

Old Dominion University

## ODU Digital Commons

---

OTS Master's Level Projects & Papers

STEM Education & Professional Studies

---

1995

### A Study to Determine the Effectiveness of a Seven Bell School Day to a Block Schedule School Day Using Grade Point Averages as a Predictor

Traci Allgor  
*Old Dominion University*

Follow this and additional works at: [https://digitalcommons.odu.edu/ots\\_masters\\_projects](https://digitalcommons.odu.edu/ots_masters_projects)



Part of the [Education Commons](#)

---

#### Recommended Citation

Allgor, Traci, "A Study to Determine the Effectiveness of a Seven Bell School Day to a Block Schedule School Day Using Grade Point Averages as a Predictor" (1995). *OTS Master's Level Projects & Papers*. 340.

[https://digitalcommons.odu.edu/ots\\_masters\\_projects/340](https://digitalcommons.odu.edu/ots_masters_projects/340)

This Master's Project is brought to you for free and open access by the STEM Education & Professional Studies at ODU Digital Commons. It has been accepted for inclusion in OTS Master's Level Projects & Papers by an authorized administrator of ODU Digital Commons. For more information, please contact [digitalcommons@odu.edu](mailto:digitalcommons@odu.edu).

**A STUDY TO DETERMINE THE EFFECTIVENESS OF A  
SEVEN BELL SCHOOL DAY  
TO A BLOCK SCHEDULE SCHOOL DAY  
USING GRADE POINT AVERAGES  
AS A PREDICTOR**



**A RESEARCH PROJECT  
PRESENTED TO  
THE FACULTY OF  
THE DEPARTMENT OF OCCUPATIONAL  
AND TECHNICAL STUDIES  
OLD DOMINION UNIVERSITY**



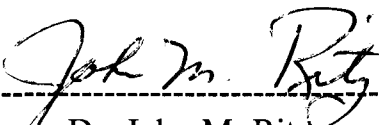
**IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE MASTER OF  
SCIENCE IN EDUCATION DEGREE**



**BY  
TRACI ALLGOR  
AUGUST, 1995**

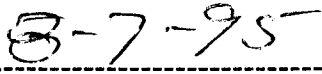
This research paper was prepared by Traci Allgor under the direction of Dr. John M. Ritz in OTED 636, Problems in Education. It was submitted to the Graduate Program Director as partial fulfillment of the requirements for the Degree of Masters of Science in Education.

APPROVED BY:

  
-----  
Dr. John M. Ritz

**Research Advisor and Graduate Program Director  
Occupational and Technical Education  
Old Dominion University**

Date:

  
-----

# TABLE OF CONTENTS

	Page
Signature Page .....	iii
Table of Tables .....	vi
CHAPTER	
I. INTRODUCTION .....	1
Statement of the Problem .....	2
Research Goals .....	2
Background and Significance .....	3
Limitations .....	4
Assumptions .....	5
Procedures .....	5
Definition of Terms .....	6
Overview of Chapters .....	7
II. REVIEW OF THE LITERATURE .....	8
Time .....	8
Retention .....	14
Impact on Students .....	16
Impact on Academic Performance .....	19
Significance of Teacher .....	20

Staff Development . . . . .	21
Summary . . . . .	22
III. METHODS AND PROCEDURES . . . . .	23
Population . . . . .	23
Research Variables . . . . .	24
Instrument Design . . . . .	24
Methods of Data Collection . . . . .	25
Statistical Analysis . . . . .	25
Summary . . . . .	25
IV. FINDINGS . . . . .	26
t - Calculations . . . . .	26
Summary . . . . .	29
V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS . . . . .	30
Summary . . . . .	30
Conclusions . . . . .	31
Recommendations . . . . .	31
BIBLIOGRAPHY . . . . .	33
APPENDICES . . . . .	37
APPENDIX A. A-1 Student numbers and GPA's (GRHS) . . . . .	39
A. A-2 Student numbers and GPA's (OLHS) . . . . .	40

## TABLE OF TABLES

Table I - Block Schedule for 6 Courses . . . . .	9
Table II - Block Schedule for 6 Courses. . . . .	10
Table III - Block Schedule for 7 Courses . . . . .	10
Table IV - Block Schedule for 7 Courses . . . . .	11
Table V - Block Schedule for 8 Courses. . . . .	11
Table VI - Block Schedule for 8 Courses . . . . .	12
Table VII - Seminar Choice List . . . . .	13
Table VIII - Research Data collected from Green Run High School. .	27
Table IX - Research Data collected from Ocean Lakes High School .	28
Table X - Research Data calculated using t-Test . . . . .	29

# CHAPTER 1

## INTRODUCTION

The warm summer breezes slowly disappear as the homeroom bell rings to begin another new school year. It's as reliable as the changing of seasons. Schools throughout the country are proposing considerable change in the organization of the daily school schedule.

One of the most significant developments includes the alternating block schedule. It is the most common choice to the traditional seven-period schedule (Schoenstein, 1994, p. 8). Students take four 90-minute classes Monday, Wednesday and Friday, and four other classes Tuesday and Thursday. The order then rotates the following week. Students concentrate on three or four subjects each day, rather than the traditional six or seven. The rotating block schedule has interchangeably been referred to as double-sessions, concentrated curriculum, 4x4 model or the four-block model. Regardless of the name, the concept is the same (Simmons, 1993, p. 1).

American high schools have changed very little in the past century. Educational reform is under intense scrutiny to organize high schools on the basis of empirical research and experience concerning more efficient and effective instruction. "Time -- or more importantly how we use it -- is becoming an issue of its own, separate from other reform changes, " said Vann Langston,

a consultant with the State Department of Public Instruction who oversees high school programs (Simmons, 1993, p. 1).

The rotating block schedule proposes reduced class sizes allowing instruction to be based on individual's rate of progress while implementing proven effective learning strategies. Fewer interruptions, more teachable moments and additional planning time place the teacher in total control of the classroom environment and daily progress of individual students. "Research shows that students learn more efficiently if instruction is highly individualized and material is presented at the frontier of each student's level of understanding" (Carroll, 1987, p. 6).

## **STATEMENT OF THE PROBLEM**

The problem of this study was to determine the effectiveness of a seven bell school day in a semester keyboarding class as compared to a block schedule school day semester keyboarding class, using grade point average as a predictor.

## **RESEARCH GOALS**

To answer this problem, the following hypothesis was established:

H<sub>1</sub>: Students who attend class in a block scheduling class format are more likely to have higher GPA's than students who attend class in a seven-bell class scheduling system.



## BACKGROUND AND SIGNIFICANCE

The revolutionary era of change initiated by "A Nation At Risk", a critical report of the National Commission On Excellence in Education, confirmed the conceptions that our Nation's schools lacked the effectiveness in preparing productive, resourceful citizens. Educators all across the country focused attentions on the reconstruction of more effective and efficient environments for students. "We observed carefully that while it is possible to change without improving, it is impossible to improve without changing (Carroll, 1987, p. 4).

The traditional school system, dating back to the 1920's, characterized common patterns followed by all schools. School days were divided into seven-bell periods of 45 minutes, five days a week. Academic subjects were divided into departments organized by a principal in charge of the overall system. Learning was based on time in class, and how much a teacher could "cover", rather than content. Bright students with unmarked attendance records received high grades, while those who struggled received lower grades and were pushed through the system.

The block scheduling system introduced initially by the 16th century scholar, Nicolaus Copernicus, has been revised by Joseph M. Carroll. "The purpose of the Copernican Plan was not to change the schedule but to create an environment and structure in which teachers and students could have a better relationship, one in which both would also have a more manageable workload. Schedule changes were a *means* to that end, not an end in themselves" (Kadel,

1994, p. 7).

According to intensive studies of block instructional programs involving the U.S. military, results prove students can master 90% of instructional material in 25% to 50% less time than under traditional instruction (Encyclopedia of Educational Research, 1950, p. 1167). We have seen this study proven every year as students cram semesters of information into weeks of summer school classes. Though considerable research has not been conducted for either the traditional or Copernican scheduling styles, "what there is indicates that students will retain what they learn at least as well" (Powell, 1976, p. 13). "The concentration of attention and more immediate feedback provides powerful reinforcement" (Encyclopedia of Educational Research, 1950, p. 758) resulting in success, igniting a cycle of achievement that generates positive effects in most humans. This research focused on the effectiveness and efficiency of block scheduling for teachers and students.

## LIMITATIONS

The limitations of this study were as follows:

1. The results of this study were confined to Green Run High School and Ocean Lakes High School business education programs in Virginia Beach, Virginia.
2. Two semester classes of keyboarding students were instructed on computers; one governed by a seven-bell schedule and the other by a block scheduling format.
3. The study relied on the individual performance of each member of the class, although the class average would be measured on overall class

performance.

4. The students' ages ranged from freshman to seniors.
5. The period of the study was for the 1993-94 and 1994-1995 school years.

## **ASSUMPTIONS**

In this study there were several factors which were assumed to be true and correct. These assumptions were as follows:

1. The students enrolled in the keyboarding class had never taken keyboarding prior to the class.
2. The students had individual needs, interests, skills and abilities relating to the computer.
3. The students had individual GPA (grade point average) scores before entering the class.

## **PROCEDURES**

Keyboarding students at Green Run High School (GRHS) and Ocean Lakes High School (OLHS) were used to conduct this study. Student records from each class were used to establish individual and class average GPA scores. The GRHS keyboarding class was instructed under a seven-bell system daily, while the OLHS keyboarding class was instructed under a block scheduling format. The study was experimental in nature and conducted as follows:

1. The GRHS keyboarding class was instructed from 8:30-9:25 a.m. daily,

five days a week during the 1993-1994 school year. Each student worked at their own computer.

2. The OLHS keyboarding class was instructed from 9:00-10:43 a.m. every other day during the 1994-1995 school year. Each student worked at their own computer.

3. Both classes were instructed with the same teaching style by the same teacher. The GPA scores for each class were computed utilizing the mean measure of central tendencies for significance.

## DEFINITION OF TERMS

The following is a list of terms and definitions to assist the reader in comprehending this study.

1. **Block Scheduling** - daily school schedule organized into four 90-minute blocks of time allowing flexibility in instructional activities for the students and teachers.

2. **Copernican Pilot Program** - a program implemented by Joseph M. Carroll to test the effects of block scheduling in comparison to the traditional seven bell schedule.

3. **Copernican Plan** - combined block scheduling and other features of school-wide change such as mastery learning to improve students success in high school (Carroll, 1987, p. 7).

4. **Educational Reform** - a change or improvement in the patterns of educational instruction.

5. **GPA** - grade point average

6. **Keyboarding** - an elective class offered to high school students taught on a computer.

7. **Mastery** - full command or control in a subject matter; complete

knowledge.

8. **Mean** - a measure of central tendency defined as the average or sum of the measures divided by the number of measures.

9. **Seven Bell Schedule** - a traditional daily school format organized into six or seven 45 to 55-minute classes a day.

## OVERVIEW OF CHAPTER

This chapter identified the various components of this study. It focused on the organizational strategies of the types of school schedules implemented in high schools across the country. It discussed advantages of block scheduling employed in the process of introducing educational reform techniques. The problem of this study was to determine the effectiveness of a seven bell school day in a GRHS semester keyboarding class to a block schedule school day in a OLHS semester keyboarding class, using GPA as a predictor. Students records were analyzed and calculated in order to acquire the mean GPA of each class. To support the reader's understanding of this study, a definition of terms list was included.

Chapter II, Review of Literature, addresses the problem in relation to similar studies conducted by other researchers. Chapter III, Methods and Procedures, describes the instruments and techniques used to complete the study. Chapter IV, Findings, contains the analysis and results of the study. Finally, Chapter V, Summary, Conclusions and Recommendations, concludes the study.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

The factors determining the effectiveness of block scheduling in comparison to a seven bell schedule are numerous and extensive. This review dealt with current and dated statistics as they influenced the growing decisions toward school restructuring. The elements focused on time, retention, impact on students, impact on academic performance, significance of teacher and staff development.

#### **Time**

American high schools have followed a traditional seven bell schedule since the early 1900's. The school day is divided into seven periods of 45 minutes regardless of the subject matter. Classrooms are teacher-oriented with passive learners and little interaction or discussion. Daily, students must conform to numerous teaching styles and other behavioral requirements while teachers undertake the responsibility of educating 95-150 students.

For many years educators have searched for ways to improve the abilities of high school students to meet the growing demands of society. As we look to the future, finding efficient ways to manipulate instructional time while meeting the needs of students has become challenging. "Teachable moments" are lost in the start up and stopping of class, eliminating needed instructional time for lab work, group activities and class discussion. Unconsciously, teachers begin to

teach to the intellectual middle of the class because there is no time for individual instruction or reinforcement activities. Extended classroom time would provide teachers with more opportunities to monitor and evaluate student's individual progress. "Research shows that students learn more efficiently if instruction is highly individualized and material is presented at the frontier of each student's level of understanding" (Encyclopedia of Educational Research, 1969, p. 1019).

If the application of flexible time is to have an impact on future efforts for restructuring high schools, we must consider how we can efficiently use time for instruction within the present school day. Block scheduling can be adjusted in a variety of ways to meet the needs of schools which offer six, seven and eight bell schedules. Schools can chose to use a two, three or four block method of dividing instructional time to meet their specific needs. Examples of the various types of block methods are provided in Tables 1-6.

TABLE I

Basic Alternate Day Block Schedule Built for 6 courses

Days	M Day 1 A	T Day 2 B	W Day 1 A	R Day 2 B	F Day 1 A	M Day 2 B
Period	1	2	1	2	1	2
	1	2	1	2	1	2
	3	4	3	4	3	4
	3	4	3	4	3	4
	5	6	5	6	5	6
	5	6	5	6	5	6

TABLE II

Basic Alternate Day Block Schedule Built for 6 Courses

Days	M Day 1 A	T Day 2 B	W Day 1 A	R Day 2 B	F Day 1 A	M Day 2 B
Period	1	2	1	2	1	2
	1	2	1	2	1	2
	3	4	3	4	3	4
	3	4	3	4	3	4
	5	6	5	6	5	6
	5	6	5	6	5	6

TABLE III

Basic Alternate Day Block Schedule Built for 7 Courses

Days	M Day 1 A	T Day 2 B	W Day 1 A	R Day 2 B	F Day 1 A	M Day 2 B
P	1	2	1	2	1	2
E	1	2	1	2	1	2
R	3	4	3	4	3	4
I	3	4	3	4	3	4
O	5	5	5	5	5	5
D	7	6	7	6	7	6
	7	6	7	6	7	6



TABLE IV

Basic Alternate Day Block Schedule Built for 7 Courses

Days	M Day 1 A	T Day 2 B	W Day 1 A	R Day 2 B	F Day 1 A	M Day 2 B
Block I	1	2	1	2	1	2
	1	2	1	2	1	2
Block II	3	4	3	4	3	4
	3	4	3	4	3	4
Period 5	5	5	5	5	5	5
Block III	7	6	7	6	7	6
	7	6	7	6	7	6

TABLE V

Basic Alternate Day Block Schedule Built for 8 Courses

Days	M Day 1 A	T Day 2 B	W Day 1 A	R Day 2 B	F Day 1 A	M Day 2 B
P	1	2	1	2	1	2
	1	2	1	2	1	2
E	3	4	3	4	3	4
	3	4	3	4	3	4
R	5	6	5	6	5	6
	5	6	5	6	5	6
I	7	8	7	8	7	8
	7	8	7	8	7	8
O	1	2	1	2	1	2
	1	2	1	2	1	2
D	3	4	3	4	3	4
	3	4	3	4	3	4

TABLE VI

Basic Alternate Day Block Schedule Built for 8 Courses

Days	M Day 1 A	T Day 2 B	W Day 1 A	R Day 2 B	F Day 1 A	M Day 2 B
Block I	1	2	1	2	1	2
	1	2	1	2	1	2
Block II	3	4	3	4	3	4
	3	4	3	4	3	4
Block III	5	6	5	6	5	6
	5	6	5	6	5	6
Block IV	7	8	7	8	7	8
	7	8	7	8	7	8

In a school where students take six or eight courses, half the courses double their instruction time one day while the other three or four classes meet in double blocks the next day (See Tables I, II, V and VI). If a school offers seven courses, six courses would double up every other day while one class, called a singleton, would meet everyday in the traditional single period format (See Tables III and IV).

The singleton period can be utilized to place emphasis on subjects that may require daily class meetings such as math and foreign language. A high school in Clarke County, Virginia, exercises their singleton period as a seminar bell. Their primary goal was to offer a wide variety of activities during the seminar bell, maintaining uninterrupted instruction time throughout the remainder of the school day. A sample of a seminar choice list is provided in Table 7. By improving learning and teaching practices, breaking away from time restraints, eliminating teacher-directed classrooms and passive learners, time can be a powerful instrument, manipulated to bring change to

a school. "Both learners and teachers need more time **not** to do more of the same, but to use all time in new, different and better ways. The key to liberating learning lies in unlocking time" (Prisoners of Time, 1994, p. 10). Although more time may be the key to improving education, questions regarding its authenticity have been raised.

Table 7

Attention Teachers: Correction - All Academic Seminar Days will not "kick in" until after Christmas.

●	Ball	Crafts - part 2 By Ticket Only See list by Mrs. Cox entry
●	Bowman	Physics Retest - Newton's Laws
●	Brosh	Chess
●	Cox	Christmas Crafts - part 2 By Ticket Only
●	Curtis	Weight Room - BFS Program By Ticket Only
●	Edmundson	"Free Willy" continued - Only Previous Tickets will be Honored!
●	Emmars	Sentence Fragment Requiz Periods 2 and 4 Only
●	Gregory	Extra Help for District Band Auditions
●	Grubbs	Algebra II Review for Test
●	Harper	No JCL today - Sorry!
●	Hill	NHS Meeting (Others welcome after 2:30)
●	Johnson, B.	Citrus Fruit Inventory
●	Johnson, L.	Quiet Study
●	Layton	Research Assistance, Make-up Tests, Report Writing, Word Processing
●	Leahy	Newspaper Layouts
●	Loveless	Open Library - By Ticket Only
●	Lyttle	Chemistry - Atomic History Essays
●	Parker	Weight Room - By Ticket Only
●	Quigley	French Club (starts at 2:45)
●	Schletty	Classic Film: "A Christmas Carol" with Alistari Sims - By Ticket Only
●	Sellers	Testing and 2:45 meeting
●	Specht	"Call of the Wild" Video based on famous Jack London story
●	Staples	Driver's Ed Make-ups - for any student
●	Wheeler	Part 2 "Pride and Prejudice"

## Retention

Perhaps the most serious concern raised about block scheduling is whether or not students learn as well and retain as much knowledge as students in a traditional schedule (Kadel, 1994, p. 23). Concerned by the validity of the levels of retention maintained by Copernican students, Joseph M. Carroll tested the Copernican model in a Massachusetts school. He asked a team of Harvard researchers to compare block-scheduled students to a traditionally-scheduled control group. In the beginning, the block scheduled students had lower academic scores and obtained 39 less hours of instruction than the control group. In the end, the block schedule students learned as much as the control group, and retained the information over a longer period of time.

Problems in retention emerge when scheduling sequences of certain courses can not be offered or taken in consecutive semesters. Advanced placement course offerings have also posed concerns with block scheduling. Students completing a semester one course must wait until May to take the exam. Does this time delay present a barrier to the success of the students?

To maintain continuous levels of success, many teachers have expressed the need of daily instruction in courses such as math and foreign language. Principals should become well-versed in the literature on learning and cognition so that he/she can respond in an informed manner regarding short and long term memory and the need for daily learning activities (Shortt, 1994, p. 1). Successful instructional programs can be demonstration models of effective block learning.

The tremendous amount of research and experience with programmed

instruction is insightful. Programmed instruction has four basic characteristics:

1. Focus attention on a limited amount of material at one time.
2. Require a response that is measurable.
3. Provide immediate knowledge of results after every response, i.e., rapid feedback.
4. Permit each student to respond at his own pace (Encyclopedia of Educational Research, 1969, p. 1017).

Four basic widespread examples of successful programmed instructional formats include: the United States military dealing with young high school graduates who are trained for programmed instruction, summer school programs, vocational programs and alternative education programs. Results show that mastery of learning 90% or more could be obtained by students in 24% to 50% less time than under conventional instruction (Encyclopedia of Educational Research, 1969, p. 853).

Experience with summer school programs shows that by meeting three to four hours per day in a period of six weeks, students can complete work equivalent to that of a regular high school course, within 25% to 30% less time than is provided in the traditional schedule (Encyclopedia of Educational Research, 1950, p. 1167).

Vocational and alternative programs provide large blocks of time in a structurally controlled environment where students receive a great deal of individual attention. The allotment of time allows teachers to meet the specific needs of the students eliminating the distractions and impersonalities of the traditional high school surroundings.

Large blocks of instructional time have proven to be constructive for

graduates of military programs, high school students, summer school programs, special needs students and vocational programs. If these diverse types of students can be productive learners instructed under block scheduling, this type of schedule can be effective for all students. Concentration of attention and more immediate feedback provides powerful reinforcement (Powell, 1976, p. 14). Perhaps most important, students remember best that which they really understand and can apply; the memorized abstraction is not remembered much beyond the next test (Calfee, 1981, p. 3).

## **Impact on Students**

Three measures of student conduct that are annually reported to the state include attendance, suspension rates and dropout rates. Evaluation of this data consistently reflects changes in student conduct. Improvements in these three areas of student conduct will be examined in the following Copernican plan, which executes the block schedule format.

In 1989, Joseph M. Carroll's first Copernican pilot program was implemented in seven high schools serving students from rural, urban and suburban communities. The program represented high schools across the United States with enrollments ranging from 250 to 1500 students. Evaluations from the Copernican model begin to accurately measure the effects block scheduling can have on schools. The following statistical information on attendance, rates of suspension and dropout rates were collected from the study. Attendance remained consistent, although four schools showed improvement, two declined and one

showed no change. Only five out of the seven schools provided information regarding suspension rates. Of the five, four reported reductions in the rate of suspensions ranging from 25% to 75% during the first year operating under the Copernican system. Two schools stated a decrease but reported no valid data. One school reported an 11% increase in suspension rates.

The most significant improvement in the pilot study occurred concerning dropout rates. Six of the seven high schools reported a reduction in dropout rate ranging from 17% to 63%. Three of the six high schools had serious trouble graduating 27% to 50% of the students. The dropout rates of these schools were dramatically reduced to 63%, 58% and 36%. One high school's dropout rate increased 62%. The overall average reduction rate for the seven schools equalled 36% in the first year of implementation of the Copernican plan. These statistics support the Copernican approach and demonstrate a superior learning environment which is the focus of block scheduling.

Another example of the effects of block scheduling regarding student conduct was studied at Atlee High School in Hanover County, Virginia. At Atlee High School, the dropout rate for students in grades 9-12 during the 1992-93 and 1993-94 school year was 0%. A major part of this success was the flexibility of the alternate day (A-B) schedule. The creative use of instructional time allowed the faculty and staff to identify at-risk-students and provide educational plans that were relevant to their needs (Shortt, 1994, p. 7).

Furthermore, transient students benefit from the ability to start new classes twice a year. This schedule allows all students to complete more courses, receive more individualized instruction, manage less classes per day and complete less

makeup work.

By reducing suspension rates, dropout rates, and aiding transient students with course selections, classrooms are regaining effective learning environments necessary in rebuilding schools. These outcomes can be attributed to smaller classes and block scheduling which helps to develop improved relationships between teachers and students, providing more manageable workloads for both.

Students who know their teachers and feel apart of their classes are less disruptive and stay in school (Carroll, 1994, p. 112). Block scheduling gives students and teachers an opportunity to know each other well and to develop a sense of group membership and acceptance. Several students stated, "spending so much more time with classmates generates a close-knit, family-like atmosphere" which brings them closer to teachers and each other. For some, it may be as close as they become to a family environment. Many students reflecting on their personal development, drew a connection between their growth, self-confidence and better schoolwork. "They're much more willing to tackle things and give it a try. They're less afraid to make mistakes..." (Guthrie, 1990, p. 16). "If students are more successful, success provides incentive, and incentive starts a success spiral which pays instructional dividends and improves attitudes and discipline as well" (Carroll, 1987, p. 6). Teachers can focus on each students' individual needs rather than targeting on the majority intelligence level. Implementation of a variety of teaching strategies and high quality instructional practices allow teachers to facilitate students who demand additional attention and learn in different ways while challenging the more academically advanced students.



## **Impact on Academic Performance**

In addition to creating self-confidence and positive attitudes, the availability of time in a block schedule format generates an environment conducive to learning. Students change classes less, which creates fewer disruptions enabling students and teachers more opportunities to interact and concentrate on learning. Reducing the number of courses taken in one day reduces the quantity of homework assignments, generates better class preparation, increases the production of quality work and knowledge of subject matter, and increases the quality of understanding (Holston High School Restructuring, 1993-94, p. 3). A student from Parker Vista Middle School in Colorado stated, "before block scheduling I felt like my mind and my locker were much the same. My locker was cluttered. I had to stand in front of it each day and decide what I needed to take home. Now my locker is organized, and my mind is less cluttered and confused. I feel free!" (Alam & Seick, Jr., 1989, p. 733)

Validity of block scheduling was tested by Joseph M. Carroll in his pilot program encompassing seven United States high schools. The schools' increase in academic mastery ranged from 0% to 46%. The average increase was 18%. Two high schools scored above average in their year-to-year state/provincial testing programs. Appropriate testing results were not yet available for the other four schools (Carroll, 1994, p. 113).

Other academic opportunities for students include the availability of elective classes or retaking a course they have failed in the same year. As students make career decisions many choices are offered, providing options and diversity in

course selections. Teachers can utilize their time, teaching styles and techniques by correlating group activities, experiments and projects as important learning tools in the classroom. It is easier for teachers to maintain students interest by personalizing instruction. Different types of assignments become fun and interesting. Most importantly, teachers can plan for a complete "learning cycle" in one lesson...from knowledge to concept, introduction to application, and analysis to evaluation (Holston High School Restructuring, 1993-94, p. 3).

## **Significance of Teacher**

Increased blocks of time improve the amount of time-on-task activities teachers can spend on daily lessons. Block scheduling requires teachers to adjust teaching methods and attitudes to become more appropriate and diversified for the extended period of class time. Although some have raised concerns they will not meet instructional objectives, this is not always the case. At Atlee High School, teachers reported that as the pacing was increased, instruction time provided them an opportunity to teach concepts that they had never had the time to teach in the past. Teachers estimated increased coverage of content ranged from four to six weeks ahead of the previous years pacing (Shortt, 1994, p. 5). The emphasis placed on "coverage of material" has been transferred to content. Traditionally, teachers were held accountable for meeting curriculum guidelines. Contemporary standards reflect a philosophical idea that, "less is more," and "students are viewed as workers" (Schoenstein, 1994, p. 11). Less content, but more information is absorbed than ever before.

Teachers agreed that they modified their methods to some degree to accommodate the changed schedule, but, for the most part, their instruction remained basically the same. They observed that their methods just seemed to "work better" (Alam & Seick Jr., 1989, p. 733).

As teachers deal with fewer students for much longer periods of time, the concept of the teacher as a "role model" reappears (Carroll, 1994, p. 113). All the positive outcomes resulting from the block scheduling format can greatly be attributed to the effectiveness and importance of teachers. This reason alone becomes an essential part of continuous evaluation reinforcing constant improvement.

## **Staff Development**

If block scheduling is to continue to provide unrestricted opportunities for students and teachers, opportunities must also be available for teachers to grow professionally and sharpen teaching skills (Shortt, 1994, p. 9).

As technology appears to continually grow, emphasis should be placed on training in the use of technology as a teaching tool. In addition to training faculty and staff, constant monitoring and evaluation procedures are important in maintaining appropriate changes in instructional methods. Modifications in the teacher evaluation process would enhance the professional growth of teachers seeking to provide quality instruction (Frost, 1992, p. 6).

Before a block schedule is implemented, principals should determine the factors that will reflect the successes or failures of the new educational structure.

Measurable factors could include characteristics aforementioned such as reductions in suspension rates, dropout rates, absenteeism, improved retention rates, academics, aptitude tests, literacy passport scoring and overall school environment. Collection of data will measure what adjustments need to be made to maximize success for teachers and students on a continuous basis.

## **Summary**

The review of literature presented an insightful overview of fundamental changes required by our high schools to meet national demands for improved student performance. Educators across the country are focusing attention on restructuring more effective and efficient environments for students.

As society continues to become more technology-oriented, the need for improved education is justified. If we look at the nation's goals for education and compare them to results reported from evaluations of block scheduling experiments, we can see significant improvements. Reductions in dropout rates, and suspension rates, increases in academic performance and attendance percentages and improved problem solving skills become essential statistics that lead us toward meeting our educational goals.

Chapter III will outline the Methods and Procedures used by the researcher. Chapter IV will review the findings that were gathered. The final chapter will present the Summary, Conclusion and Recommendation of the research collected.

## **CHAPTER III**

### **METHODS AND PROCEDURES**

The methods and procedures used in this study were described in this chapter. The following sections were included: population, research variables, instrument design, methods of data collection, statistical analysis, and summary. The research study was experimental in nature.

#### **POPULATION**

The population of this study consisted of 43 semester keyboarding students. Nineteen of the students were from Green Run High School and 24 of the students were from Ocean Lakes High School. The GRHS keyboarding class was instructed from 8:30-9:25 a.m. daily, five days a week during the 1993-1994 school year. This was the second bell of the day. The OLHS keyboarding class was instructed from 9:00-10:43 a.m. every other day during the 1994-1995 school year. This was the second block of the day. The students grade level in each class ranged from Freshman to Senior. Appendix A contains a numbered listing of the students and their final grade in the keyboarding class.

## **RESEARCH VARIABLES**

The 19 GRHS students were instructed with the same teaching style by the same teacher as the 24 OLHS students. The difference between the GRHS students and the OLHS students was the blocks of time each class spent on instruction. Although, GRHS students were in class 55 minutes every day, OLHS students meeting every other day for one hour and 43 minutes were instructed the same number of total hours. All students worked at their own computer.

## **INSTRUMENT DESIGN**

Three tests, four quizzes and 12 miscellaneous daily assignments were used in the study. The purpose of these tests and quizzes were to measure daily performance and productivity. The 12 miscellaneous assignments included timed writings, language skills, memos, letters, unbound reports, outlines and tables. All assignments were based on a 100 point scale, tests counting 200 points. These measurements were used to show student overall understanding and competencies learned.

## **METHODS OF DATA COLLECTION**

The data was collected by using the raw scores of the grade point averages (GPA's) for each student in both classes. The individual grade point averages

were calculated by adding each student's first semester, second semester and exam grades. The means were found by adding the sum of each classes GPA's and dividing by the number of students. The means from each class were compared for relationship or correlation.

## **STATISTICAL ANALYSIS**

This study was conducted by computing the GPA scores for each class, utilizing the mean measure of central tendencies for significance. Grades for each student were collected throughout the semester and logged in a gradebook. The grades were analyzed statistically using the mean and t-Test methods detailed in the Appendices and Tables in Chapter IV.

## **SUMMARY**

Chapter III outlined the methods and procedures used to carry out this study. These included population, research variables, instrument design, procedures, method of data collection, statistical analysis and summary. Chapter IV presented the findings and results of the study. The summary, conclusions, and recommendations were presented in Chapter V.

## **CHAPTER IV**

### **FINDINGS**

The problem of this study was to determine the effectiveness of a seven bell school day in a semester keyboarding class as compared to a block schedule school day semester keyboarding class, using grade point average as a predictor. This chapter contains the results from the test instruments used in the study. The data was used to determine if there was a significant difference in the grade performance of students enrolled in schools that utilized a traditional seven bell schedule in comparison to the grade performance of students enrolled in schools that operated under a block schedule format.

### **t - CALCULATIONS**

The comparison results of the two schools grade point averages, according to the mean, appear in Tables 8 and 9. Student numbers were assigned to maintain confidentiality of all students. Their grade level and GPA were also listed. The results of the t-Test appear in Table 10.

The scores of both classes were tabulated and the mean scores computed. The mean score for each group was inserted in a t-Test to determine if a statistically significant difference existed between the means. The mean scores of Green Run High School keyboarding students taught under a traditional seven bell



school schedule was: 81.36, compared to that of the Ocean Lakes High School keyboarding students taught under a block bell schedule: 83.79. The t-Test comparison results were determined to be -0.74. The calculated t-ratio indicated that the values did not exceed either the .01 or .05 level of significance, using 22 as a medium degree of freedom and the "Critical Value of t" table (Tuckman, 1988. p. 476). See Table III for t-Test data calculations.

**TABLE 8**

***RESEARCH DATA - GREEN RUN HIGH SCHOOL***

<b>STUDENT IDENTIFICATION</b>	<b>GRADE LEVEL</b>	<b>GPA</b>
Student 1	11	88
Student 2	10	78
Student 3	11	87
Student 4	10	87
Student 5	10	79
Student 6	9	66
Student 7	10	84
Student 8	10	91
Student 9	9	81
Student 10	10	82
Student 11	10	79
Student 12	11	90
Student 13	12	96
Student 14	11	76
Student 15	11	94
Student 16	12	49
Student 17	11	88
Student 18	9	90
Student 19	11	61
	<b>N = 19</b>	<b>Σx = 1546</b>

The mean is:  $\bar{x} = \frac{\sum x}{N}$  (sum of scores)  
 (total number of scores you have)

The mean calculation for the above list of numbers:  $\bar{x} = \frac{1546}{19} = 81.36$

## TABLE 9

### *RESEARCH DATA - OCEAN LAKES HIGH SCHOOL*

STUDENT IDENTIFICATION	GRADE LEVEL	GPA
Student 1	11	93
Student 2	10	88
Student 3	11	87
Student 4	11	85
Student 5	9	82
Student 6	10	98
Student 7	10	91
Student 8	10	85
Student 9	12	82
Student 10	10	78
Student 11	9	66
Student 12	10	66
Student 13	10	84
Student 14	11	94
Student 15	9	83
Student 16	11	93
Student 17	11	83
Student 18	10	83
Student 19	10	84
Student 20	11	91
Student 21	9	88
Student 22	11	55
Student 23	9	86
Student 24	9	86

$$N = 24$$

$$\sum x = 2011$$

The mean is:  $\bar{x} = m = \frac{\sum x}{N}$  (sum of scores)

$N$  (total number of scores you have)

The mean calculation for the above list of numbers:

$$\bar{x} = \frac{2011}{24} \quad \sum x = 83.79$$

## TABLE 10

*RESEARCH DATA = t - Test*

t-Test formula:

$$t = \frac{m1 - m2}{\sqrt{\left(\frac{\sum d1^1 + \sum d2^2}{N1 + N2 - 2}\right) \left(\frac{N1 + N2}{N1 * N2}\right)}}$$

**Data collected from Green Run High School and Ocean Lakes High School:**

$$t = 81.36 - 83.79$$

$$\sqrt{\left(\frac{2524.24 + 2141.86}{19 + 24 - 2}\right) \left(\frac{19 + 24}{19 * 24}\right)}$$

**t - Test Results:**

$$t = \frac{-2.43}{\sqrt{10.69}} = \frac{-2.43}{3.27} = -0.74$$

## SUMMARY

Chapter IV provided the results of the test administered to collect data. The data was recorded and calculated. The data was presented for each class by calculating the mean scores and performing a t-Test to determine if a significant difference existed between the means. Chapter V will provide the Summary, Conclusions and Recommendations of the Study.

## **CHAPTER V**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **SUMMARY**

The problem of this study was to measure the effectiveness of a seven bell school day in a semester keyboarding class as compared to a block schedule school day semester keyboarding class, using grade point average as a predictor. The hypothesis of this study was to find out if students who attend class in a block scheduling class format are more likely to have higher GPA's than students who attend class in a seven bell class scheduling system.

The data was collected using grade point averages for each student in both classes. The individual grade point averages were calculated by adding each student's first semester, second semester and exam grades.

The mean was found by adding the sum of each classes GPA's and dividing by the total number of students in the class. The mean scores for both classes were calculated and used to compute the t-Test. The mean and the t-Test methods were used to check for significant differences, relationships or correlations.

## **CONCLUSIONS**

The findings of this study showed that there was no significant difference in the grade point averages of keyboarding students following a traditional seven bell schedule compared to keyboarding students following a block schedule format. According to the data presented in Chapter IV, the mean scores of the Green Run High School students was: 81.36, compared to the mean scores of the Ocean Lakes High School students: 83.79. This data used to compute the t-Test, as displayed in Chapter IV, was determined to be -0.74. The values from the computed t-ratio did not exceed either the .01 or .05 level of significance. The degree of freedom used was 22. Therefore, the researcher rejected the hypothesis that there would be a significant difference in the grade point averages of students in a traditional seven bell schedule compared to those in a block schedule format.

It should be noted that although the averages of both classes were close statistically, the average grade point average in the block scheduled class was consistently higher. In the block class, three low GPA scores greatly reduced the overall mean.

## **RECOMMENDATIONS**

Based upon the research findings and conclusions of this study, the researcher includes the following recommendations:

1. Similar research should be repeated, in the same format, following a college freshman from a block format and one from a traditional format, calculating which could adjust to a college schedule more quickly and effectively. Time management is a factor.

2. Similar research should be repeated, in the same format, tracking a high school freshman through four years of either block or traditional scheduling.
3. Additional research is needed in order to determine which of the school day schedules is more or less effective concerning students grade point averages as well as learning.
4. Similar research should be repeated, in the same format, for students from two very different socio-economical backgrounds.
5. Additional research is needed using only those students in a class that meet school policy requirements for absenteeism.

## **BIBLIOGRAPHY**

## BIBLIOGRAPHY

- Alam, Dale and Seick, Robert E., Jr. (1989). *A Block Schedule with a Twist*. Phi Delta Kappan. (pp. 732-733).
- Calfee, Robert. (1981). *Cognitive Psychology and Educational Practice*. Review of Research in Education. American Education Research Association. (pp. 3-73).
- Canady, Robert Lynn. (1990). *Parallel Block Scheduling: A Better Way to Organize School*. Principal. (pp. 34-36).
- Canady, Robert Lynn and Rettig, Michael D. (1993). *Unlocking the Lock-Step High School Schedule*. Department of Secondary Education, James Madison University. (pp. 2-17).
- Carroll, Joseph M. (1987). *The Copernican Plan: A Concept Paper for Restructuring High Schools*. New Orleans, LA: American Association of School Administrators. (ERIC Document Reproduction Service No. ED 281 308).
- Carroll, Joseph M. (1994). *The Copernican Plan Evaluated - The Evolution of a Revolution*. Phi Delta Kappan. (pp. 105-113).
- Encyclopedia of Educational Research, Review of Research in Education. American Educational Research Association. (pp. 758-1167).
- Frost, Diane. (1992). *The Asheboro High School Block Schedule*. Department of Secondary Education, James Madison University. (pp. 1-6).



- Guthrie, Larry F., and others. (1990). *Providing Options for At-Risk Youth: The Health and Media Academies in Oakland*. Madison, WI: Far West Lab. for Educational Research and Development. (ERIC Document Reproduction Service No. ED 337 528).
- Holston High School Restructuring. (1993-94). *Commitment to Excellence*. Department of Secondary Education, James Madison University. (pp. 1-7).
- Kadel, Stephanie. (1994). *Reengineering High Schools for Student Success*. Washington, D.C.: Office of Educational Research and Improvement. (ERIC Document Reproduction Service No. ED 366 076).
- Powell, Barbara Schieffelin. (1976). *INTENSIVE EDUCATION: The Impact of Time on Learning*. Newton, MA: Educational Development Center Inc. (pp. 12-14).
- Prisoners of Time - Report of the National Education Commission on Time and Learning*. (1994). U.S. National Educational Commission on Time and Learning. (p. 10).
- Schoenstein, Roger. (1994). *Block Schedules - Building the High Schools of the Future?* Virginia Journal of Education. (pp. 7-13).
- Shortt, Thomas L. (1994). *The Next Generation of Block Scheduling*. Virginia Department of Secondary Education. (pp. 1-11).
- Simmons, Tim. (1993). *School bells herald a change in traditional day*. The News and Observer. CD Newsbank. (p. A1).

Tuckman, Bruce W. (1988). *Conducting Educational Research*. San Diego: Harcourt, Brace and Jovanovich, Inc. (p. 476).

Vance, Debra Anne. (1994). *Change is in the wind for high schools*. The Kentucky Post. CD Newsbank. (p. 1K).

## **APPENDICES**

## **APPENDIX A**

### **Student Numbers and GPA's**

## APPENDIX A - 1

KEYBOARDING  
GREEN RUN HIGH SCHOOL  
1993-1994  
2ND BELL (8:35-9:25 a.m.)

STUDENT IDENTIFICATION	GRADE LEVEL	GPA	d of 1	d <sup>2</sup> of 1
Student 1	11	88	6.64	44.08
Student 2	10	78	-3.36	11.28
Student 3	11	87	5.64	31.80
Student 4	10	87	5.64	31.80
Student 5	10	79	-2.36	5.56
Student 6	9	66	15.36	235.92
Student 7	10	84	2.64	6.96
Student 8	10	91	9.64	92.92
Student 9	9	81	-.36	0.12
Student 10	10	82	.64	.40
Student 11	10	79	- 2.36	5.56
Student 12	11	90	8.64	74.64
Student 13	12	96	14.64	214.32
Student 14	11	76	-5.36	28.72
Student 15	11	94	12.64	159.76
Student 16	12	49	32.36	47.16
Student 17	11	88	6.64	44.08
Student 18	9	90	8.64	74.64
Student 19	11	61	-20.36	414.52

$$\sum d1^2 = 2524.24$$

**APPENDIX A - 2**

KEYBOARDING  
OCEAN LAKES HIGH SCHOOL  
1994-1995  
2ND BLOCK (9:07-10:43)

<b>STUDENT IDENTIFICATION</b>	<b>GRADE LEVEL</b>	<b>GPA</b>	<b>d of 2</b>	<b>d<sup>2</sup> of 2</b>
Student 1	11	93	9.21	84.82
Student 2	10	88	4.21	17.72
Student 3	11	87	3.21	10.30
Student 4	11	85	1.21	1.46
Student 5	9	82	-1.79	3.20
Student 6	10	98	4.21	201.92
Student 7	10	91	7.21	51.98
Student 8	10	85	1.21	1.46
Student 9	12	82	-1.79	3.20
Student 10	10	78	-5.79	33.52
Student 11	9	66	-17.79	316.48
Student 12	10	66	-17.79	316.48
Student 13	10	84	.21	.04
Student 14	11	94	10.21	104.24
Student 15	9	83	-.79	0.62
Student 16	11	93	9.21	84.82
Student 17	11	83	-.79	0.62
Student 18	10	83	-.79	0.62
Student 19	10	84	.21	.04
Student 20	11	91	7.21	51.98
Student 21	9	88	4.21	17.72
Student 22	11	55	-28.79	828.86
Student 23	9	86	2.21	4.88
Student 24	9	86	2.21	4.88

$$\sum d^2 = 2141.86$$