with Intensive block scheduling, and will not be addressing modified or alternate block scheduling. From this point on, whenever the researches refer to Block Scheduling it will imply Intensive Block Scheduling exclusively.

## CHAPTER 2

### Review of Related Literature

#### Introduction

The researchers were able to locate related information from a variety of sources. Dissertation abstracts, journal articles, internet data, summative evaluations from individual high schools, and resource books were utilized. The sources are categorized as literature since relatively limited research has been published on such a timely subject. This related literature is divided into two sections: a general overview of information on block scheduling, and data obtained from specific high schools.

#### General Overview

In "New, Improved Timetables", Gore states "In the 70's and 80's many schools changed from the traditional full-year timetable to a semester system". The semester system was going to allow for longer more concentrated classes, greater variety of teaching techniques, more course selection, and the pupil achievement and study habits would be greater (p.1). Just like with the "new" block scheduling the teachers were concerned with the incomplete studies, especially in the area of mathematics. One major flaw was that the studies lacked comparisons with schools using the traditional method (p. 1). Therefore an intense study was undertaken in 1986 by three individuals from the Ontario Institute for studies in Education. Four major points were made concerning the study.

1. "educational advantage in terms of student achievement and attitudes does not appear"
2. "math achievement was, however, clearly greater in year-long classes"
3. "all year courses consistently outperformed both 1st and 2nd semester students in cognitive domains tested"
4. "second semester students outperformed the 1st semester students, which casts doubt ... that knowledge retention is of little concern under a semester system" (p. 1).

The semester system was abandoned by many schools but now is being "reincarnated" in many places as block scheduling or even the quarter system (which consists of completing 2 classes a day for 10 weeks). Once again, however, very little research is available. In conclusion, Gore states that "schools that are on full-year timetables should stay the way they are and let the proponents of 'new improved timetables' prove beyond a doubt that they are as good as they say they are" (p. 1).

In an effort to increase graduation rates many Virginia high schools switched to the 4 x 4 schedule concurs Edward's in the article Virginia's 4 x 4 High Schools: High School, College, and More. The 4 x 4 schedule, also known as alternate block scheduling, allows students to only have four classes a day, each class meets every other day. Advanced placement students in Orange County seemed to be the major beneficiaries of the move to the 4 x 4 schedule. The AP Exam reports scores from 1 to 5, with 5 being the highest. The article maintains that "student scores on the 1994 AP exams, like grades school wide, skewed to the upper end of the grading scale. The number of 4's and 5's increased from 44 to 58 percent. Those scoring 3's, 4's, and 5's increased from a previous high of 73 to 85 percent" (p. 29).

Even with all the positive growth, there is a concern about the lagging

standardized test scores. The first year using 4 x 4 schedules provided no change on the state assessment program given to 11th graders (p. 29). With the increased number of core courses taken, and no study halls, this is expected to improve in the near future.

"With the elimination of study halls and the move to the 4 x 4, student school wide completed 26 percent more classes than in the previous year. By allowing students to enroll in a two-course sequence in math, science, and language each school year, the number of classes completed in these areas increased by 47 percent, 19 percent, and 33 percent, respectively" (p. 29).

In "The effects of parallel block scheduling versus surface scheduling on reading and mathematics achievement and on attitudes toward school and learning" ,a dissertation abstract, Wilson states "statistically significant differences were found in mathematics achievement in favor of the parallel block scheduled school". Improved student attitudes towards school and learning was also evident.

Catherine Cox, from University of Houston, wrote a dissertation entitled "Study of the effects of a block scheduling program with high school students who are 'at-risk'". Measures of achievement indicated an improvement in students' grades from failing to passing. There were no significant gains, however, observed for attendance, achievement motivation, or in the lack of disruptive behavior. "Differences in outcomes were also observed for gender, ethnic and socio-economic status, and family status." The author concludes that students who are at-risk can benefit from the extended class time.

"Unlocking the Lockstep High School Schedule", by Canady & Rettig, advocates a 75 -75 - 30 day schedule of intensive block scheduling, although it alludes to other alternatives. This means that for 75 days in the fall and winter, students would have scheduled classes in 3 - 112 minute block classes (2 of which are academic subjects, and 1 is an elective subject); 1 - 48 minute period which remains constant for 180 days, and 24 minutes for lunch.

The article implies that block scheduling is especially advantageous for 9th grade students in adjusting to the high school setting. It also allows for acceleration, by taking more courses in a particular area, and/or remediation, by being able to repeat a failed course sooner. Intensive block scheduling also reduces discipline problems, increases instructional time, and facilitates a larger variety of instructional approaches. Preparation time for both students and teachers is less.

"The Copernican Plan Evaluated: The Evolution of a Revolution", an article written by Carroll, evolved from success of a summer school program, where the students studied math and english for 4 hours a day, 5 days a week. This plan changes the way schools use time. Classes are taught in much longer periods (90 minutes, 2 hours, or 4 hours a day) for 30, 45, 60 or 90 days. The students have significantly fewer classes, and their teachers deal with significantly fewer students. It also involves a new credit system to replace the Carnegie credit unit.

In order to evaluate the Copernican Plan, these researchers studied 8 very different high schools, that use 7 different Copernican schedules, and compared student performance data over a two year period. The findings indicated that there was no significant difference between the 2 groups. Also, both groups had comparable levels of retention, even when tested over large gaps of time (as much as 15 months after a course ended). Students enrolled in the Copernican Plan scored significantly higher in higher order thinking and problem solving skills. It also appears that student conduct improved, as well as attendance and that drop-out rates decreased. It improves relationships between students and teachers.

The article is very pro-change, and implies that the Copernican Plan may be a solution to our nations problems in high schools.

Edward's article, "The Four-Period Day: Restructuring To Improve Student Performance", describes the many advantages of block scheduling. "Almost every high

school in the United States uses a six or seven period schedule. As a result, students must cope daily with six or seven different teachers, sets of class rules, and homework assignments. In addition, they are responsible for coordinating and managing their academic, cocurricular, social, and family obligations. High school teachers provide instruction for up to 150 students each day. Their teaching schedule may require preparations of lessons for as many as five different courses" (p. 78).

### Data from Specific High Schools

"The Intensive Scheduling model at a suburban public high school; Student and teacher behavior changes", a dissertation abstract written by Kevin Hart, refers to the Hatboro-Horsham High School for the 1991-92 and 1992-93 school years. Data indicates that there was significant improvement in the number of students making the honor roll and there were less grades of "D" and "F" earned. Teachers used more varied teaching techniques, and much less lecture format. Improved teaching and learning was indicated.

At Cody High School in Wyoming, most teachers and students favored the new type of scheduling. "Block Immersion Schedule", a pamphlet developed at the school, describes a schedule with many changes. The method of teaching also influenced fewer drop-outs (75 percent less), failures and absences.

The staff agrees on the following points favoring block scheduling: a more relaxed atmosphere, time for better quality learning activities, greater variety of teaching methods, and increased "in class" participation. The district offered a variety of inservice training activities prior to its 93 - 94 inception of block scheduling.

Students, who are behind in math may, double up in the 9th grade in order to catch up (ex. pre-algebra and algebra I taken in the same year). Academically capable students could double up in math starting their junior year, since math teachers feel that there is a level of maturing needed to perform in upper level math courses.

"The Hybrid Schedule: Scheduling to the Curriculum" depicts the scheduling experimentation at Eleanor Roosevelt High School in Greenbelt, Maryland. When they first introduced block scheduling, they worked with a voluntary control group of academically talented students. It was extremely successful. The next year, they were ready to go beyond a small group of gifted students to a large number of students with varying abilities. There were some teachers who opposed this; especially foreign language, math, production/performance, and AP teachers. They then went with a hybrid schedule. Some students had double mod classes and others didn't. Especially in math classes, students now have the opportunity to start working on problems in class that they ordinarily would do only at home. The opportunity to put a concept into practice while the teacher is available for consultation has increased their understanding. In this school, they see many benefits of block scheduling:

1. It has retained the integrity of classes
2. It has created more time for students and teachers.
3. It has caused them to evaluate carefully the many requirements placed on children outside but affecting the classroom.
4. The building runs more smoothly with reduced hall traffic.
5. It has fostered a team spirit that pervades the entire community.

Seneca Township High School's "8 Block Inservice" packet believes in the 8 Block because: "Imagine how inefficient and ineffective workers would be if jobs were organized the way most high schools are organized, said Rex Brown, director of communication for the Education Commission of the States: 'People would have eight or nine different bosses. Every 44 minutes a bell would ring, and they'd go to a different boss with different standards; they'd have to stop what they were doing and do something else.



People couldn't work together because that would be called cheating. And instead of dealing with problems as they arise in the real world, they'd have to deal with them one subject at a time."

Seneca Township High School has been using Alternate Block Scheduling for seven years. After completing two years of 8-block scheduling the school compared results to the year before implementing the 8-block system. "We are very satisfied with the results in all areas of concern we had prior to moving to the 8-Block system. Vocation enrollment has increased, class failures have dropped, attendance rates have increased, ACT scores have increased and discipline problems have reduced dramatically."

At the Roy J. Wasson High School in Colorado Spring, Colorado, the staff, students and parents are very pleased with the effects of Block Scheduling.

Believing that 'excellence is not a place but a direction,' the Wasson staff in 1989 developed the Wasson Block Schedule to expand active student learning, to maximize the use of a great variety of teaching techniques and courses, and to foster the spirit of challenge and discovery that leads to personal success. This schedule consists of four 90-minute blocks of instructional time each day. Since class periods are twice as long as those in a traditional schedule, students complete a two-semester course in one semester. At any time students are working with only four courses and four teachers, at any one time teachers instruct only half of their yearly number of students. This reduction of student and teacher fragmentation has resulted in more individualized and in-depth instruction, an increase in Advance Placement scores, more interdisciplinary courses, an increase in the number of community-school connections, more elective choices for students, and an increase in the number of credits earned by students.

"Intensive Scheduling - A Guide to Intensive Scheduling in the Burlington Township High School" is a brochure which briefly describes the implementation and reorganization of learning time known as Intensive Scheduling. This New Jersey high school has concluded the following:

1. There is no conclusive evidence that intensive scheduling either helps or hinders retention.
2. Districts that have implemented intensive scheduling have consistently reported improvement in attendance, reduction of discipline referrals, and increases on their honor roll.
3. Currently there are 5-10 non-productive minutes between starting and ending a period. Over two periods that time doubles. Under intensive scheduling, the actual instructional time is greater.
4. There is some concern over sequential courses and the gap between them. This will be looked at as a scheduling objective. Some courses could be linked and offered in a specific sequence.

The Daily Newspaper's article, "Intensive Scheduling at Hatboro-Horsham puts more Kids on the Honor Roll", written by Duffy, summarizes the unique scheduling system used at Hatboro-Horsham. Hatboro-Horsahm High School is considered one of the pioneers of the intensive block scheduling technique. "The results seem almost unbelievable" - The honor roll is up and the failures are down. David Hottenstein, the principal of Hatboro-Horsham, is very pleased with the new program and is considering the possibility of implementing the schedule in the middle school as well.

"In the typical American high school, students are faced with seven or eight class periods a day covering at least six subjects, while dealing with the same number of teachers." Hotttestein says that the intensive block scheduling allows the students to "focus on less" and "do it better".

## Summary

In this chapter the researchers have presented a variety of views pertaining to block scheduling. This innovative approach to education appears to be growing in popularity in high schools throughout the United States. The intensive scheduling plan offers numerous benefits to both teachers and students.

Major benefits for teachers include a reduction in the number of class preparations as well as reduction in the number of students and class records for which a teacher must be responsible (Canady, 1995, p.113).

"Major benefits for students include the provision of opportunities for students to (1) repeat "failed" courses and still graduate on time, which may encourage some students to stay in school longer; (2) be accelerated in a subject when appropriate; and (3) focus on fewer classes at any one time" (p. 113).

Despite the many advantages of block scheduling some people feel that several topics are still left unaddressed. Retention of learning, lack of research, attendance policies, and professional development are a few issues that need to be more thoroughly explored.

The bottom line remains that the success or failure of any new educational movement, including block scheduling, will be determined largely by the ability of teachers and administrators to work together to improve instruction. "Regardless of a school's time schedule, what happens between individual teachers and students in the classrooms is still most important" (p. 240).

## CHAPTER 3

### Procedures

#### Introduction

A detailed itinerary of the researchers course of action is delineated in this chapter. The tool of the investigation, a school survey, is explained with regard to its construction. High schools using block scheduling throughout the continental United States and Canada were designated samples of the population. Mathematics achievement and patterns of higher level mathematics course selection were the main ideas examined in the study.

#### Preliminary Steps in Garbering Data

After meeting with Dr. Caldwell, who informed the researchers of the controversy surrounding the infusion of block scheduling in high schools throughout the country, the researchers accepted the challenge of investigating this topic. Since Dr. Caldwell has a personal interest in this subject, she photocopied a few articles for the researchers to read. In order to get a more thorough understanding, the researchers spent a day at the Savitz Library at Rowan College of New Jersey. While there; journal articles, dissertation abstracts, newspaper articles, and magazine publications were located and photocopied.

Upon reading all the collected information, it became obvious that the broad topic of block scheduling needed to be restricted. Emphasis was then placed on mathematics achievement and patterns of higher level mathematics course selection. It became further necessary to limit the type of block scheduling studied solely to intensive block scheduling, thereby eliminating all high schools using modified or alternate scheduling.

Identification of high schools using this innovative scheduling became the next task. Compilations of names of schools were discovered through reading, researching, and personal networking. Unfortunately many lists were incomplete. This forced the researchers to telephone numerous schools throughout the United States and Canada in order to obtain accurate addresses and appropriate contacts as well as to verify their continued use of block scheduling. Upon completion, a data base of nearly 200 high schools was created. This enabled the researchers to print two sets of labels, one on the mailing envelope to the high school and the other to identify the school for recording purposes. See Appendix A.

#### Construction of Instruments

After consulting with Dr. Caldwell, the researchers formulated a series of possible questions to be included in the survey. After sketching a rough draft, the researchers presented the blueprint for its first jury trial to half of Dr. Sooy's mathematics seminar class. The jurors critically reviewed the survey, line by line. Many helpful suggestions were given. The main recommendation was to send two different surveys: the first being merely a postcard to determine what type of block scheduling, if any, the school employs, and the second, a more detailed survey, to be sent to schools who returned the postcard indicating that they use intensive block scheduling.

Since the postcard concept sounded feasible, the researchers immediately began designing it and the accompanying cover letter. See appendices B and C. This initial questionnaire is an abbreviated form of the complete survey with the primary intention of determining: if the school is currently using block scheduling and if so, what type of block scheduling it uses and how long it has been utilized. The postcard also enabled the researchers to obtain a more accurate school address and a specific contact person.

Another valuable suggestion, made by Dr. Sooy, was to use a high school address to receive the returned surveys, since he felt there would be a greater number of responses from one high school to another. Mr. Steven Merkel, the principal of Woodstown High School, was then approached regarding the possibility of having the returned surveys mailed there. He graciously agreed and assigned a corresponding mailbox in the high school office for that purpose.

The final draft of the postcard and cover letter were then submitted for approval to Dr. Sooy. After his consent the mailing process began. Large envelopes were stuffed with the cover letter and a self-addressed stamped postcard survey. The prepared labels were affixed, the return address was stamped on each envelope, and they were mailed.

While anxiously awaiting responses, the time was used to revamp the second survey which provides the main source of data for the study. Upon completion, the survey was returned for a second jury trial, which consisted of different members than the previous trial. Other than a few formatting changes, the content was unanimously approved. The complete survey included general questions regarding: school population, percentage of college bound students, higher level math courses offered, and sequence of math courses taught leading to AP Calculus. The remaining part of the survey requested specific data comparing standardized test results and enrollments in higher level mathematics classes before and after the inception of block scheduling. Another cover letter to accompany this survey was written and also approved. An opportunity was also given to attach any additional information or comments deemed appropriate. See appendices D and E.

In addition to the jury trials it was also necessary for the survey to have two field tests. The researchers decided to have one completed by a school district currently using intensive block scheduling for a few years, and the other by a school district seriously

considering changing to block scheduling in the near future. By field testing an experienced school the researchers anticipated discovering if such information is readily available. By field testing a school investigating block scheduling the researchers hoped to ask questions of interest to their expected audience. Both field test came back with positive comments. See appendices F and G.

By this time, over a hundred postcards had been returned, nearly seventy of which indicated that they used intensive block scheduling in their school. After setting up an amended data base, using proper contact names and positions, another mailing took place. This included the cover letter, the two page survey, and a self-addressed stamped envelope. For recording purposes another mailing label was placed on the survey. These were then mailed to the schools returning the postcards indicating the use of intensive block scheduling. At the end of a six week period approximately 40% of the surveys had been returned. The information received provided a sufficient amount of data required to be analyzed.

## CHAPTER 4

### Analysis of the Data

#### Introduction

The data obtained by a survey sent to high schools using block scheduling throughout the United States and Canada is described in this chapter. The intent of the survey was to determine the efficacy of intensive block scheduling. The research is divided into two sections: mathematics achievement and higher level mathematics course selection.

The researchers entered the data received from the returned surveys into a computer based statistics program. Exploratory data analysis was done. Meta-analysis techniques, which involves using summary data as data points, were applied. Paired t-tests were administered to determine significance. The summaries are reported in narrative and table form.



### Results of Survey

Table 1 shows a comparison of student enrollment in advanced placement calculus before and after intensive block scheduling was incorporated. There were fourteen schools in the study. The mean number of students enrolled before intensive block scheduling was 5.43. The mean number of students after intensive block scheduling was incorporated was 13.36. This resulted in a gain score of 7.93. A dependent t-test was administered and a t-score of 4.62 was obtained. This was significant at the .005 level.

Table 1

A Comparison of Student Enrollment in Advanced Placement Calculus  
before and after Intensive Block Scheduling is Incorporated  
(n = 14 schools)

	t	Mean Number of Students	S.D.
Before		5.43	6.31
After		13.36	9.20
Gain Score	4.62*	7.93	

\* Significant at the .005 level.

Table 2 shows a comparison of student enrollment in higher level mathematics courses before and after intensive block scheduling is incorporated. There were sixteen schools in the study. The mean number of students enrolled before intensive block scheduling was 16.50. The mean number of students after intensive block scheduling was incorporated was 28.50. This resulted in a gain score of 12.00. A dependent t-test was administered and a t-score of 4.18 was obtained. This was significant at the .005 level.

Table 2  
A Comparison of Student Enrollment in Higher Level Mathematics Courses  
before and after Intensive Block Scheduling is Incorporated  
(n = 16 schools)

	t	Mean Number of Students	S.D.
Before		16.50	13.66
After		28.50	19.18
Gain Score	4.18*	12.00	

\* Significant at the .005 level.

Table 3 shows a comparison of student's advanced placement calculus test scores before and after intensive block scheduling was incorporated. There were seven schools in the study. The mean student's score before intensive block scheduling was 1.71. The mean student's score after intensive block scheduling was incorporated was 2.71. This resulted in a gain score of 1.00. A dependent t-test was administered and a t-score of 1.45 was obtained. This was not significant at the .05 level.

Table 3

A Comparison of Student's Advanced Placement Calculus Test Scores  
before and after Intensive Block Scheduling is Incorporated  
(n = 7 schools)

	t	Mean Student's Score	S.D.
Before		1.71	1.70
After		2.71	1.11
Gain Score	1.45**	1.00	

\*\* Not significant at the .05 level.

Table 4 shows a comparison of student's SAT mathematics scores before and after intensive block scheduling was incorporated. There were ten schools in the study. The mean student's score before intensive block scheduling was 468.30. The mean student's score after intensive block scheduling was incorporated was 483.60. This resulted in a gain score of 15.30. A dependent t-test was administered and a t-score of 0.89 was obtained. This was not significant at the .05 level.

Table 4

A Comparison of Student's SAT Mathematics Scores  
before and after Intensive Block Scheduling is Incorporated  
(n = 10 schools)

	t	Mean Student's Scores	S.D.
Before		468.30	37.33
After		483.60	44.74
Gain Score	0.89**	15.30	

\*\* Not significant at the .05 level.

Table 5 shows a comparison of student's ACT mathematics scores before and after intensive block scheduling was incorporated. There were six schools in the study. The mean student's score before intensive block scheduling was 16.43. The mean student's score after intensive block scheduling was incorporated was 17.30. This resulted in a gain score of 0.87. A dependent t-test was administered and a t-score of 2.21 was obtained. This was significant at the .05 level.

Table 5

A Comparison of Student's ACT Mathematics Scores  
before and after Intensive Block Scheduling is Incorporated  
(n = 6 schools)

	t	Mean Student's Scores	S.D.
Before		16.43	7.40
After		17.30	7.69
Gain Score	2.21*	0.87	

\* Significant at the .05 level.

As is evident in Tables 1 and 2, there is a significant increase in the number of higher level mathematics courses, including Advanced Placement Calculus, taken and the implementation of intensive block scheduling. Tables 3 and 4 indicate that there is no significant relationship between SAT /Advanced Placement scores and the utilization of intensive block scheduling. In Table 5, however, intensive block scheduling appears to have a minor positive effect on ACT scores.

## CHAPTER 5

### Summary, Conclusions, and Recommendations

#### Introduction

The focus of this study is the comparison of intensive block scheduling to the traditional scheduling used in the high school setting. Specifically, the researchers were interested in determining if there is a significant difference in the levels of mathematics achievement and in the patterns of higher level mathematics course selection when intensive block scheduling is used. The results of the surveys were tabulated and the data was analyzed using meta-analysis techniques. The findings were evaluated and conclusions were drawn.

#### Summary of Findings

The first hypothesis stated that there is no significant difference in the levels of mathematics achievement when intensive block scheduling is used. Scores gathered on the SAT's, ACT's, and the Advanced Placement Calculus tests, before and after block scheduling was implemented, were compared. Since these three tests are widely used throughout the country, the researchers agreed that using these tests were a reliable way to measure student's mathematics achievement.

From the surveys returned, ten schools provided data regarding comparisons of their student's SAT mathematics scores before and after intensive block scheduling was incorporated. A t-score 0.89 was obtained after a dependent t-test was administered. This was not significant at the .05 level.

From the surveys returned, six schools provided data regarding comparisons of their student's ACT mathematics scores before and after intensive block scheduling was implemented. A t-score 2.21 was obtained after a dependent t-test was administered. This was significant at the .05 level.

From the surveys returned, seven schools provided data regarding comparisons of their student's AP Calculus test scores before and after intensive block scheduling was implemented. A t-score 1.45 was obtained after a dependent t-test was administered. This was not significant at the .05 level.

The second hypothesis stated that there is no significant difference in the patterns of higher level mathematics course selection with intensive block scheduling. To measure this the researchers requested information pertaining to the number of students registered in AP Calculus as well as other higher level mathematics courses prior to and following intensive block scheduling. This information was readily available and easy to ascertain.

From the surveys returned, fourteen schools provided data regarding comparisons of their student's enrollment in advanced placement calculus classes before and after intensive block scheduling was implemented. A t-score 4.62 was obtained after a dependent t-test was administered. This was significant at the .005 level.

From the surveys returned, sixteen schools provided data regarding comparisons of their student's enrollment in higher level mathematics courses before and after intensive block scheduling was implemented. A t-score 4.18 was obtained after a dependent t-test was administered. This was significant at the .005 level.

### Conclusions

Since the advent of intensive block scheduling, it is apparent that students are taking advantage of the opportunities available to them in selecting more higher level



mathematics classes. Inasmuch as the statistical analysis indicates, there are significant relationships between the inception of block scheduling and increased student enrollments in mathematics. Not only the increase in enrollment in advanced placement calculus but in all other higher level mathematics courses as well, there is a .005 level of significance, which is extremely high. Even though students have the opportunity to take extra courses when block scheduling is implemented, it is exciting that they have opted for additional mathematics classes instead of other disciplines.

The findings indicated that there was no significant difference in achievement on the SAT and AP Calculus tests, and only a .05 level of significance for the ACT test after block scheduling was introduced. Unfortunately there were only six schools that supplied data for the ACT. Considering the totality of all three outcomes, there possibly was only a meager increase in scores at best.

Dealing with the mathematics achievement aspect, two schools of thought could be considered from the results. One school of thought is the fact that even though there was no significant increase in achievement there also was no decrease. This has a positive connotation since one of the major criticisms involving block scheduling is the adverse affect on mathematics achievement. Therefore since our statistics show no negative change in mathematics achievement, the other benefits to a high school using block scheduling could be realized. The other school of thought would be that even though there are more students taking higher level mathematics courses, there is no increase in achievement. One would expect that with the additional knowledge acquired, the standardized test scores would increase. Since this did not occur one would wonder what benefit the additional courses produced.

Historically, mail-in surveys have a low rate of return, so the 40 percent, although disappointing, is not out of the ordinary. A more careful follow-up may have increased

this percentage and provided a larger sample to explore. The fact that people are not as likely to respond if the results are negative, may also have influenced the percentage of returned surveys.

### Recommendations

In future studies the following areas of comparison might be explored: the relationship between the size of the school population and the efficiency of scheduling students using this new phenomenon, and the relationship between the percentage of college bound students from a particular school and the success of block scheduling. The researchers question if there might be a difference in the results from the schools that have been using block scheduling for a while, compared with those who have recently implemented it. Another possible dilemma to be investigated is the continuity of course content before and after block scheduling is initiated, since some question whether teachers can cover as much material in the block time. The researchers final suggestion is for the examination of the students' retention of course material, especially since there is a possibility of a longer period of time elapsing between consecutive mathematics courses.

APPENDIX A  
SCHOOLS USING BLOCK SCHEDULING  
MAILING LIST

SMITHEAST GULLFORD HS  
GREENVILLE, NC

ASHEBORO HIGH SCHOOL  
1223 SOUTH PARK STREET  
ASHEBORO, NC 27203

SOUTHERN NASH COUNTY HS  
ROUTE ONE  
BAILEY, NC 27807

ST. ANNE'S-BELFIELD SCHOOL  
CHARLOTTESVILLE, VA 22903

THOMASVILLE HS  
410 UNITY STREET  
THOMASVILLE, NC 27380

THOMTON HS  
9351 N. WASHINGTON STREET  
THOMTON, CO 80229

VASHON ISLAND HS  
20120 VASHON HWY SW  
VASHON, WA 98070

WADENA HS  
BOX 151  
WADENA, MN 56482

WEST CARTERET HS  
MOREHEAD CITY, NC 28557

WEST LINCOLN COUNTY HS  
ROUTE ONE  
LINCOLNTON, NC 28092

WESTERN HIGH SCHOOL  
2501 ROCKFORD LANE  
LOUISVILLE, KY 40216

WILLIAM B. TRAVIS HS  
1211 E. OTTORP STREET  
AUSTIN, TX 78704

WILLIAMSBURG HS  
1009 MAIN STREET  
WILLIAMSBURG, KY 40769

UPPER MORELAND HS  
TERWOOD ROAD  
WILLOW GROVE, PA 19090

HAVERTOWN HIGH SCHOOL  
200 MILL ROAD  
HAVERTOWN, PA 19333

GATEWAY REGIONAL HS  
EGG HARBOR ROAD  
WOODBURY HEIGHTS, NJ 08097

HATBORO-HORSHAM HIGH SCHOOL  
899 HORSHAM ROAD  
HORSHAM, PA 19044

ATHOLTON HIGH SCHOOL  
6520 FREETOWN ROAD  
COLUMBIA, MD 21044

CATONSVILLE HIGH SCHOOL  
421 BLOOMSBURY AVE  
CATONSVILLE, MD 21228

CHESAPEAKE HIGH SCHOOL  
1801 TURKEY POINT ROAD  
BALTIMORE COUNTY, MD 21221-1799

FERRY HALL HS  
4601 EBENEZER ROAD  
BALTIMORE, MD 21236

SURRATTSVILLE HS  
6106 GARDEN DRIVE  
CLINTON, MD 20735

CACHE LAPOUDRE JUNIOR HS  
U.S. HIGHWAY 387 NORTH  
LAPORTE, CO 80535

DOLORES HIGH SCHOOL  
DOLORES, CO 81523

CENTRAL BUCKS EAST HIGH SCHOOL  
IOLICONG AND ANDERSON ROADS  
BUCKINGHAM, PA 18912

CENTRAL BUCKS WEST HIGH SCHOOL  
COURT AND LAFAYETTE  
DOYLESTOWN, PA 18901

SOUTHEAST LINCOLN COUNTY HS  
GREENVILLE, NC 27834

SOUTHERN LINCOLN COUNTY HS  
LINCOLNTON, NC 28092

BENJAMIN FRANKLIN HS  
ROCHESTER, NY 14600

BURKBURNETT HIGH SCHOOL  
BURKBURNETT, TX 76354

CLARKE COUNTY HIGH SCHOOL  
BERRYVILLE, VA 22611

PERSON COUNTY HIGH SCHOOL  
ROXBORO, NC 27573

REGION IV EDUCATION SERV. CTR  
HOUSTON, TX 77000

SOCASSEE HIGH SCHOOL  
MYRTLE BEACH, SC 29577

UNIVERSITY OF VIRGINIA  
CHARLOTTESVILLE, VA 22901

KEMPSVILLE HIGH SCHOOL  
574 KEMPSVILLE ROAD  
VIRGINIA BEACH, VA 23462

KINGS HIGH SCHOOL  
19303 FEMONT AVENUE N  
SEATTLE, WA 98133

KINGS WEST HIGH SCHOOL  
BREMERTON, WA 98310

LAUREL VALLEY JSHS  
RD 1  
NEW FLORENCE, PA 15944

LIBERTY HIGH SCHOOL  
COLORADO SPRINGS, CO 80900

LINCOLN COUNTY HIGH SCHOOL  
LINCOLNTON, NC 28092

LOVELAND HIGH SCHOOL  
520 WEST 29TH  
LOVELAND, CO 80538

MONTE VISTA HIGH SCHOOL  
349 PROSPECT  
MONTE VISTA, CO 81401

MONTEZUMA CORTEZ HIGH SCHOOL  
MONTEZUMA, CO 80464

MOUNTAIN VIEW HIGH SCHOOL  
2755 NE 27TH STREET  
BEND, OR 97701

NORTH MYRTLE BEACH HS  
NORTH MYRTLE BEACH, SC

OMAK HIGH SCHOOL  
PO BOX 833  
OMAK, WA 98841

SAN BENITO HIGH SCHOOL  
1220 MONYEREY STREET  
HOLLISTER, CA 95023

SAN MARCOS HIGH SCHOOL  
4750 HOLLISTER AVENUE  
SANTA BARBARA, CA 93110

SENECA HIGH SCHOOL  
PO BOX 126 307 E. SCOTT  
SENECA, IL 61360

SIERRA HIGH SCHOOL  
2250 JET WING DRIVE  
COLORADO SPRINGS, CO 80916

ABRAHAM LINCOLN HIGH SCHOOL  
12285 SOUTH FEDERAL BLVD  
DENVER, CO 80219

ALI ACADEMY HIGH SCHOOL  
COLORADO SPRINGS, CO 80906

ALAMOSA HIGH SCHOOL  
401 VICTORIA BLVD  
ALAMOSA, CO 81101

ATLANTIC HIGH SCHOOL  
DAYTONA BEACH, FL 32000

BELL COUNTY HIGH SCHOOL  
1 ROUTE ONE  
PINEVILLE, KY 40977

BEMIDI HIGH SCHOOL  
201 15TH STREET  
BEMIDI, MN 56601

BLAINE HIGH SCHOOL  
12555 UNIVERSITY AVENUE NE  
MINNEAPOLIS, MN 55434

BURLINGTON HIGH SCHOOL  
POBOX 396 PLATO ROAD  
BURLINGTON, IL 60109

CARVER HIGH SCHOOL  
3545 CARVER SCHOOL ROAD  
WINSTON-SALEM, NC 27105

CENTRAL DAVIDSON COUNTY HS  
ROUTE 56X  
LEXINGTON, NC 27292

CHAMPLIN PARK HIGH SCHOOL  
CHAMPLIN PARK, MN 55316

CHELSEA HIGH SCHOOL  
CHELSEA, MA 02150

COAL CITY HIGH SCHOOL  
655 WEST DIVISION  
COAL CITY, IL 60416

COOK COUNTY HIGH SCHOOL  
GRAND MARAIS, MN 55604

EASTERN WAYNE COUNTY HS  
RR TEN  
GOLDSBORO, NC 27534

FORT COLLINS HIGH SCHOOL  
1400 REMINGTON  
FORT COLLINS, CO 80524

FOUNTAIN FORT CARSON HS  
515 NORTH SANTE FE  
FORT CARSON, CO 80817

GLENN HIGH SCHOOL  
WINSTON-SALEM, NC 27103

GRANADA HIGH SCHOOL  
400 WALLSTREET  
LIVENMORE, CA 94550

GREEN RIVER HIGH SCHOOL  
GREEN RIVER, WY 82935

MATH CHAIR  
INDEPENDENCE HIGH SCHOOL  
5175 REFUGEE  
COLUMBUS, OH 43232

MR. ASCHENBRENNER  
LONGMONT HIGH SCHOOL  
1040 SUNSET  
LONGMONT, CO 80501

DAVID BERKOWITZ  
MATH CHAIRMAN  
BORDENTOWN REGIONAL HIGH SCHOOL  
1429 KIMBERLY DRIVE  
LAKEWOOD, NJ 08701

MARTY BOWEN  
MATH CHAIR  
DOUGLAS COUNTY HIGH SCHOOL  
CASTLEROCK, CO 80104

CHUCK BOWMAN  
MATH CHAIRMAN  
BRIAN SENIOR HIGH SCHOOL  
4700 GILES ROAD  
OMAHA, NB 68157

JUDY BRYANT  
WASSON HIGH SCHOOL  
2115 AFTON WAY  
COLORADO SPRINGS, CO 80908

JOHN BURNHAM  
MONTEVISTA HS  
1444 HUYLBY STREET  
MONTE VISTA, CO 81144

SLOAN BURNS  
MATH CHAIR  
JAMES RIVER HIGH SCHOOL  
3700 JAMES RIVER ROAD  
MIDLOTHIAN, VA 23113

IMOGENE CABELL  
MATH CHAIR  
AMHERST COUNTY HIGH SCHOOL  
P.O. BOX 410  
AMHERST, VA 24521

ROBERT CANELLI  
FACULTY LEADER  
HIGH SCHOOL IN THE COMMUNITY  
45 NASH STREET  
NEW HAVEN, CN 06511

CARDINAL DOUGHERTY  
CATHOLIC HS  
64 AVENUE & 2ND STREET PIKE  
PHILADELPHIA, PA 19120

PAULINE CLINE  
PRINCIPAL  
MOUNTLAKE TERRACE HS  
21801 44TH AVENUE WEST  
MOUNTLAKE TERRACE, WA 98043

DAVID CONLEY  
UNIVERSITY OF OREGON  
EUGENE, OR 97400

JACK CURRAN  
MANCOS JR./SR. HIGH SCHOOL  
355 GRAND AVENUE  
MANCOS, CO 81328

TERRILEE DAY  
CENTRAL HIGH SCHOOL  
P.O. BOX 730  
CENTER, CO 81125

CERI DEAN  
EISENHOWER HIGH PLAINS  
CONSORTIUM FOR MATH & SCIENCE  
2550 S. PARKER RD STE. 300  
AURORA, CO 80014

ANNÉ DEAN  
MATH CHAIR  
MADISON COUNTY HIGH SCHOOL  
ROUTE 29 SOUTH  
MADISON, VA 22727

ROD DÉJARNETT  
MATH SUPERVISOR  
DENNIS YARMOUTH HIGH SCHOOL  
296 STATION AVENUE  
SOUTH YARMOUTH, MA 02664

KAREN DIXON  
ROCKY MOUNTAIN HIGH SCHOOLS  
1300 WEST SWALLOW ROAD  
FORT COLLINS, CO 80526

JIM EGGLESTON  
ROBESON HIGH SCHOOL  
6855 SOUTH NORMAL BLVD.  
CHICAGO, IL 60621

MARIETT EGGLESTON  
MATH CHAIR  
MONACAN HIGH SCHOOL  
11501 SMOKETREE DRIVE  
RICHMOND, VA 23236

ELEANOR ROOSEVELT  
HIGH SCHOOL  
GREENBELT, MD 20770

BILL ESTERBROOK  
ASST. PRINCIPAL  
PAGOSA SPRINGS HS  
PO BOX 1498, 344 PAGOSA ST  
PAGOSA SPRINGS, CO 81147

PHIL FAUBER  
MATH CHAIR  
CENTRAL HIGH SCHOOL  
1147 SUSAN AVENUE  
WOODSTOCK, VA 22664

PAT GABRAIL  
MATH CHAIR  
JEFFERSON SCI/TECH HIGH SCHOOL  
6860 BRADDOCK ROAD  
ALEXANDRIA, VA 22312

SHIRLEY GILFETLER  
MOUNT EVERETT REG. SCHOOL  
BERKSHIRE SCHOOL ROAD  
SHEFFIELD, MA 01257

YVONEE GLOVER  
MATH CHAIR  
THOMAS A EDISON HIGH SCHOOL  
5801 FRANCONIA ROAD  
ALEXANDRIA, VA 22310

G. DONALD GOERLITZ  
PRINCIPAL  
MT. VERNON HIGH SCHOOL  
MOUNT VERNON, IN 47620

GOV. THOMAS JOHNSON  
HIGH SCHOOL  
1501 NORTH MARKEY STREET  
FREDERICK, MD 21702

ANTHONY GREEN  
MATH CHAIR  
LAFAYETTE HIGH SCHOOL  
4460 LONGHILL ROAD  
WILLIMSBURG, VA 23188

JANECE GWYNN  
MATH CHAIRPERSON  
CANBY HIGH SCHOOL  
721 S.W. FOURTH  
CANBY, OR 97013

BRIAN HANSON  
MATH CHAIR  
MANCOS HIGH SCHOOL  
BOX 420  
MANCOS, CO 81328

HAVEN HENDERSON  
GRADE PRINCIPAL  
CENTRAL PARK EAST HS  
NEW YORK, NY 10000

LINDA HICKEY  
MATH CHAIR  
STUARTS DRAFT HIGH SCHOOL  
ROUTE 4 BOX 108  
STUARTS DRAFT, VA 24477

NANCY HICKS  
MATH CHAIR  
BRUNSWICK HIGH SCHOOL  
2171 LAWRENCEVILLE PLANK ROAD  
LAWRENCEVILLE, VA 23868

CAROLYN HITT  
MATH CHAIR  
MANSFIELD HIGH SCHOOL  
1520 N. WALNUT CREEK  
MANSFIELD, TX 76063

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P.O. BOX 951  
LAJUNTA, CO 81050

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2115 AFTON WAY  
COLORADO SPRINGS, CO 80909

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MANITOU SPRINGS, CO 80829

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DAN RIVER HIGH SCHOOL  
ROUTE 3 BOX 947  
RINGGOLD, VA 24586

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ROBESON HIGH SCHOOL  
6835 S. NORMAL  
CHICAGO, IL 60621

ANDREW JONES  
MATH DEPARTMENT  
WINDSOR HIGH SCHOOL  
26 CHURCH STREET  
WINDSOR, VA 23487

NANCY KALDOR  
PRINCIPAL  
MAYO HIGH SCHOOL  
1420 11TH AVENUE SOUTHEAST  
ROCHESTER, MN 55904

CHERYL KAYES  
MATH CHAIR  
RICHMOND COMMUNITY HIGH SCHOOL  
5800 PATTERSON AVENUE  
RICHMOND, VA 23226

DONNA KILLMAN  
MATH CHAIR  
ARCADIA HIGH SCHOOL  
P.O. BOX 69  
OAK HALL, VA 23416

BETSY KLEIN  
MATH CHAIR  
LIBERTY HIGH SCHOOL  
100 LIBERTY MINUTEMEN DRIVE  
BEDFORD, VA 24523

MS. LAW  
MATH CHAIR  
MAGNA VISTA HIGH SCHOOL  
P.O. BOX 1170  
RIDGEWAY, VA 24148

IRENE LOBER  
STATE UNIVERSITY OF NY  
NEW PALTZ, NY 12561

KEN LYTWYNIUK  
HARRISON HIGH SCHOOL  
2755 JANITELL ROAD  
COLORADO SPRINGS, CO 80906

BILL MACE  
MATH CHAIR  
RANOCAS VALLEY REG. H.S.  
JACKSONVILLE ROAD  
MOUNT HOLLY, NJ 08060

CINDY MARKOWSKI  
MATH CHAIR  
CARSON HIGH SCHOOL  
515 NORTH SANJA FE  
FOUNTAIN, CO 80817

DEBBIE MARKS  
MATH CHAIR  
PLATTE CANYON HIGH SCHOOL  
P.O. BOX 295  
BAILEY, CO 80421

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APPOMATTOX HIGH SCHOOL  
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MATH CHAIR  
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150 STONEWALL LANE  
QUICKSBURG, VA 22847

ROBERT MEKA  
MATH CHAIRMAN  
KING GEORGE HIGH SCHOOL  
8246 BALDGREN ROAD  
KING GEORGE, VA 22485

RON MINTY  
CANON CITY HS  
1315 COLLEGE AVENUE  
CANON CITY, CO 81212

WENDY MOORE  
ASSISTANT PRINCIPAL  
SUMMIT HIGH SCHOOL  
BOX 1468  
FRISCO, CO 80443

GARY MURPHY  
HIGHLAND RANCH HS  
9975 SOUTH CRESTHILL LANE  
HIGHLANDS RANCH, CO 80134

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PRINCIPAL  
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19800 CARPER ROAD  
ROCHESTER, WA 98579

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PARKLAND HIGH SCHOOL  
1600 BREWER ROAD  
WINSTON-SALEM, NC 27127

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BLOOMINGTON, IL 61702-0249

SIDNEY PARKER  
MATH CHAIR  
NORTHWOOD HIGH SCHOOL  
P.O. BOX DRAWER Y  
SALTVILLE, VA 24370

R. SCOTT PFEIFER  
ATHOLTON HS  
COLUMBIA, MD 21043

CHUCK PHIPPS  
CORONADO HIGH SCHOOL  
1590 WESTFILLMORE  
COLORADO SPRINGS, CO 80904

TONYA PORTER  
PRINCIPAL  
CALDONIA HIGH SCHOOL  
CALEDONIA, MI 49316

SARAH QUESENBERRY  
MATH CHAIR  
FLOYD COUNTY HIGH SCHOOL  
869 BAKER STREET  
FLOYD, VA 24091

JAY RAMSEY  
MATH CHAIR  
STRASBURG HIGH SCHOOL  
RAM DRIVE  
STRASBURG, VA 22657

VIRGIL RICE  
PRINCIPAL  
WINFIELD HIGH SCHOOL  
3022 WINFIELD ROAD  
WINFIELD, WV 25213

LINDA ROUSE  
MATH CHAIR  
NANDUA HIGH SCHOOL  
P.O. BOX 489  
ONLEY, VA 23418

KATHY SCOTT  
MATH CHAIR  
POTOMAC HIGH SCHOOL  
16786 JEFF DAVIS HIGHWAY  
DUMFRIES, VA 22026

JEREMY SHIBLEY  
REX PUTMAN HIGH SCHOOL  
4950 S.E. ROETHE ROAD  
MELWAUKIE, OR 97267

CARLENE SHORES  
MATH CHAIR  
TANGIER COMBINED HIGH SCHOOL  
P.O. BOX 245  
TANGIER, VA 23440

THOMAS SHORTT  
PRINCIPAL  
ATLEE HIGH SCHOOL  
MECHANICSVILLE, VA 23111

JACKIE SIMMONS  
ROBESON HIGH SCHOOL  
6835 S. NORMAL AVENUE  
CHICAGO, IL 60621

TERRY SLOAN  
MATH CHAIR  
MANITOU SPRINGS HIGH SCHOOL  
401 ELMONTE PLACE  
MANITOU SPRINGS, CO 80829

STEVE SMITH  
PRINCIPAL  
MACONOMET REGIONAL HS  
20 ENDICOTT ROAD  
RFD TOPSFIELD, MA 01983

WAYNE SMITH  
BAYFIELD HIGH SCHOOL  
P.O. BOX 258  
BAYFIELD, CO 81122

PETER SMITH  
MATH CHAIRMAN  
OMAHA PUBLIC SCHOOLS  
3215 CUMING STREET  
OMAHA, NE 68131

TERRY STATTON  
CODY HIGH SCHOOL  
1225 TENTH STREET  
CODY, WY 82414



BILL STONIS  
PRINCIPAL  
BURLINGTON TWP. HS  
SOUNTON AVENUE  
BURLINGTON, NJ 08016

GENE STREAGLE  
PRINCIPAL  
HOWARD HIGH SCHOOL  
ELLCOTT CITY, MD 21043

MIKE STURGILL  
MATH CHAIR  
CHILHOWIE HIGH SCHOOL  
DRAWER Z  
CHILHOWIE, VA 24319

YVONNE THAYER  
GLOUCESTER COUNTY PUBLIC SCHOOLS  
GLOUCESTER, VA 23061

KATHY WALSH  
MATH SUPERVISOR  
REX PUTNAM HIGH SCHOOL  
4950 S.E. ROETHE ROAD  
MILWAUKEE, OR 97267

CHYSTIA WALTERS  
MATH CHAIR  
ORANGE COUNTY HIGH SCHOOL  
201 SELMA ROAD  
ORANGE, VA 22960

SUSAN WEAVER  
MATH CHAIR  
SMITHFIELD HIGH SCHOOL  
14171 TURNER DRIVE  
SMITHFIELD, VA 23430

WALTER WEISS  
MATH/COMPUTER SCIENCE  
CLEAR CREEK HS  
103 CHICAGO CREEK  
IDAHO SPRINGS, CO 80452

WILLIAMSBURG-JAMES  
COUNTY SCHOOLS  
P.O. BOX 8783  
WILLIAMSBURG, VA 23187

RONALD WILLIAMSON  
EXECUTIVE DIRECTOR-INSTRUCTION  
ANN ARBOR PUBLIC SCHOOLS  
SALINE, MI

WAYNE WOOTEN  
MATH CHAIR  
PULASKI COUNTY HIGH SCHOOL  
5414 COUGAR TRAIL  
DUBLIN, VA 24084

BONNIE WORD  
MATH SUPERVISOR  
FREDERICK COUNTY SCHOOLS  
5584 JOLLIE DRIVE  
FREDERICK, MD

KITTY WYNN-GAVEL  
MATH CHAIR  
HIGHLANDS RANCH HIGH SCHOOL  
9375 S. CRESTHILL LANE  
HIGHLANDS RANCH, CO 80126

APPENDIX B  
POSTCARD SURVEY

\_\_\_\_\_  
School \_\_\_\_\_  
School Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_  
Phone #: \_\_\_\_\_ E-Mail \_\_\_\_\_

1. Does your school currently use block scheduling?    Y    N
2. If yes, what kind of block scheduling do you use?(Please Circle)  
                 Intensive      Modified      Alternate
3. When did you implement block scheduling? \_\_\_\_/\_\_\_\_/\_\_\_\_
4. If no longer using block scheduling, why did you abandon it?  
\_\_\_\_\_
5. Generally math classes meet \_\_\_\_\_ weeks for \_\_\_\_\_ minutes a day. If some math classes vary from the above, please describe.  
\_\_\_\_\_

\_\_\_\_\_  
School \_\_\_\_\_  
School Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_  
Phone #: \_\_\_\_\_ E-Mail \_\_\_\_\_

1. Does your school currently use block scheduling?    Y    N
2. If yes, what kind of block scheduling do you use?(Please Circle)  
                 intensive      Modified      Alternate
3. When did you implement block scheduling? \_\_\_\_/\_\_\_\_/\_\_\_\_
4. If no longer using block scheduling, why did you abandon it?  
\_\_\_\_\_
5. Generally math classes meet \_\_\_\_\_ weeks for \_\_\_\_\_ minutes a day. If some math classes vary from the above, please describe.  
\_\_\_\_\_

Name \_\_\_\_\_ Position \_\_\_\_\_  
School \_\_\_\_\_  
School Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_  
Phone #: \_\_\_\_\_ E-Mail \_\_\_\_\_

1. Does your school currently use block scheduling?    Y    N
2. If yes, what kind of block scheduling do you use?(Please Circle)  
                 Intensive      Modified      Alternate
3. When did you implement block scheduling? \_\_\_\_/\_\_\_\_/\_\_\_\_
4. If no longer using block scheduling, why did you abandon it?  
\_\_\_\_\_
5. Generally math classes meet \_\_\_\_\_ weeks for \_\_\_\_\_ minutes a day. If some math classes vary from the above, please describe.  
\_\_\_\_\_

Name \_\_\_\_\_ Position \_\_\_\_\_  
School \_\_\_\_\_  
School Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_  
Phone #: \_\_\_\_\_ E-Mail \_\_\_\_\_

1. Does your school currently use block scheduling?    Y    N
2. If yes, what kind of block scheduling do you use?(Please Circle)  
                 intensive      Modified      Alternate
3. When did you implement block scheduling? \_\_\_\_/\_\_\_\_/\_\_\_\_
4. If no longer using block scheduling, why did you abandon it?  
\_\_\_\_\_
5. Generally math classes meet \_\_\_\_\_ weeks for \_\_\_\_\_ minutes a day. If some math classes vary from the above, please describe.  
\_\_\_\_\_

Mrs. Eileen DuBois  
c/o Woodstown High School  
140 East Avenue  
Woodstown, NJ 08098

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APPENDIX C  
COVER LETTER TO ACCOMPANY  
POST CARD SURVEY

WOODSTOWN HIGH SCHOOL  
140 EAST AVENUE  
WOODSTOWN, NEW JERSEY 08098-1392  
(609) 769-0144

JOHN B. FARGNOLI  
*Assistant Principal*

STEVEN P. MERKEL  
*Principal*

PETER G. NESTOR  
*Assistant Principal*

November 1995

Dear Fellow Educator,

We are conducting a research study concerning the use of block scheduling in public high schools across the country and its effects on mathematics achievement and course selection. If you are the individual most likely to have this type of information about your school, please fill out and return the enclosed postcard. Otherwise, please pass this on to the appropriate person.

On the postcard, please indicate the type of block scheduling used in your school:

INTENSIVE/SEMESTER BLOCK SCHEDULING: schedules consist of four ninety minutes periods each day. The classes meet daily for a semester. Intensive Block Schedules allow the student to earn the equivalent of one year's credit in one semester.

MODIFIED BLOCK SCHEDULING: schedules are built using a combination of other types of block scheduling and/or traditional scheduling in a fixed or flexible pattern throughout the school year.

ALTERNATE BLOCK SCHEDULING: schedules consist of four approximately ninety minute blocks on each of two days. The two days alternate continuously throughout the school year providing for an equal number of class periods for each course.

Thank you very much for your cooperation.

Sincerely,



Eileen DuBois  
Woodstown High School



A. Elena Bogardus  
Camden County College



Dr. Janet Caldwell  
Rowan College

APPENDIX D  
INTENSIVE BLOCK SCHEDULING  
FULL SURVEY

**Math and Intensive  
Block Scheduling**

Please fill in the blanks.

1. Approximate Number of Students in School \_\_\_\_\_

2. Estimated Percent of College bound students \_\_\_\_\_

3. Math courses offered beyond Algebra II

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. Sequence of math courses leading to AP Calculus (if offered):

\_\_\_\_\_

\_\_\_\_\_

5. Please estimate the following for before (the last year of a traditional schedule) and after (the most recent year in which block scheduling was used in your school).

	BEFORE	AFTER
	Date of Data _____	Date of Data _____
A. Approximate percent of students in grades 11 and 12 taking courses beyond Algebra II		
B. Number of students taking Advanced Placement Calculus		

C. With the additional availability to take elective courses using block scheduling, does it appear as if the students are electing to take additional math courses?  
(Please circle)

YES

NO

\*\*\*Please complete other side\*\*\*



6. If there are any factors other than block scheduling that might have affected enrollments, please describe them.

---



---

7. Please provide the following data for before (the last year of a traditional schedule) and after (the most recent year in which block scheduling was used in your school).

	BEFORE	AFTER
	Date of Data _____	Date of Data _____
A. Mean SAT Math Score		
B. Mean Advanced Placement Calculus (AB) Score		

- C. If there are any other factors other than block scheduling which may have affected math achievement, please describe.

---



---

8. Please provide as much additional information on math achievement as you can. This might include, for example, Advanced Placement BC scores, SAT Math Achievement Tests, PSAT, state tests, ACT, standardized achievement tests, or common finals. If data are available but have not been summarized, please attach the raw data with identifying information removed.

DATA SOURCE	BEFORE	AFTER

9. Please feel free to attach any additional information or comments.

10. If you would like to have a copy of the survey results, please check this space. \_\_\_\_\_

Thanks for your help!

APPENDIX E  
COVER LETTER TO ACCOMPANY  
FULL SURVEY

WOODSTOWN HIGH SCHOOL  
140 EAST AVENUE  
WOODSTOWN, NEW JERSEY 08098-1392  
(609) 769-0144

JOHN B. FARGNOLI  
*Assistant Principal*

STEVEN P. MERKEL  
*Principal*

PETER G. NESTOR  
*Assistant Principal*

December 1995

Dear Fellow Educator,

Thank you for returning our postcard so quickly. Since your school is presently using Intensive Block Scheduling, we would appreciate your cooperation again by completing our survey.

Enclosed you will find the survey as well as a self-addressed stamped envelope for your convenience.

Please feel free to attach any additional information that you feel might be relevant to our study. Any supplementary data will be beneficial. Once more, thank you for your time and generosity!

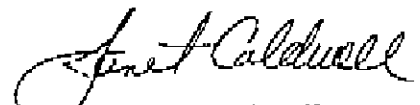
Sincerely,



Eileen DuBois  
Woodstown High School



A. Elena Bogardus  
Camden County College



Dr. Janet Caldwell  
Rowan College

APPENDIX F  
WOODSTOWN HIGH SCHOOL  
FIELD TEST RESPONSE

February 14, 1996

I recently had the opportunity to review a survey designed by Ms. Eileen DuBois on the effects of block scheduling on math achievement in high school. I found this survey to be clearly written and comprehensive in its scope with the exception of gathering information on how long the block scheduling had been in practice at the school completing the survey. Ms. DuBois, however, pointed out that the post card which accompanied the survey did ask for that information, so it was not necessary to include that fact on the survey. Therefore, I believe Ms. DuBois' survey to be an appropriate and effective method of gathering the evidence she needs for her Master's thesis.



Audrey Lovenberg

Instructional Facilitator

Woodstown High School

Woodstown, N.J. 08098

APPENDIX G  
OMAHA PUBLIC SCHOOLS  
FIELD TEST RESPONSE

12-7-95

Eileen

The survey looks good. Perhaps item 9 could be expanded to make sure teachers respond. Included should be specific comments about amount of material being covered, changes in classroom instructional strategies, amount of homework, and increased or decreased use of technology. Thanks for letting me preview this important study!

Pau Smith  
O.P.S.

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