THE EFFECTS OF PARALLEL SCHEDULING UPON CLASSROOM INSTRUCTIONAL TIME AND THE LANGUAGE ARTS AND MATHEMATICS ACHIEVEMENT SCORES OF ELEMENTARY STUDENTS

by

Jody Sponsler Carlisle

Dissertation submitted to the faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Doctor of Education

in

Education Administration

APPROVED:

Dr. Kenneth Underwood
Co-Chairman

Dr. Ronald McKeen
Co-Chairman

Dr. Judy Nash

Dr. Jim Fortune

Dr. Houston Conley

March 1988
Blacksburg, Virginia

THE EFFECTS OF PARALLEL SCHEDULING UPON CLASSROOM INSTRUCTIONAL TIME AND THE LANGUAGE ARTS AND MATHEMATICS ACHIEVEMENT SCORES OF ELEMENTARY STUDENTS

by

Jody Sponsler Carlisle

Committee Co-Chairmen: Dr. Kenneth Underwood
and Dr. Ronald McKeen

Education

(ABSTRACT)

Historically, scheduling has not been a major concern for elementary school principals but has been viewed by many as the task of the secondary principal (Canady, 1985). Recently, however, more attention has been given to the merits of scheduling for several reasons.

The purpose of this study was to determine the impact of parallel scheduling upon classroom instructional time and the scores of elementary students in language arts and mathematics. Parallel scheduling was defined as the structuring of the school day by the principal to ensure that specialist schedules (art, music and physical education) and the support schedules (special programs for selected students) enhance rather than fragment the instructional day. This scheduling design ensured that all children received direct teacher instruction without interruption to attend a pull-out program. It also reduced

the number of students in the classroom during direct instruction in reading and mathematics allowing the teacher the opportunity to provide direct instruction to 12-15 students without the presence of the remainder of the students in the classroom. This encouraged efficient and effective use of instructional time during each school day.

This study was designed to address the following questions:

1. What impact, if any, does the use of parallel scheduling as compared to a regular elementary schedule have upon elementary students?

2. Does the performance level of elementary students in parallel scheduling interact with student achievement?

3. Does parallel scheduling impact classroom instructional time?

To accomplish this purpose, a quasi-experimental non-equivalent control group design was used as the researcher was unable to randomly assign the participants to the pilot and control groups. Data was collected from an assigned pilot school and a control school, that had been matched based on socio-economic level, size of school, and standardized test scores. All students in grades two, four and five in the pilot and control schools served as subjects for the study.

A pre and post test, the Metropolitan Achievement Test, was utilized to measure growth and achievement of the elementary students. Analysis of covariance was the

statistical method used to determine the relationship of parallel scheduled schools and regular scheduled schools with regard to reading, language and mathematics achievement.

Secondly, the Classroom Check List, designed by Jane Stallings (1977), was used to collect data relative to the type of activities that were occurring in the classroom, the size of the group involved in the activity, and whether students were working directly with the teacher or independently. The Chi-Square test was used to determine the relationship between classroom activities, size of groups, and whether students worked directly with the teacher or independently.

It was determined from this study that there were significant differences in the vocabulary, word recognition, total reading, math computation and post total battery achievement scores of children in parallel scheduling as compared to children in regular scheduled schools.

No relationship could be established between classroom activities, the size of student groups, nor the direct interaction with teachers and parallel scheduling. Therefore, no relationship could be established between parallel scheduling and classroom instructional time.

ACKNOWLEDGEMENTS

As with most endeavors, the writing of this dissertation was not accomplished alone. There are many people whom I wish to thank for their support, guidance and encouragement as I advanced through my doctoral program and completed my dissertation. First, I would like to express my gratitude to my dissertation committee. Dr. Kenneth Underwood and Dr. Ron McKeen served as co-chairmen for my committee and were instrumental in helping me to conceptualize my topic as well as assisting with the final completion of the study. They provided answers to my many questions and encouragement throughout my program of study. Dr. Jimmy Fortune provided the much needed assistance and patience with the statistical design of this study and the interpretation of the data. Appreciation and sincere thanks are also extended to Dr. Houston Conley and Dr. Judy Nash for their continued patience and assistance with finalizing the document.

A special thank you is extended to , a fellow doctoral student who served as the observer for the collection of the observation data.

Sincere gratitude is extended to and , my co-workers, for their unending support and encouragement.

Appreciation is extended to the principals and teachers who participated in the study as well as to my school system for allowing me to conduct the study.

Finally, my sincere gratitude and appreciation are expressed to my family and many friends for their unending support and encouragement throughout my doctoral program.

DEDICATION

This dissertation is dedicated to Dr. Warren Baldwin and to my parents, and , for their support, patience, understanding and faith during the past five years of change and growth.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

Introduction

Historically, scheduling has not been a major concern for elementary school principals but has been viewed by many as the task of the secondary principal (Canady, 1985). Recently, however, more attention has been given to the merits of scheduling for several reasons. First, the National Commission's Study (1983), A Nation at Risk: The Imperative for Educational Reform, addressed the usage of time in our schools and emphasized in Recommendation C of the report, "...that significantly more time should be devoted to learning the New Basics. This will require more effective use of the existing school day, a longer school day or a lengthened school year" (p. 29).

Secondly, effective school research such as that conducted by Emonds and Frederikson (1977) indicated that the principal must have strong administrative leadership. Strong principals establish a clear focus and communicate high expectations. More importantly, John Goodlad (1984) emphasizes that strong principals schedule for classes especially in the areas of reading and math.

Thirdly, there have been many changes in the elementary program over that past several decades that suggest the need for a thorough examination of how our schools are organized

and our instructional day is structured. Support services are now provided by resource teachers and specialist. With the increase in pull-out programs, it has become increasingly important for the elementary principal to avoid fragmentation of the instructional day.

Statement of the Problem

In a 1985 Elementary Task Force Report conducted by a large suburban county in Northern Virginia, it was noted that frequent disruptions and interruptions constantly plague the elementary instructional day and cause major disruptions during classroom instruction. Specialists' schedules (art, music and physical education) and the support schedules (special programs for selected students such as Chapter 1 reading, reading resource, speech, learning disabilities resource, English as a second language resource and gifted education) were cited as major causes for the classroom disruptions.

All of these programs lend critical support to the instructional program. There was, however, an obvious need for a means of scheduling these programs that supported the classroom program rather than fragmenting the day. Exceptional care would have to be taken in using an alternative schedule as support programs are governed by federal and state guidelines which must be adhered to and

constantly monitored. A means of providing support services to students as well as a way to ensure quality instructional time in the regular classroom which allows for maximum achievement opportunities for all students was crucial.

Therefore, this Northern Virginia School System, like many other school districts nationwide, was in search of a way to provide pull-out services to students as well as to provide quality classroom instructional time with maximum achievement.

Parallel scheduling, one form of instructional scheduling, was identified by the school system as one potential alternative for meeting this need. It may be the "...device which brings together the school's resources (staff, time, space and materials) and its raw materials (the students). To the extent that the schedule ensured that the right combination of resources and raw materials are in touch, it increases the likelihood of achieving the schools' stated goals" (Canady & Butler, 1981, p. 29).

The parallel scheduling program was defined as the structuring of the school day by the principal to ensure that specialist schedules (art, music and physical education) and the support schedules (special programs for selected students) enhance rather than fragment the instructional day. This scheduling design ensured that all children received direct teacher instruction without interruption to attend a pull-out program. It also reduced

the number of students in the classroom during direct instruction in reading and mathematics allowing the teacher the opportunity to provide direct instruction to 12-15 students without the presence of the remainder of the students in the classroom. This encouraged efficient and effective use of instructional time during each school day. None of the sudies reviewed provided data on the impact of parallel scheduling upon elementary student achievement and the use of instructional time.

The parallel scheduling pilot program was to be compared with a regular scheduled elementary school in the county in order to determine the impact of instructional scheduling upon classroom instructional time and achievement in reading, language and mathematics. Children in the regular scheduled school receive reading and math instruction in both small and large group settings in their regular classroom with pull-out programs being scheduled randomly during the course of the day. Pull-out program schedules are determined by the classroom teacher and resource teachers involved rather than by the building principal.

Purpose of the Study

The purpose of this study is to determine the impact of parallel scheduling upon classroom instructional time and

the achievement of elementary students in reading, language and mathematics. This study is designed to address the following questions:

1. What impact, if any, does the use of parallel scheduling as compared to a regular elementary schedule, have upon elementary students?

2. Does the performance level of elementary students in parallel scheduling interact with student achievement?

3. Does parallel scheduling impact classroom instructional time?

Significance of the Study

A need was cited for research with regard to the effects of instructional scheduling upon student achievement in a school system with annual norm-referenced testing for all students (Hoffman, 1984). Hoffman had concluded in an earlier study "that teacher directed instruction and student time on task were characteristics facilitated by the instructional schedule." (Hoffman, p. 248)

The basic work for this study originated with a review of the literature on how a principal can facilitate the most effective use of time in the classroom for maximum achievement of students. This review included literature on school organization and effectiveness, the use of classroom instructional time and the impact of each upon achievement. Within this review researchers such as Fisher and Rosenshine

(1982) stated that the most effective classroom arrangements for effective teaching are not often possible due to the numbers of children that must be assigned to classrooms in public schools. This concern coupled with literature relative to the most effective use of time in the school day for maximum student achievement provided the basis for this study.

Definition of Terms

Selected terms having specific meanings in the study have been defined below for the purpose of clarity. The specific terms and meanings are as follow:

Parallel Scheduling

"A block of time is scheduled for essential and/or desired small groups parallel to large group instructional activities and support services" (Canady & Hotchkiss, p. 344). Parallel scheduling reduces class size for small group reading and math instruction and allows for scheduling of pull-out programs during large group skill reinforcement time (Appendix A - Sample Parallel Schedule). Students work in a large group with an extension center teacher to reinforce skills taught by the regular classroom teacher during direct small group reading or math instruction. The extension center teacher supervises student work on

computers, kits, learning games, and other reinforcing activities. Students who receive special services (speech, learning disabilities resource, reading resource, Chapter 1 resource, English as a second language, and gifted education resource) receive these services during extension center time rather than during classroom instructional time.

Regular Elementary Schedule

Children receive reading and math instruction in both small and large group settings in their regular classroom with pull-out programs being scheduled randomly during the course of the day. Pull-out program schedules are determined by the classroom teacher and resource teachers involved.

Limitations of the Study

The limitations of this study include the population used for the study, the validity of the observation and testing instrument, and the processing of all of the data collected. The population of the study was limited to one elementary school within one school district selected by the Director of Elementary Education and endorsed by the local school board to serve as a pilot school for parallel scheduling. This school was then matched with another school within the school district on the basis of socio-

economic level, size of school, and standardized test scores. The second, fourth and fifth grade levels within the selected schools were further identified by the building principal as the grade levels to implement parallel scheduling. Parallel scheduling was compared to a regular elementary schedule which further limits the generalizability of this study. Children in the regular scheduled school received reading and math instruction in both small and large group settings in their regular classroom with pull-out programs being scheduled randomly during the course of the day.

The achievement test scores in reading, language and math were obtained from the Metropolitan Achievement Test. The results were limited to the validity of that test instrument. Scores were obtained from a pre and post test administered at the beginning and end of one school year. Children were tested in their classrooms in their individual school. Therefore, all scores from the test were not obtained under identical conditions.

The observation data was obtained by a trained observer using an observation instrument, "The Snapshot," developed by Jane Stallings (1977). The results were limited to classroom activities observed and recorded by the observer at a specific time on a specific day in an assigned classroom. Therefore, all classroom observations were not obtained under the same conditions.

All data collected was entered into a computer, thus allowing for systematic error.

Organization of the Remainder of the Study

The remainder of the study is reported in four chapters. A review of the literature is reported in Chapter II. A description of the pilot population used for the study is included in Chapter III. Also, the method of collecting the data and the instrument used are cited. The analyses of the data and findings are reported in Chapter IV. The conclusions and summary of the study are discussed in Chapter V.

CHAPTER II

A Review of the Relevant Literature

A review of the literature is presented in this chapter for the purpose of identifying those characteristics associated with the organization of the instructional day and its impact upon student achievement. Therefore, the review of literature will include a close examination of studies that address school organization and effectiveness, the use of classroom instructional time, and the impact of each upon achievement. A summary of this literature will follow this review.

Effective Organizational Structure

"There is a growing body of evidence that school administrators should direct greater attention to how the school day is structured. Organization is critical to a successful school operation, and an effective school structure is achieved primarily through the scheduling process" (Canady & Hotchkiss, 1985, p. 344). Moody and Amos (1975) concluded from their studies that organizational arrangements were contingent upon the involvement and commitment of the principal. They stated that "...gains in academic achievement may be maximized through the

organizational arrangements which aid teachers in utilizing their professional talents to the fullest extent possible in providing for pupil needs" (p. 56).

Conclusions drawn from case studies of effective schools located in the metropolitan areas of Baltimore, New York City and Richmond indicated that "effective schools suggest that the school as an organization and the characteristics of the adults who run it are more important determinants of achievement than family background of the students" (Glenn and McLean, 1981, p. 13).

In a study conducted by the Maryland Department of Education during 1978, high achieving schools were found to have a sense of direction. A specific set of goals and objectives were established for the school to achieve. Generally in a high achieving school there was consensus that the school was "being run" rather than just running.

The social structure and climate in eight schools were closely examined by Brookover and Lezotte (1977). They found that six of the schools were improving while two were described as declining. Some of the characteristics that they identified in the effective schools were high expectations and commitment by both principal and teachers; an emphasis on the basic skills; schedules that devoted more time to direct skill instruction and a model of accountability for improvement. (p. 66)

After a close examination of many organizational arrangements and processes for improving academic achievement in inner city schools, Levine and Stark (1981) recommended that "Stress [should be placed on] instructional and organizational arrangements..." (p. 63). They emphasized that this arrangement should be adapted to fit the needs of the school.

Clauset and Gaynor (1980) defined schools as systems that produce multiplier effects. They emphasized that administrators should do the following:

> (1) Be concerned with maximizing available instructional time and increasing the effective use of time.
>
> (2) Focus time on working with students and organizing teachers and parents in setting expectations for student behavior. (p. 55)

Clauset and Gaynor emphasized further that strong leaders should establish policy to enhance instructional time.

Organizational structure is a difficult problem for the elementary principal. The self-contained classroom continues to be the dominant form of organization for elementary schools. The antithesis of the self-contained classroom is departmentalization, a program where children move from one classroom to another. Much research has been conducted over the years concerning the two arrangements and a great deal of it has been inconclusive. Tyler (1958) while not mentioning either departmentalization or the self-contained classroom by name stated, "From the standpoint of

achieving desirable organization, any structural arrangement that provides for larger blocks of time under which planning may go on has an advantage over a structural arrangement which cuts up the time into many specific units, each of which has to be planned with some kind of transition and consideration of the work of other units" (p. 123-124).

At the University of Virginia, professors and graduate students have collected data over a ten year period of time concerning a scheduling model. Data has been collected from one Virginia school system which has over 8,000 students. Gains in reading achievement have been documented. "Variables within the control of school personnel, such as policies and the organizational structure, accounted for a large degree of gains. The only major change which occurred in the organizational structure was the implementation of parallel scheduling." (Canady, 1985, p. 353)

In another study conducted by Hoffman (1984) findings indicated that the perceptions of principals and teachers using parallel scheduling were significantly congruent with the seven effective school variables.

"Attending to the organizational structure or scheduling of an elementary school can be a significant first step in the planning for the improvement of an elementary school." (Canady, 1985, p. 355)

Classroom Instructional Time

Allotment of Time

The significance of time in an elementary classroom is pointed out by Bloom (1974) when he stated, "All learning, whether done in school or elsewhere requires time." (p. 682) He reported that if youngsters were given the time, assistance needed and they were motivated to use both then they would be able to master a set criterion. Bloom concluded his studies with "while there can be no simple explanation for all of these differences [in learning achievement], it seems to some of us that the percent of time the student spends on task in the classroom may be a powerful variable underlying most of these differences." (p. 687) If we were to restate Bloom's findings, we might conclude that we cannot expect an increase in student competence in areas of learning for which there has been no time allocated. Therefore, the way in which teachers choose to allocate time for instruction definitely impacts upon the quantity and quality of learning.

A number of studies have been conducted concerning the relationship of time and achievement in selected subject areas. Riedesel (1971) stated in an essay on the use of time in teaching elementary mathematics that although there has been little research concerning the optimum length of class time in mathematics instruction, there are strong

indications that an increased amount of time devoted to instruction would result in a significant increase in achievement.

As reported by Shirley Kazarian (1977), Jarvis (1962) studied the relationship of varying time allotments to pupil achievement in reading, mathematics and language. According to Jarvis the purpose of the study was to determine the relationship between varying class period lengths and pupil achievement. The sample was limited to the upper elementary grades in the Texas Gulf Coast area. The achievement level of 329 students in reading, language and math for specific class durations was compared to students of like ability with shorter class durations. The conclusions drawn by Jarvis were maximum time allotments in math reasoning favored pupil achievement and also maximum time in language mechanics favored pupil achievement.

There are also a number of studies in contrast to the findings that have been previously discussed. Williams (1969) used a sample of 675 elementary students and divided them into three treatment groups that varied the amount of time allotted to reading instruction. He found that the time allocated for reading instruction did not influence reading achievement.

Kiesling (1975) varied instructional modes (whole group, small group, individualized instruction and individual help) as well as allocated time as independent

variables in measuring reading achievement on criterion referenced tests. He concluded that one of his most important findings was that the number of minutes of classroom teacher instruction seemed to relate to student achievement when measured by a criterion referenced test, but not by a standardized test.

Findings by Sullivan (1975) led him to draw the following conclusion: "There is no relation between a school systems' daily reading instructional time allotments in grades one through seven and student reading achievement scores in grades two through eight." (p. 5793A)

Allocated and Engaged Time

As was found in the literature relating to allocation of time, there is another side to the issue regarding the relationship between classroom instructional time, the opportunity to learn and student achievement. The Far West Laboratory for Educational Research and Development has been concerned with a study of teacher effectiveness. The laboratory has conducted this study for the California Commissioner for Teacher Preparation and Licensing through funds supplied by the National Institute of Education. The laboratory has studied teachers in second and fifth grade to identify teacher behavior and classroom qualities related to student achievement in reading and mathematics. This multi-

year research effort is called the Beginning Teacher Evaluation Study (BTES).

During 1974-75 Annegret Harnischfeger and David Wiley (1975) developed a conceptual scheme for studying time allocation for the laboratory. This work resulted in a field study examining the relationship of instructional time and student achievement. Initial research in BTES led to a belief that an important element of teaching and learning is instructional time. They found variations in the amount of time allocated for the learning of specific subjects. They also found that student involvement varied when they became engaged in an assigned academic activity. These results called for further study and led to several other investigations which later became a part of the continuation phase of BTES.

One of the substudies conducted by Fisher, Filby and Marliave (1977) provided evidence that quantities of allocated and engaged time were related to achievement. They emphasized that instructional time and student achievement were positively related.

To test this relationship between instructional time and achievement, the researchers posed two research questions:

(1) Do students who have more time allotted to a particular subject area learn more?

(2) Do students who spend more engaged time in a particular subject area also learn more in that area?

The researchers believed that of the time allocated to a specific subject area, students will spend some of the time engaged in on-task behavior (engaged behavior) and some of the time engaged in off-task behavior. Allocated behavior, of course, was the number of minutes the teacher allotted for a subject area. The sample studied consisted of nine second grade teachers recruited in the San Francisco area. Data for 152 students was collected and analyzed.

Achievement tests in reading and mathematics were administered two times about eight weeks apart. During this time teachers were also recording the time allocated to reading and mathematics. Direct observation was used to collect data regarding engaged time. The differences found in the quality of instruction were not significantly greater than the differences in the amount of instruction. Reasons to qualify the results obtained included a short achievement measure with ceiling effects on many of the reading scales. In the words of the authors, "Although it is but speculation at this point, these few concepts [allocated and engaged time] provide a potentially powerful way to think about teaching effectiveness." (p. 36)

In the results of another study by Filby, Marliave, and Fisher (1977) where teachers had been asked to keep time logs, it was found that 24 to 45 percent of the school day

was spent in reading or reading related instruction. The average time for mathematics differed by as much as four to one. In both areas, engaged time averaged about 50 percent and varied greatly between classes. The lowest engagement rate was 25 percent and the highest 91 percent.

In grade five, the amount of time devoted to direct reading instruction varied from about one-half hour per week to one and a half hours per week. This variation was almost three to one. The overall mean engagement rate was 65 percent.

Use of Allocated and Engaged Time

Stallings and Kaskowitz (1974) observed students in 108 first grade and 58 third grade classrooms. Three complete days of observation took place in each classroom. During this observation Stallings and Kaskowitz recorded what each child was doing in the room every 15 minutes, using a "snapshot." They discovered that time spent on both reading and mathematics activities produced significant and consistent correlations of approximately .40 while other activities which occurred almost invariably produced negative correlations.

In the same study, Stallings and Kaskowitz (1974) also uncovered data on the percentage of time students were engaged in academic activities in each Follow Through program. The average percent of engaged time ranged from 29

to 59 percent per day for activities in reading and mathematics. Of the Follow Through programs, the top three programs in time engagement were also the top three in achievement.

Rosenshine and Berliner (1978) discovered that time-on-task emerged as an "essential variable for which there is no substitute" (p. 12). They emphasized that adequate "time-on-task" should be a primary objective of every teacher. They propose that teachers should assess levels of achieved time on task in their classrooms and choose strategies to increase these levels. Rosenshine and Berliner stated that teachers need to make complex diagnostic decisions in order to be able to increase student time engagement on learning tasks. They recommended that teachers use classroom organizational systems for facilitating increased "time-on-task."

In the BTES Study Phase II, McDonald (1976) reported that certain teacher behaviors appear to promote student engaged time especially in the areas of reading and mathematics instruction. At the second grade level, McDonald observed that instructing in a group and close monitoring of pupil performance with corrective feedback encouraged student task engagement in reading activities. McDonald stated that the amount and kind of interaction with individual pupils, as well as how pupils are organized for

instruction, are the critical components of teaching reading to second grade students.

In grade five, McDonald noted the same time engagement effect when teachers interacted with pupils. He observed that teacher behaviors such as discussing the subject matter and questioning to encourage student involvement are much more likely to encourage learning.

In general, Phase II BTES study as reported by McDonald found a great deal of variation in attention to task by the students involved in the study. Some of the students spent as little as 50 percent of their time actively engaged in the lesson, while others spent as much as 80 percent of their time actively engaged in instructional tasks. Not only did individual student engagement rates differ, but the average rates of the class also differed.

McDonald indicated that some teachers were observed to be more successful than others in keeping students engaged on their work. Students who spent time interacting with the teacher were more involved in learning; and, therefore, spent more time doing their work. Therefore, teacher involvement such as circulating among students, checking work and monitoring progress were behaviors that increased student engaged time.

Kounin (1970) and his associates reported in Discipline and Group Management in Classrooms, that they discovered some dimensions of teacher behaviors which promote student

involvement in classroom learning tasks. Subjects from kindergarten through high school were included in the studies. The first phase of the studies involved observation of actual classrooms, while the second phase involved observing and analyzing classrooms from videotapes. In the first phase, the studies were designed to identify disciplinary techniques.

However, in the second phase Kounin and his colleagues found that there were many different dimensions of group management techniques that were utilized by the classroom teachers to influence pupils' involvement in classroom work. These techniques were found to be much more important than disciplinary procedures. Therefore, in the second phase of the research, questions about disciplinary techniques were eliminated, and questions about classroom management strategies and work involvement among pupils were added.

As reported by Kounin, the classroom management techniques were discovered as a consequence of the observation and analysis of real classroom videotapes. These techniques were found to be used in successful classrooms. Successful classrooms were defined as those having a high "prevalence" of "on-task" behavior and few incidences of disruptive behavior.

Kounin (1970) reported the following dimensions of teacher behavior as correlating significantly with pupils' involvement in class work:

1. Withitness and overlapping. These dimensions deal (respectively) with a teacher's communicating that she knows what is going on regarding children's behavior and with her attending to two issues simultaneously when two different issues are present.

2. Smoothness and momentum. These parameters measure how the teacher manages movement during recitation and transition periods.

3. Group alerting and accountability. These aspects of a teacher's technique deal with the extent to which she maintains a group focus during recitations in contrast to becoming immersed in a single child....

4, Seatwork variety and challenge. This dimension deals with the teacher's programming learning activities with variety and intellectual challenge, especially in seatwork settings (pp. 144-145).

Kounin views these teacher behaviors as reasons for teacher success in the classroom. In short, these teacher behaviors displayed during active teaching time, appear to promote student-engaged time on learning tasks.

Summary

There is limited information on the scheduling processes used in the elementary school. However, we know "organization is critical to a successful school operation" (Canady, 1985, p. 344). Brookover and Lezotte (1977) identified "schedules that devote more time to direct skill instruction" as one characteristic of the effective school.

Levine and Stark (1981) stressed the importance of instructional and organizational arrangements for schools.

Clauset and Gaynor (1980) stated that administrators need to be concerned with maximizing the use of instructional time. Moody and Amos (1975) stated that gains in achievement can be made by the principal becoming involved in the organizational arrangements which assist teachers in providing for pupil needs.

Fenwick English (1984) addressed the impact of pull-out programs upon the instructional day and emphasized that "Pull-outs have become almost a nightmare for many elementary principals, who view the practice as a kind of pernicious anemia that attacks whole-class time" (p. 22). A seasoned elementary principal was quoted as saying, "The grammar school is dead; it doesn't exist anymore. It's been replaced with a highly complex, difficult-to-manage organization that's as complicated as anything at the secondary level" (p. 32). Fenwick concluded that clustering pull-out programs and block scheduling are two antidotes that should be considered.

As for classroom instructional time, Berliner, Stallings, Fisher and others are among the researchers who have reported the large amount of variance in time scheduled for specific subject areas when the decision is made by the classroom teacher. During an observation of a fifth grade teacher, Berliner (1984) indicated that "...one teacher

could find only 68 minutes a day for instruction in reading and language arts, while another teacher was able to find 137 minutes a day" (p. 54).

Shirley Kazarian (1977) states that although data convincingly support both sides of the issue regarding time and its relationship to achievement, there is sufficient evidence to conclude that the amount of time allocated to a content area appear, in itself, to be a contributor to the amount learned. She also states that the quality of teacher instruction and the duration of "engaged time: must also be considered. "Teachers allocate instructional time to content areas; if no time is allotted, it is reasonable to assume that no learning will take place. The task of the teacher may be to optimize the amount of time students are engaged in relevant learning activities" (Kazarian, p. 43). This may very well increase achievement.

As McDonald (1976) reported in the BTES Study Phase II, certain teacher behaviors may promote increased engaged time particularly in the areas of reading and mathematics. The amount and kind of teacher interaction with individual students as well as how students are organized for instruction are critical components of engaged time.

Lastly, as Kounin (1970) reported, certain teacher behaviors such as classroom management techniques may promote higher student involvement in learning tasks.

None of the studies reviewed provided experimental data on the impact of instructional scheduling upon elementary student achievement or the use of classroom instructional time. Robert Canady "...has been studying the use of class time and cites cases where schools have raised achievement scores dramatically simply by more careful scheduling. That means cutting down on the disruptions, giving the teacher more undivided time with the children, and providing more time for the teacher to work with small groups" (The Washington Post, 1984, A14). This study will make a contribution to the research concerning school organization, the use of classroom instructional time and the impact of each upon achievement.

CHAPTER III

Research Methodology

The purpose of Chapter III is to describe the population of the pilot and control schools as well as to examine the methods used for collecting and analyzing the data. This information is described in three sections. The first section includes a description of the school district and population used in the study. Section two includes a description of the design of the study as well as a description of the instruments and procedures used in data collection. The treatment of the data, including research questions and the hypotheses are described in section three.

Description of the School District

The school district referred to in the study is a suburban community located approximately 25 miles south of Washington, D.C. with a population of approximately 200,000. It encompasses approximately 345 square miles. Free, public schools were established in the county in 1872 and operated by magisterial districts until 1922 when the county school board was created.

The school district grew slowly and steadily along with the county's population until the 1960's. During the 1960's

and 1970's, school construction and operating budgets experienced large increases. In the late 1970's, the period of rapid growth came to an end, and the school population began to stabilize. There are currently 33 elementary schools which house kindergarten through fifth grades. There are approximately 39,000 students in the county schools; 18,000 at the elementary level.

Description of the Students in the Pilot and Control Schools

This study is comprised of students in grades two, four and five in a suburban county of Northern Virginia. All students of grades two, four and five at one elementary school were assigned to the pilot group. This assignment was made by the Director of Elementary Education and approved by the local county school board.

All students in grades two, four and five at a matched elementary school in the same suburban county served as subjects for the control group. This school was matched with the pilot school on the basis of socio-economic level, size of school, and standardized test scores. Data used for matching schools are located in Appendix B.

The chart below indicates the number of children at each grade level involved in the study.

Number of Children Involved in the Study

Pilot School		Control School	
Grade	No. of Students	Grade	No. of Students
2	87	2	79
4	53	4	53
5	60	5	73
Total	200		205

The students ranged from seven to eleven years of age and live in a suburban, middle class neighborhood in the Northern Virginia county.

Design of the Study

The purpose of the study was to investigate the impact of a parallel scheduling pilot program upon classroom instructional time and the achievement of elementary students in reading, language and mathematics.

To accomplish this purpose, a quasi-experimental non equivalent control group design as defined by Huck, Cormier, and Bounds (1974) was used as the researcher was unable to randomly assign the participants to the pilot and control groups. Data was collected from an assigned pilot school

and a control school that had been matched based on socio-economic level, size of the school and standardized test scores. This assured the researcher that the subjects in the two groups would have similar rather than extremely different scores on the pretest measures.

Method of Data Gathering and Instruments Used

The first instrument, the Metropolitan Achievement Test, was utilized to measure growth and achievement of elementary students in grades two, four and five in the pilot and control schools. Secondly, the Classroom Check List, designed by Jane Stallings (1977) often referred to as "The Snapshot" was used to collect data relative to the type of activities that were occurring in the classroom, the size of group involved in the activity, and whether students were working directly with the teacher or independently. The procedures that were followed in order to collect the data using the two instruments described will be discussed further in this section.

Following the identification of the pilot and control groups, the researcher established a meeting with the principals of the two schools involved in the study during August, 1986. At this meeting, the principals were informed of the selection of their schools and the plans for evaluation of the program. Information was given regarding

the administration of the Metropolitan Achievement Test. Principals were also informed of plans for an observer to visit their building once a month in all classrooms of grades two, four and five. It was stressed that the observer would not be affiliated with the school system and would serve only as the gatherer of information for the comparison of two forms of instructional scheduling.

Upon the return of teachers to the building in late August, 1986, building principals explained the evaluation program to the classroom teachers. The researcher was present to assist with any questions that had been left unanswered during the earlier meeting. Both teachers and principals acknowledged that they were comfortable with the explanation that had been given and understood the procedures that would be followed.

Achievement Data

The Metropolitan Achievement Test (MAT), Sixth Edition, Form L, was administered as a pre-test to each student during the second week in September, 1986, in their own classroom setting by a selected classroom teacher. This test is a K-12 norm referenced achievement test which has been widely used since the publication of its first edition in 1937. The Ninth Mental Measurements Yearbook by James Mitchell (1985) states that "the MAT gets high marks" on test characteristics such as appearance, clarity of

directions for administration, quality of the interpretive materials and score reports (p. 966). Mitchell also states that "By normal standards, the content validity of the MAT for widely shared instructional objectives is quite good..." (p. 967). This instrument provides a comprehensive series of tests in the areas of reading, mathematics, language, science and social studies. For this study, however, only the reading, language and mathematics subtests were used. The test level assigned to each grade level were as follows:

Second Grade - Metropolitan Achievement Test - Form L, Primary 2

Fourth Grade - Metropolitan Achievement Test - Form L, Elementary

Fifth Grade - Metropolitan Achievement Test - Form L, Intermediate

Students at each grade level took the same test for both the pre and post test measure.

Teachers administering this test were given both oral and written directions. A copy of the testing guidelines is provided in Appendix D. Following the completion of the test, all test booklets, answer sheets, and related materials were collected by the researcher. The researcher organized the materials and mailed them for scoring to the Psychological Corporation, Harcourt Brace Jovanovich, Publishers.

Following the administration of the test, the pilot school began parallel scheduling, and the control school

continued to use their regular elementary instructional schedule. Each student was then instructed in reading, language and mathematics by their assigned classroom teacher for the remainder of the school year. Daily instruction for both groups followed the adopted county model, the Instructional Process (Appendix C) and a planned systematic approach to teaching the basis skills, the Curriculum Action Plan (CAP). The Curriculum Action Plan outlined the basic skills to be taught in each subject at each grade level in all county schools. The CAP assists in assuring a uniform high quality instructional program by establishing the objective for each grade level and subject area. The CAP specifies the essential skills important to all students and organizes these skills into the most appropriate grade level and subject to bring mastery in a sequential fashion. It is a guide for teachers to assure that a basic curriculum of essential skills and concepts is taught to every child. The CAP includes teaching strategies and materials that were used by teachers in both the pilot and control schools.

The educational backgrounds and experiences of the classroom teachers involved in the study were also considered as a potential threat to the validity of the findings. All teachers in both the pilot and control groups participated in four county inservices concerning the Instructional Process. Each teacher has been rated as effective on the teacher evaluation during the previous

school year. The chart below indicates the similarity between the experiences and backgrounds of the selected classroom teachers in both the pilot and control schools.

Degree, Experience and Endorsements of Classroom Teachers

	Degree		Years of Experience			Endorsement			
	MS	BS	0-10	11-20	21-30	NK-7	K-7	1-7	4-7
Pilot School	4	5	1	4	4	1	3	4	1
Control School	3	6	2	4	3	2	2	5	

Following nine months of instruction using parallel scheduling in the pilot school and a regular schedule in the control school, the Metropolitan Achievement Test, Form L, was administered as a post-test. The post-test was administered during the third week in April, 1987. The same procedures used for the pre-test were used during the administration of the post-test. An analysis of the data generated from the pre-test and post-test was made to determine whether there were statistically significant mean differences between the independent variables of the parallel scheduled school and the regular scheduled school in relation to the dependent variable of student achievement. These findings will be reported in Chapter IV.

Instructional Time Data

Data relative to the impact of parallel scheduling upon classroom instructional time was collected by a trained observer using a classroom check list instrument, "The Snapshot," developed by Jane Stallings and staff members of Stanford Research Institute (1979) (Appendix F). Permission to use this instrument was obtained from Jane Stallings by letter (Appendix G). This instrument was designed as one element of an observation system to evaluate several educational programs in the Follow Through Planned Variation Project. "The Follow Through Project was established by Congress in 1967 under the Office of Economic Opportunity to find a grade-school program that would reinforce and extend the academic gains made by economically disadvantaged children who had been enrolled in Head Start and similar preschool programs" (Stallings, 1977). The programs recommended for observation in the Follow Through Project represented the entire range of innovative educational theories from a model based on the theory of Skinner to other models based on various combinations of theories and practices of Jean Piaget, John Dewey, Carl Rogers and the English Infant Schools.

After studying the available observation systems, Stallings found none in existence that were broad enough and flexible enough to accommodate the wide range of programs in the Follow Through Classrooms. Therefore, Stallings and the

staff of the Stanford Research Institute developed their own system. Due to the flexibility of the classroom check list developed by Stallings, it was selected for use in the study of parallel scheduling. The Classroom Check List (CCL) as defined by Stallings "provides information on the type of activities occurring in the classroom and on the grouping of children and the teaching staff" (p. 26). This information is identical to the type of information needed to evaluate parallel scheduling as this scheduling technique restructures the grouping of children so that classroom activities will be more teacher-directed. Parallel scheduling would, hopefully, also reduce off task behavior. Due to the variety of activities that occur simultaneously in a classroom and the need to record the groupings of children, Stallings developed a checklist grid that records the type of activities as well as the grouping of children indicated by four columns. The letters to the left of each grouping column stand for teacher (T), aide (A), volunteer (V), and independent child (I). The numbers within each column allow the observer to record the fact that more than one child is working alone or the teacher is working with a small group of children in reading. In the Follow Through Study, children, teachers and aides were placed on the grid four times an hour. For the purpose of this study, data was collected on the grid two times every thirty minutes. Twelve grids per classroom for nine teachers or one hundred

and eight grids per school gave the researcher a good idea of what activities were occurring in the pilot and control classrooms as well as with what frequency. It also showed teacher behavior and answered questions such as: Are children receiving individual attention? Are children operating independently or with a teacher?

The Classroom Check List is relatively easy to complete. As stated by Jane Stallings (1977) "Observer reliability was not difficult to gain once we had operationally defined each activity" (p. 30).

For the study, two observers were recruited and trained to use the Classroom Check List. Only one of the observers would be used to collect data. The second observer would serve as a substitute if needed. The observer was a trained certified teacher on sabbatical leave pursuing a doctoral degree. The substitute observer was a trained, certified teacher who was not employed in a permanent teaching position. The training was conducted by an employee of the Planning and Research Department of the Northern Virginia County where the study was being conducted. Training of the observers included: (1) a meeting with the researcher and trainer to study and discuss the Classroom Check List instrument and expectations for the observers; (2) a meeting of the trainer and two observers at the pilot school to discuss the Classroom Check List and to complete the workbook activities designed to train an observer. These

activities can be found in Jane Stallings' (1977) book, Learning to Look; (3) the trainer and the two observers then recorded observation data individually in five classrooms. The data was collected immediately after entering the room and again fifteen minutes after entering the classroom. After the completion of two observations in each classroom, the trainer and the two observers discussed their results. On the last four classroom observations, a minimum of 90% agreement was obtained; and (4) the trainer then met with the researcher and made some recommendations regarding the use of the Classroom Check List. These recommendations were as follows: (1) On the cover sheet for each observation include with other identifying information a space for the observer to indicate the subject being taught, (2) Change the timing of the collection of data from immediately when the observer enters the room to five minutes after entering the room. The second observation would be recorded fifteen minutes later or twenty minutes after entering the classroom. These two recommendations would provide a way for the observer to show what subject was being taught and also provide the observer with some wait time before writing must occur. Attention is drawn away from the observer by allowing some wait time. These recommendations were examined and implemented.

Following the training the researcher met with the observer. At this time a classroom observation schedule

(Appendix E) was developed, and all questions regarding the observer's visitation to the pilot and control schools were discussed.

Following the training, the observer made a visit to each classroom and completed the first observation using the Classroom Check List. Following the observation, the researcher and the observer discussed the comfortability of the teachers and students involved in the study as well as the use of the instrument. Based on this information, the researcher decided not to use the initial observation as part of the findings as a comfort level needed to be established between the observer, students and teacher. Following the initial classroom observation each classroom involved in the study was observed once each month, for six months, for a thirty-minute period of time which was randomly assigned during the 1986-87 school year. The Classroom Check List was completed two times during each thirty-minute observation. The observer completed the classroom check list grid five minutes after entering the room and again twenty minutes after entering the room. A copy of the observer's schedule is located in Appendix E.

During the observation period, the observer noted unusual behaviors or disruptions occurring in the classroom on the cover sheet of the Classroom Check List. This information will be discussed in Chapter V.

Treatment of the Data

Discussion of the treatment of the data is divided into three parts. The research questions and hypotheses to determine the impact of parallel scheduling upon achievement are outlined in part one. The research questions and hypotheses for determining the impact upon classroom instructional time are listed in part two. A description of the data analysis is discussed in part three.

Research Questions and Hypotheses

The purpose of the study is to investigate the impact of parallel scheduling upon classroom instructional time and achievement of elementary students in reading, language and mathematics. The research questions derived from this purpose are listed and discussed on the following pages.

Achievement Research Questions and Hypotheses:

Research Question I

> What impact, if any, does the use of parallel scheduling, as compared to a regular elementary schedule, have upon elementary students?

To answer the first research question a null hypothesis was developed and stated as follows?

Null Hypothesis for Reading, Language and Mathematics

There will be no statistical difference in the reading, language, and mathematics achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

The second research question to be answered by this study is as follows:

Research Question II

Does the performance level of elementary students in parallel scheduling interact with student achievement?

Due to the strong belief by the researcher that achievement would be positively influenced by parallel scheduling, four research hypotheses were developed. Coupled with each research hypothesis, the researcher identified a null hypothesis for each related subset on the Metropolitan Achievement Test. These subsets are as follows:

Total Reading
Reading Vocabulary
Reading Word Recognition
Reading Comprehension

Total Math
Math Computation
Math Concepts
Math Problem Solving

Total Language
Language
Spelling

The research hypotheses and null hypotheses are as follows:

Research Hypothesis for Reading

There was a statistical difference in the reading achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Null Hypothesis for Reading Vocabulary

There was no statistical difference in the reading vocabulary achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Null Hypothesis for Reading Word Recognition

There was no statistical difference in the reading word recognition achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Null Hypothesis for Reading Comprehension

There was no statistical difference in the reading comprehension achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Null Hypothesis for Total Reading

There was no statistical difference in the total reading achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Research Hypothesis for Mathematics

There was a statistical difference in the mathematics achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Null Hypothesis for Math Computation

There was no statistical difference in the math computation achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Null Hypothesis for Math Concepts

There was no statistical difference in the math concepts achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Null Hypothesis for Math Problem Solving

There was no statistical difference in the math problem solving achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Null Hypothesis for Total Math

There was no statistical difference in the total math achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Research Hypothesis for Language

There was a statistical difference in the language achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Null Hypothesis for Spelling

There was no statistical difference in the spelling achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Null Hypothesis for Language

There was no statistical difference in the language achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Null Hypothesis for Total Language

There was no statistical difference in the total reading, total language and total mathematics achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Classroom Instruction Time Research Questions and Hypothesis:

The third research question designed to investigate the effects of parallel scheduling upon classroom instructional time was as follows:

Research Question III

Does parallel scheduling impact classroom instructional time?

To answer the third research question the following research hypotheses were developed and stated as follows:

Null Hypothesis for Instructional Time

There is no relationship between activities that occur in classrooms and an instructional scheduling model.

There is no relationship between the size of student groups working within the classroom and an instructional scheduling model.

There is no relationship between direct interaction with the teacher and an instructional scheduling model.

Data Analyses

As stated earlier in Chapter III, data was collected using two instruments. Therefore, the discussion of the analyses of data will be presented in two sections. The first part will focus on the analysis of standardized test data. The second part will discuss the analysis of data relative to classroom instructional time.

Analysis of Standardized Test Data

In order for the researcher to account for initial differences between the pilot and control groups, the analysis of covariance statistical method was used to determine the relationship of parallel scheduled schools with regard to reading, language and mathematics achievement. By selecting this test, certain assumptions about the population were closely examined. The first assumption concerning the selection of random and independent samples representative of the total population was met by using all of the students on a given grade level in a school.

The second assumption concerning normal distribution of the scores of the selected population was examined. After visual inspection of the boxplots, the researcher found that the normality assumption was not violated. However, to ensure that the results are robust, both parametric and nonparametric tests were used and are reported in Chapter IV.

Thirdly, the assumption of homogeneity of variance was tested, and the variances were found to be equal on all subtests by using Bartlett's Test for Homogeneity of Variance. Therefore, there was no violation of the homogeneity of variance assumption.

Statistics for this analysis were computed by programs of the Statistical Package for the Social Sciences (SPSSX) and the Statistical Analysis System (SAS). A .05 level of significance was used to reject or not to reject the hypotheses stated.

Analyses of Classroom Instructional Time Data

Chi-Square is the nonparametric statistical test used to study the causal-comparative relationship between the frequency of activities that occur in the classroom and parallel scheduling. This statistical test was also used to study the size of student groups and whether the students were working with the teacher or independently in relation to parallel scheduling.

Statistics for this analysis were also computed by programs of the Statistical Package for the Social Sciences (SPSSX). A .05 level of significance was also used to reject or not to reject the hypothesis tested.

CHAPTER IV

Results of the Study

The purpose of this chapter was to present the results relative to the research questions and the hypotheses which were stated in Chapter I and III. The findings related to achievement testing are reported in section one of this chapter. Section two includes the results related to classroom instructional time. A summary of the findings is included in section three.

Description of Achievement Data

In order to investigate the effect of parallel scheduling upon student achievement, data were obtained from the pre and post Metropolitan Achievement Test, Form L, administered to 200 students in grades two, four and five of the pilot school and 205 students in grades two, four and five of the control school.

An Analysis of Covariance (ANCOVA), using Covariants Adjusted Sequential Sums of Squares to eliminate initial differences was the statistical method used to test each hypothesis to determine whether the differences between the means of the two groups on the dependent variables were

significantly different. The significance level established for each hypothesis was .05.

The first research question, hypothesis and findings were as follows:

Research Question I.

> What impact, if any, does the use of parallel scheduling, as compared to a regular elementary schedule, have upon elementary students?

Null Hypothesis for Reading, Language and Mathematics.

> There was no statistical difference in the reading, language and mathematics achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Findings. As shown in Tables 1 and 2, there was no significant difference between a parallel scheduled school and a regular scheduled school with regard to the Total Battery of the Metropolitan Achievement Test. The Total Battery includes all components of reading, language and mathematics. It should be noted, however, that the level of significance for the Total Battery was .067.

Outliers were noted in both the pilot and control schools, therefore, the sign test was used to rank the data. This test indicated a p-value of .0165. Although the parametric test suggests that a null hypothesis should not be rejected, the nonparametric test coupled with the analysis of covariance shown in Table 28, using the multiple

covariates pre total reading, pre total language, and pre total math separately, indicate that the null hypothesis should be rejected. Based on this additional information, there is a significant difference in the reading, language and mathematics achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Table 1

Means for Total Battery

School	Pre Total Battery	Post Total Battery	Covariate Adjusted Total Battery
Experimental	46.297	63.243	63.197
Control	46.194	60.620	60.687

Table 2

Analyses of Covariance (ANCOVA) Table for Total Battery

Dependent Measure: Post Total Battery
Multiple Covariates: Pre Total Battery

	SS	DF	MS	F	Sig. of F
Within Cells	39167.14	286	136.95		
Regression	63199.73	1	63199.73	461.49	.000
School	461.46	1	461.46	3.37	.067
(Model)	63661.20	2	31830.60	232.43	.000
(Total)	102828.34	288	357.04		

R-Squared = .619

Adjusted R-Squared = .616

The second research question, hypothesis and findings designed to investigate the effects of parallel scheduling upon student achievement were as follows:

Research Question II.

Does the performance level of elementary students in parallel scheduling interact with student achievement?

Research Hypothesis for Reading.

There was a statistical difference in the reading achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Findings. As shown in Tables 3 and 4, there was a significant difference between a parallel scheduled school and a regular scheduled school with regard to total reading (p-value = .046). Therefore, the research hypothesis was not rejected.

The data collected for the pilot school was not normal, but the data for the control school was normal. The p-value for total reading when a nonparametric test was used was .0618.

Due to the strength of the parametric test, the research hypothesis was not rejected. Therefore, a significant difference was found in the reading achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Table 3

Means for Total Reading

School	Pre Total Reading	Post Total Reading	Covariate Adjusted Total Reading
Pilot	45.487	59.944	60.326
Control	46.374	57.943	57.561

Table 4

Analysis of Covariance (ANCOVA) Table for Total Reading

Dependent Measure: Post Total Reading
Covariate: Pre Total Reading

	SS	DF	MS	F	Sig. of F
Within Cells	40960.15	292	140.27		
Regression	66471.65	1	66471.65	473.87	.000
School	562.58	1	562.58	4.01	.046*
(Model)	67034.23	2	33517.11	238.94	.000
(Total)	107994.38	294	367.33		

R-Squared = .621

Adjusted R-Squared = .618

*p< .05

Outlined below are the hypothesis and findings related to reading subsets of the Metropolitan Achievement Test.

Null Hypothesis for Reading Vocabulary.

> There was no statistical difference in the reading vocabulary achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Findings. As shown in Tables 5 and 6, there was a significant difference between a parallel scheduled school and a regular scheduled school with regard to reading vocabulary (p-value = .010).

In addition, the p-value for vocabulary when a nonparametric test was used was .0110. Therefore, the null hypothesis was rejected, and the findings indicate that there was a statistical difference in the reading vocabulary achievement scores of children involved in parallel scheduling as compared to children in a regular elementary schedule.

Table 5

Means for Reading Vocabulary

School	Pre Vocabulary	Post Vocabulary	Covariate Adjusted Vocabulary
Pilot	46.885	58.155	59.148
Control	50.726	56.167	55.175

Table 6

Analysis of Covariance (ANCOVA) Table for Vocabulary

Dependent Measure: Post Vocabulary
Covariate: Pre Vocabulary

	SS	DF	MS	F	Sig. of F
Within Cells	50266.41	293	171.56		
Regression	32557.02	1	32557.02	189.77	.000
School	1155.20	1	1155.20	8.73	.010*
(Model)	33712.22	2	16858.11	98.25	.000
(Total)	83978.63	295	284.67		

R-Squared = .401

Adjusted R-Squared = .397

*p< .05

Null Hypothesis for Word Recognition.

> There was no statistical difference in the reading word recognition achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Findings. As shown in Tables 7 and 8, there was a significant difference between a parallel scheduled school and a regular scheduled school with regard to word recognition (p-value = .027).

In addition, the p-value for reading word recognition when a nonparametric test was used was .0120. Therefore, the null hypothesis was rejected, and the findings indicate that there was a statistical difference in the reading word recognition achievement scores of children involved in parallel scheduling as compared to children in a regular elementary schedule.

Table 7

Means for Reading Word Recognition

School	Pre Word Recognition	Post Word Recognition	Covariate Adjusted Word Recognition
Pilot	46.092	57.519	57.050
Control	44.941	52.404	52.874

Table 8

Analysis of Covariance (ANCOVA) Table for Word Recognition

Dependent Measure: Post Word Recognition
Covariate: Pre Word Recognition

	SS	DF	MS	F	Sig. of F
Within Cells	33510.69	195	171.85		
Regression	29824.39	1	29824.39	173.55	.000
School	857.65	1	857.65	4.99	.027*
(Model)	30682.04	2	15341.02	89.27	.000
(Total)	64192.73	197	325.85		

R-Squared = .478

Adjusted R-Squared = .473

*p< .05

Null Hypothesis for Reading Comprehension.

There was no statistical difference in the reading comprehension achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule

Findings. As shown in Tables 9 and 10, there was no significant difference between a parallel scheduled school and a regular scheduled school with regard to reading comprehension (p-value = .137).

In addition, the p-value for reading comprehension when a nonparametric test was used was .4015. Therefore, the null hypothesis was not rejected as there was no statistical difference in the reading comprehension achievement scores of children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Table 9

Means for Reading Comprehension

School	Pre Reading Comprehension	Post Reading Comprehension	Covariate Adjusted Reading Comprehension
Pilot	45.395	61.468	61.328
Control	45.046	58.784	58.924

Table 10

Analysis of Covariance (ANCOVA) Table for Reading Comprehension

Dependent Measure: Post Reading Comprehension
Covariate: Pre Reading Comprehension

	SS	DF	MS	F	Sig. of F
Within Cells	57927.39	297	195.04		
Regression	62100.13	1	62100.13	318.39	.000
School	432.62	1	432.62	2.22	.137
(Model)	62532.75	2	31266.38	160.31	.000
(Total)	120460.14	299	402.88		

R-Squared = .519

Adjusted R-Squared = .516

Research Hypothesis for Total Language.

> There was a statistical difference in the language achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Findings. As shown in Table 11 and 12, there was no significant difference between a parallel scheduled school and a regular scheduled school with regard to total language (p-value = .865).

In addition, the p-value for total language when a nonparametric test was used was .9805. Therefore, the research hypothesis was rejected as there was no statistical difference in the language achievement scores of children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Table 11

Means for Total Language

School	Pre Total Language	Post Total Language	Covariate Adjusted Language
Pilot	47.703	59.764	59.996
Control	48.263	60.491	60.259

Table 12

Analysis of Covariance (ANCOVA) Table for Total Language

Dependent Measure: Post Total Language
Covariate: Pre Total Language

	SS	DF	MS	F	Sig. of F
Within Cells	51214.31	292	175.39		
Regression	49404.47	1	49404.47	261.68	.000
School	5.08	1	5.08	.03	.865
(Model)	49409.55	2	24704.77	140.86	.000
(Total)	100623.86	294	342.26		

R-Squared = .491

Adjusted R-Squared = .488

Outlined below are the hypotheses and findings related to the language subsets of the Metropolitan Achievement Test.

Null Hypothesis for Spelling.

> There was no statistical difference in the spelling achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Findings. As shown in Tables 13 and 14, there was no significant difference between a parallel scheduled school and a regular scheduled school with regard to spelling (p-value = .775).

In addition, the p-value for spelling when a nonparametric test was used was .5839. Therefore, the null hypothesis was not rejected.

Table 13

Means for Spelling

School	Pre Spelling	Post Spelling	Covariate Adjusted Spelling
Pilot	47.675	56.522	56.438
Control	47.421	55.883	55.967

Table 14

Analysis of Covariance (ANCOVA) Table for Spelling

Dependent Measure: Post Spelling
Covariate: Pre Spelling

	SS	DF	MS	F	Sig. of F
Within Cells	60332.09	296	203.82		
Regression	33603.49	1	33603.49	164.86	.000
School	16.62	1	16.62	.08	.775
(Model)	33620.11	2	16810.05	82.47	.000
(Total)	93952.19	298	315.28		

R-Squared = .358

Adjusted R-Squared = .354

Null Hypothesis for Language.

> There was no statistical difference in the language achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Findings. As shown in Tables 15 and 16, there was no significant difference between a parallel scheduled school and a regular scheduled school with regard to language (p-value = .260).

In addition, the p-value for language when a nonparametric test was used was .7685. Therefore, the null hypothesis was not rejected.

Table 15

Means for Language

School	Pre Language	Post Language	Covariate Adjusted Language
Pilot	47.968	59.817	59.942
Control	48.305	61.904	61.778

Table 16

Analysis of Covariance (ANCOVA) Table for Language

Dependent Measure: Post Language
Covariate: Pre Language

	SS	DF	MS	F	Sig. of F
Within Cells	56734.17	292	194.33		
Regression	45962.69	1	45962.69	236.52	.000
School	247.88	1	247.88	1.28	.260
(Model)	46210.57	2	23105.28	118.90	.000
(Total)	102953.74	294	350.18		

R-Squared = .449

Adjusted R-Squared = .445

Research Hypothesis for Mathematics.

There was a statistical difference in the mathematics achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Findings. As shown in Tables 17 and 18, there was no significant difference between a parallel scheduled school and a regular scheduled school with regard to total math (p-value = .167).

There were outliers in both the pilot and control schools. The p-value for total math when a nonparametric test was used was .0433. Although this result suggests a weak statistical significance, the strength of the parametric test suggests that the research hypothesis should be rejected. Therefore, no significant difference was found in the mathematics achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Table 17

Means for Total Math

School	Pre Total Math	Post Total Math	Covariate Adjusted Total Math
Pilot	46.612	65.455	65.073
Control	45.600	62.349	62.730

Table 18

Analysis of Covariance (ANCOVA) Table for Total Math

Dependent Measure: Post Total Math
Covariate: Pre Total Math

	SS	DF	MS	F	Sig. of F
Within Cells	61424.90	292	210.36		
Regression	45518.25	1	45518.25	216.38	.000
School	403.96	1	403.96	1.92	.167
(Model)	45922.21	2	22961.10	109.15	.000
(Total)	107347.11	294	365.13		

R-Squared = .428

Adjusted R-Squared = .424

Outlined below are the hypotheses and findings related to the mathematics subsets of the Metropolitan Achievement Test.

Null Hypothesis for Math Computation.

> There was no statistical difference in the math computation achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Findings. As shown in Tables 19 and 20, there was a significant difference between a parallel scheduled school and a regular scheduled school with regard to math computation (p-value = .001).

In addition, the p-value for math computation when a nonparametric test was used was .0002. Therefore, the null hypothesis was rejected as there was a statistical difference in the math computation achievement scores of children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Table 19

Means for Math Computation

School	Pre Math Computation	Post Math Computation	Covariate Adjusted Math Computation
Pilot	45.273	64.991	65.076
Control	45.558	59.124	59.039

Table 20

Analysis of Covariance (ANCOVA) Table for Math Computation

Dependent Measure: Post Math Computation
Covariate: Pre Math Computation

	SS	DF	MS	F	Sig. of F
Within Cells	74728.70	295	253.32		
Regression	32402.95	1	32402.95	127.91	.000
School	2711.55	1	2711.55	10.70	.001*
(Model)	35114.49	2	17557.25	69.31	.000
(Total)	109843.20	297	369.84		

R-Squared = .320

Adjusted R-Squared = .315

*p< .05

Null Hypothesis for Math Concepts.

There was no statistical difference in the math concepts achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Findings. As shown in Tables 21 and 22, there was no significant difference between a parallel scheduled school and a regular scheduled school with regard to math concepts (p-value = .386).

In addition, the p-value for math concepts when a nonparametric test was used was .5085. Therefore, the null hypothesis was not rejected as there was no statistical difference in the math concepts achievement scores of children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Table 21

Means for Math Concepts

School	Pre Math Concepts	Post Math Concepts	Covariate Adjusted Math Concepts
Pilot	45.874	63.550	63.582
Control	46.000	65.483	65.451

Table 22

Analysis of Covariance (ANCOVA) Table for Math Concepts

Dependent Measure: Post Math Concepts
Covariate: Pre Math Concepts

	SS	DF	MS	F	Sig. of F
Within Cells	102891.70	297	346.44		
Regression	19277.05	1	19277.05	55.64	.000
School	261.67	1	261.67	.76	.386
(Model)	19538.72	2	9769.36	28.20	.000
(Total)	122430.42	299	409.47		

R-Squared = .160

Adjusted R-Squared = .154

Null Hypothesis for Math Problem Solving.

> There was no statistical difference in the math problem solving achievement scores of elementary children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Findings. As shown in Tables 23 and 24, there was no significant difference between a parallel scheduled school and a regular scheduled school with regard to math problem solving (p-value = .837).

Furthermore, the p-value for math problem solving when a nonparametric test was used was .4910. Therefore, the null hypothesis was not rejected as there was no statistical difference in the math problem solving achievement scores of children involved in parallel scheduling as compared with children involved in a regular elementary schedule.

Table 23

Means for Math Problem Solving

School	Pre Math Problem Solving	Post Math Problem Solving	Covariate Adjusted Math Problem Solving
Pilot	48.730	61.040	59.933
Control	45.933	58.443	59.550

Table 24

Analysis of Covariance (ANCOVA) Table for Math Problem Solving

Dependent Measure: Post Math Problem Solving
Covariate: Pre Math Problem Solving

	SS	DF	MS	F	Sig. of F
Within Cells	74415.80	294	253.11		
Regression	49248.96	1	49248.96	194.57	.000
School	10.77	1	10.77	.04	.837
(Model)	49259.72	2	49259.72	97.31	.000
(Total)	123675.52	296	417.82		

R-Squared = .398

Adjusted R-Squared = .394

Based on the findings stated for each hypothesis, the researcher can conclude:

1. There is a statistical difference in the reading achievement scores of elementary children in parallel scheduling as compared with children in a regular elementary schedule. This can be further illustrated by using pre vocabulary, pre word recognition, and pre reading comprehension as multiple covariates for Post Total Reading as shown in Table 25.

2. There is no statistical difference in the language achievement scores of elementary children in parallel scheduling as compared with children in a regular elementary schedule. This can be further illustrated by using pre spelling and pre language as multiple covariates for Post Total Language as shown in Table 26.

3. There is no statistical difference in the mathematics achievement scores of elementary children in parallel scheduling as compared with children in a regular elementary schedule. This can be further illustrated by using pre math computation, pre math concepts, and pre math problem solving as multiple covariates for Post Total Math as shown in Table 27.

4. There is a statistical difference in the reading, language and mathematics achievement scores of elementary children in parallel scheduling as compared with children in a regular elementary schedule. This can be further illustrated by using pre total reading, pre total language and pre total math as multiple covariates for the Total Battery as shown in Table 28.

Table 25

Analysis of Covariance (ANCOVA) Table for Total Reading

Dependent Measure: Post Total Reading
Multiple Covariates: Pre Vocabulary, Pre Word Recognition and Pre Reading Comprehension

	SS	DF	MS	F	Sig. of F
Within Cells	27192.11	189	143.87		
Regression	46627.67	3	15542.56	108.03	.000
School	1915.69	1	1915.69	13.32	.000*
(Model)	48543.35	4	12135.84	84.35	.000
(Total)	75735.47	193	392.41		

R-Squared = .641

Adjusted R-Squared = .633

*p< .05

Table 26

Analysis of Covariance (ANCOVA) Table for Total Language

Dependent Measure: Post Total Language
Multiple Covariates: Pre Spelling and Pre Language

	SS	DF	MS	F	Sig. of F
Within Cells	52599.68	291	180.75		
Regression	48019.10	2	24009.55	132.83	.000
School	30.08	1	30.08	.17	.684
(Model)	48049.19	3	16016.40	88.61	.000
(Total)	100648.87	294	342.34		

R-Squared = .477

Adjusted R-Squared = .472

Table 27

Analysis of Covariance (ANCOVA) Table for Total Math

Dependent Measure: Post Total Math
Multiple Covariates: Pre Math Computation, Pre Math Concepts, and Pre Math Problem Solving

	SS	DF	MS	F	Sig. of F
Within Cells	58313.87	290	201.08		
Regression	48629.29	3	16209.76	80.61	.000
School	200.82	1	200.82	1.00	.318
(Model)	48830.11	4	12207.53	60.71	.000
(Total)	107143.97	294	364.44		

R-Squared = .456

Adjusted R-Squared = .448

Table 28

Analysis of Covariance (ANCOVA) Table for Total Battery

Dependent Measure: Post Total Battery
Multiple Covariates: Pre Total Reading, Pre Total Language, and Pre Total Math

	SS	DF	MS	F	Sig. of F
Within Cells	37889.70	284	133.41		
Regression	64477.18	3	21492.39	161.09	.000
School	581.37	1	581.37	4.39	.038*
(Model)	65058.55	4	16264.64	121.91	.000
(Total)	102948.25	288	357.46		

R-Squared = .632

Adjusted R-Squared = .627

*p< .05

Description of Classroom Instructional Time Data

In order to investigate the effects of parallel scheduling upon classroom instructional time, data were collected using the Classroom Check List (CCL) or "The Snapshot" developed by Jane Stallings (1977). As explained in Chapter III of this study, a trained observer visited each classroom in the pilot and control schools once a month for a period of six months to observe the activities that occurred in the classroom and also to record the grouping of children and the teaching staff.

After summarizing the data collected from the Classroom Check List, the researcher found that the following activities were observed at least one time in the pilot or control schools and were defined by Stallings as:

Item 4. Arts, Crafts -- These refer to activities that use arts and crafts materials and teach art concepts (composition) or art techniques (shading, use of brushes).

Item 5. Guessing Games, Table Games, Puzzles -- This category includes all games or puzzles in the classroom that are provided for the enjoyment of the children -- tiddlywinks, jacks, checkers, and the like. Games and puzzles used for reading or math instruction are not recorded in this category.

Item 6. Arithmetic, Numbers, Math -- This category refers to any activity involving numbers, computation, measurements or math concepts; e.g., comparing sizes, learning to change money, telling time, reading scales and so on.

Item 7. Reading, Alphabet, Language Development -- This category includes any activity directed to the process of teaching or learning language; e.g., letter recognition, reading, writing, speaking, phonics, grammar and labeling.

Item 8. Social Studies, Geography -- This category includes any activities related to teaching or learning about peoples, life styles, cultural patterns, social environments, social roles, current events, countries, bodies of water, and so forth.

Item 9. Science, Natural World -- This category refers to activities involved with teaching or learning about the earth and its plants, animals, and minerals (caring for them, collecting them, comparing them) and about the basic concepts of physical science (sunshine and evaporation, rain and condensation, gravity, moonlight, stars and planets, and so on). Health and safety studies are also coded here.

Item 10. Sewing, Cooking, Pounding, Sawing -- Activities in this category involve teaching or learning about measurements, numbers, and proportions, or they may be used in exploratory activities. Real materials must be used.

Item 13. Active Play -- This refers to classroom or outdoors play that is organized or permitted by the teacher as part of the classroom routine and is energetic rather than quiet or passive.

Item 16. Observing -- This category is to be used for persons who are watching other people or activities: a teacher who is overseeing children in an activity, a child watching another group playing, and so on.

Item 17. Social Interaction -- This category applies to two or more persons who are not involved in activity but are interacting socially with one another, e.g., talking, whispering, laughing, hitting, hugging, or walking and holding hands. When a child or children attempt to interact with the observer during

the coding of the CCL, the appropriate circle is also marked. If a teacher, aide, or volunteer are interacting with each other, the appropriate circles for them are marked.

Item 18. Unoccupied Child -- This refers to a child sitting or standing alone or wandering about with no evident purpose or goal. (Note, however, that a child observing is coded in Activity 16.)

Item 19. Discipline -- This category is coded when an adult is disciplining a child (scolding, spanking) or when a child is being punished, e.g., standing in a corner alone at the request of an adult.

Item 20. Transitional Activities -- This category applies to periods of time when adults and/or children are "between" activities or preparing for activities, e.g., getting coats on to go out, standing in line, and so on. It also included going to the bathroom and washing hands.

Item 21. Classroom Management -- Activities in this category are daily, routine classroom activities or events -- distributing materials, setting up equipment and furniture, taking role, checking materials in cupboard, gathering up materials and equipment, correcting papers, and cleaning up.

Chi-Square, a nonparametric statistical test was used to study the causal-comparative relationship between activities that occurred in the classroom and parallel scheduling. The same statistical test was used to study the causal-comparative relationship between the groupings of students and parallel scheduling. Using a .05 level of significance, the research question, hypothesis and findings are as follows:

Research Question III.

Does parallel scheduling impact classroom instructional time?

Null Hypothesis for Instructional Time.

There is no relationship between activities that occur in classrooms and an instructional scheduling model.

Findings: Items 4-10, 13, 16-21 on Classroom Check List by School

As shown on Table 30, the same activities occur in parallel scheduling as in a regular elementary schedule with the following exceptions:

Item 5 - Games, Puzzles

Item 10 - Sewing, Cooking

Item 13 - Active Play

When comparing the relationship between all activities that occur in parallel scheduling and those that occur in the regular elementary schedule, there is no relationship. Therefore, the null hypothesis is not rejected.

Table 29

Chi-Square Table of Activities by School

Frequency Row Pct Col Pct	Pilot School	Control School
Item 4 (Arts, Crafts)	7 63.64% 2.80%	4 36.36% 1.45%
Item 5 (Games, Puzzles)	0 0.00% 0.00%	2 100.00% .73%
Item 6 (Numbers, Math)	34 56.67% 13.60%	26 43.33% 9.45%
Item 7 (Reading, Language Development)	58 39.46% 23.20%	89 60.54% 32.36%
Item 8 (Social Studies, Geography)	7 43.75% 2.80%	9 56.25% 3.27%
Item 9 (Science)	2 25.00% 0.80%	6 75.00% 2.18%
Item 10 (Sewing, Cooking)	0 0.00% 0.00%	2 100.00% 0.73%

Note: Continued on next page

Table 29 (continued)

Chi-Square Table of Activities by School

Frequency Row Pct Col Pct	Pilot School	Control School
Item 13 (Active Play)	0 0.00% 0.00%	1 100.00% 0.36%
Item 16 (Observing)	30 49.18% 12.00%	31 50.82% 11.27%
Item 17 (Social Interaction)	38 46.91% 15.20%	39 53.09% 15.64%
Item 18 (Unoccupied Child)	14 48.28% 5.60%	15 51.72% 5.45%
Item 19 (Discipline)	8 66.67% 3.20%	4 33.33% 1.45%
Item 20 (Transitional Activities)	16 59.26% 6.40%	11 40.74% 4.00%
Item 21 (Classroom Management)	36 52.94% 14.40%	32 47.06% 11.64%

p-value = .183

Findings: Items 6-9 on Classroom Check List by School

As shown in Table 30, for Items 6-9 on the Classroom Check List there is a relationship between the subjects taught and parallel scheduling. Classes were observed only when the classroom schedule indicated that reading, language or mathematics activities were being conducted in both the pilot and control schools. Therefore, activities such as social studies, geography or science, natural world should not be conducted. As shown in Table 30, 98% of the activities conducted during the observations in the pilot school were reading or math activities. Ninety-two percent of the activities conducted in the control school were reading and math. Two percent of the activities in the pilot school were social studies or science; while eight percent were social studies or science in the control school.

Table 30

Chi-Square Table of Subjects by School

Frequency Row Pct Col Pct	Item 6 Reading	Item 7 Math	Item 8 Social Studies	Item 9 Science
Pilot	170 68.00% 45.70%	74 29.60% 59.68%	3 1.20% 20.00%	3 1.20% 21.43%
Control	202 73.45% 54.30%	50 18.18% 40.32%	12 4.36% 80.00%	11 4.00% 78.57%

p-value = .001

Findings: Items 6-9 on Classroom Check List by Grade Level and School

All classes were observed only when the classroom schedule indicated that reading, language or mathematics activities were being conducted. As stated previously, other activities such as social studies and science should not have been observed.

When using the chi-square statistical test by grade level on items 6-9 on the Classroom Check List, a warning was issued due to the fact that 24% or more of the cells had expected counts less than five. Chi-Square may not be a valid test for specific grade levels, therefore, findings of individual grade levels did not yield additional information.

Findings: Items 17-21 on the Classroom Check List by School

Items 17-21 can be generally categorized as off task activities. These activities were grouped together, and the Chi-Square statistical test was performed. Findings indicated that there was no relationship between these activities and parallel scheduling. These activities were also analyzed separately by grade level, and no relationship could be established.

Based on the above findings, no relationship on items 6-9 and 17-21 on the Classroom Check List can be established

between activities which occur in classrooms and parallel scheduling. Also, no relationship could be established between the frequency of off-task behaviors and parallel scheduling.

Null Hypothesis for Classroom Instruction and Size of Groups

There is no relationship between the size of student groups working within the classroom and an instructional scheduling model.

Findings: Size of Groups of Children on the Classroom Check List by School

Data relative to size of groups of children participating in the activities discussed previously were also collected. One of the major premises of parallel scheduling is that there will be more teacher directed time with all of the students who remain in the classroom with the teacher during small group reading and mathematics instruction. Therefore, it was hypothesized by the researcher that a larger percentage of the children in the parallel scheduling schools would be working with the teacher in a small or large group.

As shown in Table 31, there is no relationship between the size of groups and parallel scheduling.

Table 31

Chi-Square Table of Groupings by School

Frequency Row Pct Col Pct	1 Child	2 Children	Small Group	Large Group
Pilot	88 35.20% 50.29%	29 11.60% 37.66%	40 16.00% 41.24%	93 37.20% 52.84%
Control	87 31.64% 49.71%	48 17.45% 62.34%	57 20.73% 58.76%	83 30.18% 47.16%

p-value = .070

Null Hypothesis for Classroom Instruction and Direct Interaction with the Teacher

There is no relationship between direct interaction with the teacher and an instructional scheduling model.

Findings: Type of Interaction on the Classroom Check List by School

Data relative to the type of interactions in the classroom were also collected. It was hypothesized that there would be increased interaction with the teacher and fewer children would be working independently in a parallel scheduling classroom. As shown in Table 32, there is no relationship between the type of interaction and parallel scheduling.

Table 32

Chi-Square Table of Type of Interaction by School

Frequency Row Pct Col Pct	Teacher	Independently
Pilot	84 33.60% 48.84%	166 66.40% 47.03%
Control	88 32.00% 51.16%	187 68.00% 52.97%

p-value = .696

Summary

The data collected for this study was analyzed in two parts. The first part included an analysis of the data related to achievement testing. The results of this analysis are summarized in the first part of this section. The analysis of the data related to classroom instructional time was included in part two of this section. The results of this analysis are summarized in part two of this section.

Achievement Data Summary

Analysis of covariance was used to determine what impact parallel scheduling has upon reading, language and mathematics achievement scores as compared to a regular elementary schedule. According to the data analysis and as shown in Table 33, there was a statistically significant difference at the .05 level of significance with three of the subsets of the Metropolitan Achievement Test. There was also a significant difference in Total Reading.

As noted in Table 33, the Sign test was also used to rank the data. When the data was ranked, there was a statistically significant difference in three of the subsets of the Metropolitan Achievement Test as well as in Total Math and the Total Battery. Parallel scheduling does interact with student achievement when compared with a regular elementary schedule.

Table 33

Summary Table for Parametric and Nonparametric Tests for the Metropolitan Achievement Test

Measure	Nonparametric p-value	Parametric p-value
Post Total Reading	.062	.046*
Vocabulary	.011*	.010*
Word Recognition	.012*	.027*
Comprehension	.402	.137
Post Total Language	.981	.865
Spelling	.584	.775
Language	.769	.260
Post Total Math	.043*	.167
Computation	.000*	.001*
Concepts	.509	.386
Problem Solving	.491	.837
Post Total Battery	.017*	.067

*p< .05

Classroom Instructional Time Data Summary

A Chi-Square test was used to determine the relationship between activities conducted in the classroom and parallel scheduling. When compared, no relationship could be established. It was determined that 98% of the activities conducted were in reading and mathematics. No relationship could be established between the frequency of off task behavior and parallel scheduling.

The relationship between the size of student groups working within the classroom and parallel scheduling was also examined. No relationship could be established.

Data relative to direct interaction with the teacher in the classroom were also collected. Once again, no relationship could be established.

In summary, there is a relationship between the achievement scores of children in parallel scheduling as compared to children in a regular elementary schedule. But, no relationship could be established between parallel scheduling and classroom instructional time.

CHAPTER V

Summary, Conclusions and Recommendations

The purpose of this chapter was to present a summary of the findings of this study, to present conclusions based on those findings and to make recommendations for further research. The first section is a review of the purpose of the study. The second section is a summary of the literature review. A summary of the methodology is presented in the third section. A summary of the findings is presented in the fourth section, and conclusions are presented in the fifth section. The final section presents recommendations for further study.

Review of Purpose of the Study

The purpose of the study was to determine the impact of parallel scheduling upon classroom instructional time and the achievement of elementary students in reading, language and mathematics. Null and research hypotheses were formulated, and the data were gathered to answer three research questions. The questions were as follows:

1. What impact, if any, does the use of parallel scheduling as compared to a regular elementary schedule, have upon elementary students?

2. Does the performance level of elementary students in parallel scheduling interact with student achievement?

3. Does parallel scheduling impact classroom instructional time?

Summary of the Review of Related Literature

The literature review was organized into three sections. It was presented to provide a rationale for the research problem and to establish a research base for the expected finding. Section two presented a close examination of classroom instructional time. This section was further delineated into three subsections. They were allotment of time, allocated and engaged time and the use of allocated and engaged time. Section three presented a summary of the review of literature.

Canady (1985) emphasizes that organization is critical to a successful school operation. Both Clauset and Gaynor (1980) recognize the need for administrators to be concerned with maximizing the use of instructional time. Moody and Amos (1975) state that gains in achievement can be made if principals become involved in organizational arrangements that assist teachers in meeting the needs of students.

The amount and use of instructional time has been considered to be a key to increasing academic achievement. Berliner, Stallings, Fisher and others have reported a large

amount of variance in the time scheduled for specific subject areas when the decision is made by the classroom teacher. McDonald (1976) has identified that certain teacher behaviors increase the probability of students being engaged in an academic activity particularly in the areas of reading and math.

None of the studies reviewed provided data on the impact of parallel scheduling upon elementary student achievement and the use of classroom instructional time. This study will make a contribution to the research on organizational structure and the use of classroom instructional time.

Summary of the Methodology Used in the Study

The research methodology used in the study was described in three sections. The first section included a description of the school district and population used in the study. Section two included a description of the design, instruments, and procedures used in the study. Section three outlines the research questions and hypotheses associated with each research question.

A Northern Virginia suburban school district was selected for study because it was planning to pilot parallel scheduling during the 1986-87 school year. The matched schools used in the study consisted of all second, fourth

and fifth graders who attended the schools. The two schools used had 405 students in the above grade levels. These students ranged from seven to eleven years of age and lived in a suburban, middle class neighborhood.

A quasi-experimental non equivalent control group design was used for the study as the participants were not randomly assigned to the pilot and control schools.

Data was gathered using two instruments. The first instrument, the Metropolitan Achievement Test, Form L, was used for pre and post testing to measure growth and achievement of elementary students in grades two, four and five. Secondly, the Classroom Check List, designed by Jane Stallings (1977), was used to collect data relative to the types of activities occurring in the classroom, the size of the group involved in the activity and whether students were working directly with the teacher or independently.

The analysis of covariance statistical test was used to determine the relationship of parallel scheduled schools and regular scheduled schools with regard to reading, language and mathematics achievement.

The Chi-Square test was used to study the causal-comparative relationship between the activities that occur in the classroom, the size of the group involved in the activity and whether students are working directly with the teacher or independently.

Summary of the Findings

Chapter IV presented the analysis of the data collected relative to the research questions and the stated hypotheses. This information was presented in three sections. The first section reported findings for the achievement testing. The second section reported findings related to classroom instructional time. A summary of the findings was presented in section three.

Analysis of covariance was used to determine what impact parallel scheduling had upon reading, language and mathematics achievement. This statistical test indicates that there were significant differences in the vocabulary, word recognition, total reading, math computation, and post total battery achievement scores of children in parallel scheduling as compared to children in regular scheduled schools. The test scores of the students in the parallel scheduled school increased in each of the aforementioned areas. Parallel scheduling does interact with student achievement when compared with a regular elementary schedule.

The Chi-Square test was used to determine the relationship between activities conducted in the classroom, size of groups working in the classroom, whether students work directly with the teacher or independently, and parallel scheduling. It was determined that 98% of the time

in parallel scheduled schools, teachers were teaching the subject that was scheduled. Ninety-two percent of the time teachers in the regular scheduled school were teaching the subject that was scheduled. No relationship could be established between the size of student groups and parallel scheduling nor the direct interaction with teachers and parallel scheduling. Therefore, no relationship could be established between parallel scheduling and classroom instructional time.

Conclusions

Conclusions are presented in this section. Conclusions were made based on effective organizational structure and the use of classroom instructional time in the review of literature and on an analysis of the findings generated from the study.

According to the literature, an administrator should be concerned with maximizing the use of instructional time because gains in achievement can be made if the organizational arrangement assists teachers in meeting the needs of students. Based on the achievement findings, parallel scheduling is one organizational arrangement that produces increased achievement in several subareas of reading and mathematics. Parallel scheduling increases the number of times that children will be instructed according

to the schedule that has been established. In this study, there was not a dramatic increase in the children being instructed in the area scheduled, however, there was a small increase. It is important to note, however, that the Northern Virginia School district has a regulation governing the total number of minutes that reading, language and mathematics must be taught at each grade level. Even with such a regulation in place, there was variation in the time allotted. If a school district lacked such a regulation and implemented parallel scheduling, the findings relative to the number of times children were being instructed according to schedule may be more pronounced. This, too, may also be a possible reason that researchers are finding the extreme variation in the time allotted for various subject areas. This may indicate that as Canady and Hotchkiss (1985) suggest"... school administrators should direct greater attention to how the school day is structured. Organization is critical to a successful school operation...." (p. 344) As Moody and Amos (1975) emphasize"... gains in academic achievement may be maximized through the organizational arrangements which aid teachers in utilizing their professional talents to the fullest extent possible in providing for pupil needs." (p. 56)

Margaret Hoffman (1984) found that teacher-directed instruction and student time on task were characteristics facilitated by the instructional schedule. Hoffman,

however, did not control to ensure that all teachers were using the most effective and efficient teaching strategies even though the schedule provided the school organization to facilitate this type of teaching. Based on the findings of this study, parallel scheduling does not ensure more direct teacher instruction or differ the classroom activities significantly from those that occur in a regular elementary schedule. Perhaps, this is due to the fact that the instrument that was used to collect this data was not sensitive enough to analyze patterns of teacher behavior in order to measure direct teacher instruction. At the same time, however, the extent to which the researcher can rely on limited observations of practices as being typical may also be questionable.

The researcher must emphasize, however, that there were significant findings in the vocabulary, word recognition, and total reading scores as well as the math computation scores of the children in the pilot school. This leads the researcher to believe that, if the activities were not unique and the direct teacher instruction did not play a significant role, then, perhaps, as McDonald (1976) reported in the BTES Study Phase II, certain teaching behaviors promote student engaged time especially in the areas of reading and math. In the second grade, monitoring pupil performance with corrective feedback and how pupils are organized for instruction were two variables that promoted

student engaged time. Such teaching behaviors as discussing the subject matter and questioning to encourage student involvement in grade five increased student engaged time. Perhaps these behaviors were present in the pilot school and account for the increased achievement in reading and math.

It must also be pointed out by the researcher that teacher attitudes may influence the successful implementation of parallel scheduling. This statement is based on the fact that the classroom observer noted on several occasions during the classroom observations that two teachers in the pilot school were very open about their dissatisfaction with parallel scheduling. Their discontent centered around the lack of teacher flexibility when such a schedule is implemented. Both teachers emphasized that they were bound to a schedule and could not take advantage of the opportunities for incidental learnings that evolved in the classroom due to the changing of students and the time assignments to specific subject areas. From an administrative point of view, the structure was needed to ensure that students had as much engaged time as possible.

Recommendations for Further Study

Based on the findings from the study and the conclusions that have been suggested based on these

findings, there are several recommendations that should be considered for further research.

First, it would be beneficial for teachers to be provided with inservice education concerning two areas: methods for teacher directed instruction and methodology for teachers on how to ensure quality instructional time in their classrooms. Once this inservice program is completed and teachers are implementing the strategies, further research should be conducted regarding student achievement and the use of classroom instructional time when parallel scheduling is implemented.

This study would then need to be replicated in a school system with annual norm-referenced testing for all students. It would be of value to have a larger number of schools involved in the study with a variety of achievement levels so that the analysis could be generalized to a larger population. Study of the learning outcomes of special populations should also be examined to determine if parallel scheduling is an acceptable instructional arrangement to be used with children of varying abilities.

Secondly, this study should be replicated in a school district that does not impose time requirements for subject areas to determine if parallel scheduling impacts achievement and the use of instructional time more dramatically under those conditions.

Thirdly, this study needs to be replicated utilizing an instrument sensitive enough to analyze teacher behaviors which promote student engaged time in the areas of reading and math.

Finally, study of the impact of teacher attitudes upon parallel scheduling and student achievement should also be considered as a possible extension of this research study.

BIBLIOGRAPHY

Beach, Mary Louise (1983). "Reading Instruction in an Effective School Setting: A Case Study of Suffolk, Virginia Elementary Schools." (Doctoral Dissertation, University of Virginia, 1983). Dissertation Abstracts International, 44, 12 A.

Berliner, David C. (1984). "The Half-full Glass: A Review of Research on Teaching" Using What We Know About Teaching, ed. Phillip Hosford. Alexandria, VA: Association for Supervision and Curriculum for Supervision and Curriculum Development, 51-82.

Bloom, Benjamin S. (1974, September). "Time and Learning." American Psychologist. 682-688.

Boyles, Marion E. & others (1969, Sept.). "Evaluation of Instructional Teams" Office of Education (DHEW). Washington, D.C.

Brookover, Wilbur B., & Schneider, Jeffrey (1975). "Academic Environment and Elementary School Achievement." Journal of Research and Development in Education, 9, 82-91.

Brookover, Wilbur B., & Lezotte, Lawrence (1977). "Changes in School Characteristics Coincident with Changes in Student Achievement." 66-68. (ERIC Document ED 181 005)

Brookover, Wilbur B., et al. (1978). "Elementary School Social Climate and School Achievement." American Educational Research Journal, 15, 301-318.

Canady, Robert L., & Butler IV, Alfred R. (1981, Fall). "Designing a Middle School Schedule." American Middle School Education. The National Association of Middle School Administrators, 4, 4, 29-35.

Canady, Robert L., & Hotchkiss, Phyllis R. (1985). "Scheduling Practices and Policies Associated with Increased Achievement for Low Achieving Students." Journal of Negro Education, 54, 3, 344-355.

Canady, Robert L., & Hotchkiss, Phyllis R. (1984, November). "School Improvement Without Additional Cost." Phi Delta Kappan, 183-184.

Clauset, Karl H. Jr., & Gaynor, Allen K. (1982, March). "Improving Schools for Low Achieving Children: A System Dynamic Policy Study." Paper presented at the Annual Meeting of the American Educational Research Association, New York.

Clauset, Karl H. Jr., & Gaynor, Allen K. (1980). "The Dynamics of Effective and Ineffective Schooling Preliminary Report of System Dynamics Policy Study." 55. (ERIC Document ED 201 801)

Emonds, Ron, & Frederikson, John (1978). Search for Effective Schools: The Identification and Analysis of Schools that are Instructionally Effective for Poor Children. Cambridge, Mass: Harvard University Center for Urban Studies, 20.

English, Fenwick (1984, May). "Pull-outs: How Much Do They Erode Whole-Class Teaching?" Principal, 63, 5, 32-36.

Filby, Nikola A., Marliave, Richard S. & Fisher, Charles W. (1977, April). "Allocated and Engaged Time in Different Content Areas of Second and Fifth Grade Reading and Mathematics Curriculum." Paper presented at the meeting of the American Educational Research Association, New York City, New York. San Francisco, California: Far West Laboratory for Educational Research and Development.

Fisher, Charles W., et al. (1978). "Technical Report: Teaching Behaviors, Academic Learning Time and Student Achievement: Final Report of Phase IIIB, Beginning Teacher Evaluation Study." (ERIC Document ED 183 525)

Fisher, Charles W., Filby, Nikola N., & Marliave, Richard S. (1977, April). "Instructional Time and Student Achievement in Second Grade Reading and Mathematics." Paper presented at meeting of the American Educational Research Association, New York City, New York.

Glass, Gene V., & Smith, Mary Lee (1977, November). "Pull Out in Compensatory Education." Paper presented by Colorado University Boulder Lab at Educational Research. Department of Health, Education and Welfare, Washington, DC, Office of the Commissioner of Education. (ERIC Document ED 160 723)

Good, Thomas L., & Brophy, Jere E. (1984). Looking into Classrooms. New York: Harper & Row.

Goodlad, John L. (1984). A Place Called School. New York: McGraw-Hill Book Company.

Harnischfeger, Annegret, Wiley, David E. (1975). Teaching Learning Processes in Elementary School: A Synoptic View. Studies of Educative Processes, Report No. 9. Berkeley, California: Far West Laboratory for Educational Research and Development.

Harrison, Rose Less (1982). "A Descriptive Study of the Perceived Influence of Institutional Interruptions on the Morale and Work of Teachers and Pupils in Elementary Schools." Dissertation Abstracts International. 3211, A.

Hoffman, Margaret (1984). "Instructional Scheduling in Effective Schools (Doctoral Dissertation, University of Virginia, 1984). Dissertation Abstracts International, 44, 12 A.

Huck, Schuyler W., Cormier, William H., & Bounds, William G., Jr. (1974). Reading Statistics and Research. New York: Harper and Row, Publishers, 301-302.

Jacobson, Kerry Ray (1980). "The Relationship of Individual Student Time Allocation to Reading and Mathematics Achievement." Dissertations Abstracts International, 35 A.

Jarvis, Oscar Thad (1962). "A Statistical Analysis of the Relationship of Varying Time Allotments to Pupil Achievement in Reading, Arithmetic, and Language of the Intermediate Elementary School in the Texas Gulf Coast Area." Unpublished doctoral dissertation, University of Houston.

Karweit, Nancy (1984, May). "Time on Task Reconsidered: Synthesis of Research on Time and Learning." Educational Leadership, 41, 8, 32-35.

Kazarian, Shirley M. (1977). The Allocation, Distribution and Use of School Time by Elementary Teachers in Selected Subject Areas. Los Angeles: University of California.

Kiesling, Herbert (1975). The Relationship of Time Spent on Reading Instruction as Measured by Norm-Referenced Tests and Criterion-Referenced Tests. Bloomington: Indiana University.

Koos, Jerry Alan (1977). "A Comparison of Reading and Mathematics Achievement of Seventh Grade Students Enrolled in a Block Time Schedule and Seventh Grade Students Enrolled in a Traditional Schedule." Dissertation Abstracts International, 5825, A.

Kean, Michael H. and others (1979). "What Works in Reading" (Federal Reserve Bank Study, School District of Philadelphia, 1979), 11.

Kounin, J. S. (1970). Discipline and Group Management in Classrooms. New York: Hot, Rinehart and Winston.

Lamme, Linda Leonard (1976, January). "Self-contained to Departmentalized: How Reading Habits Changed" The Elementary School Journal, 76, 4, 208-218.

Leithwood, K. A., & Montgomery, J. (1982). "The Role of the Elementary School Principal in Program Improvement." Review of Educational Research, 52, 309-339.

Levine, Daniel V., & Stark, Joyce (1982, December). "Instructional and Organizational Arrangements that Improve Inner-City Schools." Educational Leadership, 41-46.

Levine, Daniel V., & Stark, Joyce (1981). "Instructional and Organizational Arrangement and Processes for Improving Academic Achievement at Inner City Elementary Schools, 2. (ERIC Document ED 213 814)

McDonald, F. J. (1976). "Report on Phase II of the Beginning Teacher Evaluation Study." Journal of Educational Psychology, 62, 2, 198-203.

Maryland State Department of Education (1978). "Process Evaluation: A Comprehensive Study of Outliers." 128-131. (ERIC Document ED 160 644)

Mitchell, James V. (1985). The Ninth Mental Measurements Yearbook. Lincoln, Nebraska: The University of Nebraska Press.

Moody, Lamar, & Amos, Neil G. (1972, October). "Assessment of Selected Innovative Educational Practices by Professional Educators." Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, Louisiana, February 25-March 1, 1973). (ERIC Document ED 074 149)

Moody, L., & Amos, N. G. (1975). "The Impact of Principal Involvement Planning with Teacher Teams on Academic Achievement of ELementary School Pupils," 56. (ERIC Document ED 116 298)

Morphet, Edgar L., Johns, Roe L., & Reller, Theodore L. (1974). Educational Organization and Administration: Concepts, Practices and Issues. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

New York State Office of Education (1974). "School Factors Influencing Reading Achievement: A Case Study of Two Inner City Schools," 62-63. (ERIC Document Reproduction Service, ED 089 211)

Nie, Norman H. et al. (1975). Statistical Package for the Social Sciences. New York: McGraw-Hill.

Riedesel, Alan C. (1971). "Research Suggestions: Use of Time in Teaching Elementary School Mathematics," The Arithmetic Teacher, 177-179.

Rosenshine, Barak (1982). "Teaching Functions in Instructional Programs," 30. (ERIC Document ED 221 538)

Rosenshine, B. V. & Berliner, D. C. (1978). "Academic Engaged Time." British Journal of Teacher Education, 4, 3-16.

Saville, Anthony (1973). Instructional Programming: Issues and Innovations in School Scheduling. Ohio: Merrill Publishing Company.

Stallings, Jane (1984). "Effective Use of Classroom Time." Promoting School Excellence through the Applications of Effective Schools Research: Summary and Proceedings of a 1984 Regional Exchange Workshop. (ERIC Document ED 251 973)

Stallings, Jane A., & Hentzell, Shirley W. (1979). "What Do We Know About Teaching and Learning in Urban Schools? Volume 10: Effective Teaching and Learning in Urban Schools." Paper prepared for the Urban Education Program sponsored by National Institute of Education Washington, D.C., 1-159. (ERIC Document ED 185 165)

Stallings, Jane A. (1977). Learning to Look: A Handbook on Classroom Observation and Teaching Models. Belmont, California: Wadsworth Publishing Company, Inc.

Stallings, J., & Kaskowitz, D. (1974). Follow Through Classroom Observation Evaluation, 1971-73. Menlo Park, California: Stanford Research Institute.

Stimple, Margaret Jean (1984). "Reading Achievement Relative to School Effectiveness Research" (Doctoral Dissertation, University of Virginia, 1984). Dissertation Abstracts International, 45, 12 A.

Sullivan, Raymond Joseph (1975). "Relation Between School Systems' Variation of Reading Achievement in Grades Two Through Eight." Dissertation Abstracts, Vol. XXXIII.

Sweet, Anne Polselli, & Canady, Robert Lynn (1973, Fall). "Scheduling for a Differentiated Reading Program." Reading Horizons, 20, 1.

The National Commission of Excellence in Education (1983). A Nation at Risk: The Imperative for Education Reform. Washington, D.C.: U.S. Government Printing Office.

The Washington Post (1984, September 24). "Teachers' Time." The Washington Post Company, A 14.

Tyler, Ralph W. (1958). "Curriculum Organization" The Integrations of Educational Experiences. Fifty-seventh Yearbook of the National Society of Education, Part III. Chicago: University of Chicago Press, 105-125.

Weber, George (1971). "Inner City Children Can Be Taught to Read: Four Successful Schools," 20-30. (ERIC Document ED 057 125)

Williams, Edwin, & Raush, Harold L., ed. (1969). Naturalistic Viewpoints in Psychological Research. New York: Holt, Rinehart and Winston.

APPENDIX A

Parallel Scheduling Plan

Fourth/Fifth Grade - Pilot School

Parallel Scheduling Plan

Reading Model

	12:40-1:30	1:30-2:20	2:20-3:10
	Session I (50 minutes)	Session II (50 minutes)	Session III (50 minutes)
A	DRG-3(14) students	DRG-1(14) students	LA 1,3
B	DRG-2 (11) students	LA 2,4	DRG-4(14) students
C	LA 5,7	DRG-5(9) students	DRG-7 (15) students
D	DRG-8 (14) students	DRG-6(15) students	LA 6,8
(Extension) E	1,4,6	3,7,8	2,5

Math Model

	9:00-9:30	9:35-10:05	10:10-10:40
	Session I (30 minutes)	Session II (30 Minutes)	Session III (30 minutes)
A	MSG-1	MSG-2	P.E. Library 1,2 Music
B	MSG-3	P.E. Library 3,4 Music	MSG-4
C	P.E. Library 5,6 Music	MSG-6	MSG-5
D	MSG-8	MSG-7	P.E. Library 7,8 Music
(Extension) E	2, 4, 7	1, 5, 8	3, 6

Specialist Schedule

	Session I	Session II	Session III
	M T W Th F	M T W Th F	M T W Th F
A	MSG-1	MSG-2	P.E. 1/2 L 1/2 M
B	MSG-3	P.E. 3/4 L 3/4 M	MSG-4
C	P.E. 5/6 L 5/6 M	MSG-6	MSG-5
D	MSG-8	MSG-7	7/8 P.E. M 7/8 L
(Extension) E	2,4,7	1,5,8	3,6

APPENDIX B

Data Used for Matching Schools

Northern Virginia County Achievement/Ability Testing Program
1981-1986
GRADE 4
NATIONAL PERCENTILE RANK (AVERAGE)

SCHOOL	SCHOOL YEAR	NUMBER TESTED	READING (R)			MATHEMATICS (M)				LANGUAGE (L)								
			VOC	COM	TOT	CON	COM	PRO	TOT	MECH	USE	SPL	TOT	REF MAT	SOC STU	SCI	COM PRE	LAS
Northern Virginia County	85-86	2396	66	68	68	71	68	66	67	74	69	65	71	75	68	69	73	68
	84-85	2456	65	68	67	69	69	66	67	72	70	64	70	74	66	68	73	65
	83-84	2502	66	66	66	70	68	65	67	68	68	64	69	74	66	68	72	68
	82-83	2589	65	63	64	67	63	61	62	66	63	61	67	70	65	65	69	62
	81-82	2543	61	62	61	59	64	55	58	61	63	62	64	68	63	65	65	63
EXPERIMENTAL GROUP: STUDENT ENROLLMENT 419																		
Pilot School	85-86	48	78	54	65	64	67	58	63	69	61	58	65	70	54	66	68	56
	84-85	54	59	61	60	69	69	69	68	64	65	62	66	71	56	68	70	49
	83-84	52	48	57	55	56	58	57	56	53	55	46	53	52	52	49	58	47
	82-83	62	54	53	56	63	55	54	55	54	47	57	52	63	63	54	56	50
	81-82	63	45	52	50	46	65	49	52	54	56	56	57	55	51	55	57	48
CONTROL GROUP: STUDENT ENROLLMENT 459																		
Control School	85-86	52	71	67	69	75	69	74	73	72	66	65	70	71	79	87	74	59
	84-85	72	67	63	66	67	75	63	69	64	59	57	62	69	64	60	70	58
	83-84	53	71	55	61	78	84	69	77	67	62	59	65	68	68	69	74	50
	82-83	56	70	70	71	75	81	72	77	69	75	71	74	79	84	88	77	53
	81-82	57	54	65	61	66	70	61	65	62	63	58	63	74	73	78	67	62

ECONOMIC SURVEY - APRIL, 1986

	ENROLLMENT	FREE LUNCH	KINDERGARTEN LOW INCOME	TOTAL LOW INCOME	PERCENT LOW INCOME
Pilot	419	55	12	67	15.99
Control	459	58	9	67	14.60

APPENDIX C

Instructional Process

INSTRUCTIONAL PROCESS

I. SETTING THE STAGE
   A. RAISE LEVEL OF CONCERN
   B. REVIEW
   C. GOALS & OBJECTIVES

II. ACQUISITION OF SKILLS
   A. EXPLANATION (AUDITORY)
   B. MODELING (VISUAL)
   C. STRUCTURED PRACTICE (PHYSICAL)

MULTI—MODAL KINETIC TEACHING

III. CONSOLIDATION
   A. GUIDED PRACTICE
   B. GENERALIZATION AND DISCRIMINATION
   C. INDEPENDENT PRACTICE

APPENDIX D

Metropolitan Achievement Testing Guidelines

METROPOLITAN ACHIEVEMENT TESTING GUIDELINES

1. Tests will be administered to all students in grades 2, 4 and 5 during the week of September 8-12th from 9-12 a.m. All make-up testing will be completed by September 19th and materials should be returned to my office. The following level/form will be administered to each grade level.

   Second Grade - Primary 2 Form L
   Fourth Grade - Elementary Form L
   Fifth Grade - Intermediate Form L

2. Each teacher will complete a Scoring Service Identification Sheet (attached) using a #2 pencil. Please complete the front and back leaving the Group Code on the back unmarked. Your school code is as follows:

   Pilot - 644
   Control - 654

3. Directions and time limits for administration of the Metropolitan Achievement Tests are to be closely monitored and strictly followed. Children in second grade will record their answers on the test booklet. Fourth and fifth grades will record their answers on the answer sheets provided. No marks are to be made in the fourth and fifth grade test booklets. Please be sure that the Elementary Answer Sheet is given to Fourth Grade and the Intermediate Answer Sheet is given to Fifth Grade.

4. The Answer Sheets (Grades 4 & 5) and Test Booklet (Grade 2) need to be completed accurately as follows:

   a. Identifying information should be printed using a #2 pencil
   b. Erase cleanly any answers you wish to change. Make no stray marks
   c. Date of Testing - should be 09/08/86
   d. Answer Sheets (Grades 4 & 5) and Test Booklets (Grade 2) should be alphabetized by <u>class</u> and bound together by a paper strip for return. <u>Do not use</u> paper clips, rubber bands etc. as this will damage the booklets for machine scoring.

5. All test materials and answer sheets are to be returned to my office no later than September 21, 1986. If you have questions or special problems regarding this time limit please contact my office.

APPENDIX E

Teacher Visitation Schedule

TEACHER VISITATION SCHEDULE
CONTROL SCHOOL

Teacher A - Grade 5

Monday	November 17, 1986	9:30 - 10:00	(Language Arts)
Wednesday	December 10, 1986	2:20 - 2:50	(Math)
Tuesday	January 13, 1987	1:50 - 2:20	(Math)
Friday	February 13, 1987	9:30 - 10:00	(Language Arts)
Monday	March 9, 1987	1:20 - 1:50	(Math)
Tuesday	April 7, 1987	10:30 - 11:00	(Language Arts)

Teacher B - Grade 2

Monday	November 17, 1986	10:00 - 10:30	(Language Arts)
Wednesday	December 10, 1986	1:50 - 2:20	(Math)
Tuesday	January 13, 1987	9:30 - 10:00	(Language Arts)
Friday	February 13, 1987	1:40 - 2:10	(Math)
Monday	March 9, 1987	10:30 - 11:00	(Language Arts)
Tuesday	April 7, 1987	1:40 - 2:10	(Math)

Teacher C - Grade 2

Monday	November 17, 1986	10:30 - 11:00	(Language Arts
Wednesday	December 10, 1986	11:30 - 12:00	(Language Arts)
Tuesday	January 13, 1987	1:20 - 1:50	(Math)
Friday	February 13, 1987	1:10 - 1:40	(Math)
Monday	March 9, 1987	9:30 - 10:00	(Language Arts)
Tuesday	April 7, 1987	11:00 - 11:30	(Language Arts)

Teacher D - Grade 4

Monday	November 17, 1986	11:00 - 11:30	(Language Arts)
Wednesday	December 10, 1986	10:30 - 11:00	(Language Arts)
Tuesday	January 13, 1987	12:50 - 1:20	(Math)
Friday	February 13, 1987	11:00 - 11:30	(Language Arts)
Monday	March 9, 1987	12:50 - 1:20	(Math)
Tuesday	April 7, 1987	12:40 - 1:10	(Math)

Teacher E - Grade 5

Monday	November 17, 1986	12:10 - 12:40	(Language Arts)
Wednesday	December 10, 1986	12:10 - 12:40	(Math)
Tuesday	January 13, 1987	12:20 - 12:50	(Math)
Friday	February 13, 1987	10:00 - 10:30	(Language Arts)
Monday	March 9, 1987	12:20 - 12:50	(Language Arts)
Tuesday	April 7, 1987	12:10 - 12:40	(Math)

Teacher F- Grade 4

Monday	November 17, 1986	12:40 - 1:10	(Math)
Wednesday	December 10, 1986	10:00 - 10:30	(Language Arts)
Tuesday	January 13, 1987	10:30 - 11:00	(Language Arts)
Friday	February 13, 1987	12:30 - 1:00	(Math)
Monday	March 9, 1987	10:00 - 10:30	(Language Arts)
Tuesday	April 7, 1987	1:10 - 1:40	(Math)

Teacher G - Grade 5

Monday	November 17, 1986	1:10 - 1:40	(Math)
Wednesday	December 10, 1986	9:30 - 10:00	(Language Arts)
Tuesday	January 13, 1987	2:20 - 2:50	(Math)
Friday	February 13, 1987	10:30 - 11:00	(Language Arts)
Monday	March 9, 1987	9:00 - 9:30	(Language Arts)
Tuesday	April 7, 1987	2:10 - 2:40	(Math)

Teacher H - Grade 2

Monday	November 17, 1986	1:40 - 2:10	(Math)
Wednesday	December 10, 1986	11:00 - 11:30	(Language Arts)
Tuesday	January 13, 1987	10:00 - 10:30	(Language Arts)
Friday	February 13, 1987	11:30 - 12:00	(Language Arts)
Monday	March 9, 1987	1:50 - 2:20	(Math)
Tuesday	April 7, 1987	2:40 - 3:10	(Math)

TEACHER VISITATION SCHEDULE
PILOT SCHOOL

Teacher A- Grade 2

Wednesday	November 19, 1986	9:30 - 10:00	(Language Arts)
Monday	December 8, 1986	1:40 - 2:10	(Math)
Friday	January 16, 1987	10:30 - 11:00	(Language Arts)
Tuesday	February 10, 1987	1:40 - 2:10	(Math)
Tuesday	March 10, 1987	9:00 - 9:30	(Language Arts)
Monday	April 6, 1987	2:40 - 3:10	(Math)

Teacher B - Grade 2

Wednesday	November 19, 1986	10:00 - 10:30	(Language Arts)
Monday	December 8, 1986	10:40 - 11:10	(Language Arts)
Friday	January 16, 1987	2:10 - 2:40	(Math)
Tuesday	February 10, 1987	2:40 - 3:10	(Math)
Tuesday	March 10, 1987	9:30 - 10:00	(Language Arts)
Monday	April 6, 1987	2:10 - 2:40	(Math)

Teacher C - Grade 2

Wednesday	November 19, 1986	10:30 - 11:00	(Language Arts)
Monday	December 8, 1986	2:10 - 2:40	(Math)
Friday	January 16, 1987	11:00 - 11:30	(Language Arts)
Tuesday	February 10, 1987	9:00 - 9:30	(Language Arts)
Tuesday	March 10, 1987	1:40 - 2:10	(Math)
Monday	April 6, 1987	1:40 - 2:10	(Math)

Teacher D - Grade 2

Wednesday	November 19, 1986	11:00 - 11:30	(Language Arts Extension)
Monday	December 8, 1986	11:10 - 11:40	(Language Arts Extension)
Friday	January 16, 1987	1:40 - 2:10	(Math Extension)
Tuesday	February 10, 1987	2:10 - 2:40	(Math Extension)
Tuesday	March 10, 1987	10:30 - 11:00	(Language Arts Extension)
Monday	April 6, 1987	1:10 - 1:40	(Math Extension)

Teacher E - Grade 4

Wednesday	November 19, 1986	12:40 - 1:10	(Language Arts)
Monday	December 8, 1986	9:30 - 10:05	(Math)
Friday	January 16, 1987	12:30 - 1:00	(Language Arts)
Tuesday	February 10, 1987	10:00 - 10:30	(Math)
Tuesday	March 10, 1987	12:40 - 1:10	(Language Arts)
Monday	April 6, 1987	9:40 - 10:10	(Math)

Teacher F - Grade 5

Wednesday	November 19, 1986	1:10 - 1:40	(Language Arts)
Monday	December 8, 1986	10:05 - 10:35	(Math)
Friday	January 16, 1987	9:00 - 9:30	(Math)
Tuesday	February 10, 1987	9:30 - 10:00	(Math)
Tuesday	March 10, 1987	1:10 - 1:40	(Language Arts)
Monday	April 6, 1987	10:10 - 10:40	(Math)

Teacher G - Grade 5

Wednesday	November 19, 1986	1:40 - 2:10	(Language Arts)
Monday	December 8, 1986	9:05 - 9:35	(Math)
Friday	January 16, 1987	1:00 - 1:30	(Math)
Tuesday	February 10, 1987	12:40 - 1:10	(Language Arts)
Tuesday	March 10, 1987	2:40 - 3:10	(Language Arts)
Monday	April 6, 1987	9:00 - 9:30	(Math)

Teacher H - Grade 5

Wednesday	November 19, 1986	2:10 - 2:40	(Language Arts)
Monday	December 8, 1986	1:10 - 1:40	(Language Arts)
Friday	January 16, 1987	9:30 - 10:00	(Math)
Tuesday	February 10, 1987	1:10 - 1:40	(Language Arts)
Tuesday	March 10, 1987	10:00 - 10:30	(Math)
Monday	April 6, 1987	12:40 - 1:10	(Language Arts)

Teacher I - Grade 4/5

Wednesday	November 19, 1986	2:40 -- 3:10	(Language Arts Extension)
Monday	December 8, 1986	12:40 - 1:10	(Language Arts Extension)
Friday	January 16, 1987	10:00 - 10:30	(Math Extension)
Tuesday	February 10, 1987	10:30 - 11:00	(Math Extension)
Tuesday	March 10, 1987	2:10 - 2:40	(Language Arts Extension)
Monday	April 6, 1987	10:40 - 11:10	(Math Extension)

APPENDIX F

Classroom Observation Summary and Check List

CLASSROOM SUMMARY INFORMATION

_____ School

_____ Date

Grade: _____

Room Number: _____

Number of Students Enrolled in Class: _____

Number of Students Present Today: _____

Time:

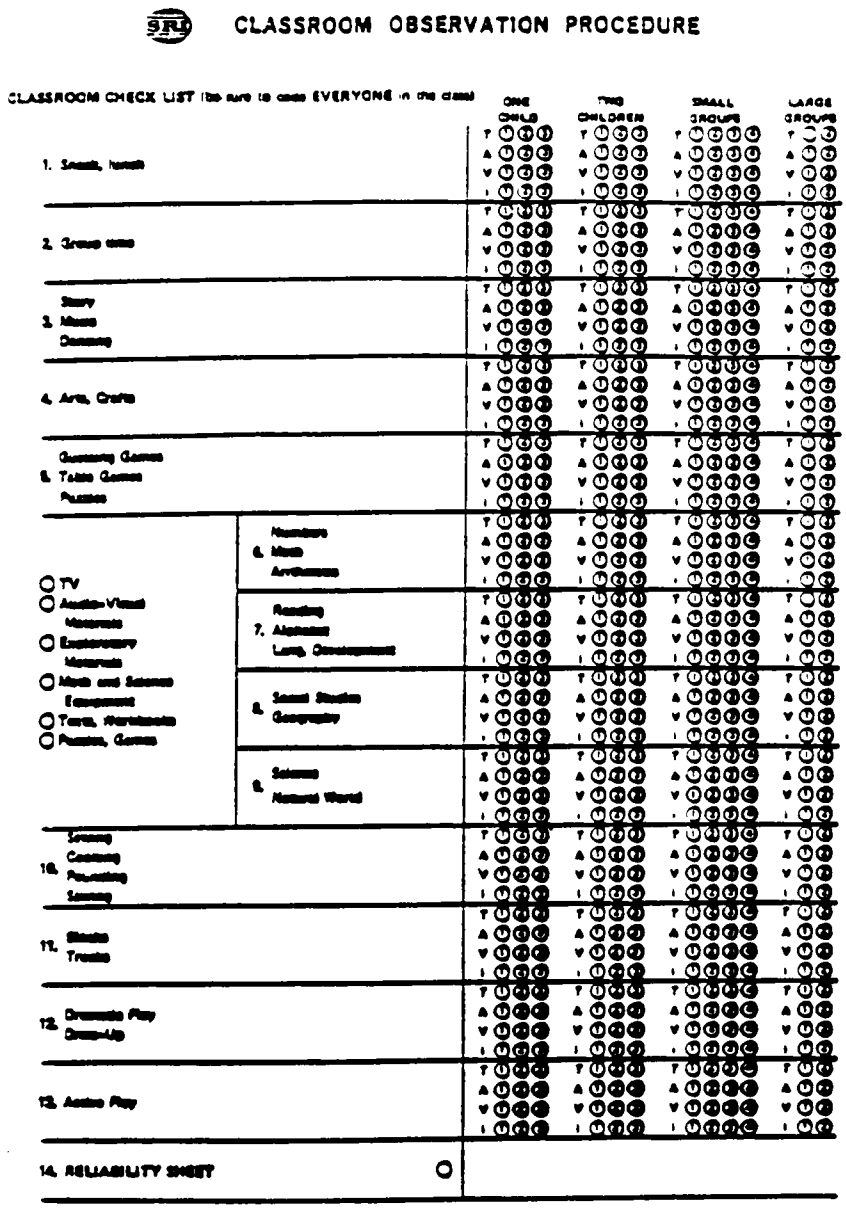
1st Observation: _____

2nd Observation: _____

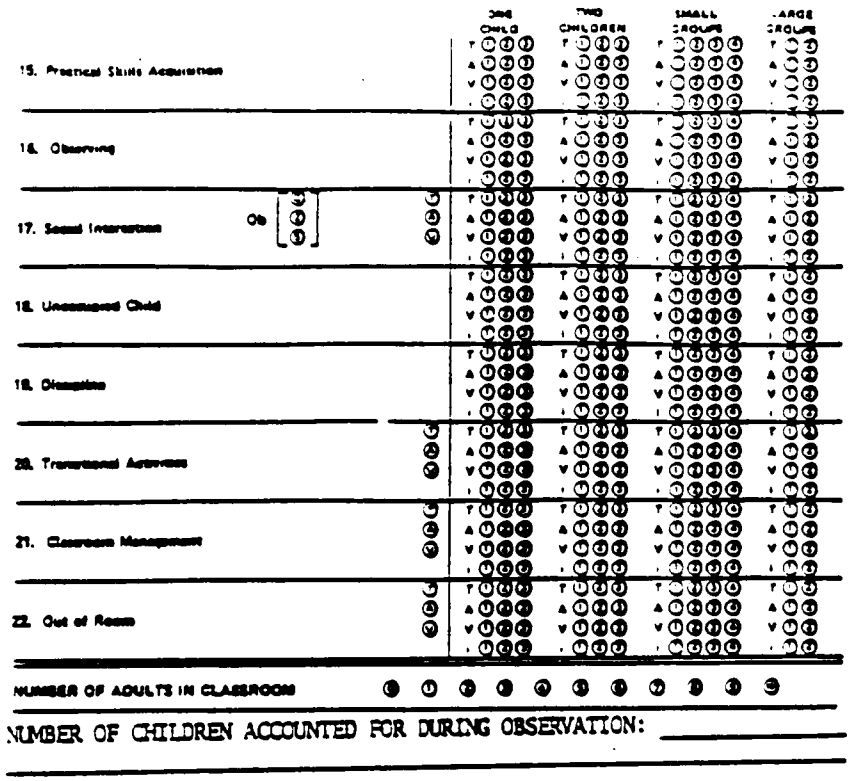
Adults:

Number of Aides While Observing: _____

Number of Volunteers While Observing: _____



The Classroom Checklist (1977)
Permission to use granted by Jane Stallings. See Appendix G.



The Classroom Checklist (1977)
Permission to use granted by Jane Stallings. See Appendix G.

APPENDIX G

Correspondence to Obtain Permission to Use Classroom Check List

November 18, 1986

Ms. Jody S. Carlisle

Woodbridge, VA 22192

Dear Ms. Carlisle:

Dee Leitner referred your request for permission to use Jane Stallings' instrument ("Snapshot") to me. Jane Stallings left SRI International and is now at Vanderbilt University. She developed several instruments while she was here. To get her permission to use the instrument, please write to her at this address:

Jane Stallings
Vanderbilt University
Department of Education
West End Avenue
Nashville, TN 37240

My apologies for the delay here at SRI. Best of luck with your work.

Sincerely,

Carolyn Estey
Social Sciences Department

SRI International
333 Ravenswood Ave. • Menlo Park, CA 94025 • 415 326-6200 • TWX: 910-373-2046 • Telex: 334 486 • Facsimile: 415 326-5512

Woodbridge, Va. 22192
November 10, 1986

Jane Stallings
Vanderbuilt University
Department of Education
West Inn Avenue
Nashville, Tennessee 37240

Dear Ms. Stallings:

I am currently a Doctoral student at Virginia Polytechnic Institute and State University and am currently in the process of collecting data on Parallel Scheduling in the Elementary School. During my review of the literature, I located your Classroom Checklist (CCL) or classroom "Snapshot" in your book, Learning to Look. I would like to request your permission to use this instrument in collecting classroom data on the tasks of children and teachers within 9 classrooms on traditional schedules and 9 classrooms that are involved in parallel scheduling.

I have contacted the Stanford Research Institute both by phone and in writing concerning this instrument. I have been unable to locate anyone that seems to be aware of the instrument or the manner in which I obtain permission for its use.

I would appreciate your authorization for use of this instrument based on the instructions given in your book, Learning to Look, or information as to how to obtain such permission.

Your assistance is greatly appreciate.

Sincerely,

Jody S. Carlisle

JSC:leb

11-19-86 Dear Jody,

Dr. Stallings is currently at the University of Houston. I talked with her by phone today, and she has given her verbal permission for you to use the instrument described in Learning to Look. Her address is attached if you wish to contact her further.

Sincerely,

Leith Patton
Coordinator

Dr. Jane Stallings, Chair
Department of Curriculum and Instruction
College of Education
University of Houston-University Park
4800 Calhoun
Houston, Texas 77004

Woodbridge, VA 22192
December 1, 1986

Dr. Jane Stallings, Chair
Department of Curriculum and Instruction
College of Education
University of Houston - University Park
4800 Calhoun
Houston, Texas 77004

Dear Dr. Stallings:

I am in receipt of a note from Leith Patton, informing me of your permission to use the Classroom Checklist in your book, Learning to Look for my dissertation. He stated that he spoke with you by phone on November 19, 1986.

I would like to express my appreciation for the opportunity to use the instrument as well as my interest in your work. I have been reading many of your documents such as "Effective Use of Classroom Time" and "What Do We Know About Teaching and Learning in Urban Schools." It's always a pleasure to see experts like yourself focus on classroom teaching and learning.

I am currently a Doctoral student at Virginia Polytechnic Institute and State University. The Classroom Checklist will be used to collect classroom data within 9 classrooms following traditional schedules and 9 classrooms that are involved in parallel scheduling. I am excited about the collection of the data and the information it will yield.

Once again, your authorization to use the instrument is greatly appreciated. Best of luck in your future endeavors.

Sincerely,

Jody S. Carlisle

JSC:leb

Woodbridge, VA 22192
December 1, 1986

Dr. Leith Patton
Coordinator
Vanderbuilt University
Department of Education
West Inn Avenue
Nashville, Tennessee 37240

Dear Dr. Patton:

I am in receipt of your note dated November 19, 1986 and wanted you to know how much I appreciated your assistance in obtaining permission to use the Classroom Checklist instrument in Learning to Look by Jane Stallings. I have also followed up with a letter to Dr. Stallings.

Your assistance is greatly appreciated.

Sincerely,

Jody S. Carlisle

JSC:leb

The three page vita has been removed from the scanned document. Page 1 of 3

The three page vita has been removed from the scanned document. Page 2 of 3

The three page vita has been removed from the scanned document. Page 3 of 3