COMPARISON OF ACHIEVEMENT IN 7A/B BLOCK SCHEDULED SCHOOLS AND 7-PERIOD TRADITIONAL SCHEDULED SCHOOLS IN VIRGINIA

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(ABSTRACT)

The American high school schedule of single-period classes has remained mostly unchanged for over one hundred years. In response to societal changes and reform movements, the secondary school schedule is receiving renewed attention.

Block scheduling, the use of extended periods of time for learning, is one response to school restructuring in Virginia and throughout the nation. In Virginia, the 7A/B block schedule is used by 23.3% of the high schools. Although advocates have convinced school boards to adopt this schedule, there is little hard data available to assess its efficacy.

In this study the relationship between two types of schedules (7A/B block and 7-period traditional) and student achievement at the eleventh grade was examined.

No differences were found between the two schedules for achievement as measured by the subscales of the eleventh grade Tests of Achievement and Proficiency.

DEDICATION PAGE

To the memories of the following people:

Fred and Shirley Arnold, my parents and my first teachers

Robert M. Little, my first employer

Ralph Cox, my first principal

and

Roger B. Sharpe, my friend and confidant.

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CHAPTER I

THE PROBLEM

Education is the building stone upon which American society is built. As society changes, so too must education (Daggett, 1990). The educational focus of American society in the early twentieth century was to prepare students to be responsible, well-informed citizens. After World War II, greater participation in higher education occurred because of the advent of the GI Bill and increased parental expectations. Parents encouraged their children to surpass them in economic and educational status by going to college. So, the high school curriculum became focused on preparing students for higher education. In the 1960's, schools focused on improving the vocational preparation of students not planning on going to college, but workforce preparation was not viewed as a primary mission of public education. The educational reform movement of the 1980's was primarily concerned with raising core academic standards and improving the skills of college-bound youth (Daggett, 1990).

A Nation at Risk (National Commission on Excellence in Education, 1983) launched one of the great reform movements in American education. The report urged educators to look beyond the details of schooling to three big issues: time,

content, and expectations (Greenan, 1994; National Education Commission on Time and Learning, 1994). Greenan (1994) stated:

> This report focused on the need to enhance high school graduation requirements through the "new basics" (English: four years; mathematics: three years; science: three years; social studies: three years; computer science: half a year; raising university admission requirements; establishing more "rigorous and measurable" standards for student academic performance; making a longer school day and year; improving teacher preparation; creating effective educational leadership; and requesting public fiscal support. The report identified a core of basics presumably for all students. These basics were believed to better prepare students for a college education by providing more academics with higher standards for success. (pp. 31-32)

In 1986 the National Governors' Association issued reports acknowledging that "American society was undergoing profound changes, largely as a result of the combined effects of demographic changes affecting the family, the workforce, and the schools, as well as changes in America's competitive position in the world economy" (Cohen, 1988, p.1). The National Governors' Association realized that

the American educational system must continue to adapt to changes in the broader social and economic environment. Cohen (1988) went on to state:

> More specifically, the need for continued educational reform is rooted in three inescapable realities. First, the economic well-being of the states and their citizens is increasingly dependent upon a well-educated and highly-skilled workforce. Second, the health of our economy as well as the stability of our democracy requires schools and colleges to effectively educate all students. The continuing high proportions of students at risk of academic failure deprives our economy of needed manpower, and threatens our democratic institutions. As a result of academic failure, far too many of our citizens are condemned to unproductive and unfulfilling lives. Third, public education is a big public business. (p. 1)

During the 1980's, business and industry expressed a dissatisfaction with the inequity between the needed skills for entry-level positions and the ability of high school graduates to perform them competently. The shift of the economy from a manufacturing base to an information base has meant significant changes in the kinds of jobs available and in the way work is performed. Today’s workers require

a higher level of intellectual development to handle more complex and abstract tasks (Daggett, 1990).

The need for comprehensive educational reform is widely acknowledged and has taken two very different forms: intensification and restructuring. "Intensification" is a term referring to attempts to intensify as exactly as possible the what and how of teaching (Fullan, 1991). "Restructuring" is a term describing significant changes designed to contribute to productivity and effectiveness (Cawelti, 1994). Restructuring focuses on fundamental changes in expectations for learning and teaching and in the organization and management of schools (Fallon, 1995). One goal of restructuring is to improve student performance on important outcomes in the curriculum of the future. Another major goal of restructuring the school organization is to make better use of instructional time (Cawelti, 1994).

Although secondary education in America has been the subject of frequent criticism, the United States has some of the best schools in the world (Cawelti, 1994). Contemporary American educational practices such as cooperative learning, integrated curriculum, multi-intelligence instruction, and higher level thinking and problem-solving skills hold great promise for instructional gains (Buckman, 1995). In spite of the successes of American high schools, problems such as unmotivated students, unacceptable drop out rates, and the lack of basic skills of graduates have

led to reform activities and attempts by school leaders to restructure the way they operate their schools (Cawelti, 1994).

The National Study of High School Restructuring (Cawelti, 1994) documented the changes that high schools are undertaking to improve their productivity and effectiveness in serving the needs of youth and the nation. From this study, five major components of high school reform were identified: curriculum/teaching, school organization, community outreach, technology, and monetary incentives.

Cawelti (1994) cited ten specific restructuring elements included in the school organization component. They are as follows:

1. Shared school governance,
2. Site-based management,
3. Teacher team responsibilities,
4. Transition to upper grades,
5. Teacher-advisee system,
6. School-within-a-school,
7. Block schedule,
8. Total Quality Management,
9. Divisional organization, and

10. Extended school year. (p.18)

For schools and districts engaged in restructuring efforts to produce more effective learning communities, time has proven to be the most intense, dominating issue to emerge. Time constraints are posing the most difficult problems to solve as educators work to restructure schools to meet the needs of the learner for the twenty-first century (Dalheim, 1994).

A report of the National Education Commission on Time and Learning, Prisoners of Time, was released in May, 1994. The report stated that learning in the United States was a prisoner of time. The Commission on Time and Learning (1994) stated:

> For over a century American public education has held time constant and let learning vary . . . . The conviction that learning goals should be fixed and time a flexible resource opens up profound opportunities for change . . . . New uses of time should ensure that schools rely much less on the 51-minute period, after which teachers and students drop everything and run off to the next class. Block scheduling-- the use of two or more periods for extended exploration of complex topics or for science laboratories-- should be more common. (pp. 7-31)

Breaking Ranks (NASSP,1996), the National Association of Secondary School Principals' report on high schools of the twenty-first century, asserted:

> Many high schools face the prospect of decreased relevance in a future in which time and space, as traditionally used in education, will have diminished influence on the ability to deliver learning.... Learning continues to be dispensed in tidy 50-minute segments, as if anything worth learning can be trimmed to fit a precise time frame.... (pp. 11-12)

One of the report's six main themes emphasizes organizing time differently. Time flexibility is needed for teaching and learning. The school schedule creates a framework for organization and time usage that affects teaching and learning in the school. High schools need flexible schedules that allow for more varied uses of time in order for the requirements of the core curriculum to be met (NASSP, 1996).

Innovations such as block scheduling are meant to increase flexibility so that teachers can vary instructional activities. A nationwide sampling by Cawelti (1994) estimated that 38% of the nation's schools would employ some form of block scheduling by the late 1990's. In Virginia, 58.2% of high schools employed some form of block scheduling during the 1996-1997 school year according to a survey by

Rettig (1996). Rettig's 1996-1997 block scheduling summary is in Table 1, and his 1995-1996 block scheduling summary is in Table 2.

Table 1

1996-1997 Block Scheduling Summary in Virginia

Type of Block Schedule	Number of Schools	Percentage
6A/B Block	12	4.1
7A/B Block	68	23.3
8A/B Block	8	2.7
4X4 Block	78	26.7
Other Block	4	1.4
TOTAL	170	58.2

Note. From Directory of High School Scheduling Models in Virginia 1996-97, by Michael D. Rettig, 1996.

Canady and Rettig (1995) identified five basic scheduling designs in use or being considered for use: (a) single period schedules (consisting of six, seven, or even eight classes daily, varying between 40 to 60 minutes in length); (b) alternating periods within the week (during which classes meet on a rotating basis

Table 2

1995-1996 Block Scheduling Summary in Virginia

Type of Block Schedule	Number of Schools	Percentage
6A/B Block	13	4.5
7A/B Block	51	17.6
8A/B Block	6	2.1
4X4 Block	58	20.0
Other Block	5	1.7
TOTAL	133	45.9

Note. From Directory of High School Scheduling Models in Virginia 1995-96, by Michael D. Rettig, 1995.

every other day for extended blocks of time); (c) the 4/4 semester plan or the “4 by 4" or “accelerated plan” (in which students take four 90-minute classes for 90 days); (d) the trimester, quarter-on-quarter-off model and other intensive scheduling models (in which there are shorter, more intensive courses; students can take, for example, two core courses and related subjects over a 60-day period); and (e) a variety of 180-day combinations (in which there are long and short terms of instruction and remediation/enrichment and staff development for teachers).

In Virginia, as well as many other states, educators are viewing block scheduling as a means to restructuring their school organizations to meet societal

needs and the needs of learning for the twenty-first century. Research on block scheduling is needed to assess its effect on achievement.

Statement of the Problem

Inspired by the reform movements that focus on the learner-centered school, block scheduling is an alternative for educators to allocate instructional time. However, there is too little information available to draw conclusions about the effect of an alternating-day block schedule on student achievement.

Purpose of the Study

The purpose of this study was to examine what effect the introduction of 7A/B block scheduling had on eleventh-grade Tests of Achievement and Proficiency (TAP) mean scale scores in the test areas of Reading Comprehension, Mathematics, Written Expression, Sources of Information, Social Studies, Science, and Complete Composite in public, 9-12 high schools in Virginia. Also, the study compared the 1996 eleventh-grade Tests of Achievement and Proficiency (TAP) mean scale scores in the areas of Reading Comprehension, Mathematics, Written Expression, Sources of Information, Social Studies, Science, and Complete Composite in public, 9-12 high schools in Virginia that were using 7A/B block scheduling and 7-period traditional scheduling at that time.

Research Questions

This study attempted to answer the following research questions:

1. What effect did the introduction of 7A/B block scheduling have on eleventh-grade TAP scores?
2. What were the mean scale score differences on the 1996 eleventh-grade TAP among schools who had been on 7A/B block schedules for one, two, and three or more years?
3. What were the comparative TAP mean scale score differences in achievement between public, 9-12 high schools in Virginia on 7A/B block scheduling and 7-period traditional scheduling?
4. What were the comparative mean scale score differences on the 1996 eleventh-grade TAP between schools on 7A/B block scheduling and 7-period traditional scheduling?
5. What were the mean scale score differences on the 1996 eleventh-grade TAP among schools who had been on 7A/B block scheduling for one, two, and three or more years, and schools on 7-period traditional scheduling?
6. What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period schedule schools based on school size?

7. What were the mean scale score differences on the eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools based on school location?

8. What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools based on free and reduced meal eligibility?

9. What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools according to pupil-teacher ratio?

10. What were the mean scale score trends of the combined 7A/B block schedule schools and the 7-period traditional schedule schools on the TAP from 1991-1996?

Need for the Study

Research has indicated a lack of empirical studies on the effects of 7A/B block scheduling on achievement (Sturgis,1995; Kramer, 1997). Because of this lack of empirical data on 7A/B block scheduling achievement, educators have few resources on which to base decisions about block scheduling.

This study addressed the effect of the introduction of 7A/B block scheduling on TAP mean scale score achievement as well as compared that achievement to 7-period traditional schedule schools. The findings of this study may be useful to

school decision-makers, and the study will serve as one source of achievement information for schools considering the change to block scheduling.

Definitions

Block Scheduling: A schedule configuration which allows for extended periods of instruction.

7A/B Block Schedule (also known as Alternating Day, Day 1/ Day 2, or Odd/Even): Classes meet every other day for 85-100 minutes for the entire 180-day school year. For example, classes 1-3-5-7 meet on Day 1 and classes 2-4-5-6 meet on Day 2 and so forth. One period is a constant period (5) and meets for a traditional 48 to 50-minute period.

7-Period Traditional Schedule: A single period schedule consisting of seven classes daily, varying between 45-55 minutes each.

4/4 Semester Plan (Also known as 4X4, intensive, semestered,or accelerated plan): Four classes meet every day for ninety minutes for ninety days, then four new classes meet every day for ninety minutes for ninety days. This block scheduling model is the most popular model in use.

TAP: Riverside Publishing Company's Tests of Achievement and Proficiency. The TAP test was the Virginia State Assessment Program's eleventh-grade standardized achievement test. The TAP was replaced in 1997 by the Stanford 9.

Scale Score: Standard scores that can be thought of as "inches of educational achievement."

Mean Score: The sum of all scores in a distribution divided by the number of scores.

Complete Composite: An average of scores on Reading Comprehension, Mathematics, Written Expression, Using Sources of Information, Social Studies, and Science tests of the TAP.

Achievement: The extent to which a person or group has acquired certain skills or information.

Organization of the Study

This study was divided into five chapters:

Chapter I included the introduction, the statement of the problem, the purpose of the study, the research questions, the need for the study, the definition of terms, and the organization of the study.

Chapter II is a review of the pertinent literature as it relates to block scheduling, restructuring, and achievement.

Chapter III described the methodological procedures for the study which included the research questions, the sources of data, the participants, the research procedures, and the research plan.

Chapter IV presented findings of the study.

Chapter V contained the summary, conclusions, discussion, and implications of the study.

CHAPTER II

REVIEW OF RELATED RESEARCH

This study began with the setting of a context for school reform and school restructuring. One of the elements of school restructuring is the use of block scheduling-- the use of two or more periods of time for extended exploration or laboratories (National Education Commission on Time and Learning, 1994).

One purpose of this study was to determine the effect of the implementation of 7A/B block scheduling on achievement as measured by eleventh-grade Tests of Achievement and Proficiency (TAP) scores. Another purpose of this study was to compare the eleventh-grade TAP scale scores in 7A/B block scheduled schools and 7-period traditional scheduled schools.

In order to understand the advent of block scheduling and its effect on academic achievement, it was worthwhile to investigate several related issues: (a) time and learning; (b) secondary school schedules; (c) block scheduling models; (d) block scheduling advantages; (e) block scheduling disadvantages; and (f) block scheduling achievement.

Time and Learning

In "A Model of School Learning," John Carroll (1963) stated the relationship of time to achievement. Carroll's model focused on five elements important to

achievement: aptitude-- the amount of time needed to learn the task; ability to understand instruction; perseverance-- the amount of time the learner is willing to engage in learning; opportunity-- the amount of time allocated for learning; and quality of instruction (Carroll, 1963).

Of Carroll's five elements important to achievement, three related to the use of time-- aptitude, perseverance, and opportunity. As Carroll defined opportunity as "time allowed for learning," then the school schedule determined opportunity. Carroll further stated, "It may come as a surprise to some to be told that the school may allow less than adequate time for learning any task, but second thought will make one realize that this is very often the case" (p.727).

In the 1970's, Bloom picked up on the theme of time and learning which had been proposed by Carroll. Bloom pointed out that Carroll's work in setting time as the central variable in school learning had produced a major shift in thinking about education (Powell, 1976).

Theodore Sizer, Chairman of the Coalition of Essential Schools, raised a fundamental question at a public hearing sponsored by the National Commission on Time and Learning: How do children learn? "They learn," he said, "only when they are engaged," (National Education Commission on Time and Learning Public Hearing, 1993, p.14) in other words when they are tuned-in and paying attention.

Sizer continued: "Children will be motivated, and thus engaged, when they are known and respected, and when they value what their attention is directed toward" (National Education Commission on Time and Learning Public Hearing, 1993, p.14). He said, "In too many American secondary schools, children are not known or respected; they are only categorized and processed" (National Education Commission on Time and Learning Public Hearing, 1993, p.14).

The design of the school schedule is part of the problem. In Sizer's view, "Very few of us do serious, imaginative, or intellectual work in fifty minute snippets, with the subject changed the previous hour and the following hour" (National Education Commission on Time and Learning Public Hearing, 1993). Questioning the impact of time and learning, Public Law 102-62 (The Education Council Act of 1991) established the National Education Commission on Time and Learning as an independent advisory body and called for a comprehensive review of the relationship between time and learning in the nation's schools (National Education Commission on Time and Learning, 1994). The Commission's report, Prisoners of Time, was released in May, 1994. The report stated that learning in American schools was "a prisoner of time":

> For over a century American public education has held time constant and let learning vary . . . . The conviction that learning goals should be

> fixed and time a flexible resource opens up profound opportunities for change . . . . New uses of time should ensure that schools rely much less on the 50-minute period, after which teachers and students drop everything and run off to the next class. (pp. 7-31)

Breaking Ranks (NASSP, 1996), the National Association of Secondary School Principals' report on high schools of the twenty-first century, asserted that "many high schools face the prospects of decreased relevance in a future in which time and space, as traditionally used in education, will have diminished influence on the ability to deliver learning" (p. 11). The report indicated that "learning continues to be dispensed in fifty minute segments, as if anything worth learning can be trimmed to fit a precise time frame" (p. 12). One of the report's six main themes emphasized organizing time differently. Time flexibility enhances the teaching and learning environment. "The manner in which a high school is organized and the way in which it uses time creates a framework that affects almost everything about teaching and learning in the school" (p. 19). Flexible high school schedules allow for creative uses of time in meeting the requirements of the core curriculum (NASSP, 1996).

Secondary School Schedules

In Horace's Compromise, Sizer (1984) stated that the current structure of high schools hinders the teaching and learning process. Sizer asserted that learning is fragmented, that time is wasted, and that teachers have too many students so they are not able to get to know them or their interests and needs. Sizer called for a more focused school schedule than the fragmented seven period day. Grinsel (1989) wrote that "Traditional scheduling does not easily facilitate a variety of learning situations and active student participation" (p. 29).

The high school schedule is a powerful tool for improving students' learning. Duke and Canady (1991) stated:

> The school schedule is the vehicle for allocating time, space, staff, and resources for the delivery of instruction. The schedule symbolizes what is important in a school; in essence, the schedule reveals the school's priorities. School scheduling, the allocation of instructional time, is the primary expression of the school's academic focus. (p. 29)

In the typical daily same-period, single-period high school schedule, most teachers prepare for five or six different groups of students. They usually teach 45 to 60 minute classes and oversee between 100 and 180 students daily. Because of these depersonalized, fragmented, and stressful circumstances, teachers are unable

to use more “effective, active learning methods”; and students have to adapt to the “teaching styles, academic expectations, and classroom management techniques” of several teachers daily (Canady & Rettig, 1995, p. 5).

The search for the exemplary secondary school schedule can be traced back to the late 1800's (Traverso, 1991). According to Powell (1976):

> In 1893, The National Education Association’s Committee of Ten reported on which subjects should be taught in school, and for how long. The Committee did not question whether taking four or five courses for 50 minutes each day was the best or only way to learn, its framework was periods-per-week. (p. 1)

Evidently, taking several courses during the school day--concurrent education--met the instructional methodologies of that time. From the turn of the century on, concurrent education was embedded in American secondary education (Powell, 1976).

In 1909, The Carnegie Foundation for the Advancement of Teaching suggested the formation of a “standard unit” of high school credit, now known as the Carnegie Unit. A course which met five periods weekly for the entire school year equalled a Carnegie Unit. Fourteen Carnegie Units made up the four-year secondary course which allowed entrance into college. Because of the need for

standardization and uniformity in high schools, and because of the strong influence of college admission requirements, American secondary schools almost totally adopted the Carnegie Unit (Powell, 1976). Powell (1976) went on to state that "The Carnegie Foundation made their donations to college faculty retirement funds contingent upon the college accepting only those students who had completed the fourteen units of high school" (p. 1). Thus, the adoption of the Carnegie Unit helped to solidify the acceptance of the practice of teaching several different subjects broken up into 45-50 minute segments (Powell, 1976).

Through the 1920's and 1930's, the major educational research thrust on scheduling was whether or not a 45 or 55-minute period was better. These research studies were part of an attempt to discover "laws of learning" which could be translated into classroom practice. This research led to the belief that there was a limit to the amount of drill and practice children could do at a sitting. This led to shorter class periods, with change from subject to subject (Powell, 1976).

During the 1950's and 1960's, educators began to look at the relationship between time and learning. Some educators began to feel that concurrent education and the Carnegie Unit were detrimental to learning. In fact, this recognition that the Carnegie Unit was not sacred and that time was an important factor in learning led to scheduling innovations in the 1960's and 1970's (Powell, 1976).

Goldman (1983) stated:

> The foment of the 1960's over the content of the secondary curriculum was accompanied by renewed concern with its form. The high school schedule of rigid Carnegie Units, while administratively convenient, was rejected by reformers dedicated to making education more humanistic, relevant, and individualized. The traditional organization of subject matter into classes of identical size, frequency, duration, and number of meetings, with every day the same, was seen as simply too inflexible to allow for effective variation in individual methods and for individual student differences. (p. 191)

Commenting on the proliferation of the Carnegie Unit from the early 1900's to the 1960's, Powell (1976) remarked:

> The Carnegie Unit did not invent the practice of taking several subjects for short periods of time, but it guaranteed that concurrent education, which had been the most prevalent, would become the exclusive way of scheduling instruction in American secondary schools. Although the Carnegie Foundation Board felt that the unit could be made quite flexible-- and it was instrumental in fostering the number and diversity of electives-- the unit soon exemplified a rigidity and formalism which

made curriculum integration and experimentation increasingly unlikely. (p. 2)

The major scheduling innovation of the 1960's and 1970's was called flexible modular scheduling (FMS) or the Trump Plan (named after its leading proponent, J. Lloyd Trump). Flexible modular scheduling divided the day into many short, equal units or modules. The modules could be combined to produce a variety of time packages to fit various goals and methods (Goldman, 1983; Powell, 1976).

Goldman said, “At its zenith in the late 1960s and early 1970s, it is estimated that some form of FMS was in use in about 15% of secondary schools in the United States, often the most innovative ones” (p.208). Initial reports of modular scheduling were positive. However, most high schools returned to traditional schedules because of community and other problems with modular schedules--notably discipline problems resulting from too much unstructured time associated with flexible modular scheduling (Goldman, 1983; Canady & Rettig, 1995).

In speaking of the waning popularity of flexible modular scheduling, Goldman (1983) concluded:

> We are also now beginning to know more about the effects on learning of other more precise factors such as neuropsychologic characteristics, learning styles, biorhythms, and relevance of elapsed time and time on

> task, knowledge of which will create still more obvious need for flexible educational methods. Especially in a climate of reduced financial support and a clamor for accountability in education, it may become absolutely necessary to devise programs which take such factors into consideration in order to ensure that schools are both efficient and effective. Some form of flexible, adapted scheduling is a sophistication which we probably cannot afford to overlook; the lesson to be learned from the FMS experience is that such flexibility must be real, must produce significantly better results than any system it replaces, and must not cause more problems than it solves. (p.209)

By the late 1980's and early 1990's, school personnel once again began to look at scheduling practices in light of restructuring efforts of schools across America (Canady & Rettig, 1995). Located in Massachusetts, Masconomet Regional High School adopted a schedule in 1989 that was perhaps the most widely publicized example of a restructured secondary school schedule. This pilot program resulted in an experimental secondary school schedule based on Joseph Carroll's Copernican Plan (Carroll, 1989; Traverso, 1991; Whitla, Bempechat, Perrone, Carroll, 1992). The Copernican Plan evolved from Joseph Carroll's experience and

findings in “macro-scheduling” or “intensive” scheduling in summer school programs in the District of Columbia and in New Mexico (Carroll, 1994).

In the District of Columbia summer school program of the mid-1960's, Carroll proposed a plan whereby students studied math and English for four hours a day, five days a week, for six weeks--a typical summer program. What he found was that based on pre- and post-tests for the students, the average gains were equal to the gains achieved in about two years in regular classes (Carroll, 1994).

In the New Mexico experience, Carroll offered non-remedial, credit-bearing high school courses as a part of summer school (Carroll, 1994). “Each class met in a four-hour ‘macro-class’ each day, five days a week, for six-weeks--which was about 20% less total time than was provided for a course under the traditional 180-day school year” (Carroll, 1994, p.105). The teachers who taught in the summer school program reported excellent results on the same standards applied to the traditional program (Carroll, 1994).

Block Scheduling Models

Canady and Rettig (1995) identified five basic scheduling designs presently in use or being considered for use: (a) single period schedules (consisting of six, seven, or eight classes daily, varying from 40 to 60 minutes in length); (b) alternating periods within the week (during which classes meet on a rotating basis every other

day for an extended period of time); (c) the 4/4 semester plan or the “4 by 4" or “accelerated plan” (in which students take four 90 minute classes for 90 days); (d) the trimester, quarter-on-quarter-off model and other intensive scheduling models (in which there are shorter, more intensive courses; students can take, for example, two core courses and related subjects over a 60 day period); and (e) a variety of 180-day combinations (in which there are long and short terms of instruction and remediation/enrichment and staff development for teachers).

Two of the most popular block scheduling designs are the alternating day schedule and the 4/4 schedule. The alternating day schedule (known as A/B or Odd/Even or Day 1/Day 2) meets its classes (six, seven, or eight) every other day. Half of the classes meet in a double instructional block one day, while the other classes meet in double blocks the next day (see Table 3). This cycle repeats itself throughout the 180-day school year (Canady & Rettig, 1995).

Table 3

<u>The Alternating Day Block Schedule (Seven Classes)</u>

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Monday
	Day 1 A	Day 2 B	Day 1 A	Day 2 B	Day 1 A	Day 2 B
Block 1	1	2	1	2	1	2
	1	2	1	2	1	2

Block 2	3	4	3	4	3	4
	3	4	3	4	3	4
Block 3	5	5	5	5	5	5
Block 4	7	6	7	6	7	6
	7	6	7	6	7	6

Note. Adapted from Block Scheduling: A Catalyst for Change in High Schools, by Robert Lynn Canady and Michael D. Rettig, 1995.

The 4/4 schedule (also known as “4 by 4,” “accelerated,” “intensive,” or “semestered”) meets its four classes for 90 minutes every day for 90 days (a semester). Students enroll in four new courses for the second semester (Canady & Rettig, 1995) (See Table 4).

Table 4

The 4X4 Block Schedule (Four Courses each semester)

Periods	Semester 1	Semester 2
1 2	Course 1	Course 5
3 4	Course 2	Course 6
5 6	Course 3	Course 7
7 8	Course 4	Course 8

Note. Adapted from Block Scheduling: A Catalyst for Change in High Schools, by Robert Lynn Canady and Michael D. Rettig, 1995.

Block Scheduling Advantages

Cawelti (cited in Canady & Rettig, 1995) cited the following advantages of block scheduling:

1. It enables teachers to use a variety of teaching activities.
2. It reduces the number of students seen each day by the teacher.
3. It affords flexibility needed to provide appropriate instruction for a diverse student body.
4. It allows teachers to get to know their students better. (p.28)

Canady and Rettig (1995) listed some of the advantages of various forms of block scheduling as follows:

1. Increased useable instructional time.
2. Teachers are able to plan extended lessons.
3. The number of class changes is decreased which results in fewer disciplinary referrals.
4. Teaching with a variety of instructional models is encouraged.
5. Concentrated work can take place.
6. Students have fewer classes, tests, quizzes, and homework assignments to keep up with.
7. Make-up work is easier to gather.
8. Students have an early opportunity to take a failed course.
9. Students have greater opportunity for acceleration.
10. Students may enroll in a greater number and variety of elective courses. (pp.68-73)

It should be noted, however, that not all of the listed advantages of block scheduling hold true for all models of block scheduling.

Block Scheduling Disadvantages

Critics of block scheduling assert that serious consideration to the downside of the schedule is not given. These critics often state that school boards across the country seem to adopt block scheduling based on the purported advantages without demanding or considering hard data on its effectiveness (Lindsay, 1996). Some of the disadvantages of block scheduling as asserted by Lindsay (1996) are as follows:

1. Longer classes are incompatible with the attention spans of most students.
2. The curriculum is watered-down.
3. Learning is less effective, especially in math and science.
4. Long gaps of time between courses affects retention of learning.
5. Transferring schools is problematic.
6. Specific courses, especially music, suffer.
7. Academic performance is unproven.

Czaja and McGee (1995) wrote, "Time is the major element of change in the block schedule" (p. 37), and time will answer the question of whether block scheduling created a learning boom or bust. They also indicated many concerns related to student achievement which had not been addressed. Some of these concerns were as follows: (a) dealing with the slow learner, (b) dealing with inclusion students, (c) dealing with student absenteeism, (d) dealing with teacher

absenteeism, (e) dealing with make-up work, (f) dealing with extended teaching periods, (g) dealing with electives, and (h) dealing with changing the traditional curriculum (Czaja & McGee, 1995). The authors wrote that weaker math students who were absent due to illness fell further behind in the block schedule (Czaja & McGee, 1995).

Block Scheduling Achievement

Eineder and Bishop (1997) reported an increase in the number of studies showing improved achievement as measured by grade point averages, honor rolls, and numbers of A's and F's earned under conditions of block scheduling. Further, Eineder and Bishop (1997) reported impressive first year block scheduling gains in grade point averages, honor rolls, and numbers of A's and F's earned in a study they conducted in an Ohio high school.

During the 1994-1995 school year, the Center for Applied Research and Educational Improvement (CAREI) conducted a study of block scheduling for the Anoka-Hennepin School District in Minnesota (Freeman, 1995). Four schools were involved in this study: two schools had a four-period schedule, and two schools had a seven-period schedule. On district criterion-referenced tests, the district report of percentage of mastery favored the four-period schools in number of objectives mastered. An examination of four math areas showed no apparent differences in

means on district tests. When students were grouped by quartiles of their Iowa Test of Basic Skills quantitative scores, there were no consistent differences in favor of either schedule. Scores on ACT college admission tests showed no discernible pattern related to school schedule (Freeman & Maruyama, 1995).

Lockwood (1995) had similar results with standardized algebra and geometry tests in Alabama. She studied the effects of a traditional schedule and a block schedule on the achievement of students in algebra and geometry. Her conclusion was: "There are no significant differences in the achievement of students in algebra or geometry on the two schedules" (p. 108).

In "Blocked Scheduled High School Achievement: Comparison of 1995 End-of-Year Course Tests for Blocked and Non-Blocked High Schools," the North Carolina Department of Public Instruction (1997) examined student achievement in blocked schools and compared it to student achievement in non-blocked schools. In general, the block scheduled students' end-of-course test scores were at least equal to test scores of students in non-blocked schools.

Sturgis (1995) summarized the results of seven studies which attempted to address differences in student achievement when comparing various forms of block scheduling to traditional scheduling. Although Sturgis (1995) "maintained that the research was spotty, inconclusive, and not well-designed, he indicated that student

achievement did not decline in a block schedule; and, at worst, remained unchanged" (p. 10). An interesting aside that Sturgis found was that student attitudes were quite favorable toward block scheduling. So it would seem that schools that change to a block schedule can expect positive attitudes from their students and can expect at least the status quo in terms of student achievement (Sturgis, 1995).

A study done by Kramer (1997) on block scheduling and math instruction alluded to achievement test data sent to him by four alternating-day block schedule schools. He stated, "Two reported improvement, one reported no change, and one reported a decrease after switching to the block schedule" (p. 26).

Other studies have been done which shed a less than positive light on block scheduling. Raphael, Wahlstrom, and McLean (1986) reported achievement data in the course of the Second International Mathematics Study (SIMS) from a sample in eighty Ontario, Canada, schools. Suggestions of better student attitudes and achievement were not supported, and performance of students in semestered (blocked) classes was significantly lower than those in year-long classes.

Bateson (1990) conducted a study which investigated the effects of full-credit semester (blocked) and all-year timetables (schedules) on science attitudes and achievement of tenth-grade students in British Columbia, Canada. He found that

students in all-year courses consistently outperformed both first and second semester (blocked) students in the cognitive domains tested as reflected by multiple choice tests of curriculum-based science knowledge, and that there were no significant differences in the affective domains. Further, the fact that second-semester, blocked students outperformed first-semester, blocked students contradicted the perception that knowledge retention was not a concern when using a semestered (blocked) schedule.

Schroth and Dixon (1995) investigated the effects of block schedules on seventh-grade mathematics students in two Texas middle schools. One school followed a traditional schedule, and the other school was in its first year of block scheduling. Based on a comparison of mathematics scores on the Texas Assessment of Academic Achievement (TAAS), the research showed that the block scheduled students did not have greater gains in achievement than those students on the traditional schedule.

Van Mondfrans and others (1972) studied whether the effects of block scheduling on student attitudes and achievement were more advantageous than those of traditional scheduling. The study involved three required courses at the freshman, sophomore, junior, and senior levels. Within the context of his study, Van Mondfrans found that student attitudes and achievement improved with seniors

only. The effects hoped for in changing from a traditional schedule to a block schedule occurred only with seniors.

Summary

Block scheduling has received a great deal of attention in recent years. Not all attempts to initiate block scheduling have been successful or easy to do (Bruckner, 1996). Sturgis (1995) said that local scheduling changes were rarely supported by scientific research, and that each school changed according to its particular need. He continued, "Those who advocated block scheduling appeared to do so based on intuition or affective reasons rather than on hard data related to student achievement (Sturgis, 1995, p. 3). There appeared to be a paucity of empirical studies on block scheduling (Freeman & Maruyama, 1995). Kramer (1997) went to the crux of the block scheduling achievement matter when he stated, "At present, there is too little information available to draw conclusions about the effects of an alternating-day block schedule on student achievement test scores" (p. 26).

> The approach of a new century offers the opportunity to create an educational system geared to the demands of a new age and a different world. Learning, in the form of high, measurable standards of student performance, must become the goal, with time as an adjustable

> resource. Both learners and teachers need more time. The key to liberating learning lies in unlocking time. (Wisconsin Education Association Council, 1996, p. 12)

There is a need for further research on achievement in block scheduled schools. The purposes of this study were to determine the effect of the introduction of 7A/B block scheduling on TAP mean scale score achievement and to make a comparison of 1996 eleventh-grade TAP mean scale scores between public, 9-12 high schools in Virginia that were using 7A/B block scheduling and those that were using 7-period traditional scheduling.

CHAPTER III

METHODOLOGY

The purpose of this study was to examine the effect of the introduction of 7A/B block scheduling on eleventh-grade Tests of Achievement and Proficiency (TAP) mean scale scores, and to compare the 1996 eleventh-grade Tests of Achievement and Proficiency (TAP) mean scale scores in the areas of Reading Comprehension, Mathematics, Written Expression, Sources of Information, Social Studies, Science, and Complete Composite between public, 9-12 high schools in Virginia using 7A/B block scheduling and those using 7-period traditional scheduling.

Data were collected through the use of mail questionnaires and through examination of extant, archival information collected by the Virginia Department of Education.

Populations

The populations for this study were all public, 9-12 high schools in Virginia who were identified in Directory of High School Scheduling Models in Virginia (Rettig, 1996) as being on either a 7A/B block schedule or a 7-period traditional schedule during the 1995-1996 school year. Fifty-one 7A/B block schedule schools and 104 7-period traditional schedule schools were identified (see Table 5).

Table 5

1995-1996 Summary of Schools on 7A/B Block and 7-Period Traditional Schedules

Type of Schedule	Number on Schedule
7A/B Block	51
7-Period Traditional	104

To deal with the problem of external validity occurring from nonrespondents to the mail questionnaires, a comparison of the composite mean scale scores was made for early and late returns for each of the populations. According to Lehman (1963), this comparison of early and late returns "rests on the assumption that the nonrespondents would tend to be more like the late returns than like the early ones" (p. 286). Therefore, if early and late returns are similar according to the composite mean scale scores, then an inference can be made that the test scores would be similar to the non-respondents and that generalizations to the populations can be made. Goldhor (1974) also asserted that late respondents were similar to non-respondents.

The completeness of the responses and the response rates to the questionnaires were determined by the researcher (see Table 6). All comparisons of

7A/B block schedule schools had either 29 or 23 responding schools. The difference in the number of 7A/B block schedule responding schools was due to insufficient information on the partial returns. All comparisons of 7-period traditional schedule schools had 64 responding schools.

Table 6

Questionnaire Responses

Type of Questionnaire	Number Mailed	Number of Complete Returns	Number of Partial Returns	Number of No Responses	Total
7A/B Block	51	23	9	19	51
Percent		45	18	37	100
7-Period Traditional	104	64	9	31	104
Percent		61	9	30	100

In a comparison of mean scale scores from the eleventh-grade Tests of Achievement and Proficiency (TAP) for the early and late questionnaire returns of 7A/B block schedule schools, there was a 2% or less difference in the mean scale scores. In the researcher's estimation, the 7A/B block schedule respondents were similar. Table 7 illustrates the TAP test areas' mean scale score results for early and late 7A/B block schedule respondents.

In a comparison of mean scale scores from the eleventh-grade Tests of Achievement and Proficiency (TAP) for the early and late questionnaire return of 7-period traditional schedule schools, there was a less than 1% difference in the mean scale scores. Again, in the researcher's estimation, the 7-period traditional schedule respondents were similar. Table 8 illustrates the TAP test mean scale score results for early and late 7-period traditional schedule respondents.

Instruments

Two questionnaires were developed by the researcher. These questionnaires sought responses to items which described the schools' characteristics and sought copies of eleventh-grade TAP scores from 1990-1991 through 1995-1996. One questionnaire was sent to 7A/B block schedule schools, and the other questionnaire was sent to 7-period traditional schedule schools. Riverside Publishing Company's (1986) Tests of Achievement and Proficiency (TAP) gauge secondary school students' progress toward commonly accepted goals in the basic skills and basic curricular areas. The TAP battery consists of Reading Comprehension, Mathematics, Written Expression, Using Sources of Information, Social Studies, and Science. The Complete Composite

Table 7

Early and Late Return Comparisons of 7A/B Block Schedule Schools on the Complete Composite Scale

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1
Early Returns	202.11	196.33	193.32	192.87	192.62
N	3	5	11	14	14
SD	2.44	6.88	8.52	9.21	7.96
Late Returns	189.78	193.18	191.42	192.63	191.59
N	3	10	13	15	15
SD	4.86	9.02	7.54	7.02	8.79
% Difference	6.50	1.63	0.99	0.12	0.54

	Yr 0	Yr 1	Yr 2	Yr 3	AVG	SD
Early Returns	194.31	192.02	190.74	192.11	194.05	8.11
N	14	11	9	3		
SD	8.13	6.68	8.00	3.10	3.22	
Late Returns	191.33	191.92	188.75	186.25	190.76	8.35
N	15	12	6	2		
SD	9.55	8.77	7.70	2.08	2.04	
% Difference	1.56	0.05	1.05	3.15	1.72	

Table 8

Early and Late Return Comparisons of 7-Period Traditional Schedule Schools on the Complete Composite Scale

	90-91	91-92	92-93	93-94	94-95	95-96	AVG	SD
Early Returns	191.93	192.48	193.30	192.45	192.03	192.52	192.45	7.58
N	32	32	32	32	32	32	32	
SD	6.81	7.53	7.75	8.12	7.28	7.84		
Late Returns	191.99	192.55	192.84	191.20	192.13	191.40	192.02	7.50
N	32	32	32	32	32	32	32	
SD	7.25	7.76	7.18	7.67	7.46	7.55		
% Difference	0.03	0.04	0.24	0.65	0.05	0.58	0.22	

score represents overall achievement in the six test areas (Riverside Publishing Company, 1986).

Reading Comprehension measures how well students understand what they read in textbook and everyday materials.

Mathematics measures students' knowledge of operations, equivalent forms and order, common applications, algebra, geometry, statistics, and basic mathematical principles.

Written Expression measures students' abilities to express ideas in writing and to observe conventions of grammar and usage.

Using Sources of Information measures students' skills in reading maps, graphs, and tables, and using reference materials.

Social Studies measures students' knowledge and skills in history, political science, geography, and other social sciences.

Science measures students' knowledge of the concepts and techniques of biology, earth and space science, physics, and chemistry.

Validity and Reliability

The validity and reliability of the questionnaires were based on the opinions of and field testing results of the researcher's committee and mentor group members. The internal validity of the time-series comparisons was based on controlling for "history", other events that might have been going on at the same time as the introduction of the independent variable--block scheduling (Campbell & Stanley, 1963). The 7A/B block schedule information questionnaire (Appendix A) went through many revisions in an attempt to develop the right questions to gather the needed information and to state them in a non-ambiguous way.

To control for history, the 7A/B block schedule schools were disaggregated and compared on the following covariables: school size, school location, free and

reduced-price meal eligibility, length of time on block scheduling, staff development, amount of staff development, changes in instructional practices, changes in curriculum, other changes listed by respondents, changes in pupil-teacher ratio, and changes in text books.

Data Collection Procedures

A 7A/B block schedule information questionnaire (see Appendix A) and cover letter (see Appendix B) and a 7-period traditional schedule information questionnaire (see Appendix C) and cover letter (see Appendix D) were mailed to all public, 9-12 high schools in Virginia who were identified as having been on the respective schedules during the 1995-1996 school year. The researcher asked for the school's principal, guidance counselor, or director of testing to answer the questionnaire and to provide the researcher with eleventh-grade TAP scores from 1990-1991 through 1995-1996, the last year the TAP was given in Virginia. Questionnaires were mailed to fifty-one 7A/B block schedule schools and to 104 7-period traditional schedule schools. A pre-addressed, stamped return envelope was enclosed with each mailing.

The questionnaires were used to gather data on school size, school location, free and reduced-price meal percentages (a proxy for socio-economic status), length-of-time on block scheduling, and any changes in curriculum, textbooks,

student-teacher ratios, and staff development that occurred at the same time as the introduction of block scheduling in a particular school. Other extant data needed by the researcher for this study was obtained from the appropriate Superintendent's Annual Report for Virginia (Virginia Department of Education, 1990-96).

Following the advice of Dillman (1978) on implementing mail surveys, a follow-up postcard (see Appendix E) was sent one week after the initial mailing to all of the schools of the study. Approximately three weeks after the initial mailing of the questionnaires, a second follow-up letter (see Appendix F) with a replacement survey was sent to those schools who had not responded. Seven weeks after the initial mailing of the questionnaires, a third follow-up letter (see Appendix G) with replacement survey was sent to those schools who still had not responded. The third follow-up was the final request for the mail questionnaires.

Research Questions

The research attempted in this study answered the following questions:

1. What effect did the introduction of 7A/B block scheduling have on eleventh-grade TAP mean scale scores?
2. What were the mean scale score differences on the 1996 eleventh-grade TAP among schools who have been on 7A/B block schedules for one, two, and three or more years?

3. What were the comparative TAP scale score differences in achievement between public, 9-12 high schools in Virginia on 7A/B block scheduling and those on 7-period traditional scheduling?
4. What were the comparative mean scale score differences on the 1996 eleventh-grade TAP between schools on 7A/B block scheduling and those on 7-period traditional scheduling?
5. What were the mean scale score differences on the 1996 eleventh-grade TAP among schools who had been on 7A/B block scheduling for one, two, and three or more years, and those schools on 7-period traditional scheduling?
6. What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools based on school size?
7. What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools based on school location?
8. What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools based on free and reduced meal eligibility?

9. What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools according to pupil-teacher ratio?
10. What were the mean scale score trends of the responding schools on the TAP from 1991-1996?

Data Analysis

Descriptive comparisons of eleventh-grade TAP scale score mean differences between the targeted populations were made in order to answer the research questions. Since the representative populations of Virginia public, 9-12 high schools who were on 7A/B block schedules and 7-period traditional schedules during the 1995-1996 school year were used, no statistical measures other than percentages and mean comparisons were used.

Separate time-series comparisons as outlined by Campbell and Stanley (1963) were conducted on 7A/B block-scheduled schools according to variables identified in the 7A/B block schedule information questionnaire. The data were arrayed in descriptive data tables, time-series graphs, and bar graphs.

CHAPTER IV

RESULTS

The first purpose of this study was to examine what effect the introduction of 7A/B block scheduling had on eleventh-grade Tests of Achievement and Proficiency (TAP) mean scale scores in public, 9-12 high schools in Virginia. To achieve this purpose, time-series graphs and scale score mean comparisons were conducted on the responding schools. Second, the study compared the 1996 eleventh-grade Tests of Achievement and Proficiency (TAP) mean scale scores in the areas of Reading Comprehension, Mathematics, Written Expression, Sources of Information, Social Studies, Science, and Complete Composite between public, 9-12 high schools in Virginia that were using 7A/B block scheduling and those using 7-period traditional scheduling during the 1995-1996 school year.

Quantitative and qualitative descriptive data were collected by survey research through the use of mail questionnaires and by the examination of extant, archival data collected by the Virginia Department of Education.

<u>Research Question 1</u>

What effect did the introduction of 7A/B block scheduling have on eleventh-grade TAP scores?

To answer this research question, time-series graphs and descriptive data tables were constructed for the test areas of Reading Comprehension, Mathematics, Written Expression, Sources of Information, Social Studies, Science, and Complete Composite based on the Tests of Achievement and Proficiency (TAP) mean scale scores of the responding schools from the 1990-1991 school year through the 1995-1996 school year, the last year the TAP was given in Virginia as the state's official norm-referenced achievement test. The responding schools' mean scale scores on the TAP were then disaggregated and compared based on the covariables of school size, school location, free and reduced-price meal eligibility percentages, length-of-time on block scheduling, changes in student/teacher ratio, amount of staff development, changes in instructional practices, changes in curriculum, changes in textbooks, staff development focus, and other changes as listed by respondents. Test score information was obtained from twenty-nine 7A/B block schedule schools.

Before going to a description of the results, an explanation of the time-series graphs needs to be given . On the X-axis, the "Yr 0" indicates the year of introduction of 7A/B block scheduling for the responding schools. The earliest introduction date of 7A/B block scheduling for the responding schools was the 1992-1993 school year, and the latest introduction date was the 1995-1996 school year. The vertical line at "Yr 0" indicates the introduction of the independent

variable-7A/B block scheduling. The “Yr -1, Yr -2, Yr -3, Yr -4, and Yr -5" indicate one, two, three, four, and five years respectively before the introduction of 7A/B block scheduling. The “Yr 1, Yr 2, and Yr 3" indicate one, two, and three years after the introduction of 7A/B block scheduling. The Y-axis scale represents one more and one less than the maximum and minimum mean scale score attained for each test area.

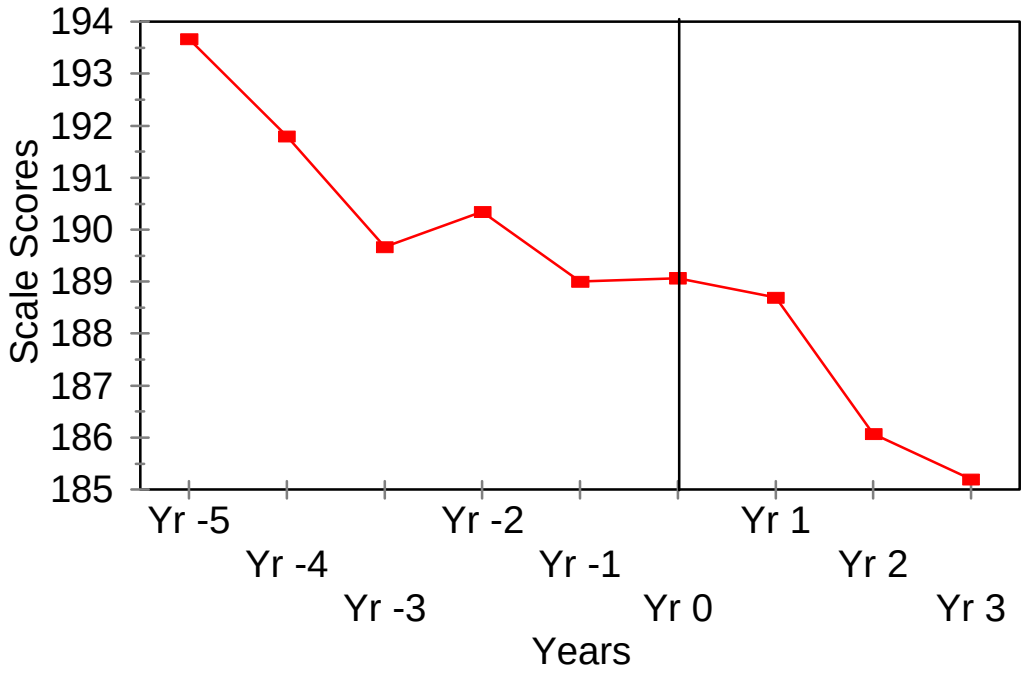
The data tables within each figure represent the tabulation of mean scale scores for each test area and the number of schools represented for each year.

7A/B Block Schedule Mean Scale Score Comparisons

The TAP Reading Comprehension test area showed no change one year prior to and one year after the implementation of 7A/B block scheduling. Schools that reported three years after the implementation of 7A/B block scheduling showed a drop of four mean scale score points (see Figure 1).

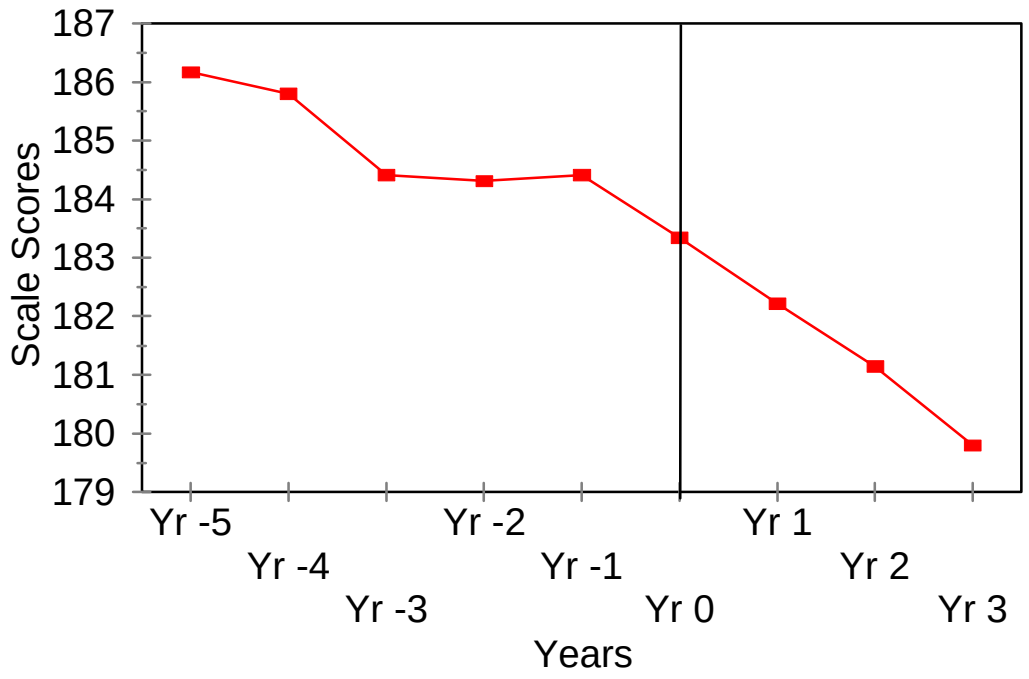
The TAP Mathematics test area showed a one point decrease in mean scale score points one year prior to and one year after the introduction of 7A/B block scheduling (see Figure 2).

The TAP Written Expression test area showed a one point increase over the previous year in mean scale score points when 7A/B block scheduling was



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Mean Scores	194	192	190	190	189	189	189	186	185
N	6	15	24	29	29	29	23	14	5
SD	8.16	9.29	8.25	8.23	9.48	12.23	9.05	9.00	4.21
% Change		-0.96%	-1.11%	0.36%	-0.71%	0.04%	-0.20%	-1.39%	-0.47%

Figure 1. Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Mean Scores	186	186	184	184	184	183	182	181	180
N	6	15	24	29	29	29	23	14	5
SD	7.56	7.90	8.28	7.81	8.19	11.34	7.47	8.03	4.07
% Change		-0.20%	-0.74%	-0.06%	0.06%	-0.58%	-0.61%	-0.59%	-0.74%

Figure 2. Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

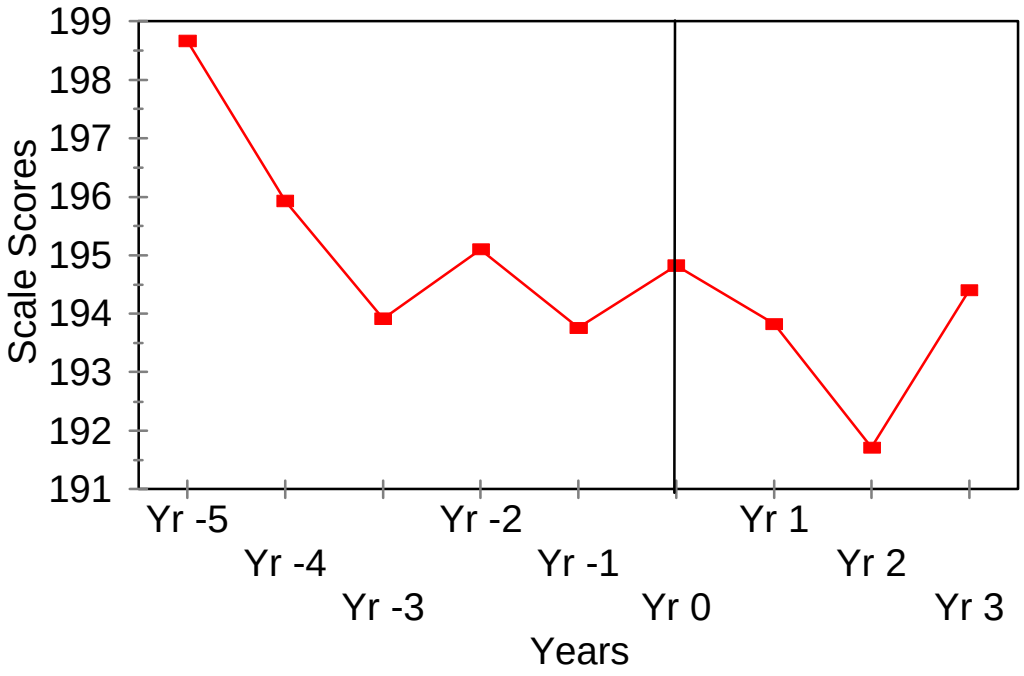
introduced. A one point decrease resulted one year after the introduction of 7A/B block scheduling (see Figure 3).

The TAP Sources of Information test area showed a one point increase in mean scale score points when 7A/B block scheduling was introduced. One year after 7A/B block schedule implementation, there was a one point mean scale score decrease (see Figure 4).

The TAP Social Studies test area showed a one point mean scale score increase when 7A/B block scheduling was introduced and a one point mean scale score decrease one year after implementation (see Figure 5).

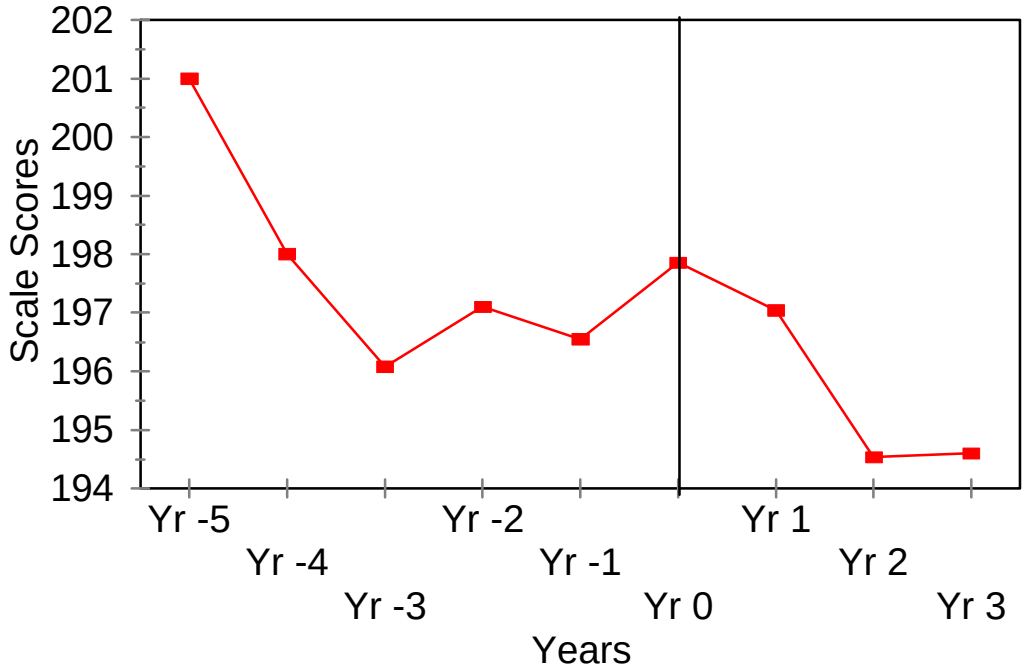
The TAP Science test area showed a one point mean scale score increase over the previous year when 7A/B block scheduling was introduced. One year after the implementation of 7A/B block scheduling the mean scale score remained the same (see Figure 6).

The TAP Complete Composite scores show a one point increase in mean scale score points over the previous year when 7A/B block scheduling was introduced. A one point decrease resulted one year after the implementation of 7A/B block scheduling (see Figure 7).



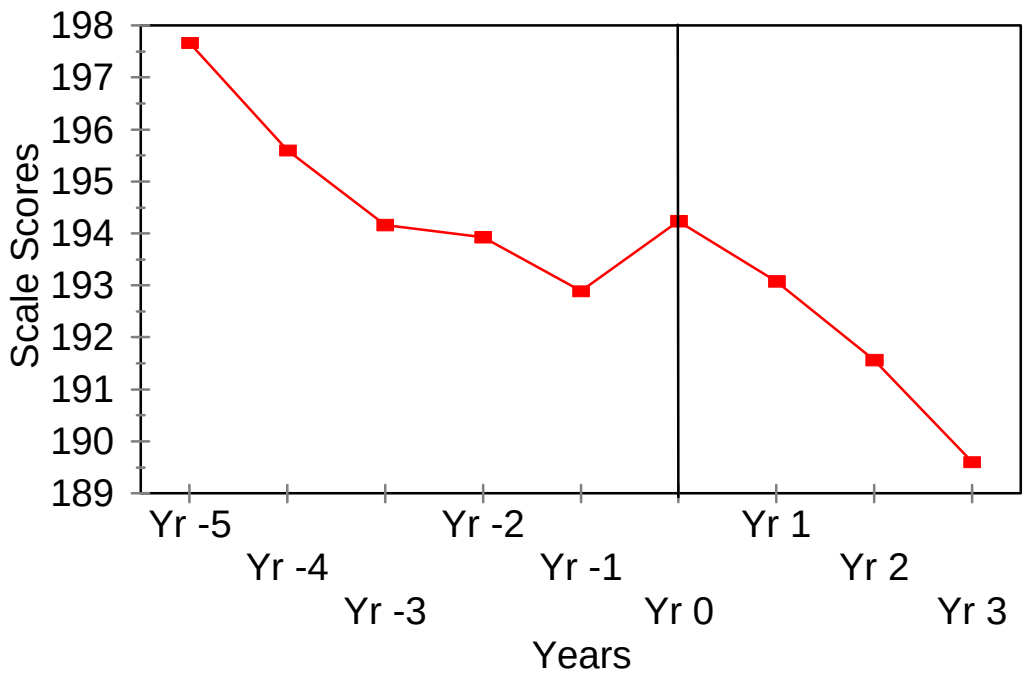
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Mean Scores	199	196	194	195	194	195	194	192	194
N	6	15	24	29	29	29	23	14	5
SD	5.91	8.88	8.11	8.29	10.02	9.57	8.25	9.96	2.33
% Change		-1.38%	-1.03%	0.61%	-0.69%	0.55%	-0.51%	-1.09%	1.40%

Figure 3. Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



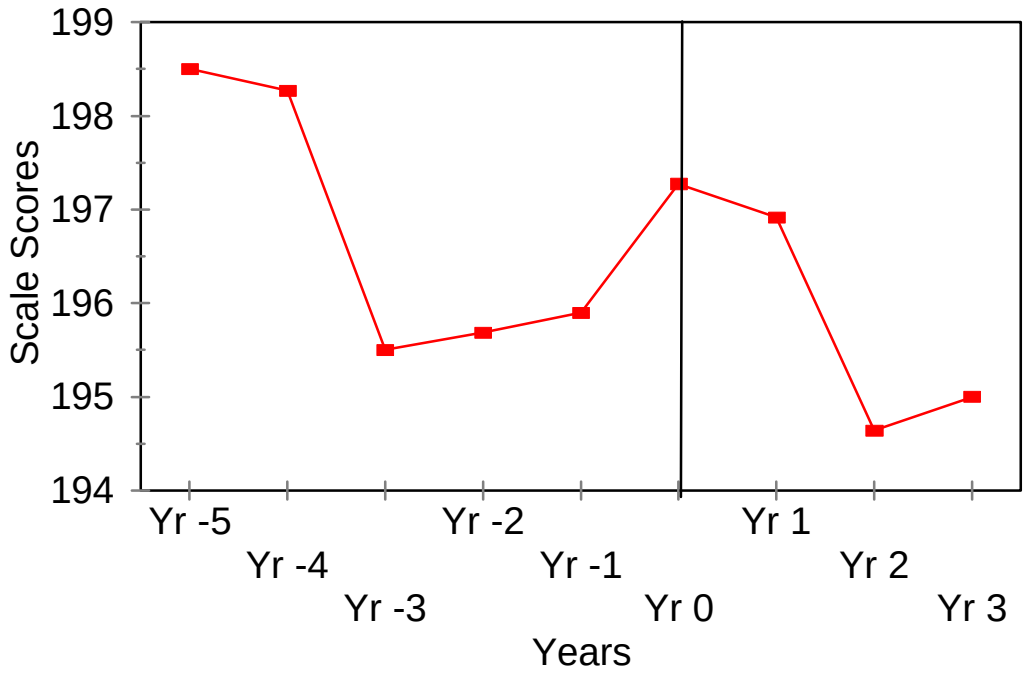
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Mean Scores	201	198	196	197	197	198	197	195	195
N	6	15	24	29	29	29	23	15	5
SD	8.52	9.38	9.99	9.97	9.02	9.71	9.23	9.82	5.46
% Change		-1.49%	-0.97%	0.52%	-0.28%	0.67%	-0.41%	-1.27%	0.03%

Figure 4. Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



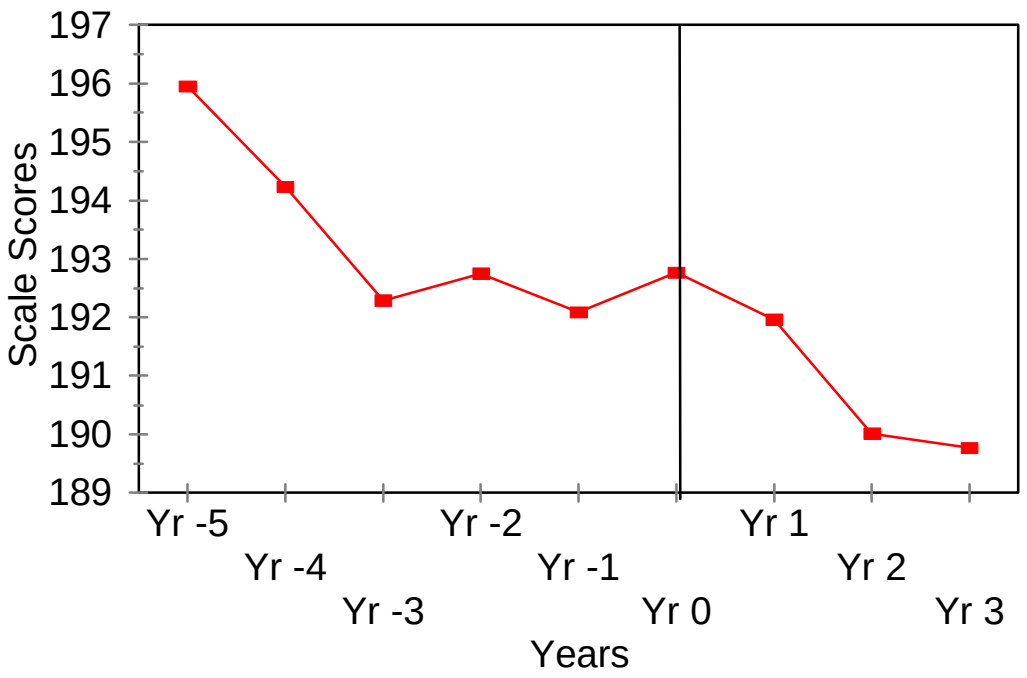
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Mean Scores	198	196	194	194	193	194	193	192	190
N	6	15	24	29	29	29	23	14	5
SD	6.34	8.06	7.61	7.75	7.91	6.88	7.52	6.84	4.67
% Change		-1.05%	-0.73%	-0.12%	-0.53%	0.70%	-0.59%	-0.78%	-1.03%

Figure 5. Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Mean Scores	199	198	196	196	196	197	197	195	195
N	6	15	24	29	29	29	23	14	5
SD	8.54	8.90	8.10	9.03	8.30	7.93	7.36	7.83	4.77
% Change		-0.12%	-1.40%	0.10%	0.11%	0.70%	-0.18%	-1.15%	0.18%

Figure 6. Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Mean Scores	196	194	192	193	192	193	192	190	190
N	6	15	24	29	29	29	23	14	5
SD	7.27	8.50	8.06	8.15	8.41	9.02	7.84	8.22	3.97
% Change		-0.87%	-1.00%	0.24%	-0.34%	0.36%	-0.42%	-1.02%	-0.13%

Figure 7. Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Summary

Of the aggregate TAP mean scale scores reported by the 7A/B respondent schools, four test areas showed a one point increase; one test area showed a one point decrease; and one test area showed no change when 7A/B block scheduling was introduced. One year after 7A/B block scheduling was introduced, four TAP test areas showed a one point decrease in mean scale scores and two TAP areas showed no change in mean scale scores.

7A/B Block Schedule Mean Scale Score Comparison Based on Size

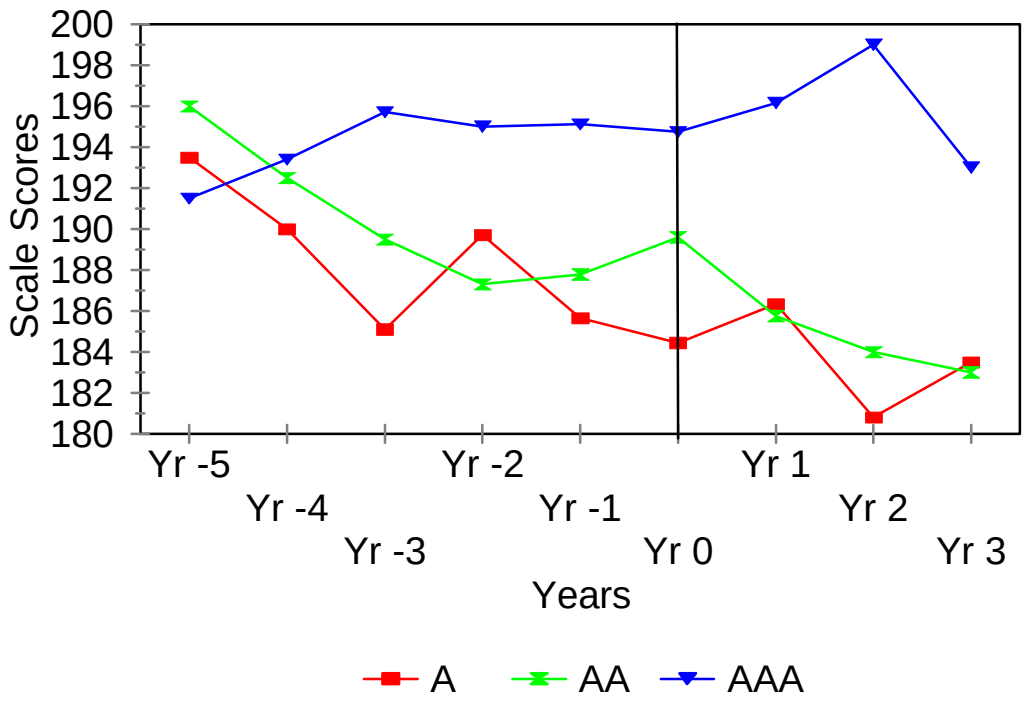
The 7A/B block schedule schools were disaggregated by a control variable--school size. Of the 29 schools for which TAP test data was available, eleven schools were A (0-500 students); ten schools were AA (501-999 students); and eight schools were AAA (more than 999 students).

On the TAP Reading Comprehension test, the 7A/B block schedule A schools showed a two point decrease in mean scale score points when 7A/B block scheduling was implemented. However, one year after the implementation of 7A/B block scheduling, the A schools had regained the two points, returning to the level of one year before the block schedule implementation. The AA schools gained two mean scale score points over the previous year when 7A/B block scheduling was implemented. One year after the implementation of 7A/B block scheduling, the AA

schools experienced a four point decline in their reading comprehension scores. The AAA schools achieved the same mean scale scores when they implemented 7A/B block scheduling as they had had one year prior to implementation of block scheduling. Mean scale scores improved one point on reading comprehension for AAA schools one year after the implementation of 7A/B block scheduling (see Figure 8).

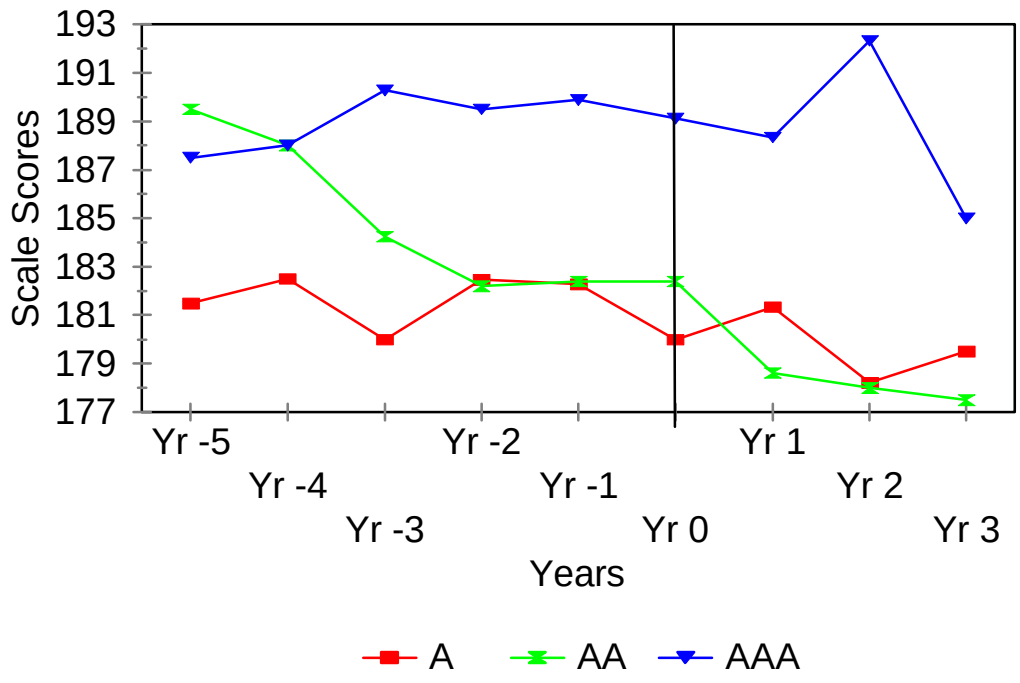
The TAP Mathematics test area showed a two point mean scale score decrease for A schools, no change for AA schools, and a one point mean scale score decrease for AAA schools over the previous year when 7A/B block scheduling was introduced. One year after implementation of 7A/B block scheduling, A schools showed a one point mean scale score increase; AA schools showed a three point mean scale score decrease; and AAA schools showed a one point mean scale score decrease (see Figure 9).

The TAP Written Expression test area showed a two point mean scale score increase over the previous year for A schools when they implemented 7A/B block scheduling. One year after block schedule implementation, A schools experienced a one point mean scale score decrease. The AA schools experienced a one point mean scale score increase over the previous year when they implemented 7A/B block scheduling and a three point decrease in mean scale scores one year after



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
A Mean Scores	194	190	185	190	186	184	186	181	184
N	2	6	9	11	11	11	9	5	2
SD	7.50	11.73	6.89	7.63	11.06	16.31	11.11	7.76	1.50
% Change		-1.81%	-2.57%	2.49%	-2.16%	-0.64%	1.02%	-2.97%	1.49%
AA Mean Scores	196	193	190	187	188	190	186	184	183
N	2	4	8	10	10	10	8	6	2
SD	1.00	4.72	5.59	6.97	4.92	6.80	3.83	3.42	2.00
% Change		-1.79%	-1.56%	-1.16%	0.27%	0.96%	-2.03%	-0.94%	-0.54%
AAA Mean Scores	192	193	196	195	195	195	196	199	193
N	2	5	7	8	8	8	6	3	1
SD	11.50	8.31	8.58	8.43	8.52	7.55	5.81	5.72	0.00
% Change		0.99%	1.20%	-0.36%	0.06%	-0.19%	0.73%	1.44%	-3.02%

Figure 8. Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school size. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



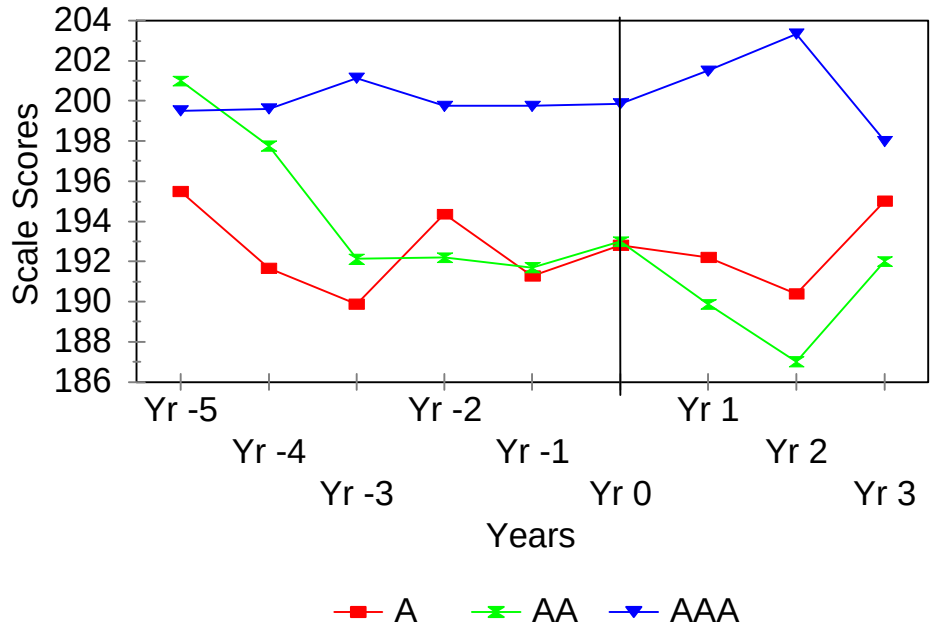
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
A Mean Scores	182	183	180	182	182	180	181	178	180
N	2	6	9	11	11	11	9	5	2
SD	4.50	8.48	6.75	6.84	7.75	14.19	8.04	5.84	1.50
% Change		0.55%	-1.37%	1.36%	-0.10%	-1.25%	0.74%	-1.73%	0.73%
AA Mean Scores	190	188	184	182	182	182	179	178	178
N	2	4	8	10	10	10	8	6	2
SD	2.50	4.64	6.46	6.46	6.65	7.76	3.87	3.65	4.50
% Change		-0.79%	-1.99%	-1.11%	0.11%	0.00%	-2.07%	-0.35%	-0.28%
AAA Mean Scores	188	188	190	190	190	189	188	192	185
N	2	5	7	8	8	8	6	3	1
SD	10.50	7.87	8.33	8.20	8.01	8.01	6.39	7.59	0.00
% Change		0.27%	1.22%	-0.41%	0.20%	-0.39%	-0.42%	2.12%	-3.81%

Figure 9. Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school size. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

block schedule implementation. The AAA schools mean scale scores on written expression remained the same as the previous year's scores when they implemented 7A/B block scheduling. One year after block schedule implementation, AAA schools experienced a two point mean scale score increase (see Figure 10).

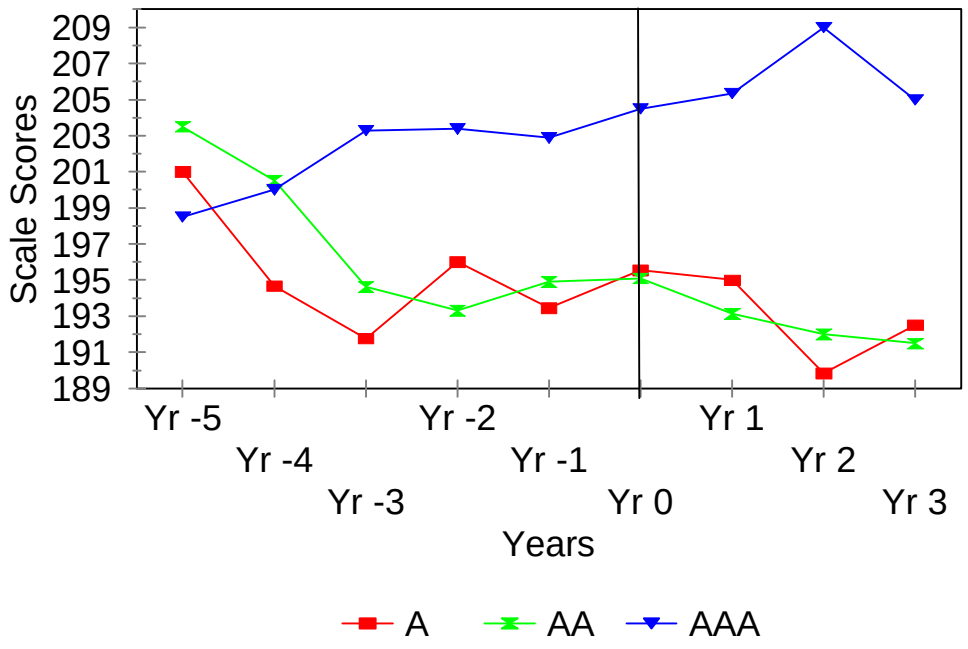
On the TAP Sources of Information test area, the A schools increased three mean scale score points; the AA schools remained the same; and the AAA schools increased two mean scale score points over the previous year when 7A/B block scheduling was implemented. One year after block schedule implementation, A schools decreased one mean scale score point; AA schools decreased two mean scale score points; and AAA schools remained the same on the Sources of Information test area (see Figure 11).

The TAP Social Studies test area revealed a three point mean scale score increase for A schools, a one point mean scale score increase for AA schools, and no change for AAA schools over the previous year when 7A/B block scheduling was implemented. One year after implementation of 7A/B block scheduling, A schools decreased one mean scale score point; AA schools decreased three mean scale score points; and AAA schools increased one mean scale score point (see Figure 12).



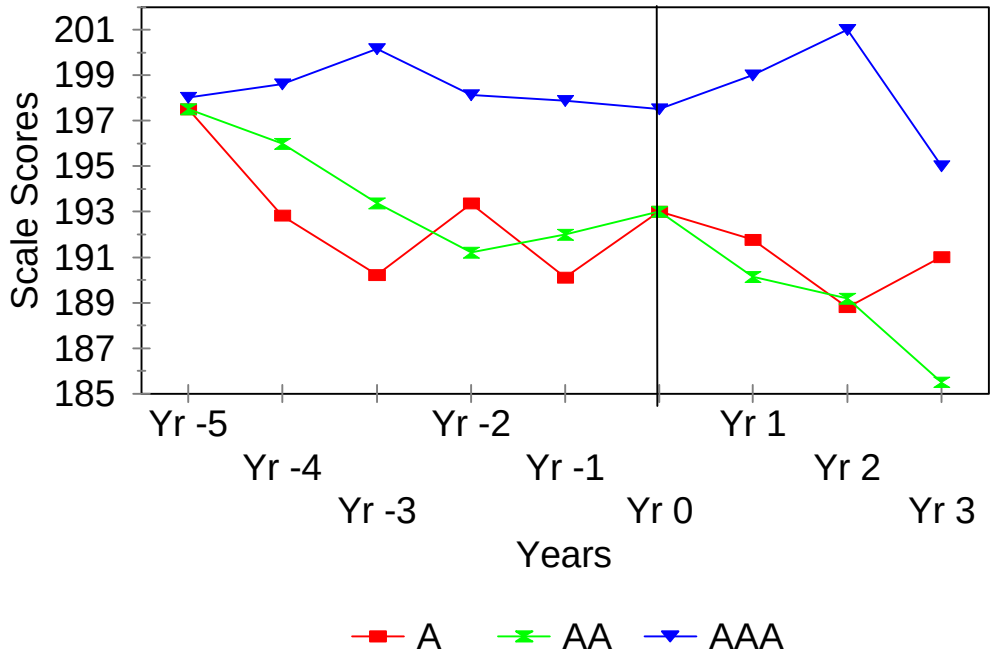
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
A Mean Scores	196	192	190	194	191	193	192	190	195
N	2	6	9	11	11	11	9	5	2
SD	6.50	11.03	5.69	6.92	11.55	10.08	8.70	8.01	1.00
% Change		-1.96%	-0.93%	2.36%	-1.59%	0.81%	-0.31%	-0.95%	2.42%
AA Mean Scores	201	198	192	192	192	193	190	187	192
N	2	4	8	10	10	10	8	6	2
SD	2.00	6.02	7.49	9.83	8.53	9.78	5.49	7.55	0.00
% Change		-1.62%	-2.84%	0.04%	-0.26%	0.68%	-1.62%	-1.51%	2.67%
AAA Mean Scores	200	200	201	200	200	200	202	203	198
N	2	5	7	8	8	8	6	3	1
SD	6.50	4.88	6.58	5.45	6.34	6.13	4.86	7.72	0.00
% Change		0.05%	0.77%	-0.69%	0.00%	0.06%	0.81%	0.91%	-2.62%

Figure 10. Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school size. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
A Mean Scores	201	195	192	196	193	196	195	190	193
N	2	6	9	11	11	11	9	6	2
SD	7.00	10.50	8.78	8.19	8.88	9.97	9.93	7.71	0.50
% Change		-3.15%	-1.48%	2.20%	-1.30%	1.08%	-0.28%	-2.65%	1.40%
AA Mean Scores	204	201	195	193	195	195	193	192	192
N	2	4	8	10	10	10	8	6	2
SD	0.50	5.85	7.98	9.99	5.82	7.98	4.70	4.83	2.50
% Change		-1.47%	-2.93%	-0.68%	0.83%	0.10%	-1.01%	-0.58%	-0.26%
AAA Mean Scores	199	200	203	203	203	205	205	209	205
N	2	5	7	8	8	8	6	3	1
SD	12.50	9.06	9.59	9.16	9.35	8.05	7.32	7.07	0.00
% Change		0.76%	1.64%	0.04%	-0.25%	0.80%	0.41%	1.79%	-1.91%

Figure 11. Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school size. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
A Mean Scores	198	193	190	193	190	193	192	189	191
N	2	6	9	11	11	11	9	5	2
SD	7.50	10.51	8.22	7.75	10.17	8.51	8.77	5.98	1.00
% Change		-2.36%	-1.35%	1.65%	-1.69%	1.53%	-0.63%	-1.55%	1.17%
AA Mean Scores	198	196	193	191	192	193	190	189	186
N	2	4	8	10	10	10	8	6	2
SD	0.50	2.24	3.87	7.47	3.66	4.75	4.88	3.53	4.50
% Change		-0.76%	-1.34%	-1.12%	0.42%	0.52%	-1.49%	-0.50%	-1.94%
AAA Mean Scores	198	199	200	198	198	198	199	201	195
N	2	5	7	8	8	8	6	3	1
SD	8.00	6.34	6.17	6.17	5.60	5.41	4.51	4.55	0.00
% Change		0.30%	0.78%	-1.01%	-0.13%	-0.19%	0.76%	1.01%	-2.99%

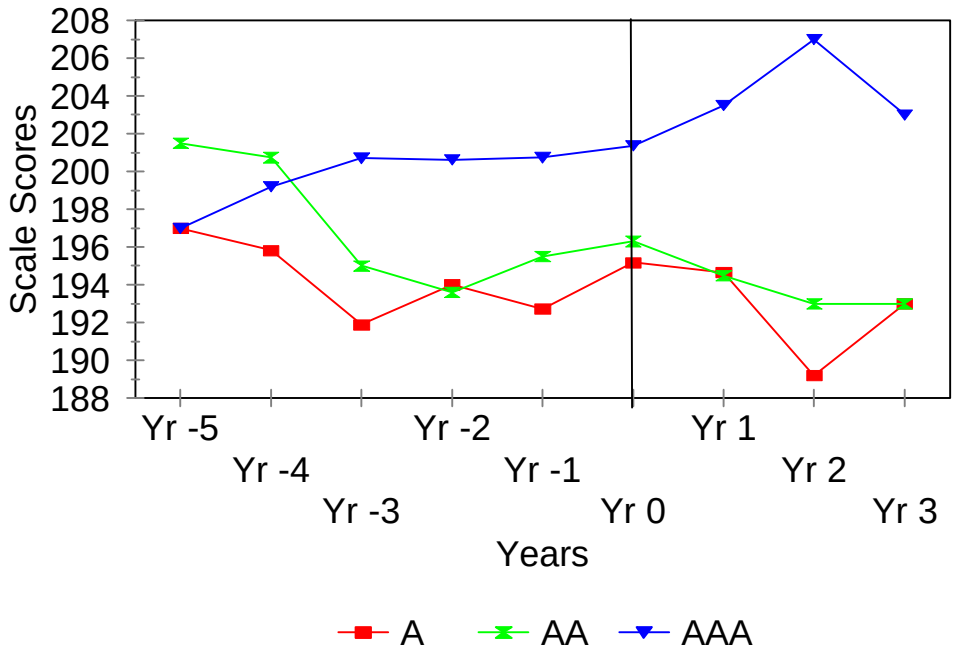
Figure 12. Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school size. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

The TAP Science test area showed a two point mean scale score increase over the previous year for A schools when 7A/B block scheduling was implemented. There was no change for AA and AAA schools during the same period. One year after the implementation of 7A/B block scheduling, A schools had no change in their mean scale scores; AA schools decreased one mean scale score point; and AAA schools increased three mean scale score points (see Figure 13).

The TAP Composite score showed that A schools increased one mean scale score point over the previous year when they implemented 7A/B block scheduling. The AA schools increased one mean scale score point over the previous year when they implemented 7A/B block scheduling. The AAA schools' mean scale score remained unchanged over the previous year when they implemented 7A/B block scheduling. One year after the implementation year of 7A/B block scheduling, A schools remained unchanged in their mean scale score; AA schools decreased three means scale score points; and AAA schools increased one mean scale score point (see Figure 14).

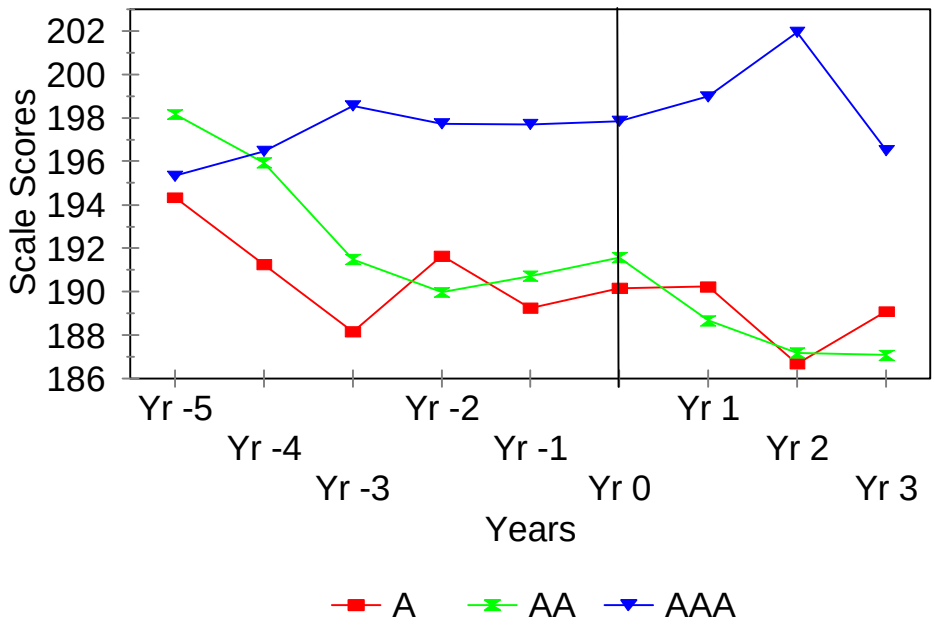
Summary

The 29 responding block schedule schools were disaggregated according to school size-- A, AA, AAA. Their TAP mean scale scores were then compared one



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
A Mean Scores	197	196	192	194	193	195	195	189	193
N	2	6	9	11	11	11	9	5	2
SD	7.00	10.17	7.99	8.75	9.69	8.60	8.83	5.64	1.00
% Change		-0.59%	-2.01%	1.10%	-0.66%	1.27%	-0.26%	-2.81%	2.01%
AA Mean Scores	202	201	195	194	196	196	195	193	193
N	2	4	8	10	10	10	8	6	2
SD	3.50	4.60	5.15	8.49	5.43	6.59	2.18	2.94	4.00
% Change		-0.37%	-2.86%	-0.72%	0.98%	0.41%	-0.92%	-0.77%	0.00%
AAA Mean Scores	197	199	201	201	201	201	204	207	203
N	2	5	7	8	8	8	6	3	1
SD	12.00	9.15	8.26	8.14	6.81	6.95	5.06	2.94	0.00
% Change		1.12%	0.76%	-0.04%	0.06%	0.31%	1.06%	1.72%	-1.93%

Figure 13. Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school size. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
A Mean Scores	194	191	188	192	189	190	190	187	189
N	2	6	9	11	11	11	9	6	2
SD	6.67	10.23	7.00	7.20	9.53	10.50	8.97	6.04	0.75
% Change		-1.59%	-1.62%	1.86%	-1.26%	0.49%	0.03%	-1.85%	1.28%
AA Mean Scores	198	196	191	190	191	192	189	187	187
N	2	4	8	10	10	10	8	6	2
SD	1.67	4.63	5.79	7.92	5.28	6.91	3.61	3.82	2.92
% Change		-1.14%	-2.26%	-0.79%	0.39%	0.45%	-1.51%	-0.78%	-0.06%
AAA Mean Scores	195	196	199	198	198	198	199	202	197
N	2	5	7	8	8	8	6	3	1
SD	10.17	7.49	7.71	7.42	7.20	6.82	5.46	5.74	0.00
% Change		0.58%	1.06%	-0.41%	-0.01%	0.07%	0.57%	1.49%	-2.70%

Figure 14. Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school size. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

year prior to the implementation of 7A/B block scheduling and one year after the implementation of 7A/B block scheduling. The A schools showed a gain during the implementation year on four of the six TAP test areas and a loss on two of the test areas. One year after implementation of 7A/B block scheduling, A schools noted a gain on two of the six TAP test areas, a loss on three of the test areas, and no change in one of the test areas. The AA schools showed a gain during the implementation year on three of the six test areas and no change on three of the six test areas. One year after implementation of the block schedule, AA schools showed decreases in all six of the test areas. The AAA schools showed a gain during the implementation year of 7A/B block scheduling on one of the six TAP test areas, a decrease on one test area, and no change on four test areas. One year after implementation of 7A/B block scheduling, AAA schools showed a gain on four of the test areas, a decrease in one test area, and no change in one test area.

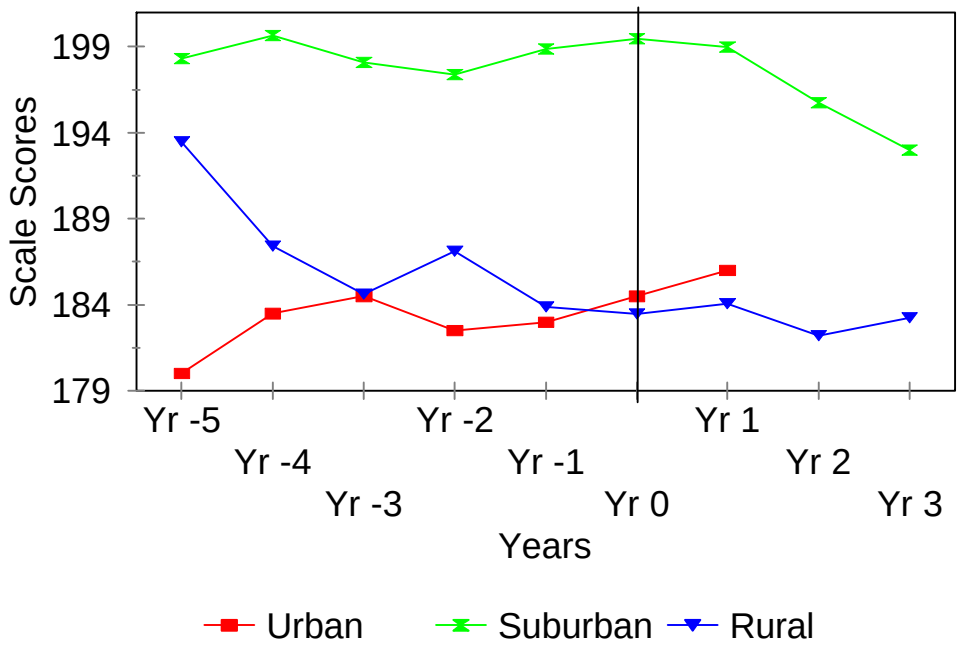
7A/B Block Schedule Mean Scale Score Comparison Based on Location

The 7A/B block schedule schools were disaggregated by a control variable--school location. Schools were asked to define their school location. Of the 29 responding schools for which test data are available, two schools were classified as urban; ten schools were classified as suburban; and 17 schools were classified as rural.

On the TAP Reading Comprehension test area, urban schools experienced a two point increase in mean scale score over the previous year during the implementation year of 7A/B block scheduling. Suburban schools increased one mean scale score point, and rural schools decreased one mean scale score point in the implementation year of 7A/B block scheduling and from the previous year. One year after the implementation of 7A/B block scheduling, urban schools increased one mean scale score point; suburban schools decreased one mean scale score point; and rural schools increased one mean scale score point (see Figure 15).

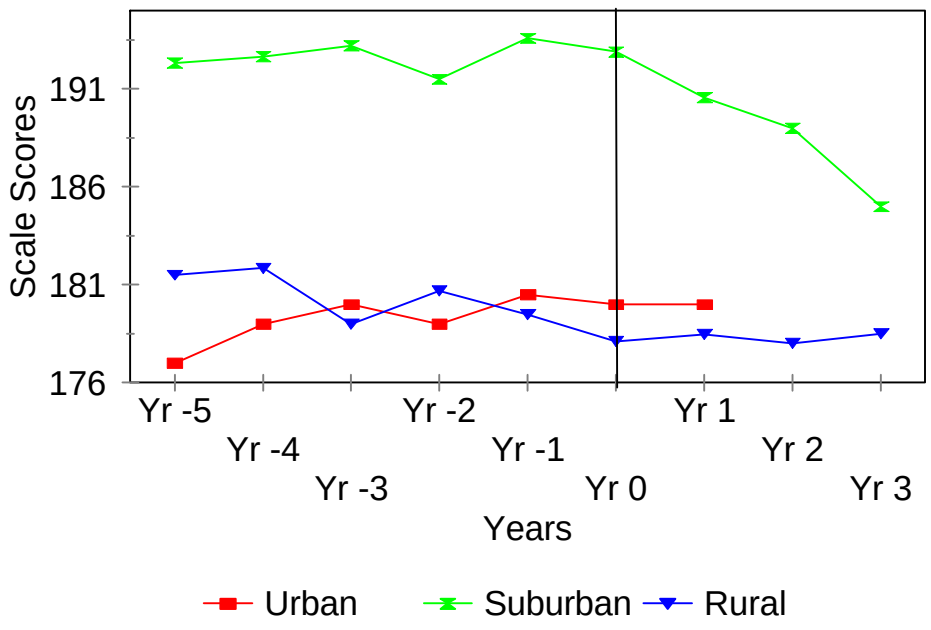
The TAP Mathematics test area showed that during the implementation year of 7A/B block scheduling, urban, suburban, and rural schools decreased one mean scale score point from the previous year. One year after the implementation of 7A/B block scheduling, urban schools' mean scale scores were unchanged; suburban schools' mean scale scores decreased two points; and rural schools' mean scale scores remained unchanged (see Figure 16).

The TAP Written Expression test area showed that during the implementation year of 7A/B block scheduling, urban schools decreased one mean scale score point; suburban schools gained two mean scale score points; and rural schools gained one mean scale score point from the previous year. One year after



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Urban Mean Scores	180	184	185	183	183	185	186		
N	1	2	2	2	2	2	1	0	0
SD	0.00	1.50	2.50	1.50	1.00	2.50	0.00		
% Change		1.94%	0.54%	-1.08%	0.27%	0.82%	0.81%		
Suburban Mean Scores	198	200	198	197	199	200	199	196	193
N	3	6	9	10	10	10	7	4	1
SD	3.40	6.82	5.78	9.29	6.92	5.54	7.35	7.50	0.00
% Change		0.67%	-0.78%	-0.36%	0.76%	0.30%	-0.25%	-1.63%	-1.40%
Rural Mean Scores	194	187	185	187	184	183	184	182	183
N	2	7	13	17	17	17	15	10	4
SD	7.50	7.25	4.76	4.20	6.09	11.77	5.38	6.21	1.79
% Change		-3.14%	-1.50%	1.36%	-1.73%	-0.22%	0.32%	-1.01%	0.58%

Figure 15. Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school location. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Urban Mean Scores	177	179	180	179	181	180	180		
N	1	2	2	2	2	2	1	0	0
SD	0.00	1.00	3.00	2.00	1.50	0.00	0.00		
% Change		1.13%	0.56%	-0.56%	0.84%	-0.28%	0.00%		
Suburban Mean Scores	192	193	193	192	194	193	191	189	185
N	3	6	9	10	10	10	7	4	1
SD	4.50	5.12	4.98	7.72	6.95	6.27	6.86	8.75	0.00
% Change		0.17%	0.29%	-0.89%	1.10%	-0.36%	-1.21%	-0.82%	-2.12%
Rural Mean Scores	182	182	179	181	179	178	178	178	179
N	2	7	13	17	17	17	15	10	4
SD	4.50	6.47	4.69	4.66	3.15	10.67	4.06	5.00	3.50
% Change		0.20%	-1.57%	0.95%	-0.68%	-0.75%	0.20%	-0.26%	0.28%

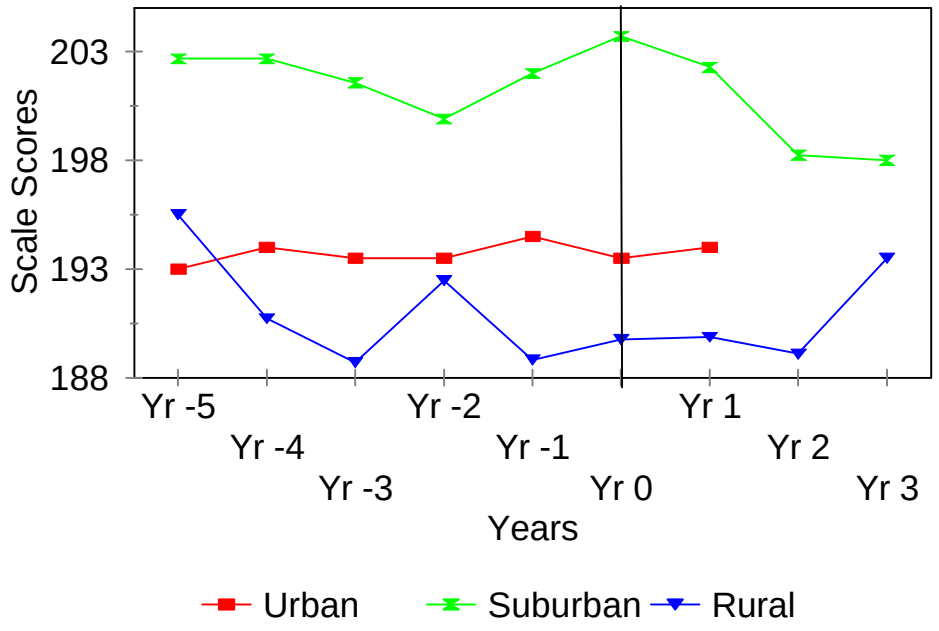
Figure 16. Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school location. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

the implementation of 7A/B block scheduling, urban schools' mean scale scores remained unchanged; suburban schools' mean scale scores decreased two points; and rural schools' mean scale scores remained unchanged (see Figure 17).

The TAP Sources of Information test area showed that during the implementation year of 7A/B block scheduling, urban and suburban schools gained two mean scale score points, and rural schools gained one mean scale score point from the previous year. One year after the implementation of 7A/B block scheduling, urban schools' mean scale scores remained unchanged; suburban schools' mean scale scores decreased by one point; and rural schools' mean scale scores remained unchanged (see Figure 18).

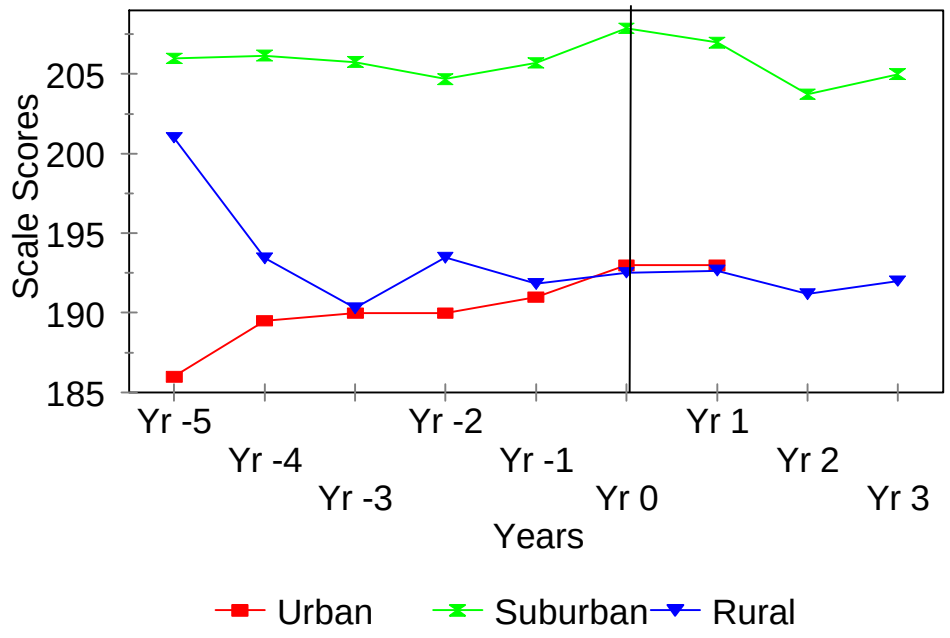
The TAP Social Studies test area showed that during the implementation year of 7A/B block scheduling, urban and suburban schools gained one mean scale score point, and rural schools gained two mean scale score points over the previous year. One year after the implementation of 7A/B block scheduling, the urban schools' mean scale score remained unchanged; the suburban schools' mean scale score decreased one point; and the rural schools' mean scale score decreased one point (see Figure 19).

The TAP Science test area showed that during the implementation year of 7A/B block scheduling, urban schools gained one mean scale score point;



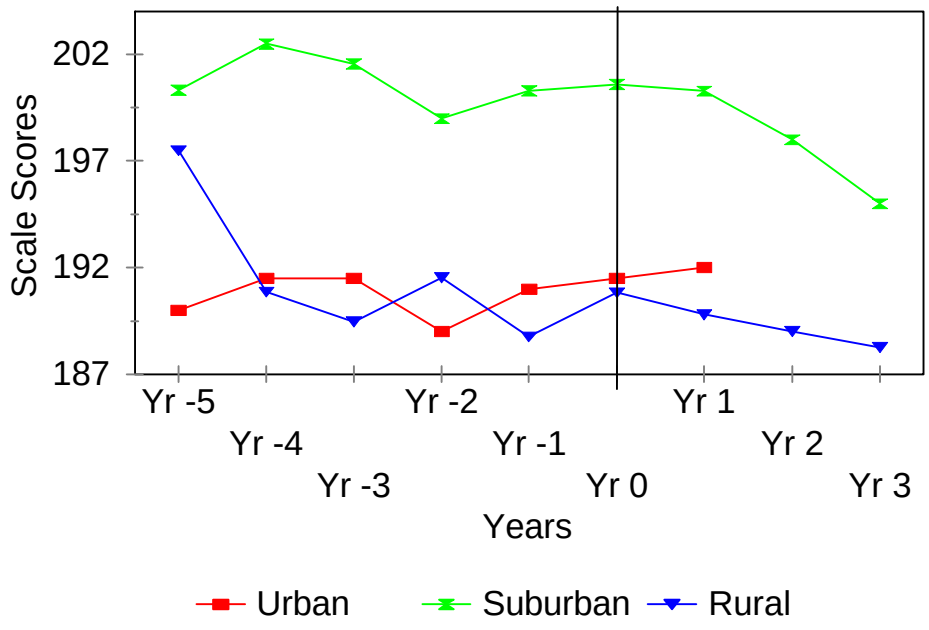
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Urban Mean Scores	193	194	194	194	195	194	194		
N	1	2	2	2	2	2	1	0	0
SD	0.00	1.00	1.50	0.50	1.50	0.50	0.00		
% Change		0.52%	-0.26%	0.00%	0.52%	-0.51%	0.26%		
Suburban Mean Scores	203	203	202	200	202	204	202	198	198
N	3	6	9	10	10	10	7	4	1
SD	2.87	5.28	6.62	9.54	8.44	7.46	7.52	11.05	0.00
% Change		0.00%	-0.55%	-0.82%	1.05%	0.84%	-0.69%	-2.00%	-0.13%
Rural Mean Scores	196	191	189	192	189	190	190	189	194
N	2	7	13	17	17	17	15	10	4
SD	6.50	8.81	4.81	6.55	8.05	7.17	5.38	8.13	1.66
% Change		-2.45%	-1.06%	2.00%	-1.89%	0.50%	0.05%	-0.40%	2.33%

Figure 17. Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school location. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Urban Mean Scores	186	190	190	190	191	193	193		
N	1	2	2	2	2	2	1	0	0
SD	0.00	1.50	3.00	2.00	1.00	0.00	0.00		
% Change		1.88%	0.26%	0.00%	0.53%	1.05%	0.00%		
Suburban Mean Scores	206	206	206	205	206	208	207	204	205
N	3	6	9	10	10	10	7	4	1
SD	3.56	5.01	7.63	11.75	7.31	6.83	7.91	10.96	0.00
% Change		0.08%	-0.19%	-0.52%	0.49%	1.07%	-0.43%	-1.57%	0.61%
Rural Mean Scores	201	193	190	193	192	193	193	191	192
N	2	7	13	17	17	17	15	11	4
SD	7.00	8.23	6.19	5.89	5.65	6.55	5.91	6.75	1.87
% Change		-3.77%	-1.61%	1.66%	-0.85%	0.37%	0.07%	-0.77%	0.43%

Figure 18. Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school location. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Urban Mean Scores	190	192	192	189	191	192	192		
N	1	2	2	2	2	2	1	0	0
SD	0.00	1.50	0.50	3.00	1.00	1.50	0.00		
% Change		0.79%	0.00%	-1.31%	1.06%	0.26%	0.26%		
Suburban Mean Scores	200	203	202	199	200	201	200	198	195
N	3	6	9	10	10	10	7	4	1
SD	4.03	5.35	5.89	9.55	6.37	5.95	6.13	6.52	0.00
% Change		1.08%	-0.47%	-1.27%	0.65%	0.15%	-0.16%	-1.14%	-1.52%
Rural Mean Scores	198	191	189	192	189	191	190	189	188
N	2	7	13	17	17	17	15	10	4
SD	7.50	6.79	4.67	4.90	5.74	4.83	5.83	5.04	4.26
% Change		-3.36%	-0.73%	1.09%	-1.44%	1.09%	-0.54%	-0.42%	-0.40%

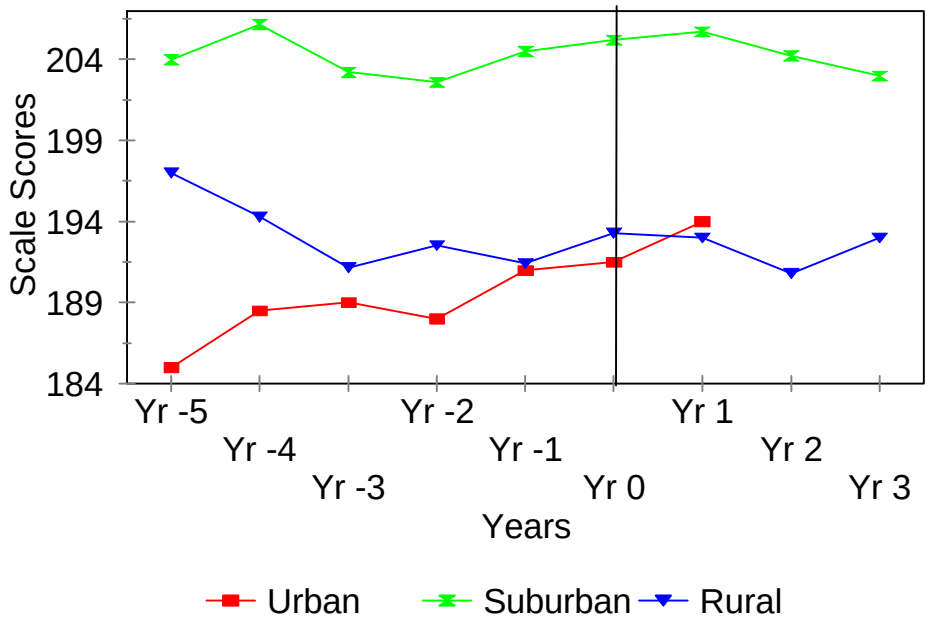
Figure 19. Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school location. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

suburban schools remained unchanged; and rural schools gained two mean scale score points over the previous year. One year after the implementation of 7A/B block scheduling, the urban schools' mean scale score gained two points; the suburban schools' mean scale score gained one point, and the rural schools' mean scale score remained unchanged (see Figure 20).

The TAP Composite score showed that urban schools retained the same mean scale score as the previous year when they implemented 7 A/B block scheduling. However, one year after the implementation of 7A/B block scheduling, urban schools showed a gain of one mean scale score point. Suburban schools showed a gain of one mean scale score point when they implemented 7A/B block scheduling over the previous year but lost that point one year following the implementation of block scheduling. Rural schools gained one mean scale score point over the previous year when they implemented 7A/B block scheduling. One year after the implementation of block scheduling, rural schools mean scale scores remained unchanged (see Figure 21).

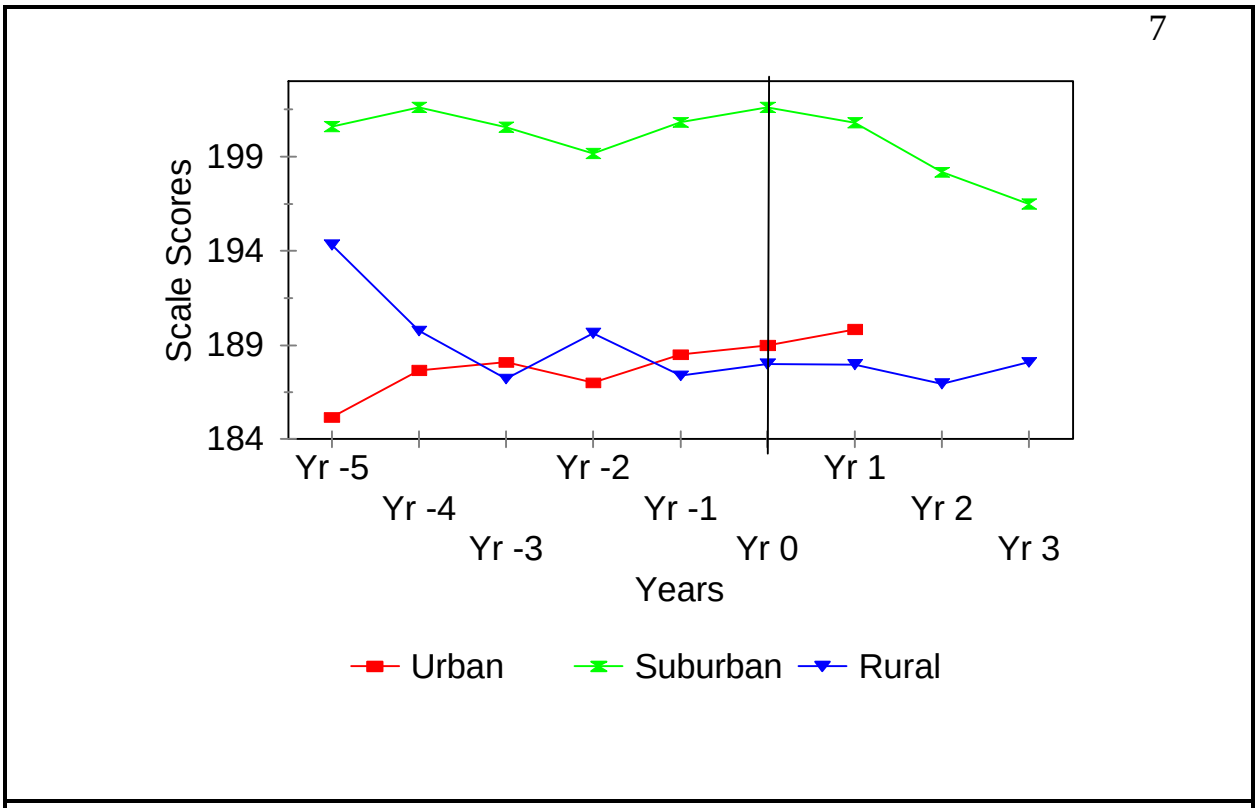
Summary

The 29 responding 7A/B block schedule schools were disaggregated according to school location--urban, suburban, rural--as defined by the respondents. Their TAP mean scale scores were compared based on their



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Urban Mean Scores	185	189	189	188	191	192	194		
N	1	2	2	2	2	2	1	0	0
SD	0.00	3.50	4.00	3.00	2.00	2.50	0.00		
% Change		1.89%	0.27%	-0.53%	1.60%	0.26%	1.31%		
Suburban Mean Scores	204	206	203	203	205	205	206	204	203
N	3	6	9	10	10	10	7	4	1
SD	4.55	4.60	6.00	10.60	6.26	5.65	5.70	5.40	0.00
% Change		1.06%	-1.43%	-0.31%	0.94%	0.34%	0.25%	-0.71%	-0.61%
Rural Mean Scores	197	194	191	193	191	193	193	191	193
N	2	7	13	17	17	17	15	10	4
SD	7.00	7.19	5.20	5.17	5.25	5.58	3.98	4.75	2.92
% Change		-1.38%	-1.61%	0.72%	-0.58%	0.98%	-0.15%	-1.14%	1.15%

Figure 20. Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school location. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Urban Mean Scores	185	188	188	187	189	189	190		
N	1	2	2	2	2	2	1	0	0
SD	0.00	1.33	2.42	2.00	0.50	1.00	0.00		
% Change		1.35%	0.22%	-0.58%	0.80%	0.27%	0.44%		
Suburban Mean Scores	201	202	201	199	201	202	201	198	197
N	3	6	9	10	10	10	7	4	1
SD	3.72	5.12	5.64	9.51	6.53	5.80	6.69	8.22	0.00
% Change		0.51%	-0.53%	-0.69%	0.83%	0.40%	-0.41%	-1.32%	-0.84%
Rural Mean Scores	194	190	187	190	187	188	188	187	188
N	2	7	13	17	17	17	15	11	4
SD	6.67	7.24	4.57	4.66	5.18	6.94	4.56	5.28	2.35
% Change		-2.35%	-1.35%	1.30%	-1.20%	0.34%	-0.01%	-0.54%	0.60%

Figure 21. Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by school location. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

implementation year of block scheduling, one year prior to block scheduling, and one year after block scheduling. Urban schools showed TAP test score increases in four test areas and decreases in two test areas in the 7A/B block schedule implementation year. One year after block schedule implementation, increased scores were noted in two test areas, and no changes were noted in the other four test areas. Suburban schools showed increased scores in three test areas, decreased scores in two test areas, and no change in one test area during their 7A/B block schedule implementation year. One year after block schedule implementation, suburban schools increased test scores in one test area and decreased test scores in five test areas. During the rural schools' block schedule implementation year, scores increased in four test areas and decreased in two test areas. One year after the implementation of 7A/B block scheduling, rural schools had a test score increase in one test area, a decrease in one test area, and no change in four test areas.

7A/B Block Schedule Mean Scale Score Comparison Based on Free and Reduced-Price Meal Eligibility Percentages

The 29 7A/B block schedule schools were disaggregated by a control variable--free and reduced-price meal eligibility percentages. Free and reduced-price meal eligibility served as a proxy for the socioeconomic status of the school's

population. The meal eligibility percentages were grouped as follows: 0-10%, 11-20%, 21-30%, 31-40%, 41-50%, and >50%.

In the TAP Reading Comprehension test area, schools having 0-10% and 11-20% free and reduced-price meal eligibility percentages had no increase in mean scale score points during the implementation year of 7A/B block scheduling over the previous year. Schools having 21-30% and 31-40% free and reduced-price meal eligibility increased scores by two and five points respectively during the implementation year of 7A/B block scheduling over the previous year. Schools having 41-50% free and reduced-price meal eligibility had a decrease of five mean scale score points during the implementation year of block scheduling over the previous year.

One year after the implementation year of 7A/B block scheduling, 0-10% free and reduced-price meal eligibility schools recorded a one point mean scale score increase; schools in the 11-20% free and reduced-price meal eligibility range were unchanged; schools in the 21-30% free and reduced-price meal eligibility range showed a five point mean scale score decrease; and schools in the 41-50% free and reduced-price meal eligibility showed an increase of six mean scale score points (See Figure 22 and Table 9).

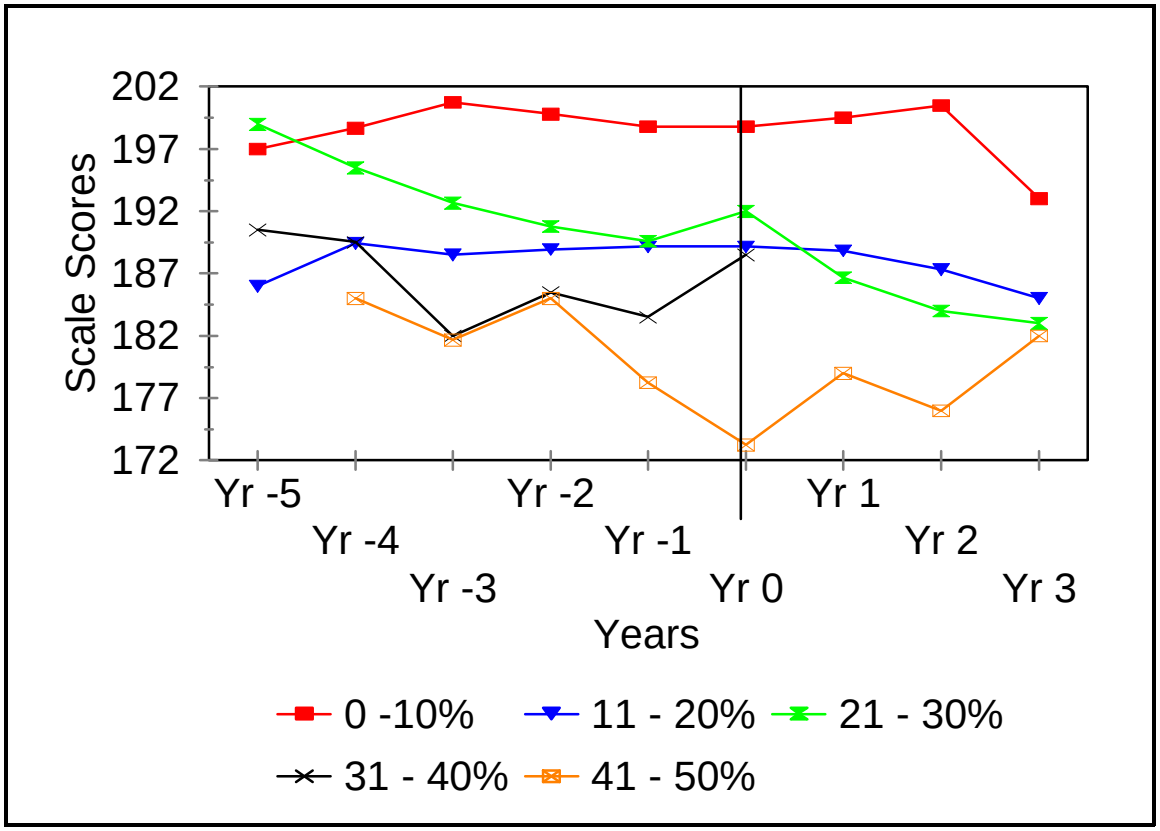


Figure 22. Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 9

Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 -10% F/R Meals	197	199	201	200	199	199	200	201	193
N	1	3	4	5	5	5	4	2	1
SD	0.00	0.47	5.21	4.62	5.81	4.87	3.35	6.50	0.00
% Change		0.85%	1.05%	-0.47%	-0.50%	0.00%	0.35%	0.50%	-3.74%
11 - 20% F/R Meals	186	189	189	189	189	189	189	187	185
N	1	7	12	13	13	13	12	6	1
SD	0.00	10.72	5.14	8.05	8.16	7.30	8.41	5.28	0.00
% Change		1.84%	-0.49%	0.22%	0.12%	0.00%	-0.17%	-0.79%	-1.25%
21 - 30% F/R Meals	199	196	193	191	190	192	187	184	183
N	2	2	3	5	5	5	3	3	2
SD	4.00	7.50	8.65	7.86	6.65	7.87	3.40	2.16	2.00
% Change		-1.76%	-1.45%	-0.97%	-0.63%	1.27%	-2.78%	-1.43%	-0.54%
31 - 40% F/R Meals	191	190	182	186	184	189			
N	2	2	2	2	2	2	0	0	0
SD	10.50	7.50	0.00	4.50	1.50	6.50			
% Change		-0.52%	-3.96%	1.92%	-1.08%	2.72%			
41 - 50% F/R Meals		185	182	185	178	173	179	176	182
N	0	1	3	4	4	4	4	3	1
SD		0.00	6.85	2.74	9.26	20.08	5.00	6.48	0.00
% Change			-1.80%	1.83%	-3.65%	-2.81%	3.32%	-1.68%	3.41%

In the TAP Mathematics test area, during the implementation year of 7A/B block scheduling, schools with 0-10% free and reduced-price meal eligibility had no change in their mean scale score from the previous year; schools with 11-20% and 21-30% free and reduced-price meal eligibility decreased one mean scale score point over the previous year; schools with 31-40% free and reduced-price meal eligibility increased four mean scale score points over the previous year; and schools with 41-50% free and reduced-price meal eligibility decreased seven mean scale score points over the previous year.

One year after the implementation year of 7A/B block scheduling, a two point mean scale score decrease was shown for schools with 0-10% free and reduced-price meal eligibility. For schools with 11-20% and 21-30% free and reduced-price meal eligibility, a decrease of one and four mean scale score points respectively was shown. For schools with 41-50% free and reduced-price meal eligibility, a five point mean scale score increase was shown (see Figure 23 and Table 10).

In the TAP Written Expression test area, schools with 0-10% free and reduced-price meal eligibility increased two mean scale score points when they implemented 7A/B block scheduling. Schools with 11-20% eligibility remained unchanged. Schools with 21-30% eligibility increased three mean scale score

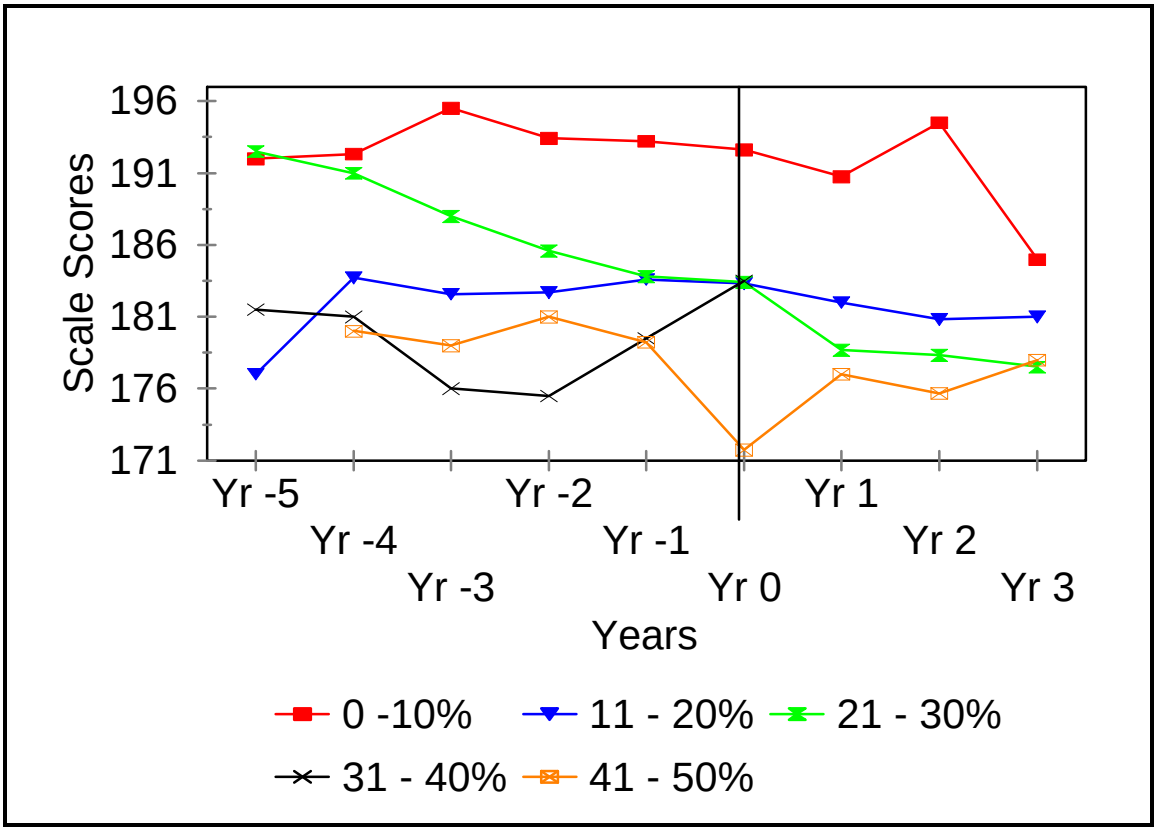


Figure 23. Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 10

Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 -10% F/R Meals	192	192	196	193	193	193	191	195	185
N	1	3	4	5	5	5	4	2	1
SD	0.00	1.25	5.36	6.05	6.14	6.80	6.14	8.50	0.00
% Change		0.17%	1.65%	-1.07%	-0.10%	-0.31%	-0.96%	1.97%	-4.88%
11 - 20% F/R Meals	177	184	183	183	184	183	182	181	181
N	1	7	12	13	13	13	12	6	1
SD	0.00	8.40	6.01	6.41	7.95	7.18	7.06	5.27	0.00
% Change		3.79%	-0.62%	0.06%	0.51%	-0.17%	-0.71%	-0.64%	0.09%
21 - 30% F/R Meals	193	191	188	186	184	183	179	178	178
N	2	2	3	5	5	5	3	3	2
SD	5.50	8.00	8.16	7.96	8.26	8.69	4.11	1.25	4.50
% Change		-0.78%	-1.57%	-1.28%	-0.97%	-0.22%	-2.58%	-0.19%	-0.47%
31 - 40% F/R Meals	182	181	176	176	180	184			
N	2	2	2	2	2	2	0	0	0
SD	4.50	3.00	1.00	1.50	0.50	3.50			
% Change		-0.28%	-2.76%	-0.28%	2.28%	2.23%			
41 - 50% F/R Meals		180	179	181	179	172	177	176	178
N	0	1	3	4	4	4	4	3	1
SD		0.00	5.66	4.30	3.27	19.10	3.32	6.18	0.00
% Change			-0.56%	1.12%	-0.97%	-4.18%	3.06%	-0.75%	1.33%

points. Schools with 31-40% eligibility increased four mean scale score points, and schools with 41-50% eligibility increased two mean scale score points.

One year after the implementation year of 7A/B block scheduling, decreases ranging from one to three mean scale score points were noted for the eligibility groups (see Figure 24 and Table 11).

In the TAP Sources of Information test area, schools with 0-10% and 21-30% free and reduced-price meal eligibility showed a one point mean scale score gain during the 7A/B block scheduling implementation year. Schools with an 11-20% free and reduced-price meal eligibility showed no change during the block scheduling implementation year. Schools with 31-40% free and reduced-price meal eligibility gained six mean scale score points when they implemented 7A/B block scheduling. Schools with 41-50% free and reduced-price meal eligibility showed a two point mean scale score increase during the implementation year of 7A/B block scheduling.

One year after the implementation year of 7A/B block scheduling, schools with 0-10% free and reduced-price meal eligibility increased one mean scale score point; schools with 11-20% eligibility had no mean scale score change; schools with 21-30% eligibility showed a three point mean scale score decrease; and

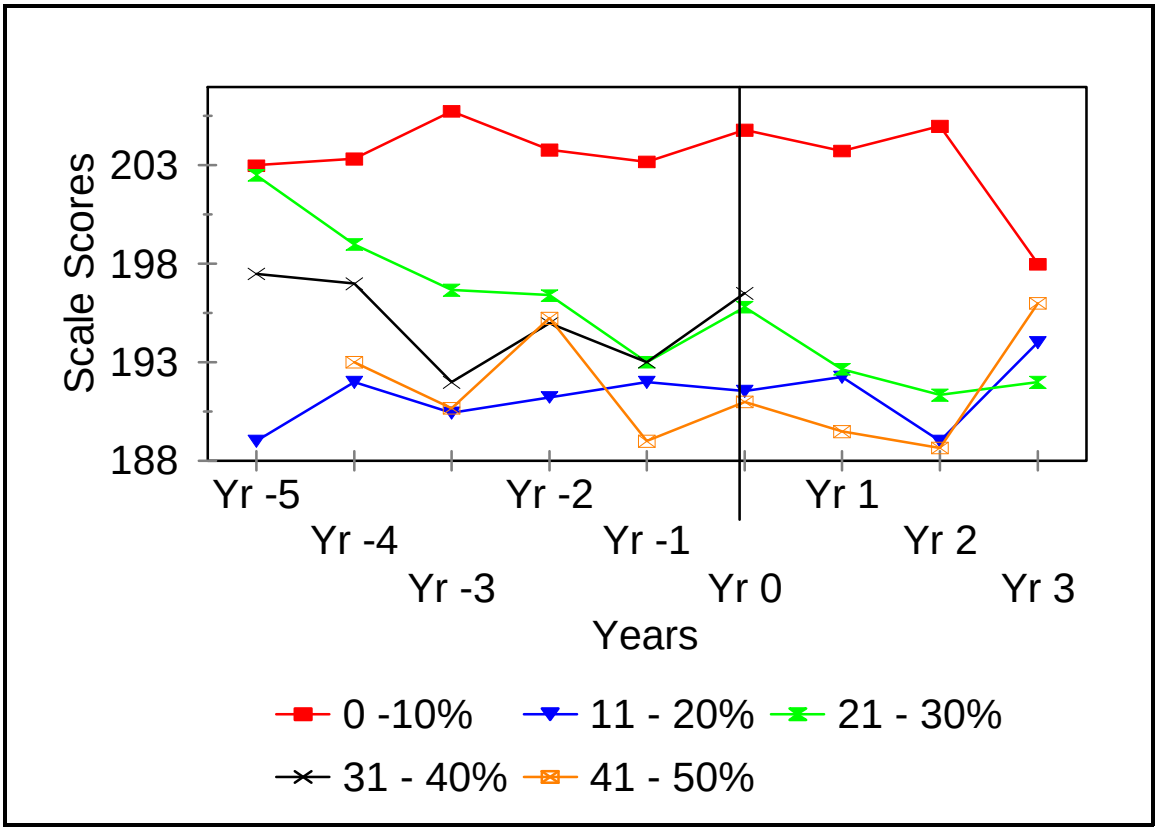


Figure 24. Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 11

Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility.

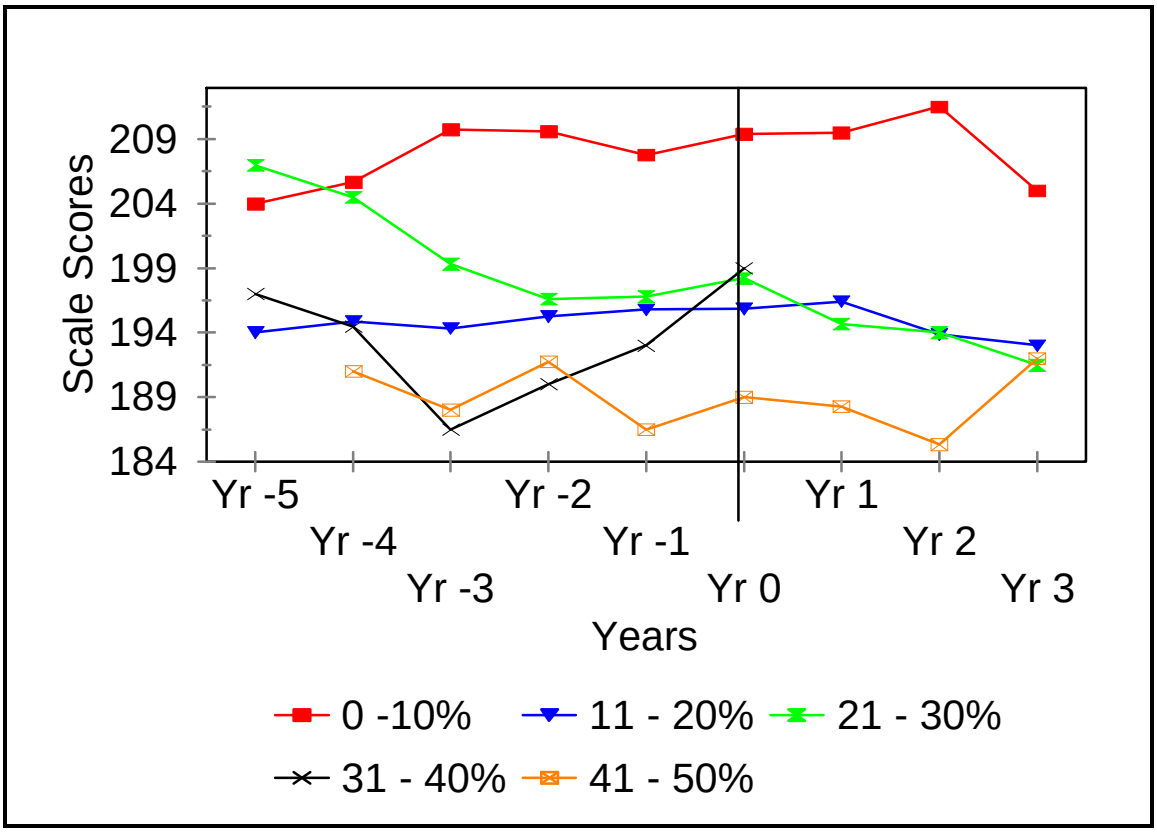
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 -10% F/R Meals	203	203	206	204	203	205	204	205	198
N	1	3	4	5	5	5	4	2	1
SD	0.00	2.05	5.12	5.88	6.85	7.00	3.96	9.00	0.00
% Change		0.16%	1.19%	-0.95%	-0.29%	0.79%	-0.51%	0.61%	-3.41%
11 - 20% F/R Meals	189	192	190	191	192	192	192	189	194
N	1	7	12	13	13	13	12	6	1
SD	0.00	10.43	5.17	8.32	9.24	9.01	8.07	7.92	0.00
% Change		1.59%	-0.82%	0.43%	0.40%	-0.24%	0.37%	-1.69%	2.65%
21 - 30% F/R Meals	203	199	197	196	193	196	193	191	192
N	2	2	3	5	5	5	3	3	2
SD	3.50	7.00	9.03	7.47	8.67	7.98	7.04	6.94	0.00
% Change		-1.73%	-1.17%	-0.14%	-1.73%	1.45%	-1.60%	-0.69%	0.35%
31 - 40% F/R Meals	198	197	192	195	193	197			
N	2	2	2	2	2	2	0	0	0
SD	4.50	2.00	0.00	2.00	3.00	2.50			
% Change		-0.25%	-2.54%	1.56%	-1.03%	1.81%			
41 - 50% F/R Meals		193	191	195	189	191	190	189	196
N	0	1	3	4	4	4	4	3	1
SD		0.00	6.85	3.56	12.19	8.92	4.15	9.67	0.00
% Change			-1.21%	2.40%	-3.20%	1.06%	-0.79%	-0.44%	3.89%

schools with 41-50% eligibility showed a one point mean scale score decrease (see Figure 25 and Table 12).

In the TAP Social Studies test area, one point mean scale score increases over the previous year were shown for schools with 0-10%, 11-20%, and 21-30% free and reduced-price meal eligibility during the implementation year of 7A/B block scheduling. Schools with 31-40% and 41-50% free and reduced-price meal eligibility showed a two and three point mean scale score increase respectively during the implementation year of 7A/B block scheduling.

One year after the implementation year of 7A/B block scheduling, schools with 0-10% free and reduced-price meal eligibility showed a two point mean scale score increase; schools with 11-20% eligibility showed a one point decrease; schools with 21-30% eligibility showed a five point decrease; and schools with 41-50% eligibility showed a one point mean scale score decrease (see Figure 26 and Table 13).

In the TAP Science test area, schools with 0-10% free and reduced-price meal eligibility showed a one point mean scale score increase during the implementation year of 7A/B block scheduling. Schools with 11-21% eligibility showed no change. Schools with 21-30% eligibility showed a two point mean scale



score increase while schools with a 31-40% eligibility showed a five point Figure 25. Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 12

Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 -10%									
F/R Meals	204	206	210	210	208	209	210	212	205
N	1	3	4	5	5	5	4	2	1
SD	0.00	1.70	4.15	4.84	6.52	5.12	4.50	7.50	0.00
% Change		0.82%	1.99%	-0.07%	-0.86%	0.77%	0.05%	0.95%	-3.07%
11 - 20%									
F/R Meals	194	195	194	195	196	196	196	194	193
N	1	7	12	13	13	13	12	7	1
SD	0.00	10.08	6.80	9.70	6.18	8.25	8.17	6.20	0.00
% Change		0.44%	-0.27%	0.46%	0.28%	0.04%	0.29%	-1.30%	-0.44%
21 - 30%									
F/R Meals	207	205	199	197	197	198	195	194	192
N	2	2	3	5	5	5	3	3	2
SD	4.00	7.50	11.44	9.39	8.66	8.95	4.99	3.56	2.50
% Change		-1.21%	-2.53%	-1.37%	0.10%	0.71%	-1.78%	-0.34%	-1.29%
31 - 40%									
F/R Meals	197	195	187	190	193	199			
N	2	2	2	2	2	2	0	0	0
SD	11.00	6.50	0.50	2.00	1.00	6.00			
% Change		-1.27%	-4.11%	1.88%	1.58%	3.11%			
41 - 50%									
F/R Meals		191	188	192	187	189	188	185	192
N	0	1	3	4	4	4	4	3	1
SD		0.00	7.79	3.49	7.09	7.25	3.56	8.01	0.00
% Change			-1.57%	1.99%	-2.74%	1.34%	-0.40%	-1.55%	3.60%

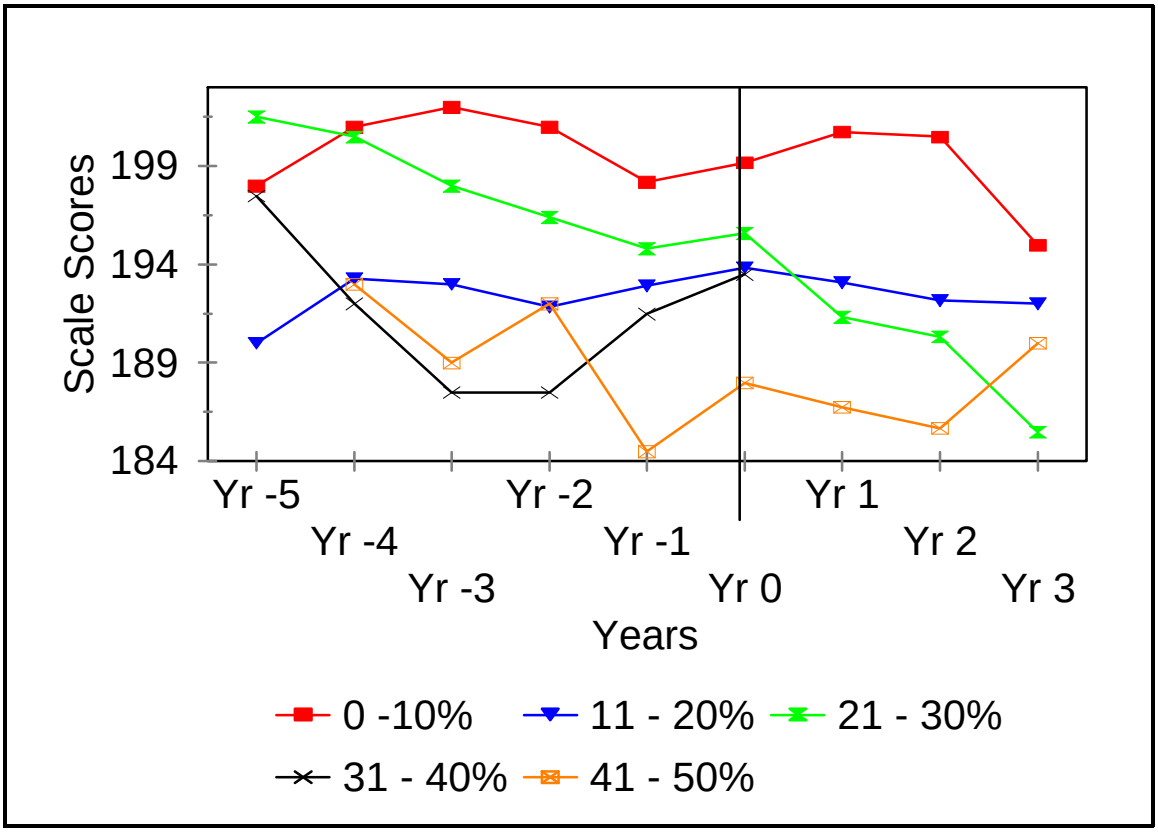


Figure 26. Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 13

Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 -10% F/R Meals	198	201	202	201	198	199	201	201	195
N	1	3	4	5	5	5	4	2	1
SD	0.00	2.83	3.39	3.03	4.35	4.02	3.90	5.50	0.00
% Change		1.52%	0.50%	-0.50%	-1.39%	0.50%	0.78%	-0.12%	-2.74%
11 - 20% F/R Meals	190	193	193	192	193	194	193	192	192
N	1	7	12	13	13	13	12	6	1
SD	0.00	9.84	7.09	9.13	7.69	7.29	7.63	6.77	0.00
% Change		1.73%	-0.15%	-0.60%	0.56%	0.48%	-0.39%	-0.47%	-0.09%
21 - 30% F/R Meals	202	201	198	196	195	196	191	190	186
N	2	2	3	5	5	5	3	3	2
SD	4.50	5.50	6.16	4.88	6.37	6.18	3.77	1.25	4.50
% Change		-0.50%	-1.25%	-0.81%	-0.81%	0.41%	-2.18%	-0.52%	-2.54%
31 - 40% F/R Meals	198	192	188	188	192	194			
N	2	2	2	2	2	2	0	0	0
SD	7.50	2.00	3.50	1.50	1.50	3.50			
% Change		-2.78%	-2.34%	0.00%	2.13%	1.04%			
41 - 50% F/R Meals		193	189	192	185	188	187	186	190
N	0	1	3	4	4	4	4	3	1
SD		0.00	6.48	3.67	8.65	4.85	4.82	3.86	0.00
% Change			-2.07%	1.59%	-3.91%	1.90%	-0.66%	-0.58%	2.33%

mean scale score increase. Schools with a 41-50% eligibility showed a three point mean scale score increase.

One year after the implementation year of 7 A/B block scheduling, schools with 0-10% and 11-20% free and reduced-price meal eligibility showed a one point mean scale score increase. Schools with a 21-30% eligibility showed a five point mean scale score decrease while schools with 41-50% eligibility showed no change (see Figure 27 and Table 14).

The TAP Composite scores showed that schools in the 0-10% free and reduced-price meal eligibility category had a one point mean scale score increase during the implementation year of 7A/B block scheduling. Schools in the 11-20% eligibility category had no change in their scores. Schools in the 21-30% eligibility range had an increase of one mean scale score point. Schools in the 31-40% eligibility range had an increase of four mean scale score points. Schools in the 41-50% eligibility range had no change in mean scale score points during the 7A/B block scheduling implementation year.

One year after the 7A/B block scheduling implementation year, the Composite scores showed no change in the respondent schools' achievement in the 0-10% and 11-20% free and reduced-price meal eligibility range. A four point mean scale score decrease was noted for schools in the 21-30% free and

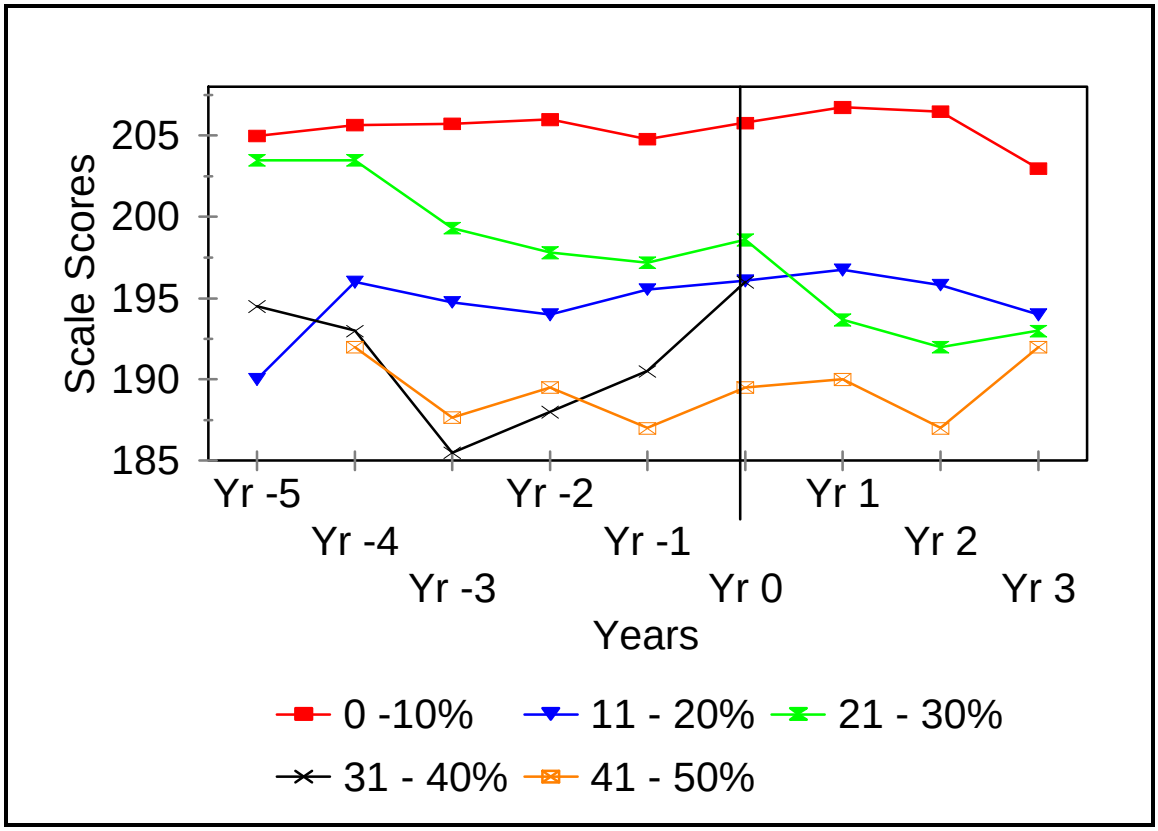


Figure 27. Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 14

Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 -10% F/R Meals	205	206	206	206	205	206	207	207	203
N	1	3	4	5	5	5	4	2	1
SD	0.00	1.25	2.17	2.28	2.71	3.87	1.48	3.50	0.00
% Change		0.33%	0.04%	0.12%	-0.58%	0.49%	0.46%	-0.12%	-1.69%
11 - 20% F/R Meals	190	196	195	194	196	196	197	196	194
N	1	7	12	13	13	13	12	6	1
SD	0.00	9.61	5.66	9.57	7.35	6.50	6.93	6.36	0.00
% Change		3.16%	-0.64%	-0.39%	0.79%	0.28%	0.34%	-0.47%	-0.94%
21 - 30% F/R Meals	204	204	199	198	197	199	194	192	193
N	2	2	3	5	5	5	3	3	2
SD	5.50	5.50	8.18	6.71	7.30	7.68	2.62	1.63	4.00
% Change		0.00%	-2.05%	-0.77%	-0.30%	0.71%	-2.48%	-0.86%	0.52%
31 - 40% F/R Meals	195	193	186	188	191	196			
N	2	2	2	2	2	2	0	0	0
SD	9.50	8.00	0.50	3.00	1.50	7.00			
% Change		-0.77%	-3.89%	1.35%	1.33%	2.89%			
41 - 50% F/R Meals		192	188	190	187	190	190	187	192
N	0	1	3	4	4	4	4	3	1
SD		0.00	6.18	3.20	7.18	6.58	2.74	5.72	0.00
% Change			-2.26%	0.98%	-1.32%	1.34%	0.26%	-1.58%	2.67%

reduced-price meal eligibility range. For schools in the 41-50% free and reduced-price meal eligibility range, a one point mean scale score increase was shown (see Figure 28 and Table 15).

Summary

The 29 responding 7A/B block schedule schools were disaggregated according to free and reduced-price meal eligibility, a proxy for socioeconomic status. The five categories that were arrayed were 0-10%, 11-20%, 21-30%, 31-40%, and 41-50%. The respondent schools' mean scale scores were compared based on their block schedule implementation year, one year prior and one year after.

During the 7A/B block schedule implementation year, schools with 0-10% free and reduced-price meal eligibility showed increases in mean scale score points in four of the six TAP test areas. Two of the TAP test areas showed no change. Schools with 11-20% free and reduced-price meal eligibility showed an increase in one TAP test area, a decrease in one TAP test area, and no change in four TAP test areas. Schools with 21-30% free and reduced-price meal eligibility showed an increase in five TAP test areas and a decrease in one TAP test area. Schools with 31-40% free and reduced-price meal eligibility showed an increase in all six TAP test areas. Schools with 41-50% free and reduced-price meal

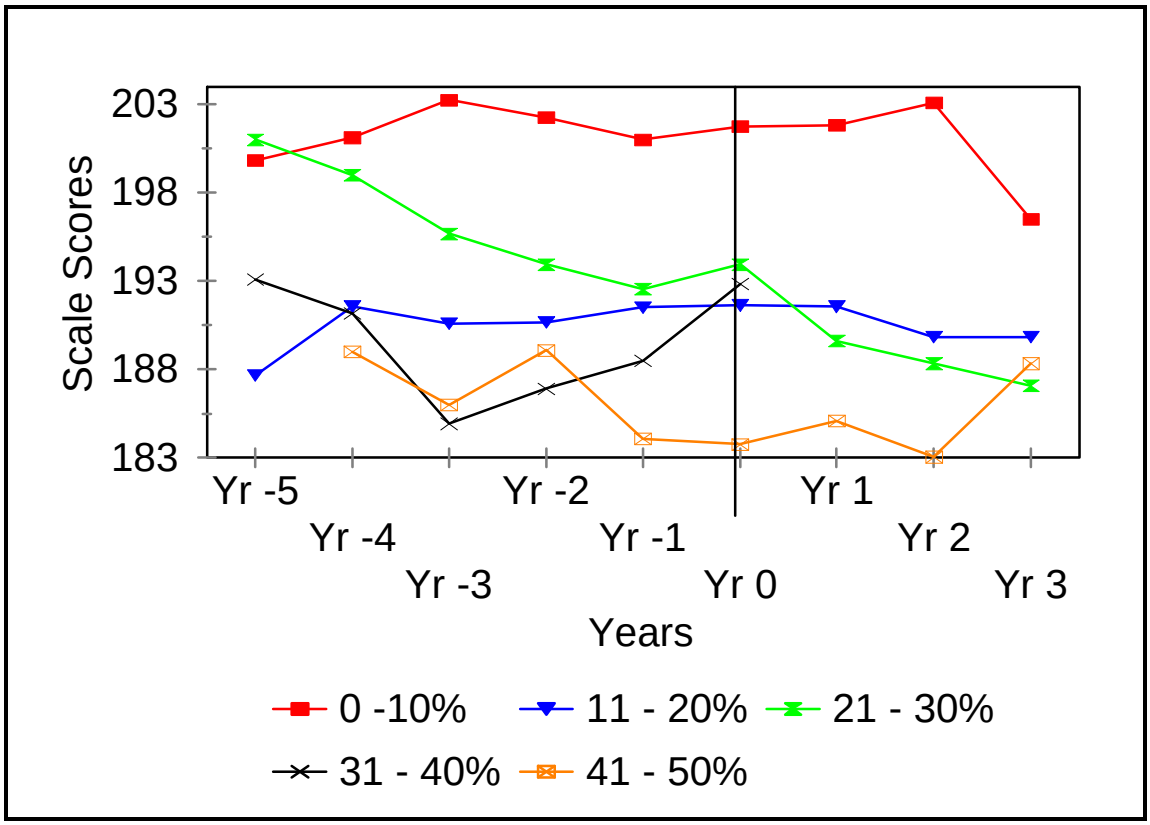


Figure 28. Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 15

Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by free and reduced-price meal eligibility.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 -10% F/R Meals	200	201	203	202	201	202	202	203	197
N	1	3	4	5	5	5	4	2	1
SD	0.00	0.89	4.03	4.29	5.11	5.04	3.78	6.75	0.00
% Change		0.64%	1.06%	-0.48%	-0.63%	0.38%	0.03%	0.62%	-3.24%
11 - 20% F/R Meals	188	192	191	191	192	192	192	190	190
N	1	7	12	13	13	13	12	7	1
SD	0.00	9.69	5.52	8.23	7.48	7.20	7.40	5.57	0.00
% Change		2.07%	-0.50%	0.03%	0.44%	0.07%	-0.04%	-0.90%	0.00%
21 - 30% F/R Meals	201	199	196	194	193	194	190	188	187
N	2	2	3	5	5	5	3	3	2
SD	4.50	6.83	8.57	7.22	7.26	7.64	4.13	2.48	2.92
% Change		-1.00%	-1.68%	-0.89%	-0.72%	0.73%	-2.23%	-0.67%	-0.66%
31 - 40% F/R Meals	193	191	185	187	189	193			
N	2	2	2	2	2	2	0	0	0
SD	7.92	4.83	0.75	1.92	0.50	4.83			
% Change		-0.99%	-3.27%	1.08%	0.85%	2.30%			
41 - 50% F/R Meals		189	186	189	184	184	185	183	188
N	0	1	3	4	4	4	4	3	1
SD		0.00	6.60	3.45	7.85	10.78	3.64	6.43	0.00
% Change			-1.59%	1.66%	-2.64%	-0.18%	0.73%	-1.10%	2.88%

eligibility showed an increase in four TAP test areas and a decrease in two TAP test areas.

One year after the implementation of 7A/B block scheduling, schools with 0-10% free and reduced-price meal eligibility showed an increase in mean scale score points in four TAP test areas and a decrease in mean scale score points in two TAP test areas. Schools with 11-20% free and reduced-price meal eligibility showed a mean scale score increase in one TAP test area, a decrease in two TAP test areas, and no change in mean scale scores in three TAP test areas. Schools with 21-30% free and reduced-price meal eligibility showed a decrease in mean scale score points in all six TAP test areas. Schools with 31-40% free and reduced-price meal eligibility recorded no data for one year after the implementation of 7A/B block scheduling. Schools with 41-50% free and reduced-price meal eligibility showed a mean scale score increase in two TAP test areas, a decrease in three TAP test areas, and no change in mean scale score in one TAP test area.

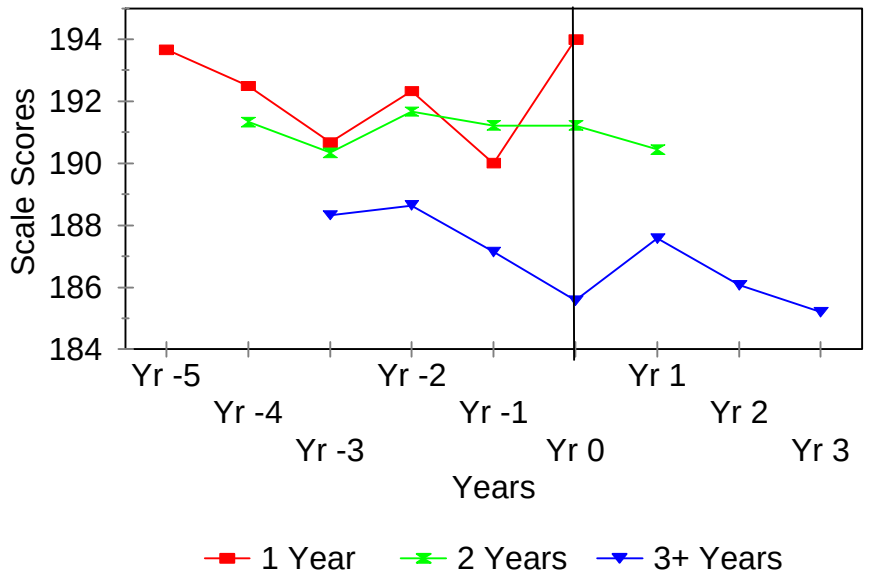
7A/B Block Schedule Mean Scale Score Comparison Based on Length-of-Time on Block Schedule

The 29 respondent 7A/B block schedule schools were disaggregated by a control variable--length-of-time on block schedule. Length-of-time was identified as

one year (implementation year), two years, and three or more years on 7A/B block scheduling.

In the TAP Reading Comprehension test area, schools that were in their first year of 7A/B block scheduling experienced a four point mean scale score increase during the implementation year. No additional data were available for these schools. Schools that were in their second year of 7A/B block scheduling experienced no change in scores during the implementation year and experienced a one point mean scale score decrease during the second year. No data were available for these schools three years after the implementation year. Schools that were in their third or more year of 7A/B block scheduling experienced a one point mean scale score decrease during the implementation year, a two point increase during the second year, a two point decrease during the third year, and a one point decrease during the fourth year (see Figure 29).

In the TAP Mathematics test area, schools that were in their first year of 7A/B block scheduling experienced a two point mean scale score increase over the previous year. No additional data were available for these schools. Schools that were in their second year of block scheduling experienced a one point decrease during the implementation year and a one point decrease during their second year. No data were available for these schools three years after the implementation year.



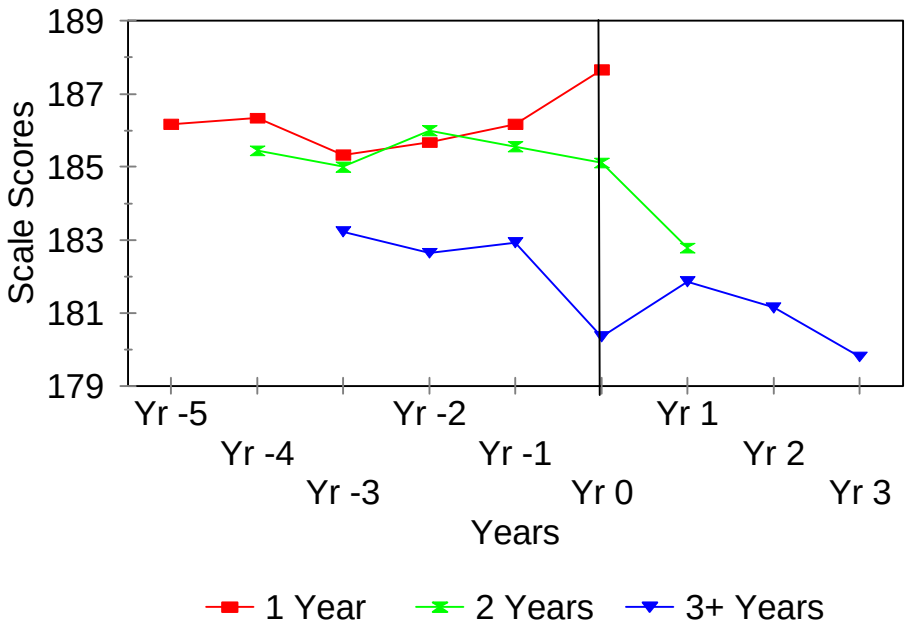
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
1 Year	194	193	191	192	190	194			
N	6	6	6	6	6	6	0	0	0
%Change		-0.60%	-0.95%	0.87%	-1.21%	2.11%			
SD	8.16	7.59	8.94	7.56	6.88	8.49			
2 Years		191	190	192	191	191	190		
N	0	9	9	9	9	9	9	0	0
%Change			-0.52%	0.70%	-0.23%	0.00%	-0.41%		
SD		10.24	6.11	8.52	9.40	7.63	10.16		
3+ Years			188	189	187	186	188	186	185
N	0	0	9	14	14	14	14	14	5
%Change				0.16%	-0.80%	-0.84%	1.08%	-0.80%	-0.47%
SD			9.39	7.96	10.11	14.70	8.07	9.00	4.21

Figure 29. Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by length-of-time on block scheduling. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Schools that were in their third or more year of 7A/B block scheduling experienced a three point decrease during the implementation year, a two point increase during the second year, a one point decrease during the third year, and a one point decrease during the fourth year (see Figure 30).

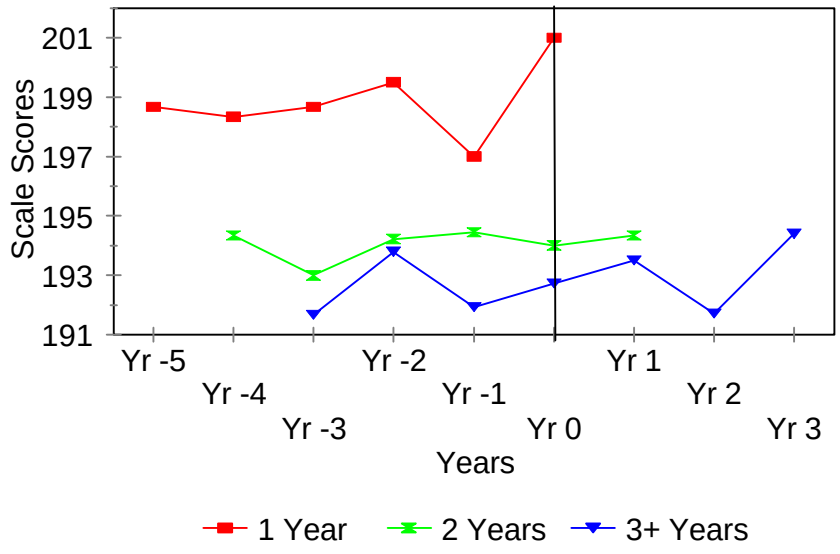
In the TAP Written Expression test area, schools that were in their first year of 7A/B block scheduling experienced a four point mean scale score increase during their implementation year. No additional data were available for these schools. Schools in their second year of block scheduling experienced no change during their implementation year or second year. Schools that were in their third or more year of block scheduling experienced a one point increase during their implementation year, a one point increase during their second year, a two point decrease during their third year and no change during their fourth year (see Figure 31).

In the TAP Sources of Information test area, schools in their first year of 7A/B block scheduling experienced a two point mean scale score increase during their implementation year. No additional data were available for these schools. Schools in their second year of block scheduling experienced a three point mean scale score increase during the implementation year and a two point decrease during the second year. Schools in their third year or more of 7A/B block



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
1 Year	186	186	185	186	186	188			
N	6	6	6	6	6	6	0	0	0
% Change		0.09%	-0.54%	0.18%	0.27%	0.81%			
SD	7.56	7.59	9.23	9.21	7.40	7.67			
2 Years		185	185	186	186	185	183		
N	0	9	9	9	9	9	9	0	0
%Change			-0.24%	0.54%	-0.24%	-0.24%	-1.26%		
SD		8.08	6.29	6.34	8.15	6.44	7.79		
3+ Years			183	183	183	180	182	181	180
N	0	0	9	14	14	14	14	14	5
% Change				-0.32%	0.16%	-1.41%	0.83%	-0.39%	-0.74%
SD			9.17	7.66	8.27	13.98	7.23	8.03	4.07

Figure 30. Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by length-of-time on block scheduling. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



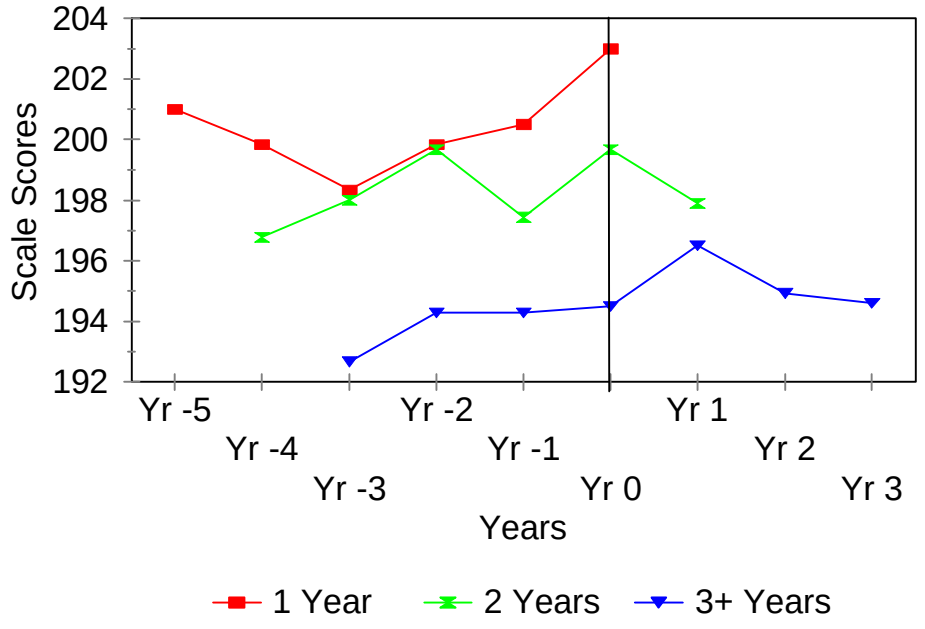
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
1 Year	199	198	199	200	197	201			
N	6	6	6	6	6	6	0	0	0
%Change		-0.17%	0.17%	0.42%	-1.25%	2.03%			
SD	5.91	5.91	6.57	6.37	7.75	7.21			
2 Years		194	193	194	194	194	194		
N	0	9	9	9	9	9	9	0	0
%Change			-0.69%	0.63%	0.11%	-0.23%	0.17%		
SD		10.09	6.85	6.86	10.09	9.59	8.73		
3+ Years			192	194	192	193	194	192	194
N	0	0	9	14	14	14	14	14	5
%Change				1.11%	-0.96%	0.41%	0.41%	-0.92%	1.40%
SD			8.88	9.17	10.43	9.33	7.91	9.96	2.33

Figure 31. Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by length-of-time on block scheduling. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

scheduling experienced a one point mean scale score increase during the implementation year, a two point increase during the second year, a two point decrease during the third year, and no change during the fourth year (see Figure 32).

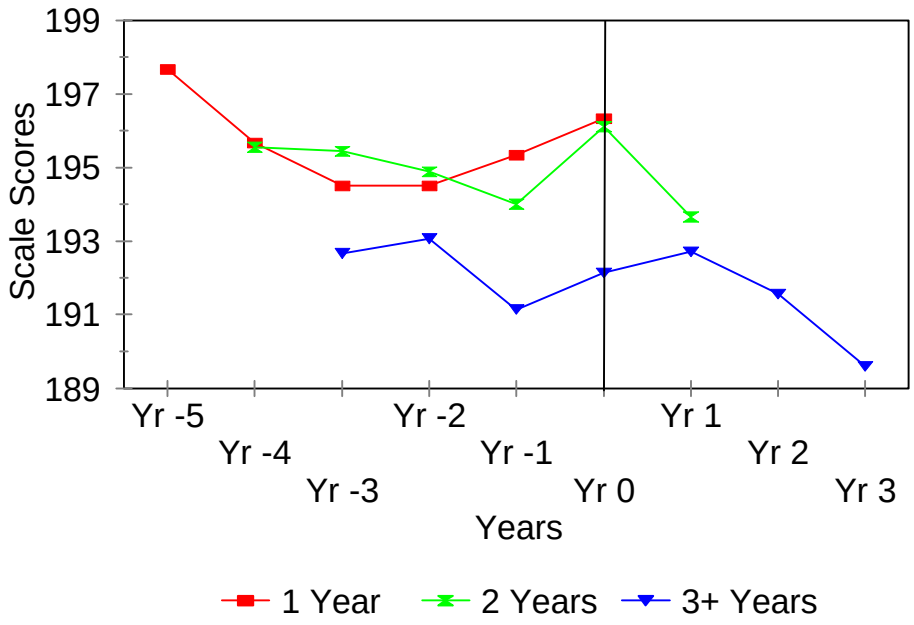
In the TAP Social Studies test area, schools in their first year of 7A/B block scheduling experienced a one point mean scale score increase. No additional data were available for these schools. Schools in their second year of block scheduling experienced a two point mean scale score increase during the implementation year and a two point decrease during the second year. Schools in their third or more year of block scheduling experienced a one point increase during the implementation year, a one point increase during the second year, a one point decrease during the third year, and a two point decrease during the fourth year (see Figure 33).

In the TAP Science test area, schools in their first year of 7A/B block scheduling experienced a two point mean scale score increase over the previous year. No additional data were available for these schools. Schools in their second year of block scheduling experienced a one point increase during the implementation year and a one point decrease during the second year. Schools in their third year or more of block scheduling experienced a two point mean scale



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
1 Year	201	200	198	200	201	203			
N	6	6	6	6	6	6	0	0	0
%Change		-0.58%	-0.75%	0.76%	0.33%	1.25%			
SD	8.52	8.27	10.70	8.97	7.25	8.04			
2 Years		197	198	200	197	200	198		
N	0	9	9	9	9	9	9	0	0
%Change			0.62%	0.84%	-1.11%	1.13%	-0.89%		
SD		9.86	7.90	8.77	8.21	8.79	10.16		
3+ Years			193	194	194	195	197	195	195
N	0	0	9	14	14	14	14	14	5
%Change				0.84%	0.00%	0.11%	1.03%	-0.80%	-0.17%
SD			10.41	10.32	9.50	9.66	8.53	10.05	5.46

Figure 32. Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by length-of-time on block scheduling. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
1 Year	198	196	195	195	195	196			
N	6	6	6	6	6	6	0	0	0
%Change		-1.01%	-0.60%	0.00%	0.43%	0.51%			
SD	6.34	5.56	7.59	6.95	5.31	6.97			
2 Years		196	195	195	194	196	194		
N	0	9	9	9	9	9	9	0	0
%Change			-0.06%	-0.28%	-0.46%	1.09%	-1.25%		
SD		9.37	7.07	7.78	8.73	7.22	8.29		
3+ Years			193	193	191	192	193	192	190
N	0	0	9	14	14	14	14	14	5
%Change				0.21%	-1.00%	0.52%	0.30%	-0.59%	-1.03%
SD			7.87	7.96	7.88	5.94	6.95	6.84	4.67

Figure 33. Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by length-of-time on block scheduling. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

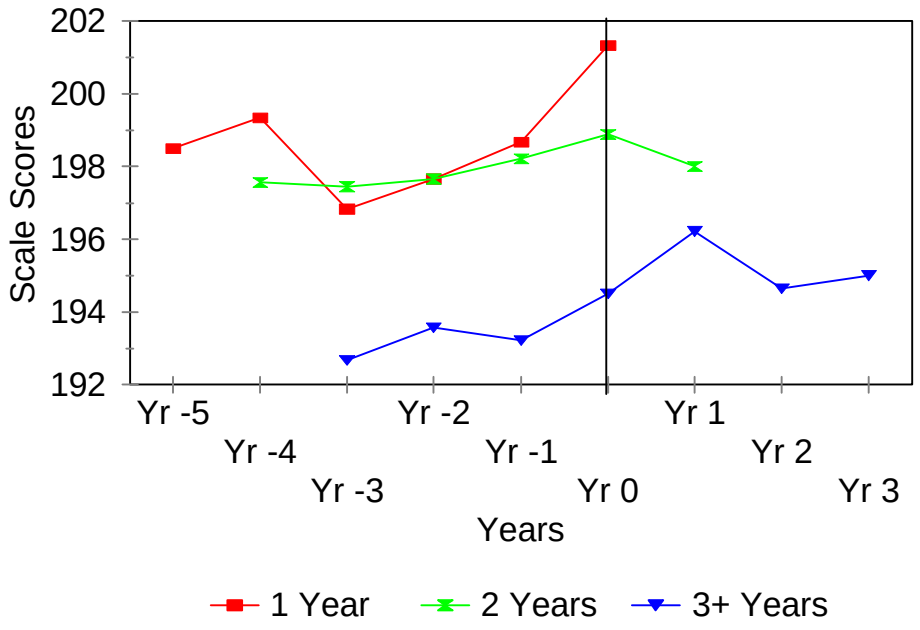
score increase during the implementation year, a one point increase during the second year, a one point decrease during the third year, and no change during the fourth year (see Figure 34).

The TAP Composite scores showed that schools in their first year of 7A/B block scheduling experienced a two point mean scale score increase over the previous year. Schools in their second year of block scheduling experienced a one point increase during the first year of block scheduling but a one point decrease during the second year of block scheduling. Schools in their third year or more of block scheduling experienced no change in scores during the first year, a one point increase during the second year, a one point decrease during the third year, and no change during the fourth year (see Figure 35).

Summary

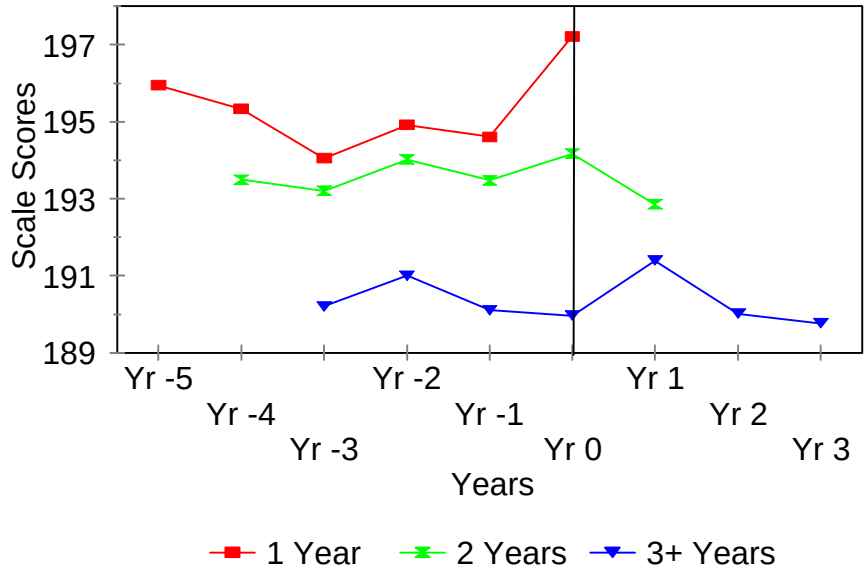
The 29 responding 7A/B block schedule schools were disaggregated according to length-of-time on block scheduling. Length-of-time was defined as one year, two years, or three or more years on 7A/B block scheduling. The respondent schools' mean scale scores were then compared.

Schools in their first year of 7A/B block scheduling showed increases in mean scale score points in every test area. Schools in their second year of 7A/B block scheduling showed increases in mean scale score points in three test areas, a



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	
1 Year	199	199	197	198	199	201			
N	6	6	6	6	6	6	0	0	0
%Change		0.42%	-1.25%	0.42%	0.51%	1.34%			
SD	8.54	7.89	8.97	8.83	7.43	8.42			
2 Years		198	197	198	198	199	198		
N	0	9	9	9	9	9	9	0	0
%Change			-0.06%	0.11%	0.28%	0.34%	-0.45%		
SD		9.45	6.93	8.67	8.84	7.01	8.86		
3+ Years			193	194	193	195	196	195	195
N	0	0	9	14	14	14	14	14	5
%Change				0.47%	-0.18%	0.67%	0.88%	-0.80%	0.18%
SD			7.76	8.85	7.41	7.21	6.11	7.83	4.77

Figure 34. Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by length-of-time on block scheduling. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
1 Year	196	195	194	195	195	197			
N	6	6	6	6	6	6	0	0	0
%Change		-0.31%	-0.65%	0.44%	-0.16%	1.34%			
SD	7.04	6.71	8.03	7.50	6.40	7.54			
2 Years		193	193	194	193	194	193		
N	0	9	9	9	9	9	9	0	0
%Change			-0.15%	0.42%	-0.28%	0.35%	-0.68%		
SD		6.93	4.68	5.85	6.81	5.78	6.85		
3+ Years			190	191	190	190	191	190	190
N	0	0	9	14	14	14	14	14	5
%Change				0.42%	-0.47%	-0.08%	0.75%	-0.72%	-0.13%
SD			6.81	6.96	6.67	7.91	5.52	6.60	3.22

Figure 35. Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by length-of-time on block scheduling. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

decrease in mean scale score points in one test area, and no change in two test areas during the implementation year of block scheduling. During the second year of block scheduling, these schools experienced a decrease in mean scale score points in five test areas and no change in one test area. Schools in their third year or more of 7A/B block scheduling experienced a mean scale score increase in four test areas and a decrease in two test areas during their implementation year of block scheduling. During the second year of block scheduling, these schools experienced an increase in mean scale scores in all six test areas. During the third year of block scheduling, these schools experienced a decrease in mean scale scores in all six test areas. Those schools in their fourth year of block scheduling experienced a decrease in mean scale scores in three test areas and no change in three test areas.

7A/B Block Schedule Mean Scale Score Comparison Based on Staff Development

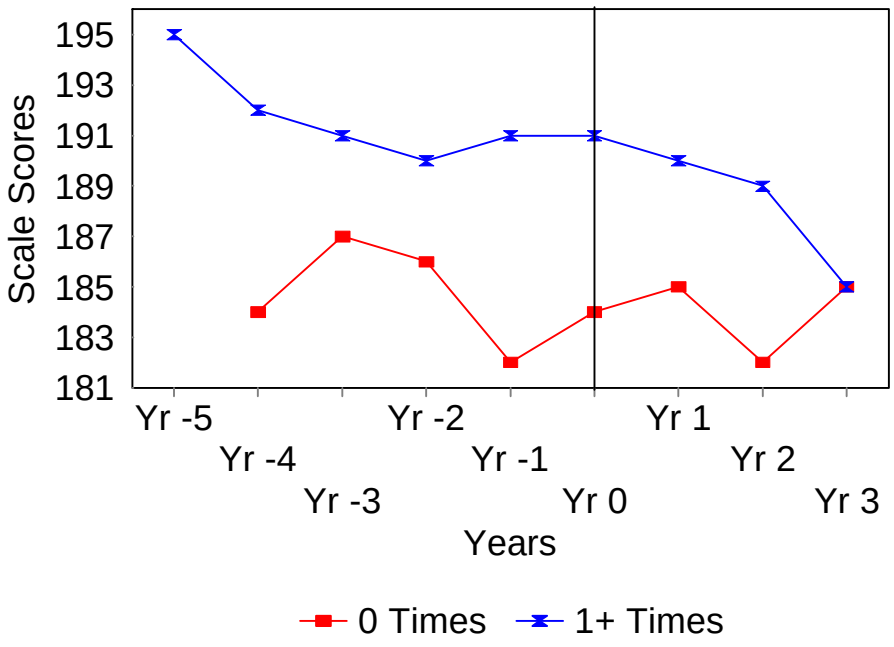
The 7A/B block schedule schools were disaggregated according to a control variable--staff development. The 23 responding schools were arrayed according to whether or not they had had any staff development before they implemented block scheduling.

In the TAP Reading Comprehension test area, 7A/B block schedule schools that reported no staff development before implementing block scheduling showed a two point mean scale score increase during the implementation year and a one point

increase one year after implementation of block scheduling. 7A/B block schedule schools that reported staff development experienced no change in mean scale score points during the implementation year and a one point decrease one year after implementation (see Figure 36).

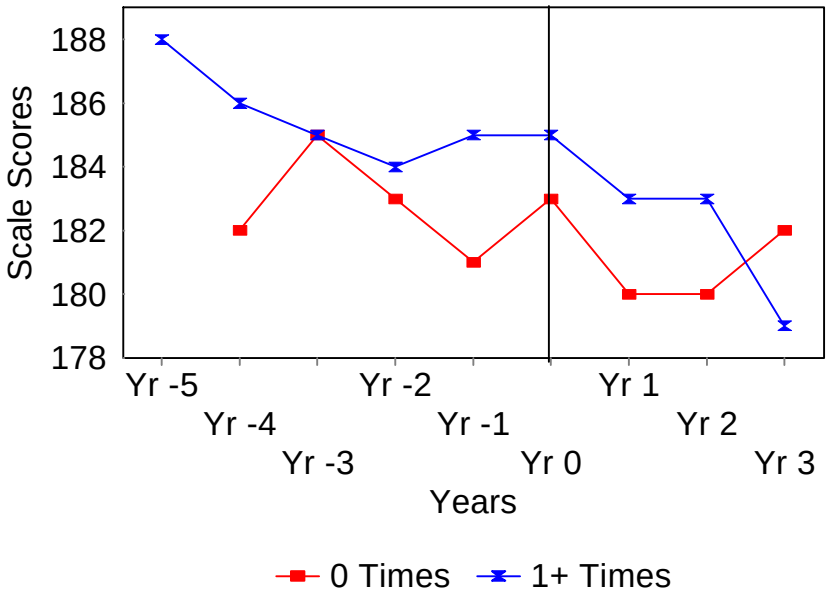
In the TAP Mathematics test area, 7A/B block schedule schools that reported no staff development before implementing block scheduling showed a two point mean scale score increase during the implementation year and a three point mean scale score decrease one year after implementing block scheduling. Schools that reported staff development experienced no change in scores during the implementation year and a one point mean scale score decrease one year after implementing block scheduling (see Figure 37).

In the TAP Written Expression test area, schools that reported no staff development before implementing block scheduling experienced a one point mean scale score increase during the implementation year of block scheduling and no change in scores one year after the implementation of block scheduling. Schools that reported staff development experienced no change in mean scale score points during the block schedule implementation year and a one point decrease during the second year of block scheduling (see Figure 38).



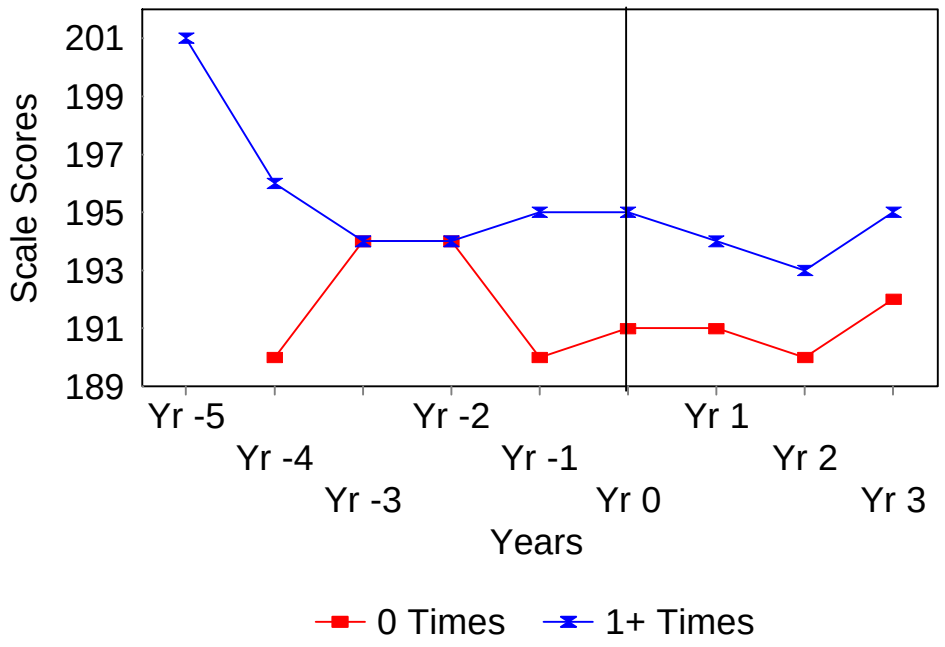
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 Times		184	187	186	182	184	185	182	185
N	0	2	3	4	4	4	4	2	1
% Change			1.63%	-0.53%	-2.15%	1.10%	0.54%	-1.62%	1.65%
SD		1.50	0.47	2.12	2.05	3.11	2.95	0.00	0.00
1+ Times	195	192	191	190	191	191	190	189	185
N	4	9	16	19	19	19	15	10	3
% Change		-1.54%	-0.52%	-0.52%	0.53%	0.00%	-0.52%	-0.53%	-2.12%
SD	9.07	8.97	8.36	8.61	7.50	7.24	7.31	8.19	5.44
No Response	191	195	188	193	188	185	188	178	185
N	2	4	5	6	6	6	4	2	1

Figure 36. Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 Times		182	185	183	181	183	180	180	182
N	0	2	3	4	4	4	4	2	1
% Change			1.65%	-1.08%	-1.09%	1.10%	-1.64%	0.00%	1.11%
SD		2.00	2.83	4.06	2.49	3.77	0.87	1.50	0.00
1+ Times	188	186	185	184	185	185	183	183	179
N	4	9	16	19	19	19	15	10	3
% Change		-1.06%	-0.54%	-0.54%	0.54%	0.00%	-1.08%	0.00%	-2.19%
SD	7.76	8.85	9.05	8.76	8.28	8.43	7.09	8.14	4.92
No Response	182	188	183	186	185	178	183	176	181
N	2	4	5	6	6	6	4	2	1

Figure 37. Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



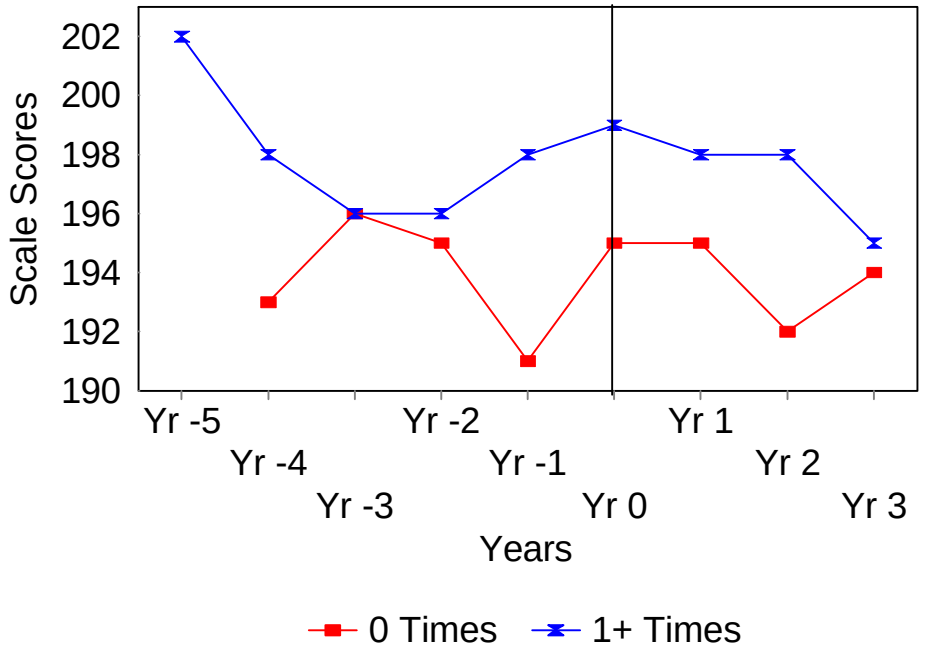
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 Times		190	194	194	190	191	191	190	192
N	0	2	3	4	4	4	4	2	1
% Change			2.11%	0.00%	-2.06%	0.53%	0.00%	-0.52%	1.05%
SD		3.00	2.62	2.96	2.86	1.48	2.55	5.00	0.00
1+ Times	201	196	194	194	195	195	194	193	195
N	4	9	16	19	19	19	15	10	3
% Change		-2.49%	-1.02%	0.00%	0.52%	0.00%	-0.51%	-0.52%	1.04%
SD	4.85	9.95	9.20	9.60	9.21	9.77	8.20	10.05	2.49
No Response	194	198	194	199	193	196	196	186	194
N	2	4	5	6	6	6	4	2	1

Figure 38. Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

In the TAP Sources of Information test area, schools that reported no staff development before implementing block scheduling experienced a four point mean scale score increase during the implementation year of block scheduling, and no change during the second year of block scheduling. Schools that reported staff development experienced a one point mean scale score increase during the implementation year and a one point mean scale score increase during the second year of block scheduling (see Figure 39).

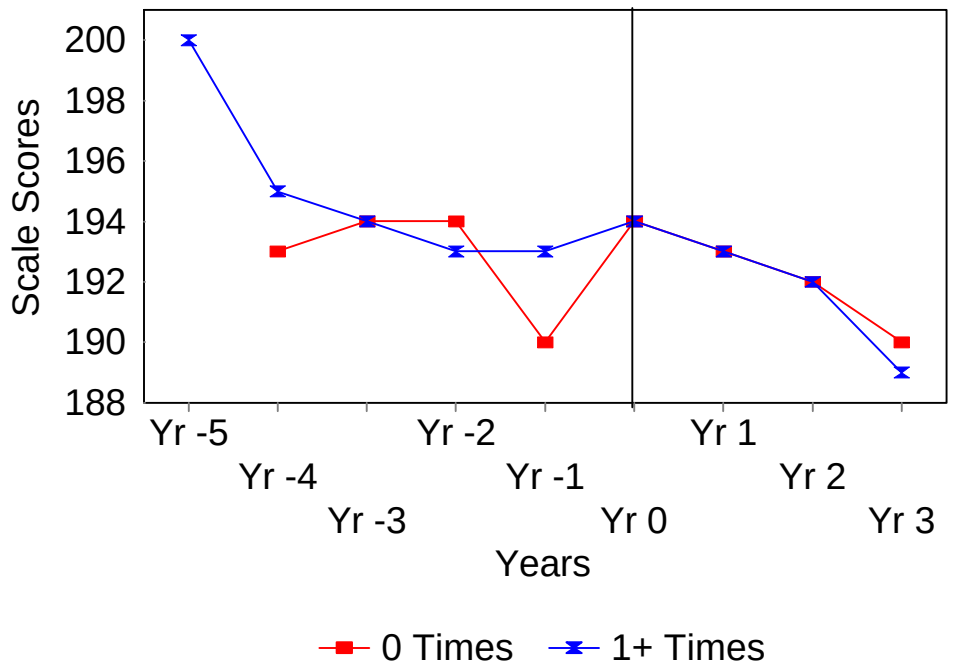
In the TAP Social Studies test area, schools that reported no staff development before implementing block scheduling experienced a four point mean scale score increase during the implementation year and a one point decrease during the second year of block scheduling. Schools that reported staff development experienced a one point mean scale score increase during the implementation year of block scheduling and a one point decrease during the second year of block scheduling (see Figure 40).

In the TAP Science test area, schools that reported no staff development before implementing block scheduling experienced a three point mean scale score increase during the implementation year and a two point decrease during the second year of block scheduling. Schools that reported staff development experienced a two point mean scale score increase during the block schedule



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 Times		193	196	195	191	195	195	192	194
N	0	2	3	4	4	4	4	2	1
% Change			1.55%	-0.51%	-2.05%	2.09%	0.00%	-1.54%	1.04%
SD		1.50	3.56	5.22	3.27	4.02	4.03	0.50	0.00
1+ Times	202	198	196	196	198	199	198	198	195
N	4	9	16	19	19	19	15	10	3
% Change		-1.98%	-1.01%	0.00%	1.02%	0.51%	-0.50%	0.00%	-1.52%
SD	9.71	10.66	10.56	11.17	8.68	9.48	8.69	9.38	6.94
No Response	199	201	196	201	197	198	197	186	193
N	2	4	5	6	6	6	4	2	1

Figure 39. Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 Times		193	194	194	190	194	193	192	190
N	0	2	3	4	4	4	4	2	1
% Change			0.52%	0.00%	-2.06%	2.11%	-0.52%	-0.52%	-1.04%
SD		0.50	1.70	1.12	2.74	3.57	1.12	0.50	0.00
1+ Times	200	195	194	193	193	194	193	192	189
N	4	9	16	19	19	19	15	10	3
% Change		-2.50%	-0.51%	-0.52%	0.00%	0.52%	-0.52%	-0.52%	-1.56%
SD	6.42	8.71	7.55	8.17	6.12	5.66	7.04	7.12	5.79
No Response	194	198	194	197	193	195	193	191	192
N	2	4	5	6	6	6	4	2	1

Figure 40. Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

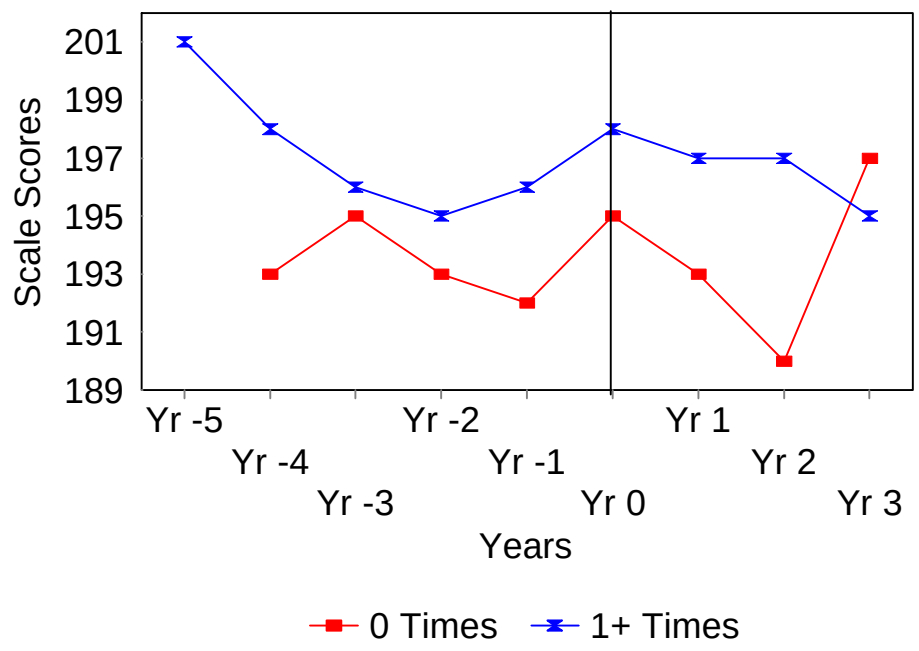
implementation year and one point mean scale score decrease in scores during the second year of block scheduling (see Figure 41).

The TAP Composite scores showed that schools reporting no staff development before implementing block scheduling experienced a two point mean scale score increase during the implementation year and a one point decrease during the second year of block scheduling. Schools that reported staff development experienced a one point mean scale score increase during the block scheduling implementation year and a one point mean scale score decrease during the second year of block scheduling (see Figure 42).

Summary

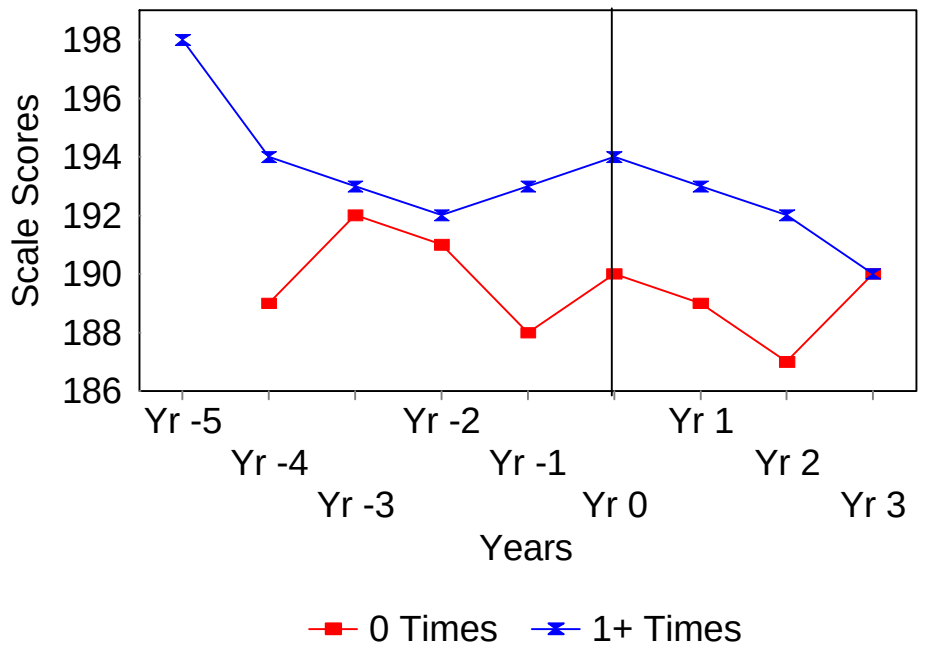
The 23 responding 7A/B block schedule schools were disaggregated according to whether or not they had had staff development before implementing block scheduling. The schools' mean scale scores were compared on the TAP test areas during the implementation year of block scheduling and the second year of block scheduling.

Schools that reported no staff development before implementing block scheduling showed TAP mean scale score gains in all six test areas during the implementation year of block scheduling. During the second year of block scheduling, these same schools showed a mean scale score increase in one test



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 Times		193	195	193	192	195	193	190	197
N	0	2	3	4	4	4	4	2	1
% Change			1.04%	-1.03%	-0.52%	1.56%	-1.03%	-1.55%	3.68%
SD		0.50	3.86	3.34	2.35	4.30	3.70	0.00	0.00
1+ Times	201	198	196	195	196	198	197	197	195
N	4	9	16	19	19	19	15	10	3
% Change		-1.49%	-1.01%	-0.51%	0.51%	1.02%	-0.51%	0.00%	-1.02%
SD	9.28	9.85	8.20	9.68	7.02	7.31	6.71	7.17	6.02
No Response	194	203	196	200	198	198	200	188	194
N	2	4	5	6	6	6	4	2	1

Figure 41. Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
0 Times		189	192	191	188	190	189	187	190
N	0	2	3	4	4	4	4	2	1
% Change			1.59%	-0.52%	-1.57%	1.06%	-0.53%	-1.06%	1.60%
SD		0.17	1.50	2.55	1.54	2.25	1.61	0.92	0.00
1+ Times	198	194	193	192	193	194	193	192	190
N	4	9	16	19	19	19	15	10	3
% Change		-2.02%	-0.52%	-0.52%	0.52%	0.52%	-0.52%	-0.52%	-1.04%
SD	7.64	9.29	8.54	9.04	7.40	7.63	7.23	7.94	5.12
No Response	192	197	192	196	192	191	193	184	190
N	2	4	5	6	6	6	4	2	1

Figure 42. Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

area, a decrease in three test areas, and no change in two test areas. Schools reporting staff development before implementing block scheduling experienced TAP mean scale score increases in three test areas and no change in three test areas. During the second year of block scheduling, these schools showed a mean scale score decrease in all six test areas.

Generally speaking, schools that reported staff development before implementing 7A/B block scheduling had higher overall TAP mean scale scores than schools which reported no staff development.

7A/B Block Schedule Mean Scale Score Comparison Based on Amount of Staff Development

The 23 responding 7A/B block schedule schools were disaggregated by a control variable--amount of staff development. Amount of staff development was defined as none, one day, two days, three to five days, and more than five days of staff development before the implementation of block scheduling. The type of staff development was defined by the survey respondents. None of the responding schools indicated that they had had only one day of staff development.

In the TAP Reading Comprehension test area, schools that indicated no staff development before implementing block scheduling had a three point mean scale score increase during the implementation year of block scheduling. During the

second year of block scheduling, these schools showed no change in mean scale scores. Schools that indicated two days of staff development before implementing block scheduling showed a two point mean scale score decrease for the implementation year. During the second year of block scheduling, these schools increased their mean scale score by one point. Schools that reported three to five days of staff development before implementing block scheduling showed a one point mean scale score increase for the implementation year. During the second year of block scheduling, these same schools showed no change in mean scale scores. Schools that reported five or more staff development days showed no change in mean scale scores during the implementation year. During the second year of block scheduling, these schools showed a three point mean scale score decrease (see Figure 43 and Table 16).

In the TAP Mathematics test area, schools that indicated no staff development before implementing 7A/B block scheduling had no change in mean scale scores during the implementation year. During the second year of block scheduling, these schools recorded a three point mean scale score decrease. Schools reporting two days of staff development before implementing block scheduling showed a one point mean scale score decrease for the implementation year. During the second year of block scheduling, these schools showed no

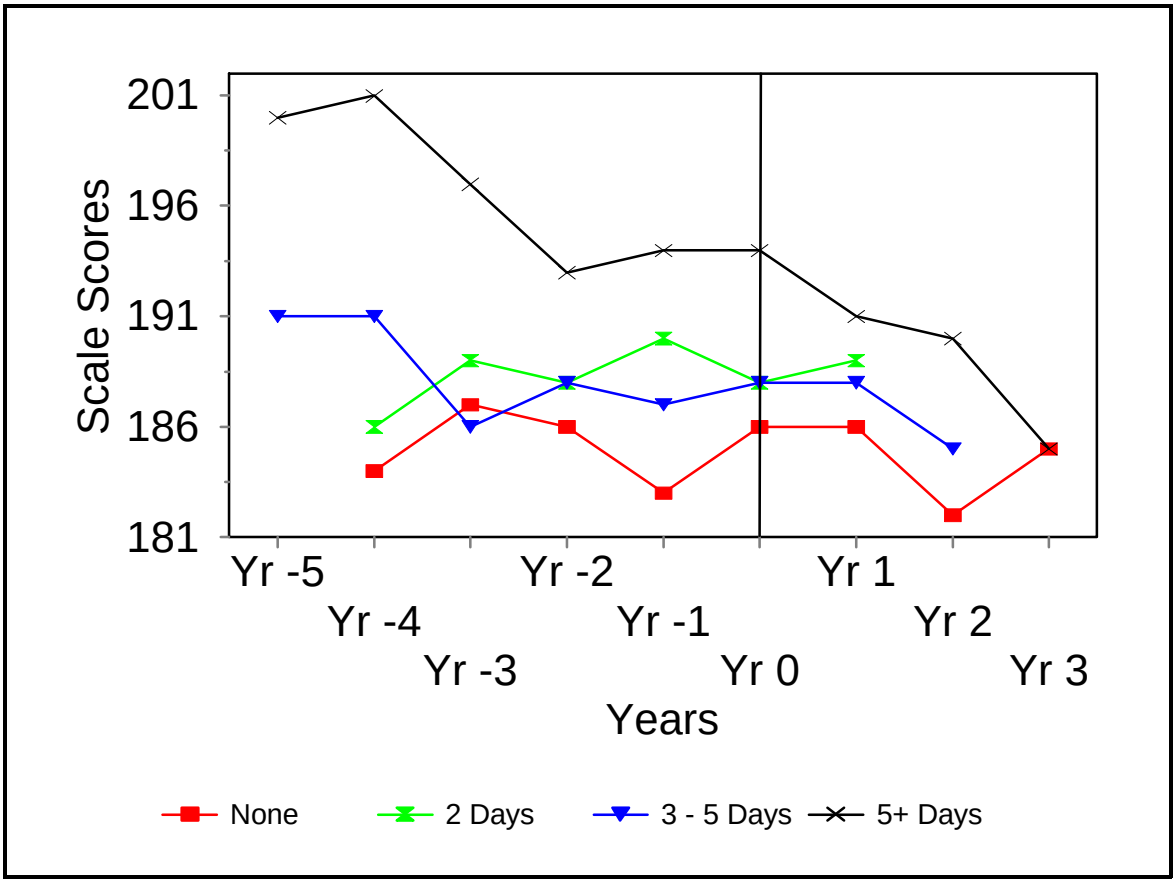


Figure 43. Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 16

Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
None		184	187	186	183	186	186	182	185
N	0	2	2	3	3	3	3	1	1
SD		1.50	0.00	2.36	0.94	0.82	1.25	0.00	0.00
% Change			1.63%	-0.53%	-1.61%	1.64%	0.00%	-2.15%	1.65%
1 Day									
N	0	0	0	0	0	0	0	0	0
SD									
% Change									
2 Days		186	189	188	190	188	189		
N	0	2	2	2	2	2	2	0	0
SD		12.00	6.50	7.00	5.50	3.00	6.50		
% Change			1.61%	-0.53%	1.06%	-1.05%	0.53%		
3 - 5 Days	191	191	186	188	187	188	188	185	
N	2	5	9	9	9	9	7	4	0
SD		6.18	4.64	5.23	5.33	5.65	6.69	2.55	
% Change		0.00%	-2.62%	1.08%	-0.53%	0.53%	0.00%	-1.60%	
5+ Days	200	201	197	193	194	194	191	190	185
N	2	2	6	9	9	9	7	7	3
SD	3.00	2.00	8.47	10.31	8.67	8.38	8.24	9.48	5.44
% Change		0.50%	-1.99%	-2.03%	0.52%	0.00%	-1.55%	-0.52%	-2.63%
No Response	191	195	188	193	188	185	188	178	185
N	2	4	5	6	6	6	4	2	1

change in mean scale scores. Schools reporting three to five days of staff development before implementing block scheduling showed a one point mean scale score increase for the implementation year. During the second year, these schools showed a one point decrease in mean scale score. Schools reporting five or more staff development days showed no change in mean scale scores for the implementation year. During the second year of block scheduling, these schools recorded a five point mean scale score decrease (see Figure 44 and Table 17).

In the TAP Written Expression test area, schools that indicated no staff development before implementing 7A/B block scheduling experienced a two point mean scale score increase for the implementation year. During the second year of block scheduling, these schools recorded no change in mean scale scores. Schools reporting two days of staff development before implementing block scheduling showed a one point mean scale score decrease for the implementation year. During the second year of block scheduling, these schools showed a two point mean scale score increase. Schools reporting three to five days of staff development before implementing block scheduling showed no change in mean scale scores for the implementation year of block scheduling. During the second year of block scheduling, these schools showed a one point mean scale score increase. Schools reporting five or more days of staff development before

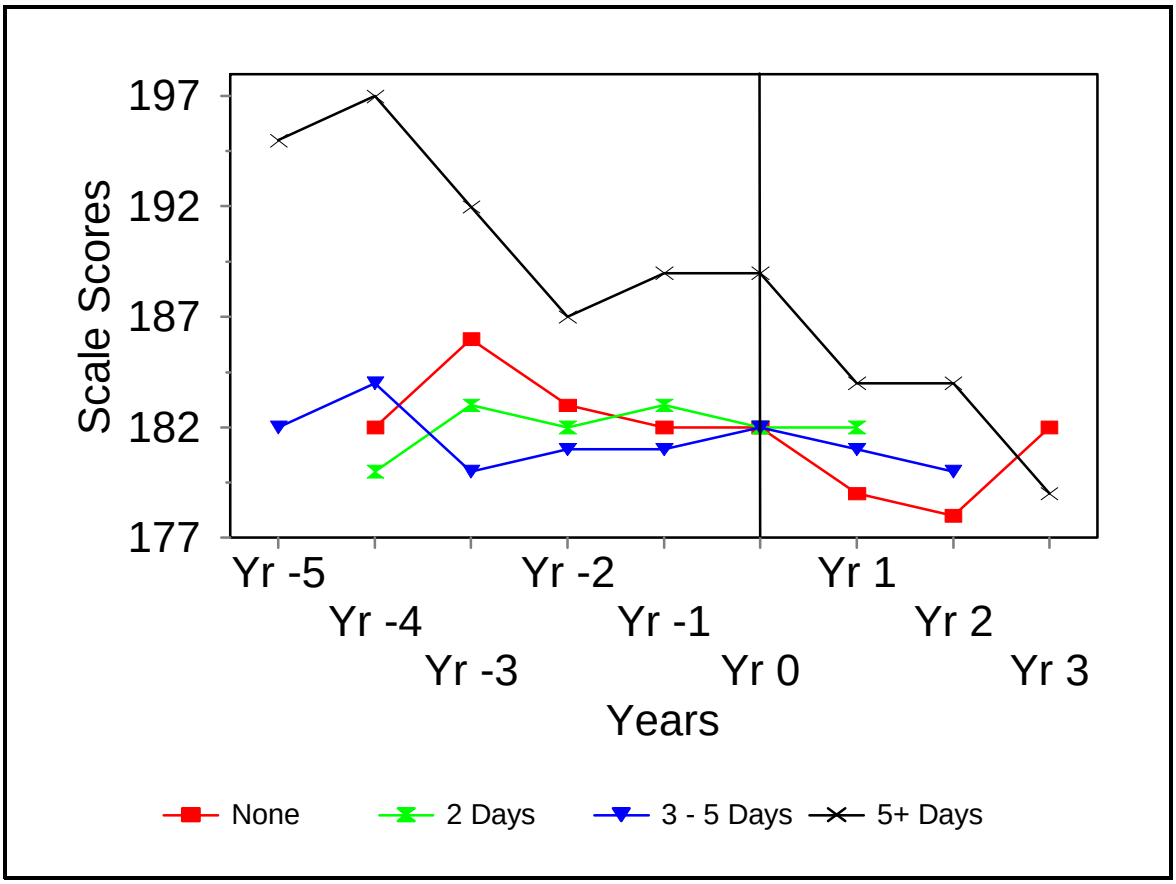


Figure 44. Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 17

Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
None		182	186	183	182	182	179	178	182
N	0	2	2	3	3	3	3	1	1
SD		2.00	3.00	4.64	2.45	3.56	0.94	0.00	0.00
% Change			2.20%	-1.61%	-0.55%	0.00%	-1.65%	-0.56%	2.25%
1 Day									
N	0	0	0	0	0	0	0	0	0
SD									
% Change									
2 Days		180	183	182	183	182	182		
N	0	2	2	2	2	2	2	0	0
SD		12.00	7.50	6.00	6.50	4.00	4.00		
% Change			1.67%	-0.55%	0.55%	-0.55%	0.00%		
3 - 5 Days	182	184	180	181	181	182	181	180	
N	2	5	9	9	9	9	7	4	0
SD		4.21	4.82	4.82	4.09	5.07	5.67	2.17	
% Change		1.10%	-2.17%	0.56%	0.00%	0.55%	-0.55%	-0.55%	
5+ Days	195	197	192	187	189	189	184	184	179
N	2	2	6	9	9	9	7	7	3
SD	3.00	2.50	8.87	10.40	9.35	9.86	8.16	9.38	4.92
% Change		1.03%	-2.54%	-2.60%	1.07%	0.00%	-2.65%	0.00%	-2.72%
No Response	182	188	183	186	185	178	183	176	181
N	2	4	5	6	6	6	4	2	1

implementing block scheduling showed a one point mean scale score increase for the implementation year. During the second year of block scheduling, these schools showed a four point mean scale score decrease (see Figure 45 and Table 18)

In the TAP Sources of Information test area, schools that indicated no staff development before the implementation of 7A/B block scheduling showed a three point mean scale score increase for the implementation year. During the second year of block scheduling, these schools recorded no change in scores. Schools reporting two days of staff development before implementing block scheduling showed a one point mean scale score increase during the implementation year and a one point increase during the second year of block scheduling. Schools reporting three-to-five days of staff development before implementing block scheduling experienced a one point mean scale score increase during the implementation year and a one point increase during the second year of block scheduling. Schools reporting five or more staff development days before implementing block scheduling experienced a one point mean scale score increase during the implementation year and a three point mean scale score decrease during the second year of block scheduling (see Figure 46 and Table 19).

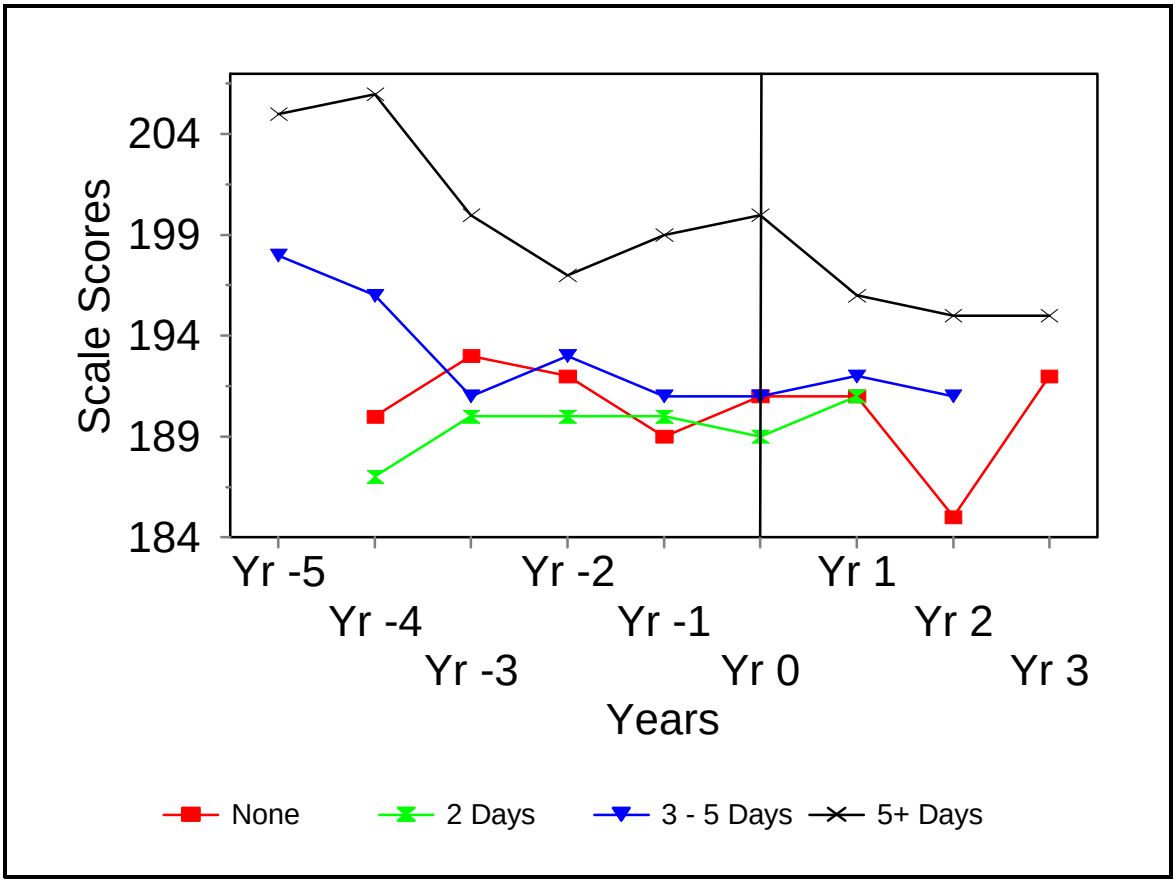


Figure 45. Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 18

Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
None		190	193	192	189	191	191	185	192
N	0	2	2	3	3	3	3	1	1
SD		3.00	2.50	1.63	2.94	1.63	2.87	0.00	0.00
% Change			1.58%	-0.52%	-1.56%	1.06%	0.00%	-3.14%	3.78%
1 Day									
N	0	0	0	0	0	0	0	0	0
SD									
% Change									
2 Days		187	190	190	190	189	191		
N	0	2	2	2	2	2	2	0	0
SD		14.50	8.00	9.50	10.00	7.00	8.00		
% Change			1.60%	0.00%	0.00%	-0.53%	1.06%		
3 - 5 Days	198	196	191	193	191	191	192	191	
N	2	5	9	9	9	9	7	4	0
SD		4.26	5.85	4.59	4.73	5.81	5.45	2.69	
% Change		-1.01%	-2.55%	1.05%	-1.04%	0.00%	0.52%	-0.52%	
5+ Days	205	206	200	197	199	200	196	195	195
N	2	2	6	9	9	9	7	7	3
SD	1.50	0.00	10.03	11.73	9.94	10.56	9.30	11.52	2.49
% Change		0.49%	-2.91%	-1.50%	1.02%	0.50%	-2.00%	-0.51%	0.00%
No Response	194	198	194	199	193	196	196	186	194
N	2	4	5	6	6	6	4	2	1

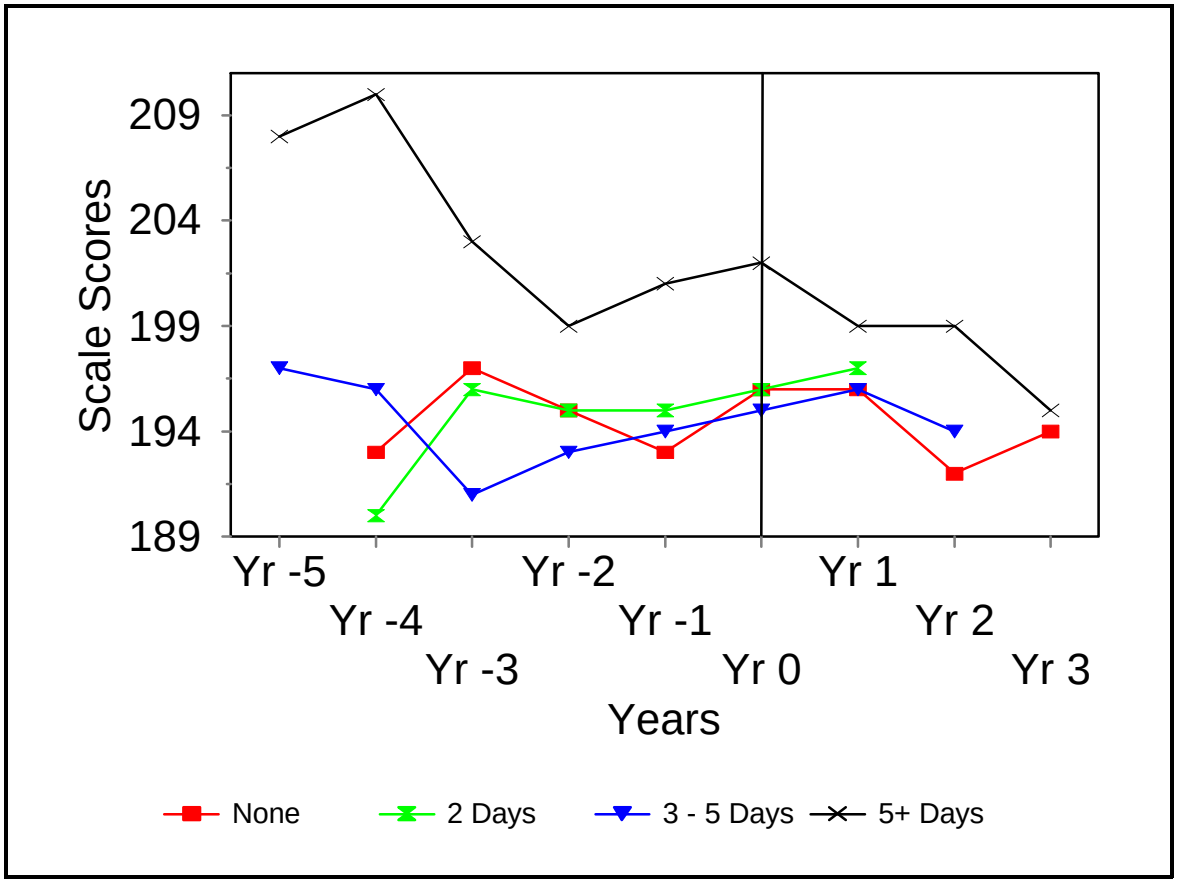


Figure 46. Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 19

Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
None		193	197	195	193	196	196	192	194
N	0	2	2	3	3	3	3	1	1
SD		1.50	4.00	6.02	2.49	3.40	2.87	0.00	0.00
% Change			2.07%	-1.02%	-1.03%	1.55%	0.00%	-2.04%	1.04%
1 Day									
N	0	0	0	0	0	0	0	0	0
SD									
% Change									
2 Days		190	196	195	195	196	197		
N	0	2	2	2	2	2	2	1	0
SD		14.00	10.50	11.00	9.00	8.50	9.50		
% Change			3.16%	-0.51%	0.00%	0.51%	0.51%		
3 - 5 Days	197	196	191	193	194	195	196	194	
N	2	5	9	9	9	9	7	4	0
SD		6.13	5.95	6.22	5.44	6.83	7.17	3.00	
% Change		-0.51%	-2.55%	1.05%	0.52%	0.52%	0.51%	-1.02%	
5+ Days	208	210	203	199	201	202	199	199	195
N	2	2	6	9	9	9	7	7	3
SD	3.50	2.00	11.22	13.44	9.76	10.41	9.38	10.89	6.94
% Change		0.96%	-3.33%	-1.97%	1.01%	0.50%	-1.49%	0.00%	-2.01%
No Response	199	201	196	201	197	198	197	186	193
N	2	4	5	6	6	6	4	2	1

In the TAP Social Studies test area, schools that indicated no staff development before implementing block scheduling experienced a four point mean scale score increase during the implementation year and a two point decrease during the second year of block scheduling. Schools that reported two days of staff development before implementing block scheduling experienced a two point mean scale score increase during the implementation year and a one point decrease during the second year of block scheduling. Schools that reported three-to-five days of staff development before implementing block scheduling showed a two point mean scale score increase during the implementation year and a one point increase during the second year of block scheduling. Schools that reported five or more staff development days before implementing block scheduling experienced no change in mean scale scores over the previous year and decreased three mean scale score points during the second year of block scheduling (see Figure 47 and Table 20).

In the TAP Science test area, schools that reported no staff development before the implementation of 7A/B block scheduling showed a four point mean scale score increase for the implementation year. During the second year of block scheduling, these schools showed a two point mean scale score decrease from the implementation year. Schools that reported two days of staff development before

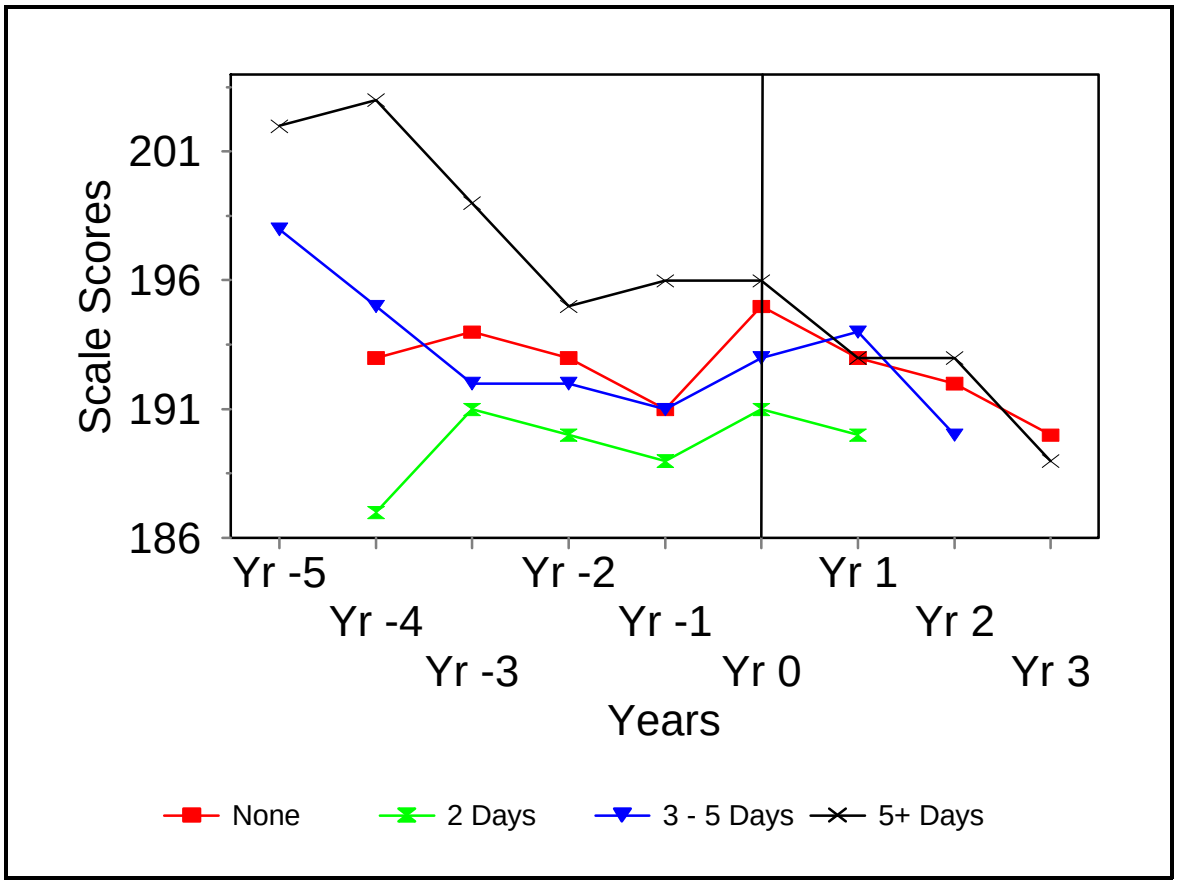


Figure 47. Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 20

Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
None		193	194	193	191	195	193	192	190
N	0	2	2	3	3	3	3	1	1
SD		0.50	2.00	0.82	1.70	2.83	0.82	0.00	0.00
% Change			0.52%	-0.52%	-1.04%	2.09%	-1.03%	-0.52%	-1.04%
1 Day									
N	0	0	0	0	0	0	0	0	0
SD									
% Change									
2 Days		187	191	190	189	191	190		
N	0	2	2	2	2	2	2	0	0
SD		12.00	6.50	7.00	6.50	2.50	7.00		
% Change			2.14%	-0.52%	-0.53%	1.06%	-0.52%		
3 - 5 Days	198	195	192	192	191	193	194	190	
N	2	5	9	9	9	9	7	4	0
SD		5.08	5.31	4.27	3.83	3.52	5.53	1.92	
% Change		-1.52%	-1.54%	0.00%	-0.52%	1.05%	0.52%	-2.06%	
5+ Days	202	203	199	195	196	196	193	193	189
N	2	2	6	9	9	9	7	7	3
SD	4.00	3.50	7.50	10.29	6.88	6.98	7.67	8.28	5.79
% Change		0.50%	-1.97%	-2.01%	0.51%	0.00%	-1.53%	0.00%	-2.07%
No Response	194	198	194	197	193	195	193	191	192
N	2	4	5	6	6	6	4	2	1

implementing 7A/B block scheduling showed a one point mean scale score increase during the implementation year and a one point mean scale score increase during the second year of block scheduling. Schools that reported three-to-five days of staff development before the implementation of block scheduling showed a two point mean scale score increase during the implementation year and a one point decrease during the second year of block scheduling. Schools reporting five or more staff development days before implementing 7A/B block scheduling showed a one point increase in mean scale score points for the implementation year. During the second year of block scheduling, these schools showed a one point mean scale score decrease (see Figure 48 and Table 21).

The TAP Composite showed that schools that reported no staff development before implementing 7A/B block scheduling showed a two point mean scale score increase for the implementation year of block scheduling. During the second year of block scheduling, these schools showed a one point mean scale score decrease. Schools reporting two days of staff development before implementing block scheduling showed no change in score for the implementation year and a one point mean scale score increase for the second year of block scheduling. Schools reporting three-to-five days of staff development before implementing block scheduling showed a one point mean scale score increase for the implementation

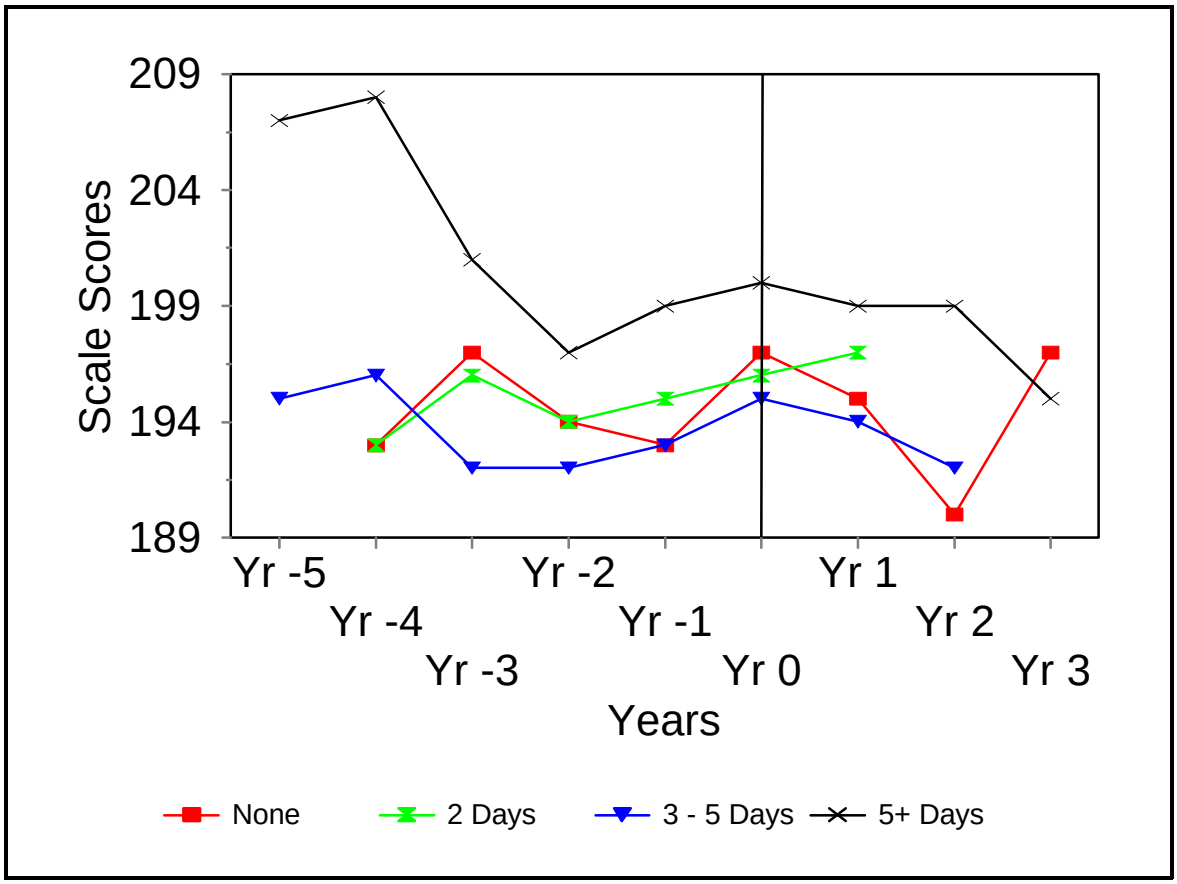


Figure 48. Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 21

Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
None		193	197	194	193	197	195	190	197
N	0	2	2	3	3	3	3	1	1
SD		0.50	3.50	3.56	0.47	2.94	0.94	0.00	0.00
% Change			2.07%	-1.52%	-0.52%	2.07%	-1.02%	-2.56%	3.68%
1 Day									
N	0	0	0	0	0	0	0	0	0
SD									
% Change									
2 Days		193	196	194	195	196	197		
N	0	2	2	2	2	2	2	0	0
SD		13.50	7.50	9.50	8.00	3.50	8.50		
% Change			1.55%	-1.02%	0.52%	0.51%	0.51%		
3 - 5 Days	195	196	192	192	193	195	194	192	
N	2	5	9	9	9	9	7	4	0
SD		6.62	5.91	5.31	4.93	5.85	6.48	3.08	
% Change		0.51%	-2.04%	0.00%	0.52%	1.04%	-0.51%	-1.03%	
5+ Days	207	208	201	197	199	200	199	199	195
N	2	2	6	9	9	9	7	7	3
SD	2.00	1.00	7.85	11.80	7.56	8.22	6.20	7.57	6.02
% Change		0.48%	-3.37%	-1.99%	1.02%	0.50%	-0.50%	0.00%	-2.01%
No Response	194	203	196	200	198	198	200	188	194
N	2	4	5	6	6	6	4	2	1

year and no change in score for the second year of block scheduling. Schools that reported five or more staff development days before implementing 7A/B block scheduling showed a one point mean scale score increase for the implementation year. During the second year of block scheduling, these schools showed a three point mean scale score decrease (see Figure 49 and Table 22).

Summary

The 23 responding 7A/B block schedule schools were disaggregated according to the amount of staff development days on block scheduling. The TAP mean scale scores were compared based on the implementation year of 7A/B block scheduling and one year after the implementation of block scheduling.

Schools reporting no staff development before implementing 7A/B block scheduling showed mean scale score increases on five TAP test areas and no change in one TAP test area for the implementation year. During the second year of block scheduling, these schools showed no change in three TAP test areas and a mean scale score decrease in three TAP test areas.

Schools reporting two days of staff development on block scheduling before implementing 7A/B block scheduling showed a mean scale score increase in three TAP test areas and a decrease in three TAP test areas for the implementation year. During the second year of block scheduling, these schools showed a mean scale

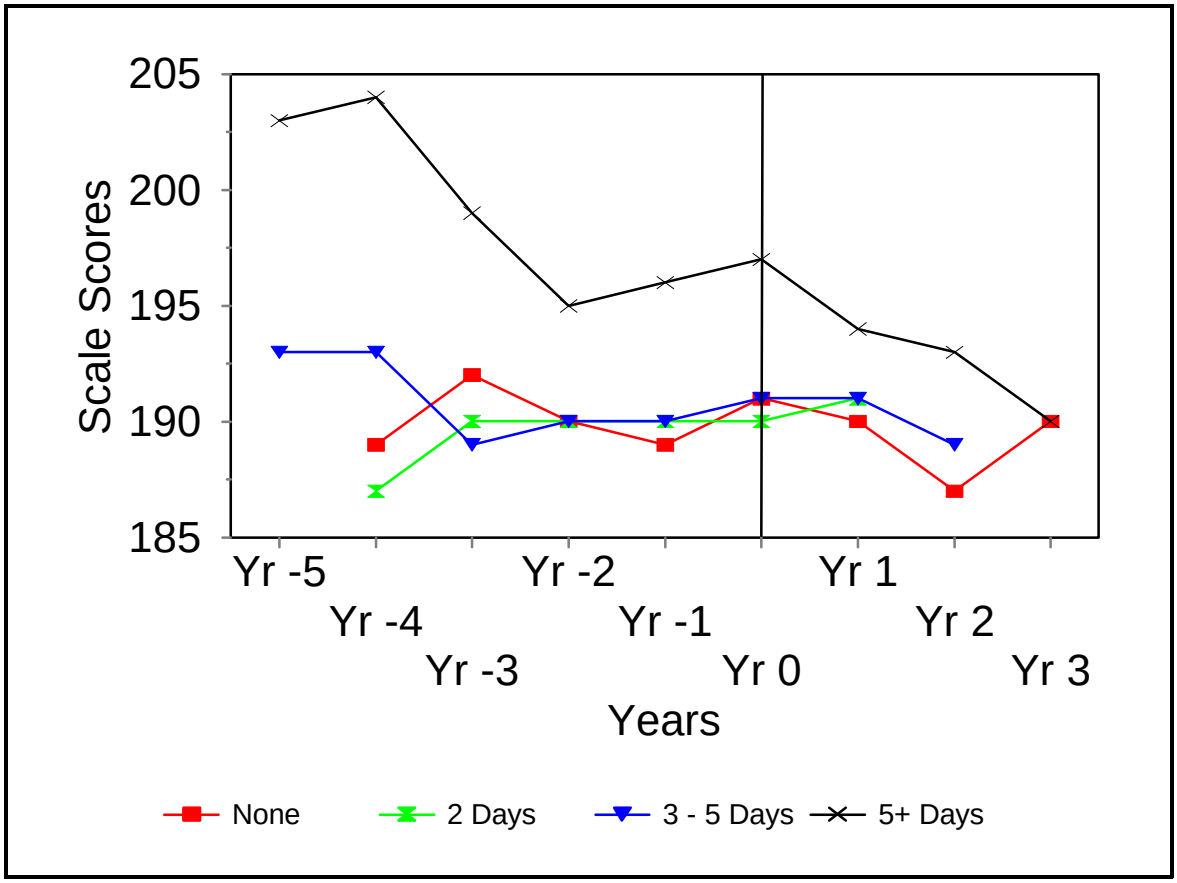


Figure 49. Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Table 22

Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by amount of staff development.

	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
None		189	192	190	189	191	190	187	190
N	0	2	2	3	3	3	3	1	1
SD		0.17	1.67	2.88	0.44	1.73	0.27	0.00	0.00
% Change			1.59%	-1.04%	-0.53%	1.06%	-0.52%	-1.58%	1.60%
1 Day									
N	0	0	0	0	0	0	0	0	0
SD									
% Change									
2 Days		187	190	190	190	190	191		
N	0	2	2	2	2	2	2	1	0
SD		13.00	7.75	8.33	7.58	4.75	7.25		
% Change			1.60%	0.00%	0.00%	0.00%	0.53%		
3 - 5 Days	193	193	189	190	190	191	191	189	
N	2	5	9	9	9	9	7	4	0
SD		5.09	5.06	4.55	4.31	4.99	5.92	1.61	
% Change		0.00%	-2.07%	0.53%	0.00%	0.53%	0.00%	-1.05%	
5+ Days	203	204	199	195	196	197	194	193	190
N	2	2	6	9	9	9	7	7	3
SD	2.83	1.83	8.67	11.08	8.19	8.66	7.89	9.11	5.12
% Change		0.49%	-2.45%	-2.01%	0.51%	0.51%	-1.52%	-0.52%	-1.55%
No Response	192	197	192	196	192	191	193	184	190
N	2	4	5	6	6	6	4	2	1

score increase in four TAP test areas, a decrease in one TAP test area, and no change in one TAP test area.

Schools reporting three to five days of staff development before implementing 7A/B block scheduling experienced a mean scale score increase in five TAP test areas and no change in one TAP test area for the implementation year. During the second year of block scheduling, these schools experienced increases in three TAP test areas, decreases in two TAP test areas, an no change in one TAP test area.

Schools reporting five or more staff development days before the implementation of block scheduling showed a mean scale score increase in three TAP test areas and no change in three TAP test areas for the implementation year. During the second year of block scheduling, these schools experienced a mean scale score decrease in all six TAP test areas.

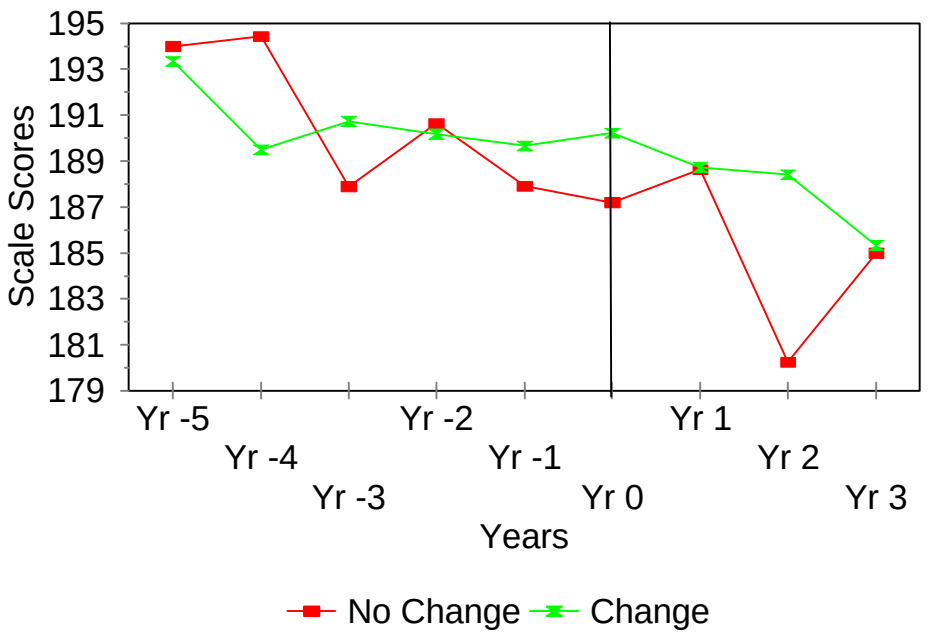
The researcher noted that the 7A/B block schedule schools that reported five or more staff development days had higher overall test scores than did the other groups.

7A/B Block Schedule Mean Scale Score Comparison Based on Changes in Instructional Practices

The 7A/B block schedule schools were disaggregated according to a control variable--changes in instructional practices. The 29 respondent schools were arrayed according to whether they reported no change in instructional practices or whether they reported some change in instructional practices over the 1991-1996 period. The schools' TAP mean scale scores were compared based on their implementation year of block scheduling and their second year of block scheduling.

In the TAP Reading Comprehension test area, schools reporting no change in instructional practices showed a one point mean scale score decrease for the implementation year of block scheduling and a two point mean scale score increase for the second year of block scheduling. Schools reporting a change in instructional practices experienced no change in mean scale score for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 50).

In the TAP Mathematics test area, schools reporting no change in instructional practices showed a three point mean scale score decrease for the implementation year of block scheduling and a two point mean scale score



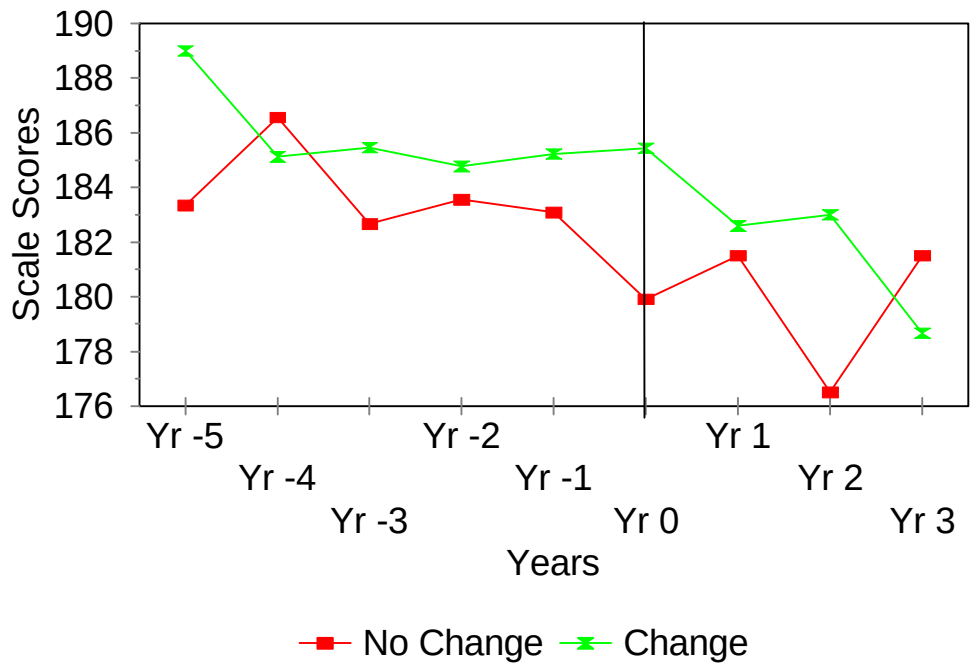
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	194	194	188	191	188	187	189	180	185
N	3	7	9	11	11	11	8	4	2
SD	6.16	8.48	8.32	8.00	11.47	17.11	12.08	8.10	0.00
% Change		0.22%	-3.36%	1.46%	-1.43%	-0.39%	0.77%	-4.44%	2.64%
Change	193	190	191	190	190	190	189	188	185
N	3	8	15	18	18	18	15	10	3
SD	9.74	9.35	8.03	8.36	7.96	7.65	6.91	8.26	5.44
% Change		-1.98%	0.65%	-0.30%	-0.26%	0.29%	-0.78%	-0.18%	-1.63%

Figure 50. Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in instructional practices. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

increase for the second year of block scheduling. Schools reporting a change in instructional practices showed no change in mean scale score for the implementation year of block scheduling and a two point mean scale score decrease for the second year of block scheduling (see Figure 51).

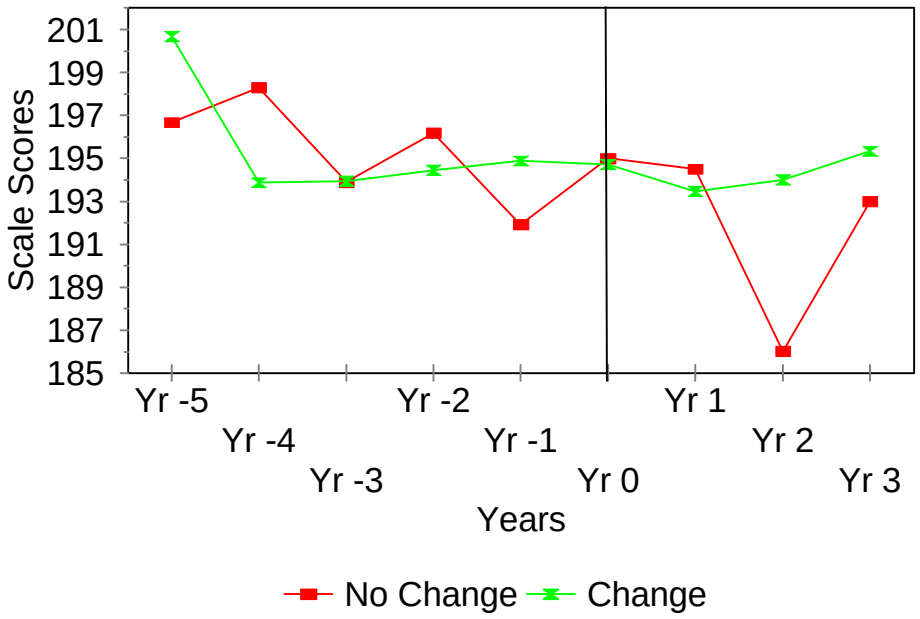
In the TAP Written Expression test area, schools reporting no change in instructional practices showed a three point mean scale score increase for the implementation year of block scheduling and no change in mean scale score for the second year. Schools reporting a change in instructional practices showed no change in mean scale score for the implementation year of block scheduling and a two point mean scale score decrease for the second year of block scheduling (see Figure 52).

In the TAP Sources of Information test area, schools reporting no change in instructional practices showed a two point mean scale score increase for the implementation year of block scheduling and no change in mean scale score for the second year of block scheduling. Schools reporting a change in instructional practices showed a one point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 53).



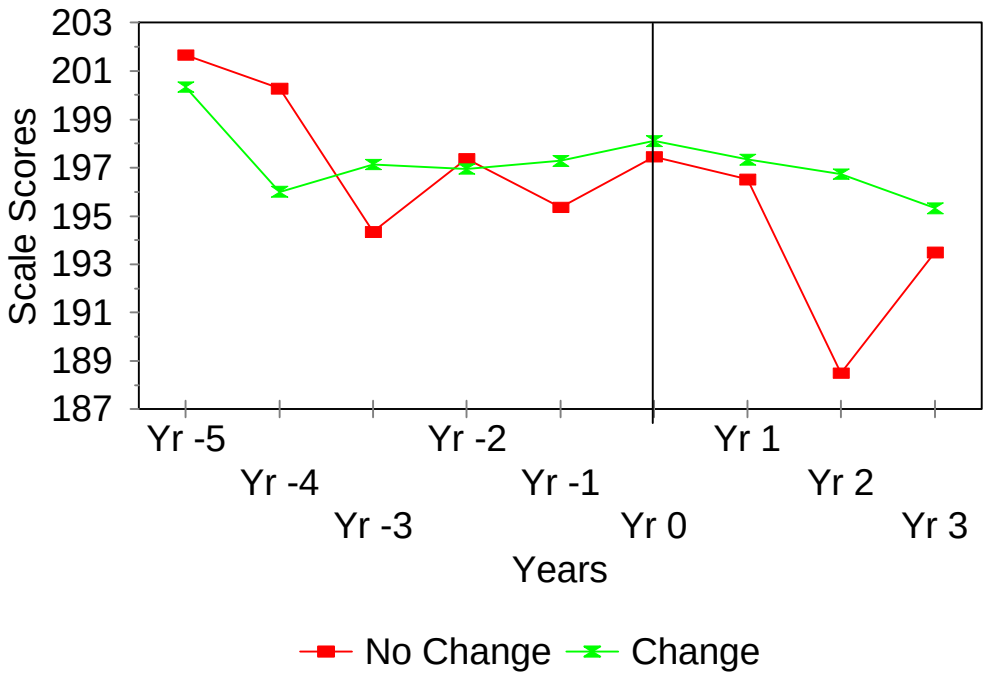
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	183	187	183	184	183	180	182	177	182
N	3	7	9	11	11	11	8	4	2
SD	4.50	6.02	7.24	6.64	8.18	14.54	8.92	6.10	0.50
% Change		1.77%	-2.09%	0.48%	-0.25%	-1.74%	0.88%	-2.75%	2.83%
Change	189	185	185	185	185	185	183	183	179
N	3	8	15	18	18	18	15	10	3
SD	8.83	9.18	8.68	8.41	8.09	8.15	6.53	7.95	4.92
% Change		-2.05%	0.18%	-0.37%	0.24%	0.12%	-1.53%	0.22%	-2.37%

Figure 51. Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in instructional practices. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	197	198	194	196	192	195	195	186	193
N	3	7	9	11	11	11	8	4	2
SD	5.56	5.75	6.77	5.10	11.19	9.49	9.11	7.52	1.00
% Change		0.82%	-2.22%	1.18%	-2.18%	1.61%	-0.26%	-4.37%	3.76%
Change	201	194	194	194	195	195	193	194	195
N	3	8	15	18	18	18	15	10	3
SD	5.56	10.48	8.82	9.68	9.05	9.62	7.73	9.90	2.49
% Change		-3.38%	0.03%	0.26%	0.23%	-0.09%	-0.64%	0.28%	0.69%

Figure 52. Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in instructional practices. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



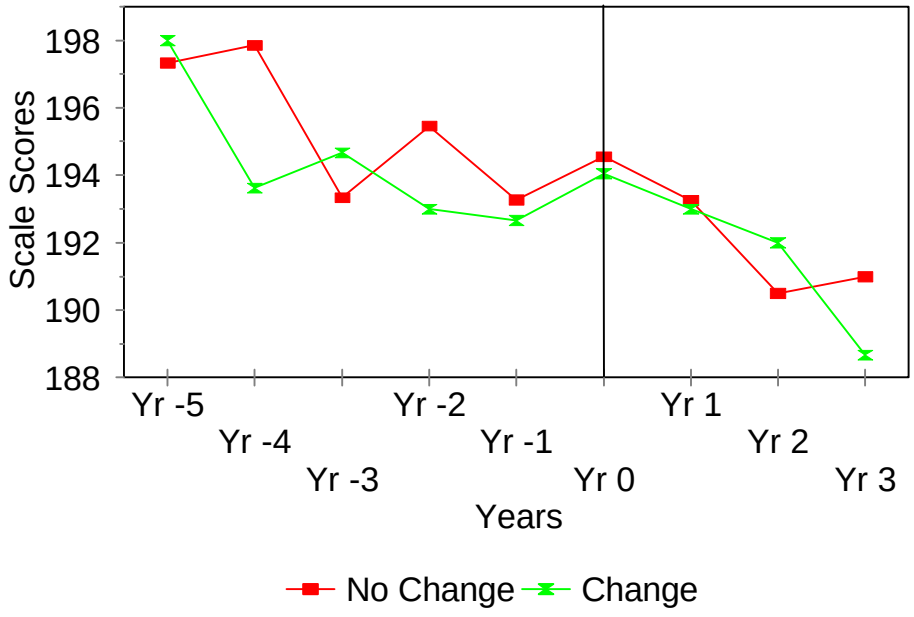
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	202	200	194	197	195	197	197	189	194
N	3	7	9	11	11	11	8	4	2
SD	5.79	6.56	9.87	8.26	9.46	10.61	10.99	8.67	0.50
% Change		-0.68%	-2.97%	1.56%	-1.01%	1.07%	-0.48%	-4.07%	2.65%
Change	200	196	197	197	197	198	197	197	195
N	3	8	15	18	18	18	15	11	3
SD	10.53	10.90	9.91	10.88	8.65	9.11	8.12	9.27	6.94
% Change		-2.16%	0.58%	-0.10%	0.17%	0.42%	-0.39%	-0.31%	-0.71%

Figure 53. Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in instructional practices. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

In the TAP Social Studies test area, schools reporting no change in instructional practices showed a two point mean scale score increase for the implementation year of block scheduling and a two point mean scale score decrease for the second year of block scheduling. Schools reporting a change in instructional practices showed a one point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 54).

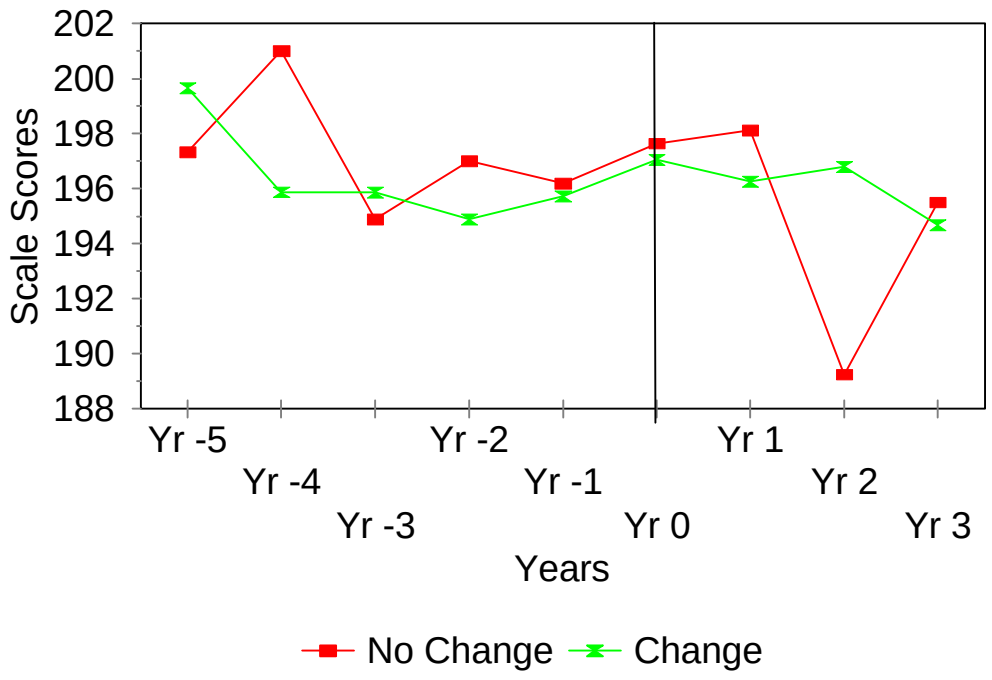
In the TAP Science test area, schools reporting no change in instructional practices showed a two point mean scale score increase for the implementation year of block scheduling and no change for the second year of block scheduling. Schools reporting a change in instructional practices showed a one point mean scale score increase for the implementation year and a one point mean scale score decrease for the second year of block scheduling (see Figure 55).

The TAP Composite showed that schools reporting no change in instructional practices experienced a one point mean scale score increase for the implementation year of block scheduling and no change in mean scale score for the second year of block scheduling. Schools reporting a change in instructional practices experienced no change in mean scale score for the implementation year



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	197	198	193	195	193	195	193	191	191
N	3	7	9	11	11	11	8	4	2
SD	6.13	6.90	8.67	6.83	10.04	8.42	9.35	6.10	1.00
% Change		0.27%	-2.29%	1.10%	-1.12%	0.66%	-0.67%	-1.42%	0.26%
Change	198	194	195	193	193	194	193	192	189
N	3	8	15	18	18	18	15	10	3
SD	6.53	8.48	6.85	8.12	6.25	5.73	6.32	7.07	5.79
% Change		-2.21%	0.54%	-0.86%	-0.17%	0.72%	-0.54%	-0.52%	-1.74%

Figure 54. Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in instructional practices. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	197	201	195	197	196	198	198	189	196
N	3	7	9	11	11	11	8	4	2
SD	5.73	6.23	8.80	7.64	10.15	8.98	8.72	6.30	1.50
% Change		1.86%	-3.04%	1.08%	-0.42%	0.74%	0.25%	-4.48%	3.30%
Change	200	196	196	195	196	197	196	197	195
N	3	8	15	18	18	18	15	10	3
SD	10.50	10.12	7.62	9.69	6.93	7.21	6.42	7.33	6.02
% Change		-1.90%	-0.00%	-0.50%	0.43%	0.68%	-0.40%	0.27%	-1.08%

Figure 55. Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in instructional practices. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

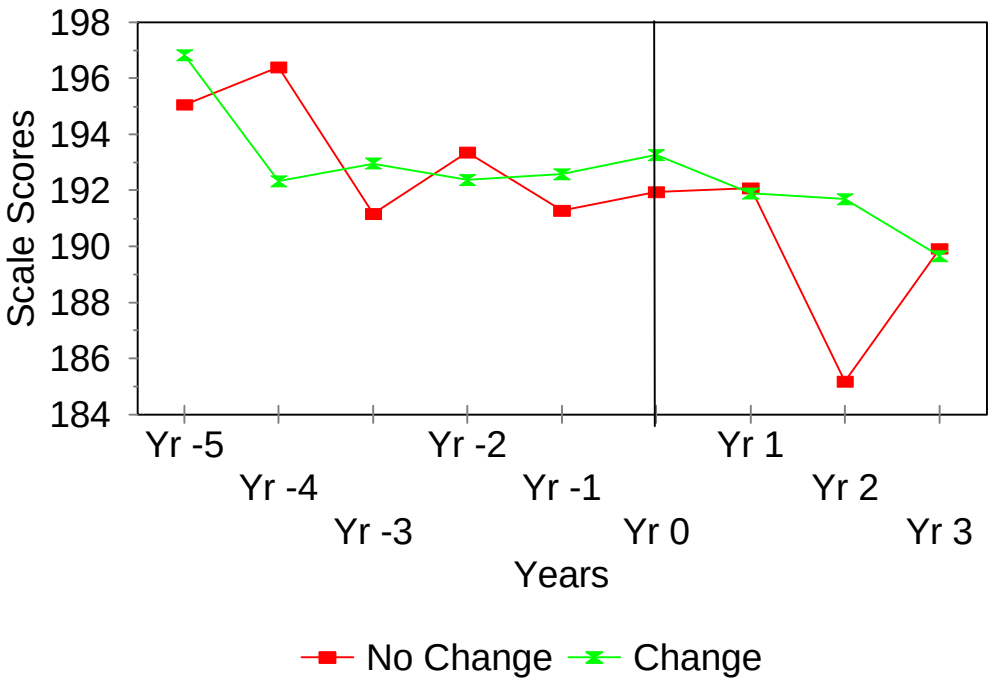
of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 56).

Summary

The 29 7A/B block schedule schools were disaggregated and arrayed according to whether or not they had changes in instructional practices over the 1991-1996 period. The schools TAP mean scale scores were then compared based on the implementation year of block scheduling and the second year of block scheduling.

Schools reporting no change in instructional practices showed mean scale score increase in four TAP test areas and a mean scale score decrease in two TAP test areas for the implementation year of block scheduling. During the second year of block scheduling, these schools showed a mean scale score increase in two TAP test areas, a mean scale score decrease in one TAP test area, and no mean scale score change in three TAP test areas.

Schools reporting a change in instructional practices showed a mean scale score increase in three TAP test areas and no mean scale score change in three TAP test areas for the implementation year of block scheduling. During the second year of block scheduling, these schools experienced a mean scale score decrease in all six TAP test areas.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	195	196	191	193	191	192	192	185	190
N	3	7	9	11	11	11	8	4	2
SD	5.54	6.48	8.05	6.67	9.83	11.11	9.73	7.04	0.08
% Change		0.69%	-2.67%	1.15%	-1.07%	0.35%	0.07%	-3.60%	2.57%
Change	197	192	193	192	193	193	192	192	190
N	3	8	15	18	18	18	15	11	3
SD	8.57	9.54	7.99	8.92	7.37	7.41	6.62	7.53	5.12
% Change		-2.29%	0.33%	-0.31%	0.11%	0.36%	-0.71%	-0.11%	-1.05%

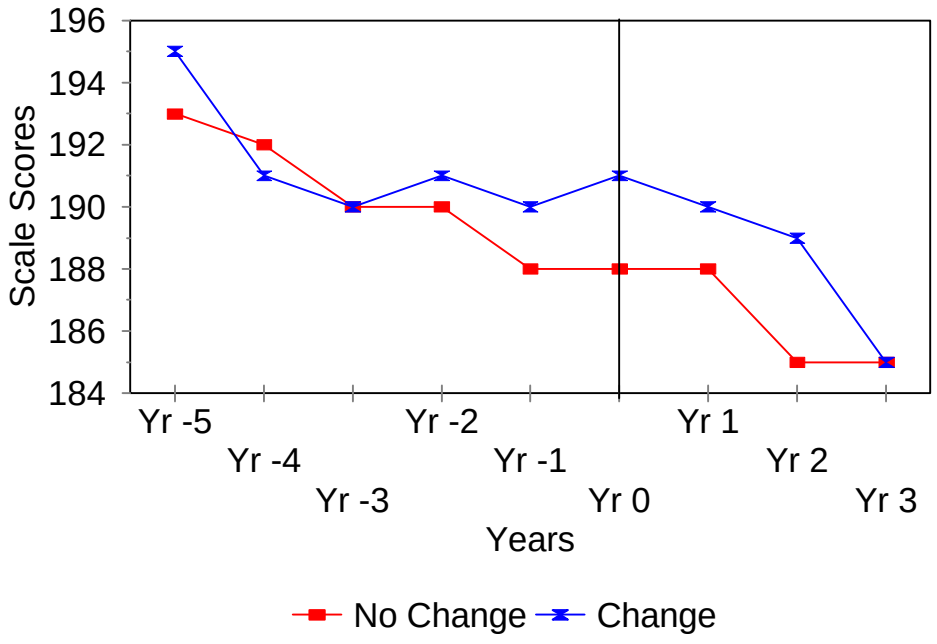
Figure 56. Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in instructional practices. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

7A/B Block Schedule Mean Scale Score Comparison Based on Curriculum Changes

The 7A/B block schedule schools were disaggregated according to a control variable--changes in curriculum. The 29 responding block schedule schools were arrayed according to whether or not they reported any curriculum changes for the 1991-1996 period. The schools' TAP mean scale scores were compared based on the implementation year of block scheduling and the second year of block scheduling.

In the TAP Reading Comprehension test area, schools reporting no curriculum changes showed no mean scale score change for the implementation year or the second year of block scheduling. Schools reporting curriculum changes showed a one point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 57).

In the TAP Mathematics test area, schools reporting no change in curriculum showed a two point mean scale score decrease for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling. Schools reporting changes in curriculum showed no



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	193	192	190	190	188	188	188	185	185
N	3	7	14	16	16	16	13	9	2
SD	4.78	9.41	8.79	9.16	11.45	15.44	10.39	9.99	0.00
% Change		-0.52%	-1.04%	0.00%	-1.05%	0.00%	0.00%	-1.60%	0.00%
Change	195	191	190	191	190	191	190	189	185
N	3	8	10	13	13	13	10	5	3
SD	10.40	9.16	7.45	6.90	6.15	5.80	6.78	5.98	5.44
% Change		-2.05%	-0.52%	0.53%	-0.52%	0.53%	-0.52%	-0.53%	-2.12%

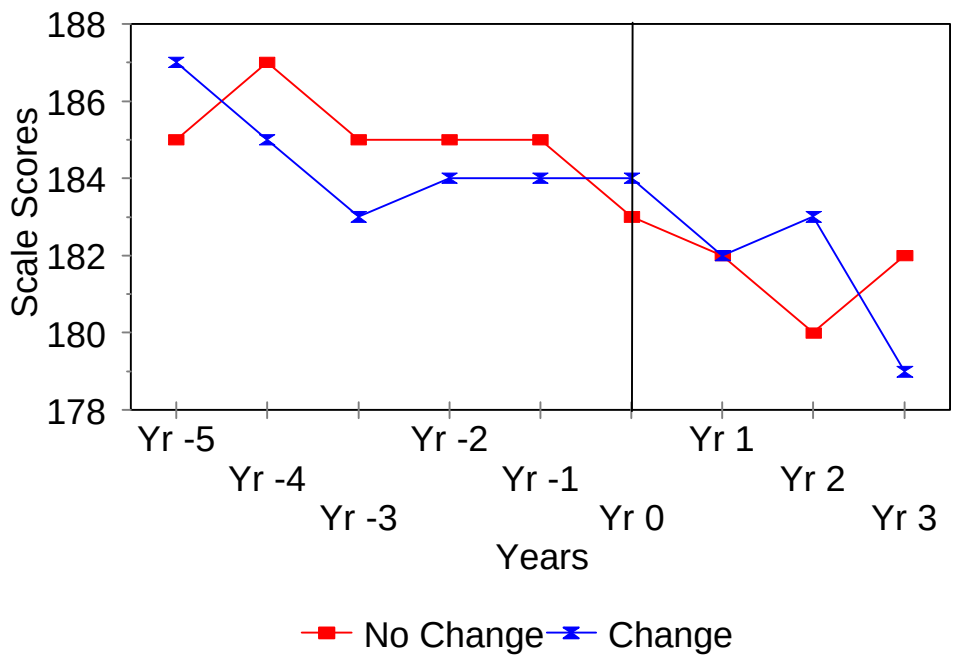
Figure 57. Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in curriculum. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

mean scale score change for the implementation year of block scheduling and a two point mean scale score decrease for the second year of block scheduling (see Figure 58).

In the TAP Written Expression test area, schools reporting no curriculum changes showed a one point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling. Schools reporting changes in curriculum showed no mean scale score change for the implementation year or second year of block scheduling (see Figure 59).

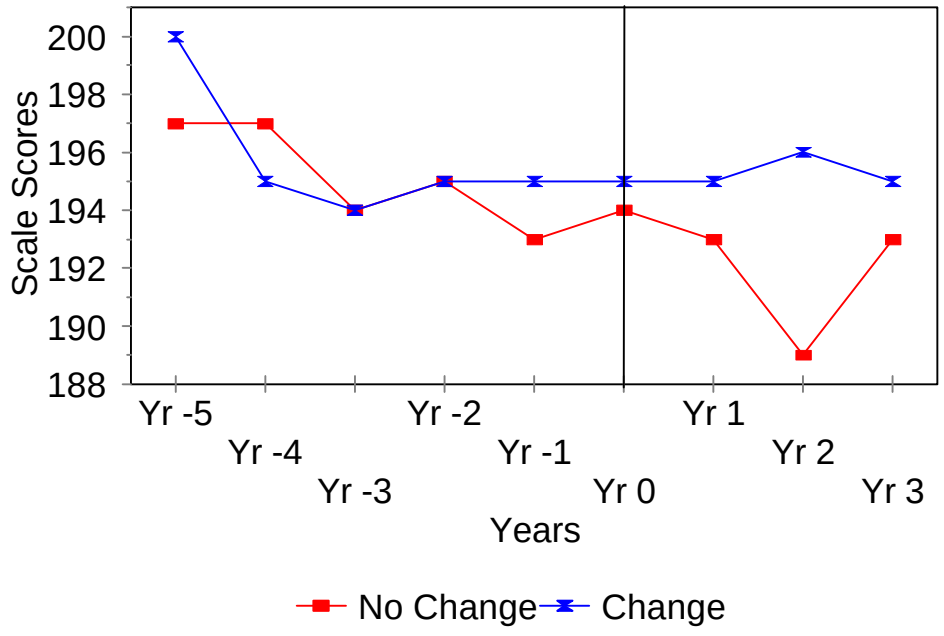
In the TAP Sources of Information test area, schools reporting no change in curriculum showed a one point mean scale score increase for the implementation year and a one point mean scale score decrease for the second year of block scheduling. Schools reporting changes in curriculum showed a two point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 60).

In the TAP Social Studies test area, schools reporting no curriculum changes showed a one point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year



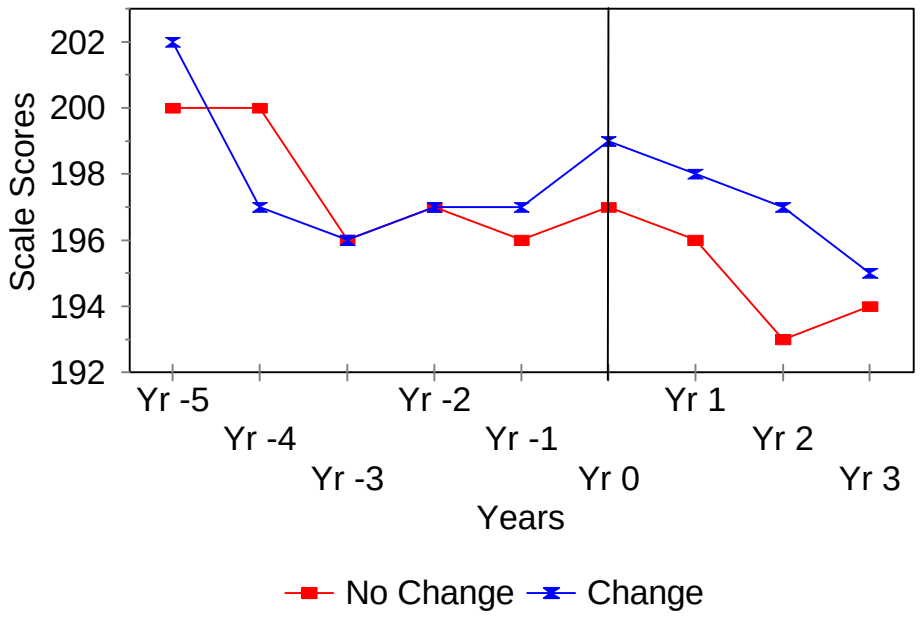
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	185	187	185	185	185	183	182	180	182
N	3	7	14	16	16	16	13	9	2
SD	6.24	6.41	8.47	8.14	9.56	14.27	8.96	9.49	0.50
% Change		1.08%	-1.07%	0.00%	0.00%	-1.08%	-0.55%	-1.10%	1.11%
Change	187	185	183	184	184	184	182	183	179
N	3	8	10	13	13	13	10	5	3
SD	8.60	8.87	7.83	7.30	6.06	5.97	4.88	3.43	4.92
% Change		-1.07%	-1.08%	0.55%	0.00%	0.00%	-1.09%	0.55%	-2.19%

Figure 58. Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in curriculum. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	197	197	194	195	193	194	193	189	193
N	3	7	14	16	16	16	13	9	2
SD	5.89	7.41	8.28	9.28	11.92	11.22	9.07	11.20	1.00
% Change		0.00%	-1.52%	0.52%	-1.03%	0.52%	-0.52%	-2.07%	2.12%
Change	200	195	194	195	195	195	195	196	195
N	3	8	10	13	13	13	10	5	3
SD	5.44	9.90	7.87	6.88	6.90	6.98	6.89	4.22	2.49
% Change		-2.50%	-0.51%	0.52%	0.00%	0.00%	0.00%	0.51%	-0.51%

Figure 59. Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in curriculum. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	200	200	196	197	196	197	196	193	194
N	3	7	14	16	16	16	13	9	2
SD	4.50	7.32	10.29	11.06	10.46	11.15	10.28	11.38	0.50
% Change		0.00%	-2.00%	0.51%	-0.51%	0.51%	-0.51%	-1.53%	0.52%
Change	202	197	196	197	197	199	198	197	195
N	3	8	10	13	13	13	10	6	3
SD	11.15	10.64	9.54	8.43	6.81	7.45	7.57	5.79	6.94
% Change		-2.48%	-0.51%	0.51%	0.00%	1.02%	-0.50%	-0.51%	-1.02%

Figure 60. Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in curriculum. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

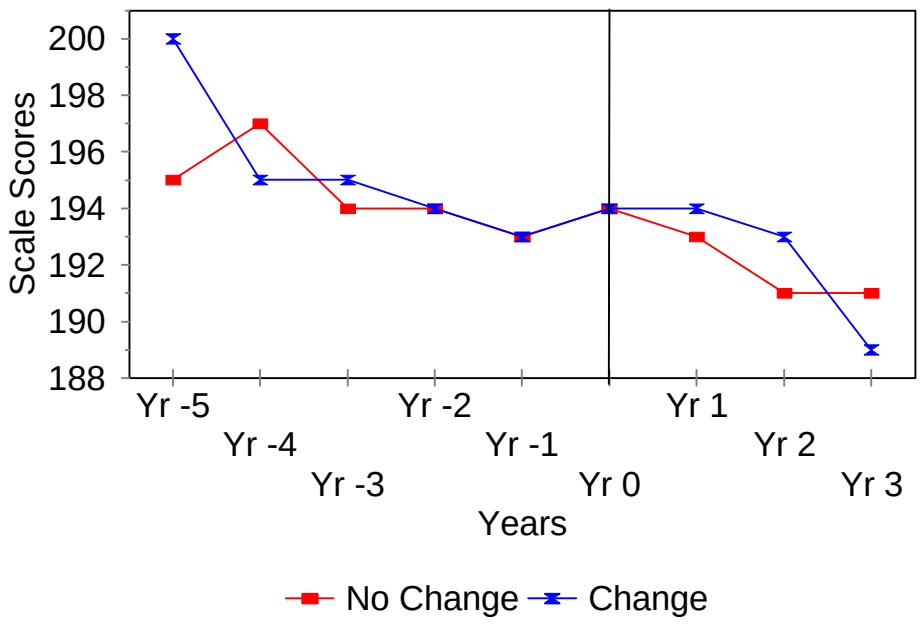
of block scheduling. Schools reporting curriculum changes showed a one point mean scale score increase for the implementation year of block scheduling and no change in score for the second year of block scheduling (see Figure 61).

In the TAP Science test area, schools reporting no change in curriculum showed a one point mean scale score increase for the implementation year of block scheduling and no change in score for the second year of block scheduling. Schools reporting curriculum changes showed a two point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 62).

The TAP Composite showed that schools reporting no change in curriculum experienced no change in mean scale score during the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling. Schools reporting changes in curriculum showed a one point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 63).

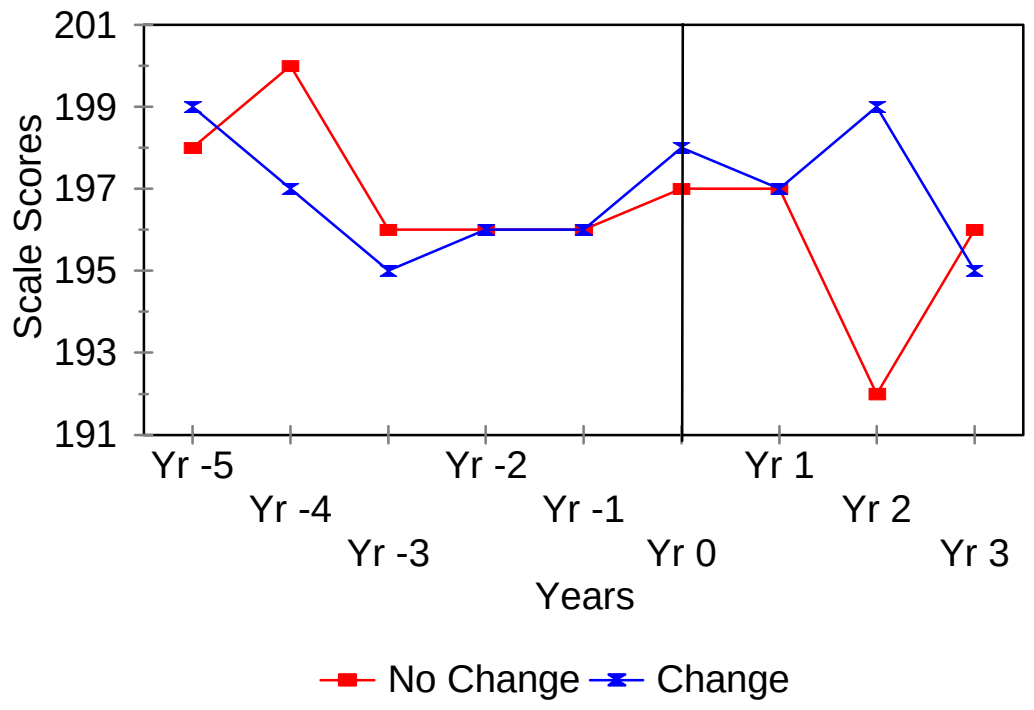
Summary

The 29 responding 7A/B block schedule schools were disaggregated and arrayed according to whether or not they experienced changes in curriculum



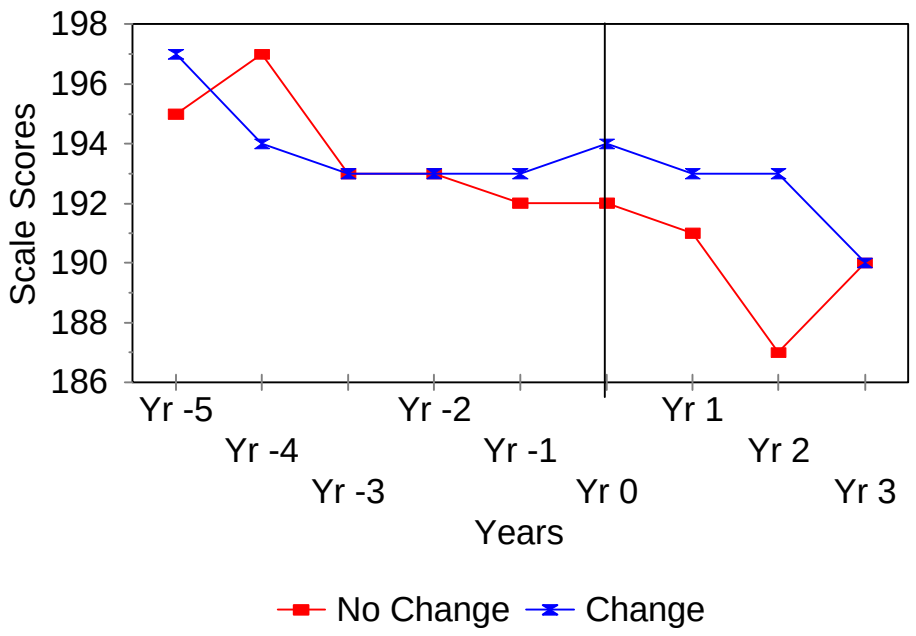
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	195	197	194	194	193	194	193	191	191
N	3	7	14	16	16	16	13	9	2
SD	3.56	6.47	7.45	8.61	9.29	8.22	8.31	7.22	1.00
% Change		1.03%	-1.52%	0.00%	-0.52%	0.52%	-0.52%	-1.04%	0.00%
Change	200	195	195	194	193	194	194	193	189
N	3	8	10	13	13	13	10	5	3
SD	7.32	9.12	7.81	6.53	5.75	4.74	6.31	5.91	5.79
% Change		-2.50%	0.00%	-0.51%	-0.52%	0.52%	0.00%	-0.52%	-2.07%

Figure 61. Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in curriculum. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	198	200	196	196	196	197	197	192	196
N	3	7	14	16	16	16	13	9	2
SD	6.13	7.17	7.96	9.61	9.58	9.02	7.75	7.82	1.50
% Change		1.01%	-2.00%	0.00%	0.00%	0.51%	0.00%	-2.54%	2.08%
Change	199	197	195	196	196	198	197	199	195
N	3	8	10	13	13	13	10	5	3
SD	10.34	9.85	8.28	8.24	6.38	6.31	6.82	5.91	6.02
% Change		-1.01%	-1.02%	0.51%	0.00%	1.02%	-0.51%	1.02%	-2.01%

Figure 62. Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in curriculum. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	195	197	193	193	192	192	191	187	190
N	7	12	16	16	16	16	16	15	6
SD	5.52	6.87	4.21	5.72	5.51	5.51	4.65	8.24	3.51
% Change		1.03%	-2.03%	0.00%	-0.52%	0.00%	-0.52%	-2.09%	1.60%
Change	197	194	193	193	193	194	193	193	190
N	6	12	13	13	13	13	13	10	6
SD	8.59	8.48	7.73	6.47	5.22	4.87	6.33	5.07	5.24
% Change		-1.52%	-0.52%	0.00%	0.00%	0.52%	-0.52%	0.00%	-1.55%

Figure 63. Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by change in curriculum. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling. TAP test areas and no change in mean scale score in two TAP test areas.

during the 1991-1996 period. The schools were then compared based on TAP mean scale scores for the implementation year and the second year of block scheduling.

Schools reporting no changes in curriculum showed mean scale score increases in four TAP test areas, a mean scale score decrease in one TAP test area, and no change in score in one TAP test area for the implementation year of block scheduling. During the second year of block scheduling, these schools experienced a mean scale score decrease in four TAP test areas and no change in score in two TAP test areas.

Schools reporting changes in curriculum showed a mean scale score increase in four TAP test areas and no change in score in two TAP test areas for the implementation year of block scheduling. During the second year of block scheduling, the reporting schools experienced a mean scale score decrease in four

7A/B Block Schedule Mean Scale Score Comparison Based on Other Changes

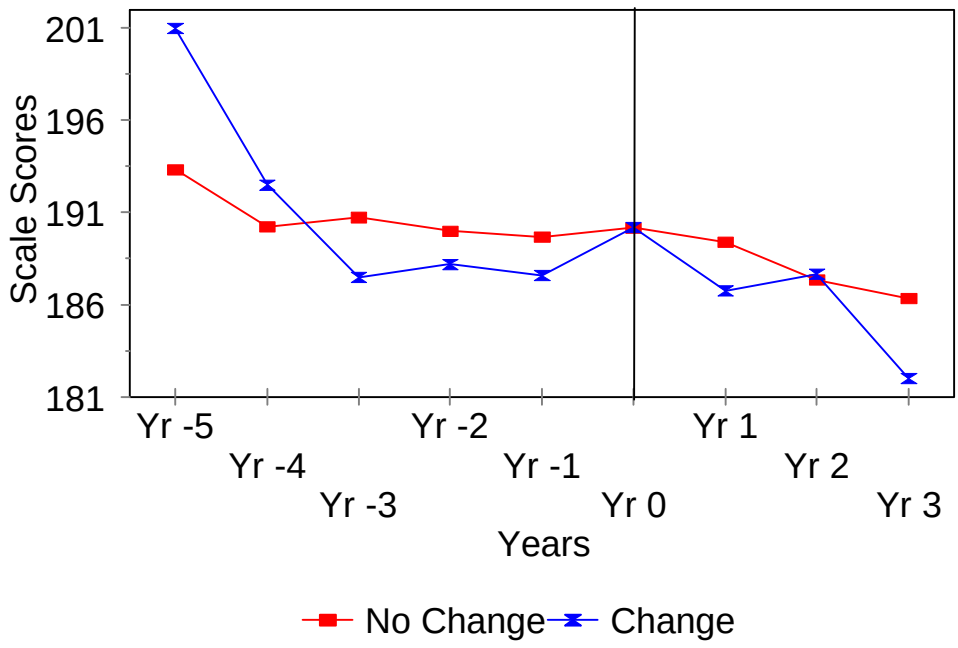
The 7A/B block schedule schools were disaggregated according to a control variable--other changes. This variable gave schools the opportunity to list any other changes that may have occurred during the 1991-1996 period that were not specifically delineated in the questionnaire. The other changes listed by questionnaire respondents were new principal, loss of sixth and seventh grades, technology, and attendance policy. The 23 respondent schools were arrayed

according to whether or not they indicated other changes in their schools. The schools' TAP mean scale scores were compared based on their implementation year and second year of block scheduling.

In the TAP Reading Comprehension test area, schools reporting no other changes showed no mean scale score change for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling. Schools reporting other changes showed a two point mean scale score increase for the implementation year and a three point mean scale score decrease for the second year of block scheduling (see Figure 64).

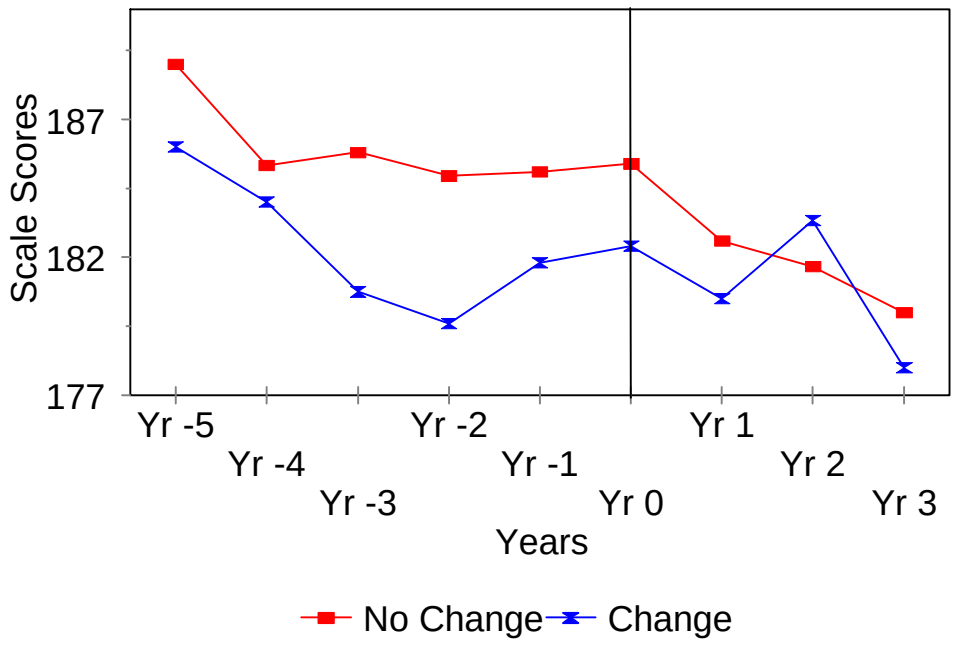
In the TAP Mathematics test area, schools reporting no other changes showed no mean scale score change for the implementation year of block scheduling and a two point mean scale score decrease for the second year of block scheduling. Schools reporting other changes showed no mean scale score change for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 65).

In the TAP Written Expression test area, schools reporting no other changes showed no mean scale score change for either the implementation year or second year of block scheduling. Schools reporting other changes showed a one point



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	193	190	191	190	190	190	189	187	186
N	3	9	15	18	18	18	15	9	3
SD	9.74	9.45	8.31	8.72	8.31	8.00	7.21	8.14	4.99
% Change		-1.61%	0.27%	-0.38%	-0.18%	0.26%	-0.40%	-1.09%	-0.53%
Change	201	193	188	188	188	190	187	188	182
N	1	2	4	5	5	5	4	3	1
SD	0.00	4.50	4.82	4.62	3.50	3.19	5.45	6.94	0.00
% Change		-4.23%	-2.60%	0.37%	-0.32%	1.39%	-1.81%	0.49%	-3.02%
No Response	191	195	188	193	188	185	188	178	185
N	2	4	5	6	6	6	4	2	1

Figure 64. Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by other changes. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	189	185	186	185	185	185	183	182	180
N	3	9	15	18	18	18	15	9	3
SD	8.83	9.03	8.81	8.36	8.52	8.53	6.78	8.41	5.10
% Change		-1.94%	0.25%	-0.46%	0.09%	0.15%	-1.50%	-0.51%	-0.92%
Change	186	184	181	180	182	182	181	183	178
N	1	2	4	5	5	5	4	3	1
SD	0.00	0.00	4.71	5.57	2.23	3.88	4.72	3.68	0.00
% Change		-1.08%	-1.77%	-0.64%	1.22%	0.33%	-1.04%	1.57%	-2.91%
No Response	182	188	183	186	185	178	183	176	181
N	2	4	5	6	6	6	4	2	1

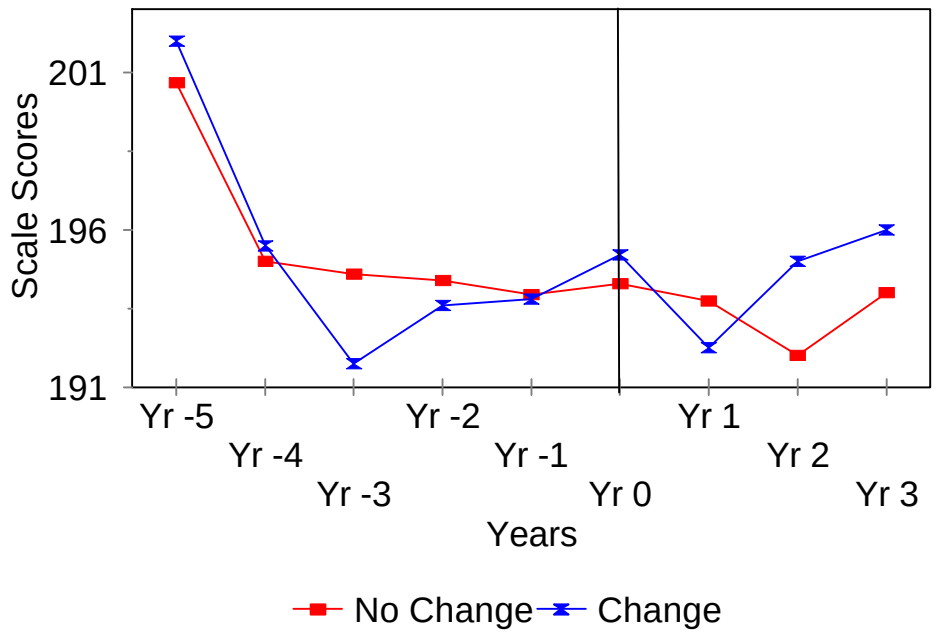
Figure 65. Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by other changes. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

mean scale score increase for the implementation year of block scheduling and a three point mean scale score decrease for the second year of block scheduling (see Figure 66).

In the TAP Sources of Information test area, schools reporting no other changes showed a one point mean scale score increase for the implementation year of block scheduling and no mean scale score change for the second year of block scheduling. Schools reporting other changes showed a three point mean scale score increase for the implementation year of block scheduling and a three point mean scale score decrease for the second year of block scheduling (see Figure 67).

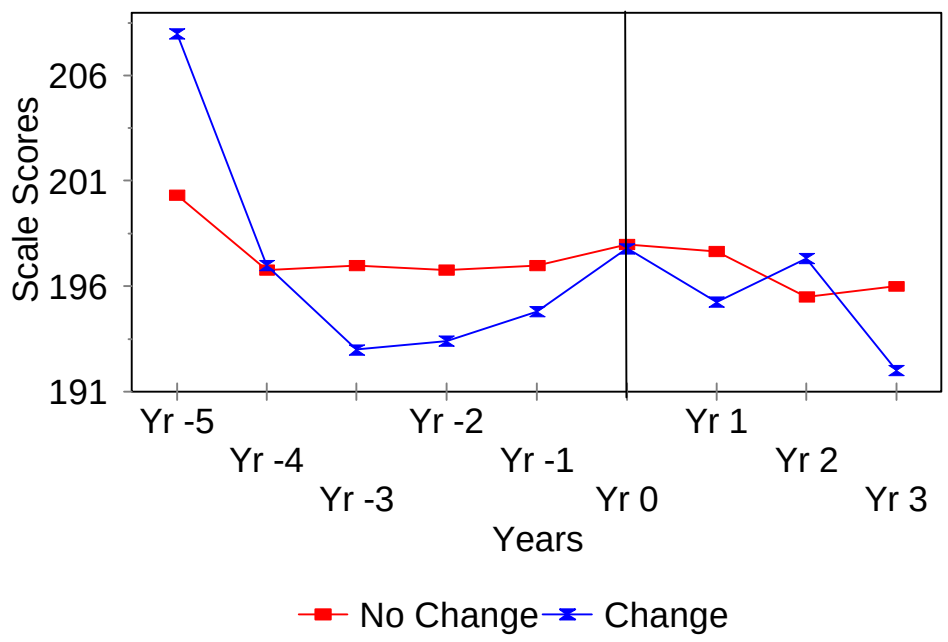
In the TAP Social Studies test area, schools reporting no other changes and schools reporting other changes showed a one point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 68).

In the TAP Science test area, schools reporting no other changes showed a one point mean scale score increase for the implementation year of block scheduling and no mean scale score change for the second year of block scheduling. Schools reporting other changes showed a four point mean scale score increase for the implementation year of block scheduling and a two point mean scale score decrease for the second year of block scheduling (see Figure 69).



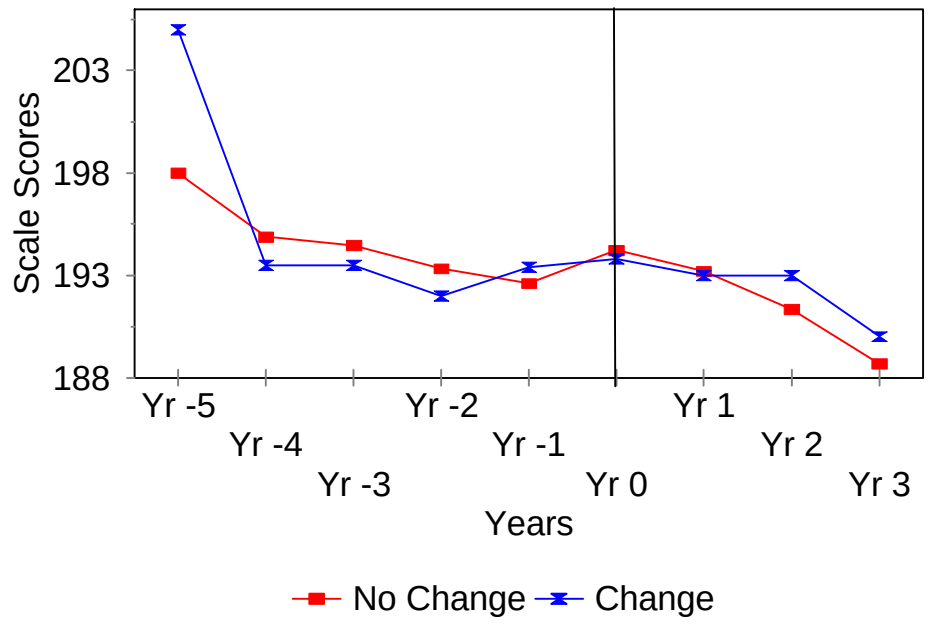
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	201	195	195	194	194	194	194	192	194
N	3	9	15	18	18	18	15	9	3
SD	5.56	10.26	9.19	9.70	9.48	9.81	8.06	10.52	2.83
% Change		-2.82%	-0.21%	-0.11%	-0.23%	0.17%	-0.28%	-0.89%	1.04%
Change	202	196	192	194	194	195	192	195	196
N	1	2	4	5	5	5	4	3	1
SD	0.00	3.50	4.55	4.32	4.66	5.53	4.55	4.55	0.00
% Change		-3.22%	-1.92%	0.96%	0.10%	0.72%	-1.51%	1.43%	0.51%
No Response	194	198	194	199	193	196	196	186	194
N	2	4	5	6	6	6	4	2	1

Figure 66. Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by other changes. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



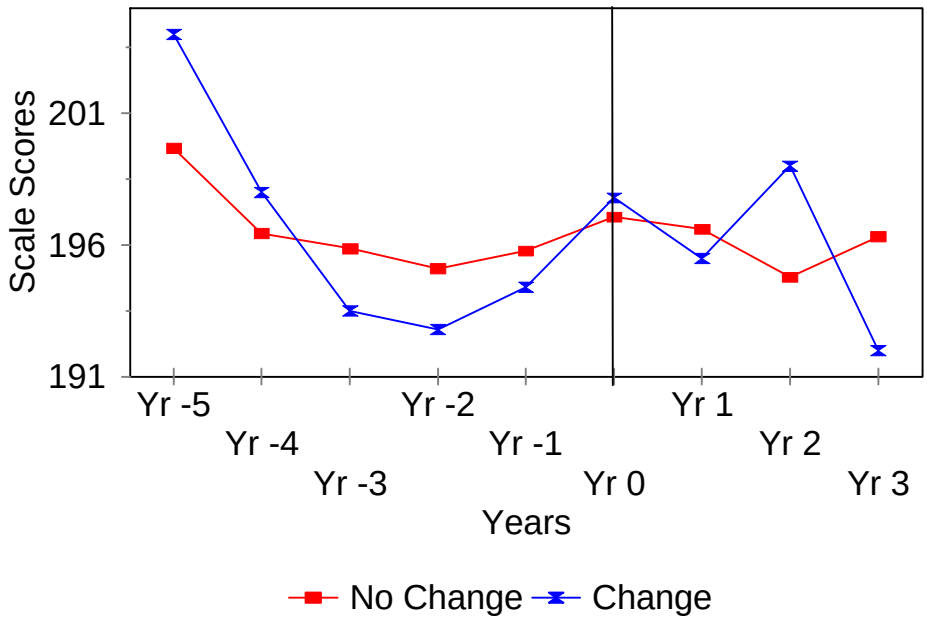
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	200	197	197	197	197	198	198	196	196
N	3	9	15	18	18	18	15	10	3
SD	10.53	10.76	10.45	11.31	9.33	9.60	8.60	9.49	6.68
% Change		-1.77%	0.11%	-0.11%	0.11%	0.51%	-0.17%	-1.10%	0.26%
Change	208	197	193	193	195	198	195	197	192
N	1	2	4	5	5	5	4	3	1
SD	0.00	4.00	5.79	5.35	2.04	5.71	5.12	5.31	0.00
% Change		-5.29%	-2.03%	0.21%	0.72%	1.54%	-1.29%	1.07%	-2.70%
No Response	199	201	196	201	197	198	197	186	193
N	2	4	5	6	6	6	4	2	1

Figure 67. Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by other changes. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	198	195	194	193	193	194	193	191	189
N	3	9	15	18	18	18	15	9	3
SD	6.53	8.76	6.80	8.00	6.36	5.91	6.32	6.15	5.79
% Change		-1.57%	-0.22%	-0.58%	-0.37%	0.84%	-0.53%	-0.97%	-1.39%
Change	205	194	194	192	193	194	193	193	190
N	1	2	4	5	5	5	4	3	1
SD	0.00	0.50	7.50	4.77	3.14	2.56	6.16	7.35	0.00
% Change		-5.61%	0.00%	-0.78%	0.73%	0.21%	-0.41%	0.00%	-1.55%
No Response	194	198	194	197	193	195	193	191	192
N	2	4	5	6	6	6	4	2	1

Figure 68. Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by other changes. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	200	196	196	195	196	197	197	195	196
N	3	9	15	18	18	18	15	9	3
SD	10.50	9.98	8.19	9.62	7.41	7.70	6.97	6.84	5.73
% Change		-1.61%	-0.29%	-0.39%	0.34%	0.65%	-0.23%	-0.93%	0.80%
Change	204	198	194	193	194	198	196	199	192
N	1	2	4	5	5	5	4	3	1
SD	0.00	3.00	4.97	5.42	2.06	2.93	3.35	6.68	0.00
% Change		-2.94%	-2.27%	-0.36%	0.83%	1.75%	-1.16%	1.79%	-3.52%
No Response	194	203	196	200	198	198	200	188	194
N	2	4	5	6	6	6	4	2	1

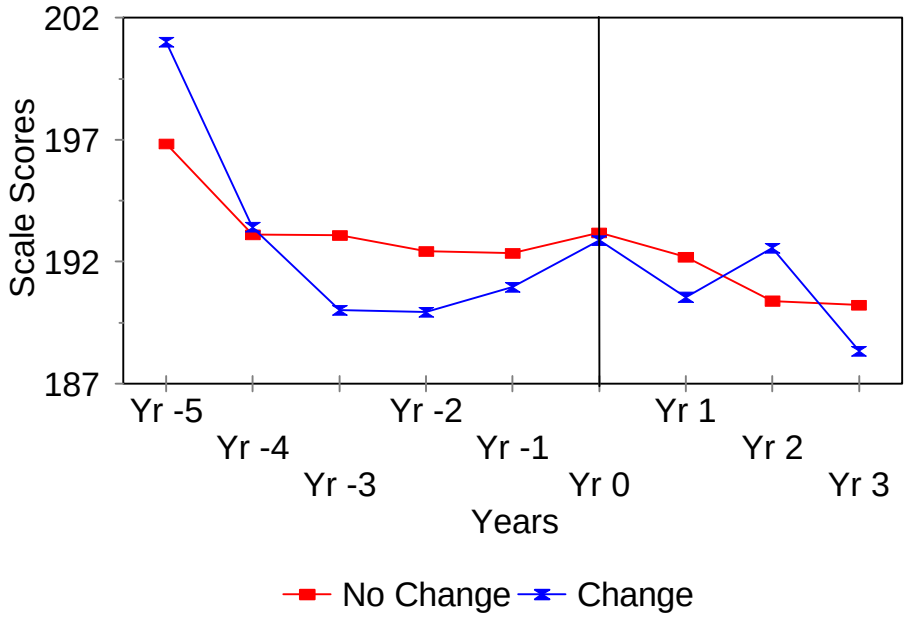
Figure 69. Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by other changes. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

The TAP Composite showed that schools reporting no other changes experienced a one point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling. Schools reporting other changes experienced a two point mean scale score increase for the implementation year of block scheduling and a two point mean scale score decrease for the second year of block scheduling (see Figure 70).

Summary

The 23 responding 7A/B block schedule schools were disaggregated according to whether or not they listed other changes not specifically referenced in the mail questionnaire. The schools' TAP mean scale scores were compared based on the implementation year of block scheduling and the second year of block scheduling.

Schools reporting no other changes experienced mean scale score increases in three TAP test areas and no mean scale score change in three TAP test areas for the implementation year of block scheduling. During the second year of block scheduling, these schools experienced mean scale score decreases in three TAP test areas and no mean scale score change in three TAP test areas.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
No Change	197	193	193	192	192	193	192	190	190
N	3	9	15	18	18	18	15	10	3
SD	8.57	9.48	8.34	8.99	7.84	7.85	7.00	7.56	5.04
% Change		-1.89%	-0.02%	-0.34%	-0.04%	0.43%	-0.51%	-0.94%	-0.09%
Change	201	193	190	190	191	193	191	193	188
N	1	2	4	5	5	5	4	3	1
SD	0.00	2.58	5.09	4.65	2.26	3.39	4.61	5.33	0.00
% Change		-3.77%	-1.77%	-0.04%	0.54%	0.99%	-1.21%	1.06%	-2.19%
No Response	192	197	192	196	192	191	193	184	190
N	2	4	5	6	6	6	4	2	1

Figure 70. Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by other changes. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

Schools reporting other changes experienced a mean scale score increase in five TAP test areas and no mean scale score change in one TAP test area during the implementation year of block scheduling. During the second year of block scheduling, these schools experienced a mean scale score decrease in all six TAP test areas.

7A/B Block Schedule Mean Scale Score Comparison Based on Changes in Pupil-Teacher Ratio

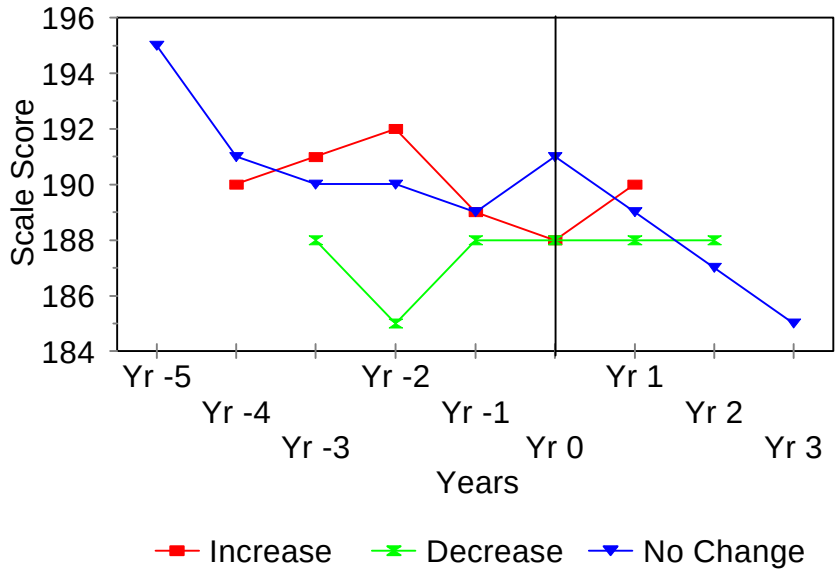
The 7A/B block schedule schools were disaggregated by a control variable--changes in pupil-teacher ratio. The 23 responding schools were arrayed according to whether there was an increase, decrease, or no change in the pupil-teacher ratio when the schools implemented 7A/B block scheduling. The schools' TAP mean scale scores were compared based on the implementation year and the second year of block scheduling.

In the TAP Reading Comprehension test area, block schedule schools that reported an increase in pupil-teacher ratio showed a one point mean scale score decrease for the implementation year of block scheduling and a two point mean scale score increase for the second year of block scheduling. The block schedule school reporting a decrease in pupil-teacher ratio showed no mean scale score change for the implementation year or the second year of block scheduling. Block

schedule schools reporting no change in the pupil-teacher ratio showed a two point mean scale score increase for the implementation year of block scheduling and a two point mean scale score decrease for the second year of block scheduling(see Figure 71).

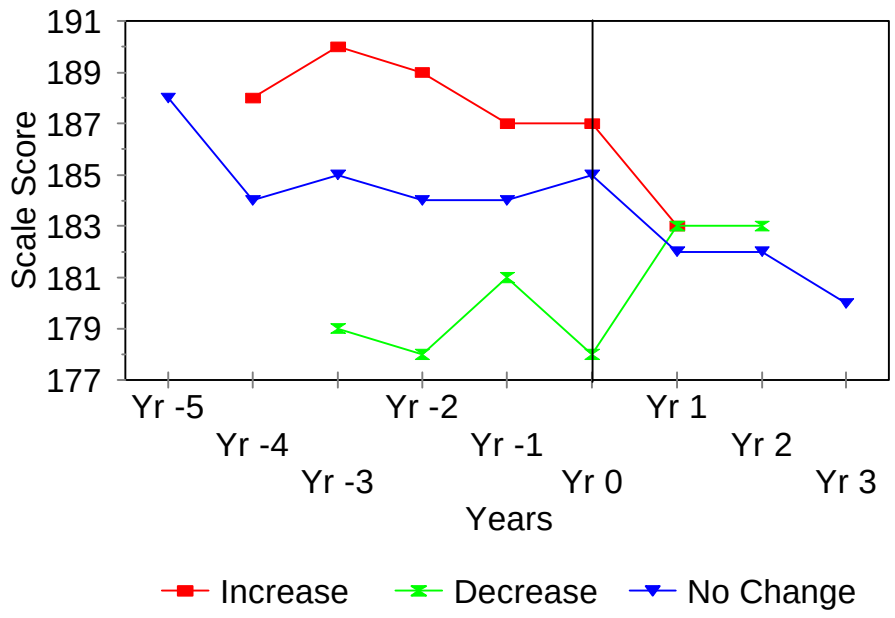
In the TAP Mathematics test area, block schedule schools reporting an increase in pupil-teacher ratio showed no mean scale score change for the implementation year of block scheduling and a four point mean scale score decrease for the second year of block scheduling. The block schedule school reporting a decrease in the pupil-teacher ratio showed a three point mean scale score decrease for the implementation year of block scheduling and a five point mean scale score increase for the second year of block scheduling. Schools reporting no change in the pupil-teacher ratio showed a one point mean scale score increase for the implementation year of block scheduling and a three point mean scale score decrease for the second year of block scheduling (see Figure 72).

In the TAP Written Expression test area, block schedule schools reporting an increase in the pupil-teacher ratio showed a one point mean scale score decrease for the implementation year of block scheduling and no mean scale score change for the second year of block scheduling. The block schedule school reporting a decrease in pupil-teacher ratio showed a two point mean scale score



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Increase		190	191	192	189	188	190		
N	0	2	2	2	2	2	2	0	0
SD		8.00	4.00	3.00	6.50	3.00	5.00		
% Change			0.53%	0.52%	-1.56%	-0.53%	1.06%		
Decrease			188	185	188	188	188	188	
N	0	0	1	1	1	1	1	1	0
SD			0.00	0.00	0.00	0.00	0.00	0.00	
% Change			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
No Change	195	191	190	190	189	191	189	187	185
N	4	9	16	20	20	20	16	11	4
SD	9.07	8.97	8.38	8.48	7.86	7.65	7.36	8.21	4.71
% Change		-2.05%	-0.52%	0.00%	-0.53%	1.06%	-1.05%	-1.06%	-1.07%
No Response	191	195	188	193	188	185	188	178	185
N	2	4	5	6	6	6	4	2	1

Figure 71. Reading Comprehension mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by changes in pupil-teacher ratio. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



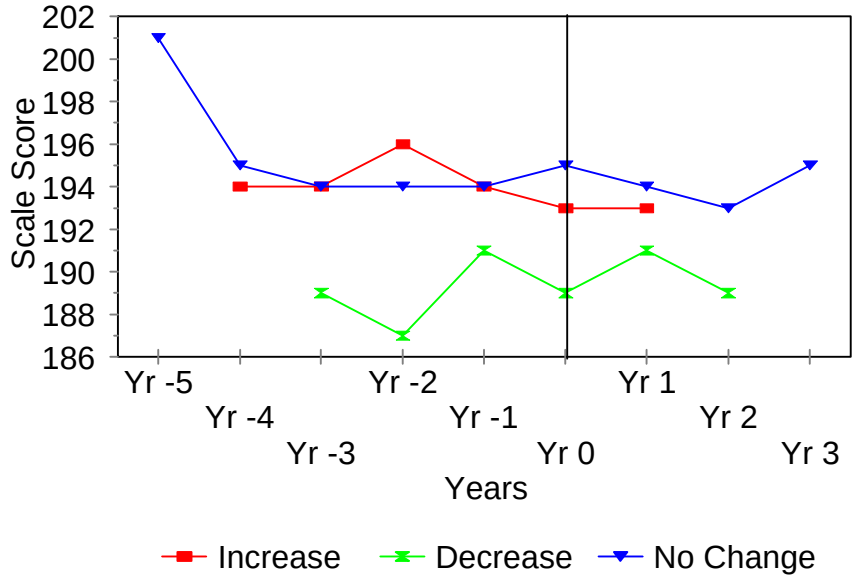
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Increase		188	190	189	187	187	183		
N	0	2	2	2	2	2	2	0	0
SD		4.00	0.50	0.50	2.00	0.50	3.00		
% Change			1.06%	-0.53%	-1.06%	0.00%	-2.14%		
Decrease			179	178	181	178	183	183	
N	0	0	1	1	1	1	1	1	0
SD			0.00	0.00	0.00	0.00	0.00	0.00	
% Change			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
No Change	188	184	185	184	184	185	182	182	180
N	4	9	16	20	20	20	16	11	4
SD	7.76	8.72	8.85	8.51	8.19	8.26	6.95	7.87	4.50
% Change		-2.13%	0.54%	-0.54%	0.00%	0.54%	-1.62%	0.00%	-1.10%
No Response	182	188	183	186	185	178	183	176	181
N	2	4	5	6	6	6	4	2	1

Figure 72. Mathematics mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by changes in pupil-teacher ratio. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

decrease for the implementation year of block scheduling and a two point mean scale score increase for the second year of block scheduling. Block schedule schools reporting no change in pupil-teacher ratio showed a one point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 73).

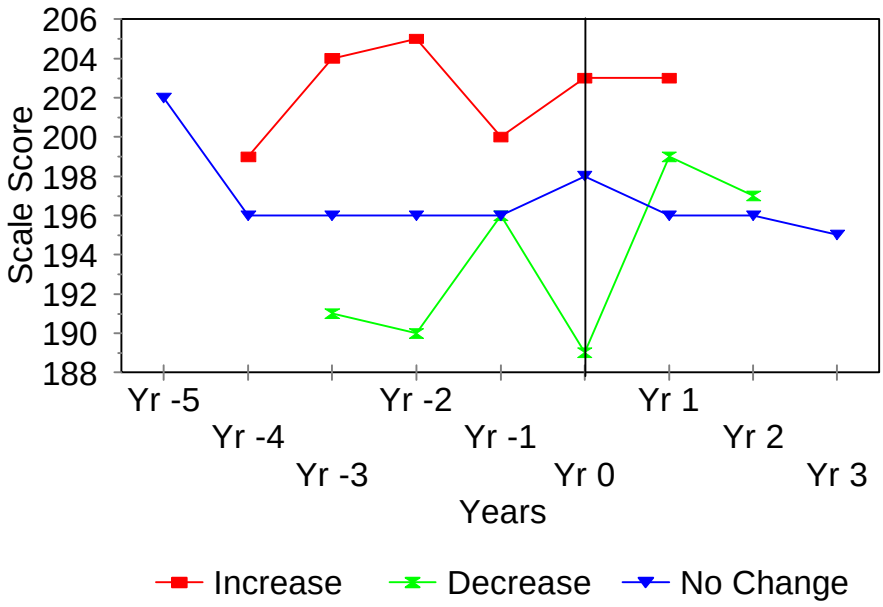
In the TAP Sources of Information test area, schools reporting an increase in the pupil-teacher ratio showed a three point mean scale score increase for the implementation year of block scheduling and no mean scale score change for the second year of block scheduling. The block schedule school reporting a decrease in the pupil-teacher ratio showed a seven point mean scale score decrease for the implementation year of block scheduling and a ten point mean scale score increase for the second year of block scheduling. Block schedule schools reporting no change in the pupil-teacher ratio showed a two point mean scale score increase for the implementation year of block scheduling and a two point mean scale score decrease for the second year of block scheduling (see Figure 74).

In the TAP Social Studies test area, schools reporting an increase in pupil-teacher ratio showed a four point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling. The block schedule school reporting a decrease in



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Increase		194	194	196	194	193	193		
N	0	2	2	2	2	2	2	0	0
SD		7.00	4.00	3.50	6.00	3.50	6.00		
% Change			0.00%	1.03%	-1.02%	-0.52%	0.00%		
Decrease			189	187	191	189	191	189	
N	0	0	1	1	1	1	1	1	0
SD			0.00	0.00	0.00	0.00	0.00	0.00	
% Change			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
No Change	201	195	194	194	194	195	194	193	195
N	4	9	16	20	20	20	16	11	4
SD	4.85	9.84	9.07	9.24	9.07	9.55	7.85	9.83	2.60
% Change		-2.99%	-0.51%	0.00%	0.00%	0.52%	-0.51%	-0.52%	1.04%
No Response	194	198	194	199	193	196	196	186	194
N	2	4	5	6	6	6	4	2	1

Figure 73. Written Expression mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by changes in pupil-teacher ratio. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



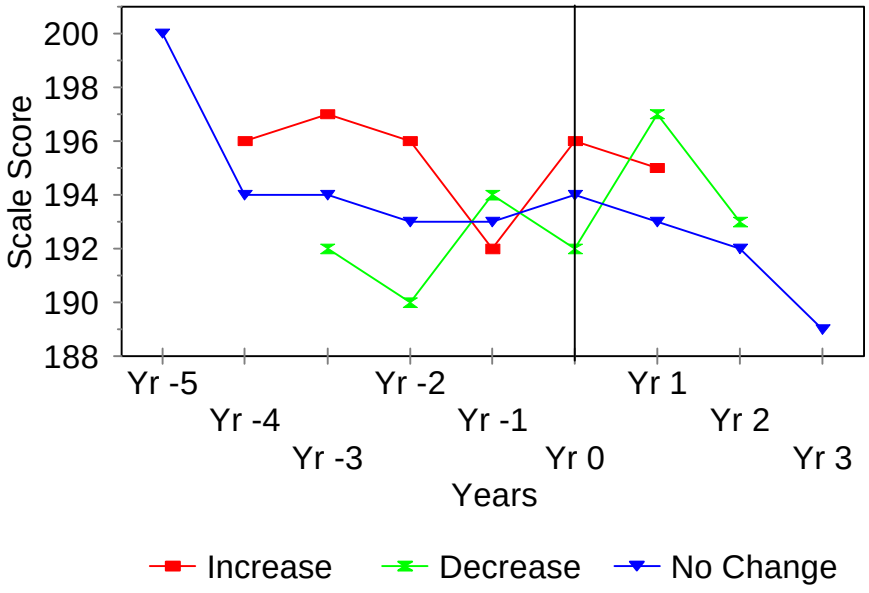
	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Increase		199	204	205	200	203	203		
N	0	2	2	2	2	2	2	0	0
SD		5.00	2.50	1.50	4.00	1.50	3.00		
% Change			2.51%	0.49%	-2.44%	1.50%	0.00%		
Decrease			191	190	196	189	199	197	
N	0	0	1	1	1	1	1	1	0
SD			0.00	0.00	0.00	0.00	0.00	0.00	
% Change			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
No Change	202	196	196	196	196	198	196	196	195
N	4	9	16	20	20	20	16	12	4
SD	9.71	10.60	10.22	10.73	8.80	9.21	8.41	9.09	6.04
% Change		-2.97%	0.00%	0.00%	0.00%	1.02%	-1.01%	0.00%	-0.51%
No Response	199	201	196	201	197	198	197	186	193
N	2	4	5	6	6	6	4	2	1

Figure 74. Sources of Information mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by changes in pupil-teacher ratio. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

pupil-teacher ratio showed a two point mean scale score decrease for the implementation year of block scheduling and a five point mean scale score increase for the second year of block scheduling. Block schedule schools reporting no change in the pupil-teacher ratio showed a one point mean scale score increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 75).

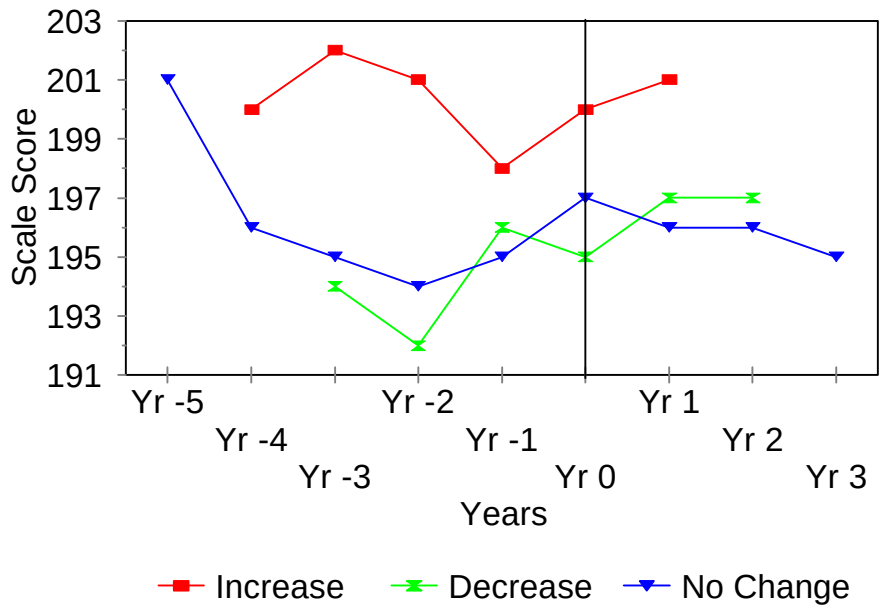
In the TAP Science test area, schools reporting an increase in pupil-teacher ratio showed a two point mean scale score increase for the implementation year of block scheduling and a one point mean scale score increase for the second year of block scheduling. The block schedule school reporting a decrease in the pupil-teacher ratio showed a one point mean scale score decrease for the implementation year of block scheduling and a two point mean scale score increase for the second year of block scheduling. Block schedule schools reporting no change in the pupil-teacher ratio showed a two point mean scale score increase for the implementation year of block scheduling and a one point decrease for the second year of block scheduling (see Figure 76).

The TAP Composite showed that schools reporting an increase in pupil-teacher ratio experienced a one point mean scale score increase for the implementation year of block scheduling and no mean scale score change for the



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Increase		196	197	196	192	196	195		
N	0	2	2	2	2	2	2	0	0
SD		3.50	0.50	1.50	3.00	3.00	2.00		
% Change			0.51%	-0.51%	-2.04%	2.08%	-0.51%		
Decrease			192	190	194	192	197	193	
N	0	0	1	1	1	1	1	1	0
SD			0.00	0.00	0.00	0.00	0.00	0.00	
% Change			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
No Change	200	194	194	193	193	194	193	192	189
N	4	9	16	20	20	20	16	11	4
SD	6.42	8.62	7.52	7.90	6.16	5.63	6.70	6.79	5.05
% Change		-3.00%	0.00%	-0.52%	0.00%	0.52%	-0.52%	-0.52%	-1.56%
No Response	194	198	194	197	193	195	193	191	192
N	2	4	5	6	6	6	4	2	1

Figure 75. Social Studies mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by changes in pupil-teacher ratio. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Increase		200	202	201	198	200	201		
N	0	2	2	2	2	2	2	0	0
SD		6.50	1.50	2.00	5.00	1.00	4.50		
% Change			1.00%	-0.50%	-1.49%	1.01%	0.50%		
Decrease			194	192	196	195	197	197	
N	0	0	1	1	1	1	1	1	0
SD			0.00	0.00	0.00	0.00	0.00	0.00	
% Change			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
No Change	201	196	195	194	195	197	196	196	195
N	4	9	16	20	20	20	16	11	4
SD	9.28	9.52	8.04	9.31	6.90	7.38	6.61	7.35	5.31
% Change		-2.49%	-0.51%	-0.51%	0.52%	1.03%	-0.51%	0.00%	-0.51%
No Response	194	203	196	200	198	198	200	188	194
N	2	4	5	6	6	6	4	2	1

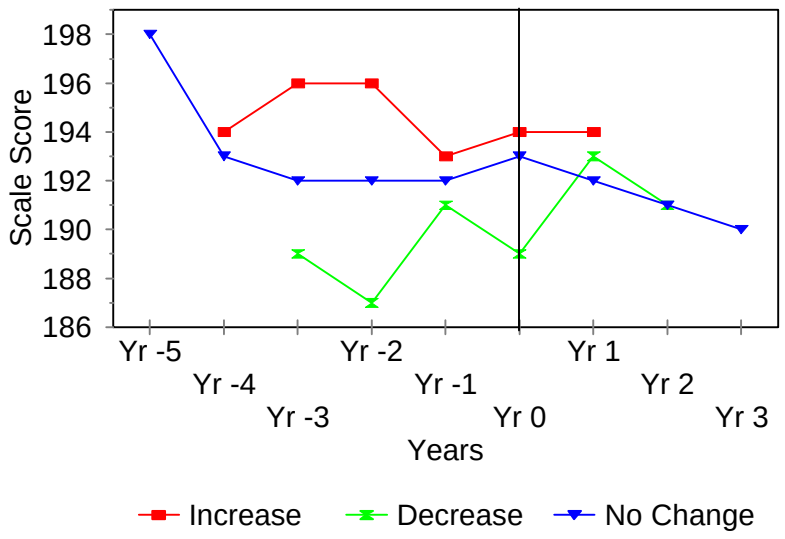
Figure 76. Science mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by changes in pupil-teacher ratio. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

second year of block scheduling. The block schedule school reporting a decrease in the pupil-teacher ratio experienced a two point mean scale score decrease for the implementation year of block scheduling and a four point mean scale score increase for the second year of block scheduling. Block schedule schools reporting no change in the pupil-teacher ratio experienced a one point increase for the implementation year of block scheduling and a one point mean scale score decrease for the second year of block scheduling (see Figure 77).

Summary

The 23 responding 7A/B block schedule schools were disaggregated according to an increase, a decrease, or no change in the pupil-teacher ratio when block scheduling was implemented in their schools. The schools' TAP mean scale scores were compared based on the implementation year and the second year of block scheduling.

Block schedule schools reporting an increase in pupil-teacher ratio experienced a mean scale score increase in three TAP test areas, a decrease in two TAP test areas, and no change in one TAP test area for the implementation year of block scheduling. For the second year of block scheduling, these schools experienced an increase in mean scale score in two TAP test areas, a mean scale



	Yr -5	Yr -4	Yr -3	Yr -2	Yr -1	Yr 0	Yr 1	Yr 2	Yr 3
Increase		194	196	196	193	194	194		
N	0	2	2	2	2	2	2	0	0
SD		5.67	2.17	1.83	4.42	0.58	3.92		
% Change			1.03%	0.00%	-1.53%	0.52%	0.00%		
Decrease			189	187	191	189	193	191	
N	0	0	1	1	1	1	1	1	0
SD			0.00	0.00	0.00	0.00	0.00	0.00	
% Change			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
No Change	198	193	192	192	192	193	192	191	190
N	4	9	16	20	20	20	16	12	4
SD	7.64	9.16	8.39	8.71	7.40	7.56	7.01	7.46	4.44
% Change		-2.53%	-0.52%	0.00%	0.00%	0.52%	-0.52%	-0.52%	-0.52%
No Response	192	197	192	196	192	191	193	184	190
N	2	4	5	6	6	6	4	2	1

Figure 77. Complete Composite mean scale scores on the Eleventh Grade Tests of Achievement and Proficiency (TAP) in Virginia 7A/B block schedule schools disaggregated by changes in pupil-teacher ratio. Yr 0 indicates the year responding schools implemented block scheduling. Other years indicate the years before or after the year in which the schools implemented block scheduling.

score decrease in two TAP test areas, and no mean scale score change in two TAP test areas.

The block schedule school reporting a decrease in the pupil-teacher ratio experienced a mean scale score decrease in five TAP test areas and no change in one TAP test area for the implementation year of block scheduling. For the second year of block scheduling, this school experienced a mean scale score increase in five TAP test areas and no change in one TAP test area.

Block schedule schools reporting no change in pupil-teacher ratio experienced a mean scale score increase in all six TAP test areas for the implementation year of block scheduling. During the second year of block scheduling, these schools experienced a mean scale score decrease in all six TAP test areas.

7A/B Block Schedule Mean Scale Score Comparison Based on Changes in Textbooks

Since all the responding 7A/B block schedule schools reported following the state textbook adoption timelines prescribed by the Virginia Department of Education, no comparisons were made on this variable.

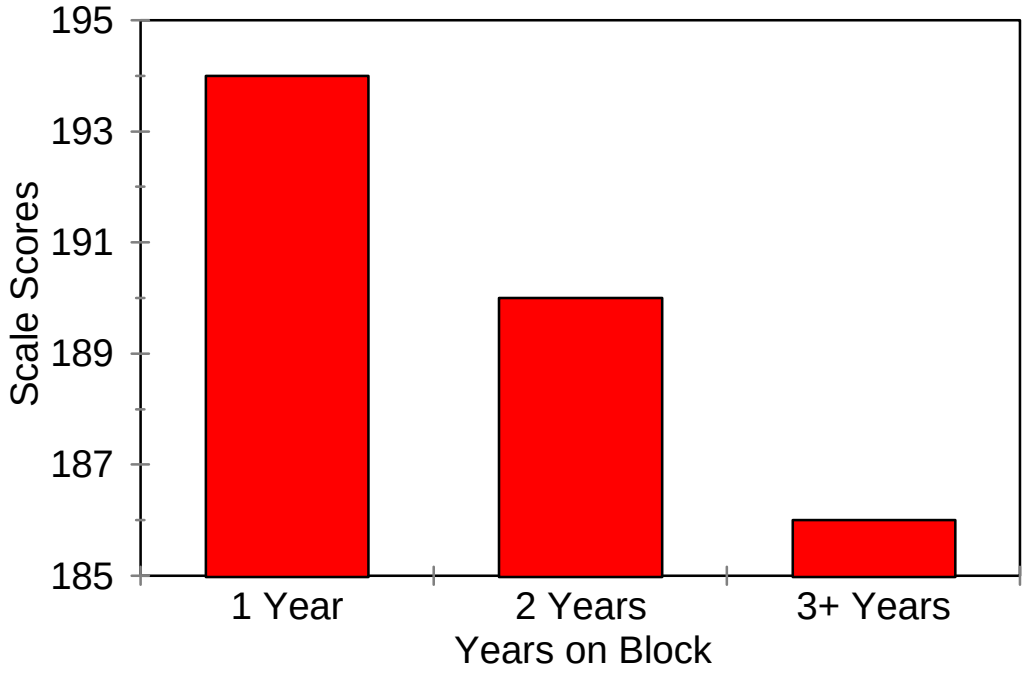
Research Question 2

What were the mean scale score differences on the 1996 eleventh-grade TAP among schools who had been on 7A/B block schedules for one, two, and three or more years?

To answer this research question, descriptive data tables and bar graphs were constructed for the mean scale scores of the TAP test areas for 7A/B block schedule schools according to the length of time they had been on block schedule as of 1996.

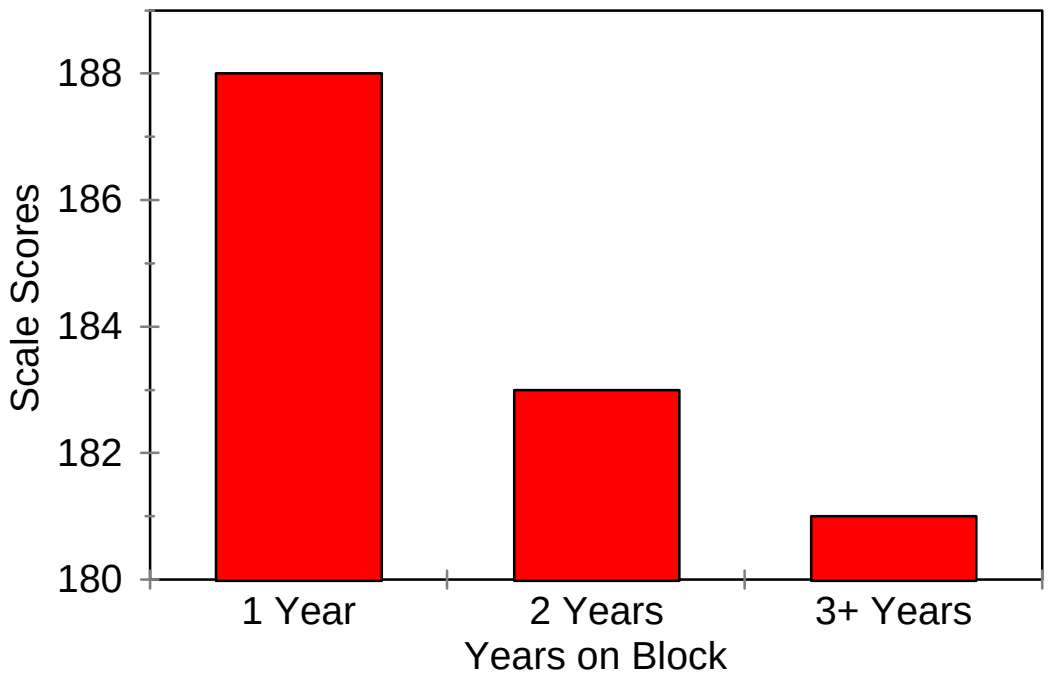
In the TAP Reading Comprehension test area, schools in their first year of block scheduling outperformed second and third or more year block schedule schools by four and eight mean scale score points respectively. Second year block schedule schools outperformed third or more year block schedule schools by four mean scale score points (see Figure 78).

In the TAP Mathematics test area, schools in their first year of block scheduling outperformed second and third or more year block schedule schools by five and seven mean scale score points respectively. Second year block schedule schools outperformed third or more year block schedule schools by two mean scale score points (see Figure 79).



	1 Year	2 Years	3+ Years
Mean Scale Scores	194	190	186
N	6	9	14
SD	8.49	10.16	8.81
% Change		-2.06%	-2.11%

Figure 78. Reading Comprehension mean scale scores on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) in responding Virginia 7A/B block schedule schools based on length-of-time on block scheduling.



	1 Year	2 Years	3+ Years
Mean Scale Scores	188	183	181
N	6	9	14
SD	7.67	7.79	8.20
% Change		-2.66%	-1.09%

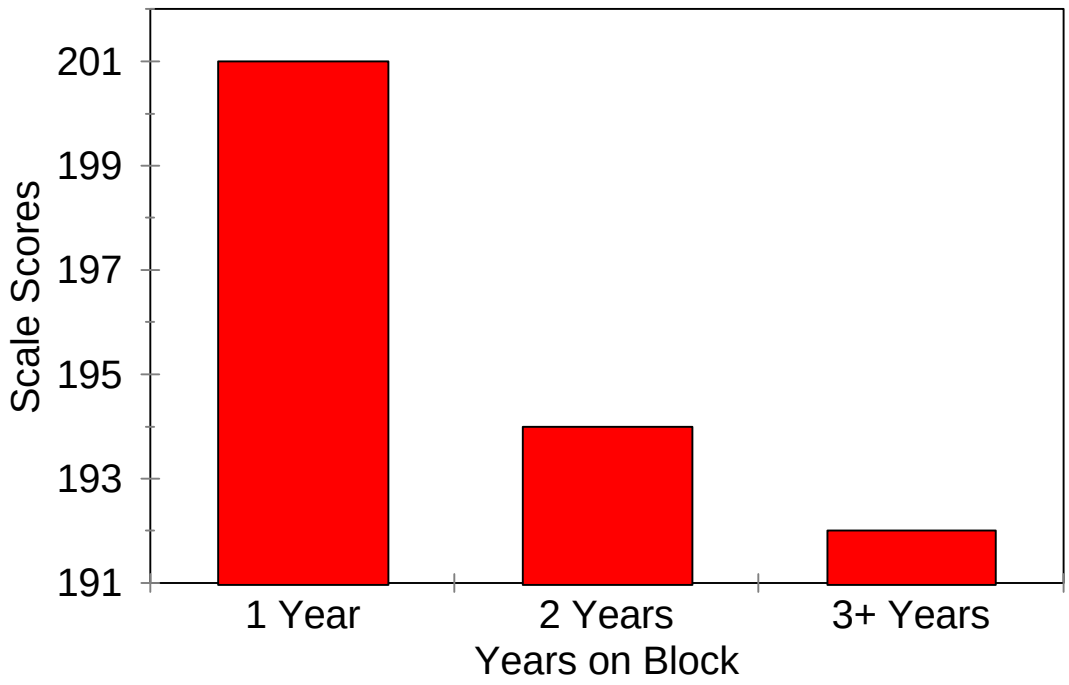
Figure 79. Mathematics mean scale scores on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) in responding Virginia 7A/B block schedule schools based on length-of-time on block scheduling.

In the TAP Written Expression test area, schools in their first year of block scheduling outperformed second and third or more year block schedule schools by seven and nine mean scale score points respectively. Second year block schedule schools outperformed third or more year block schedule schools by two mean scale score points (see Figure 80).

In the TAP Sources of Information test area, schools in their first year of block scheduling outperformed second and third or more year block schedule schools by five and nine mean scale score points respectively. Second year block schedule schools outperformed third or more year block schedule schools by four mean scale score points (see Figure 81).

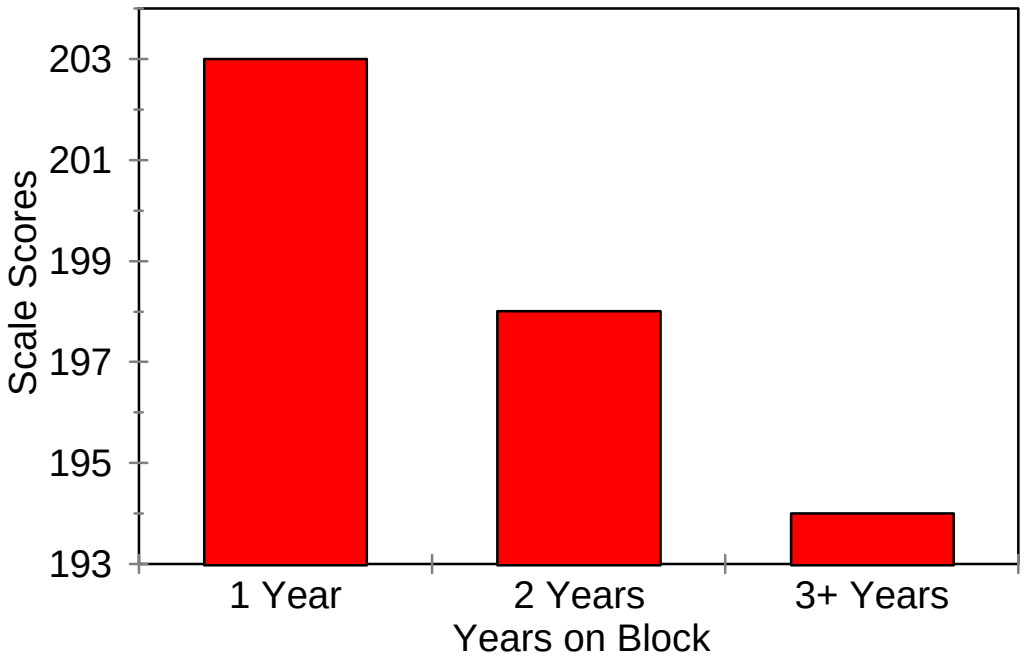
In the TAP Social Studies test area, schools in their first year of block scheduling outperformed second and third or more year block schedule schools by two and five mean scale score points respectively. Second year block schedule schools outperformed third or more year block schedule schools by three mean scale score points (see Figure 82).

In the TAP Science test area, schools in their first year of block scheduling outperformed second and third or more year block schedule schools by four and six mean scale score points respectively. Second year block schedule schools



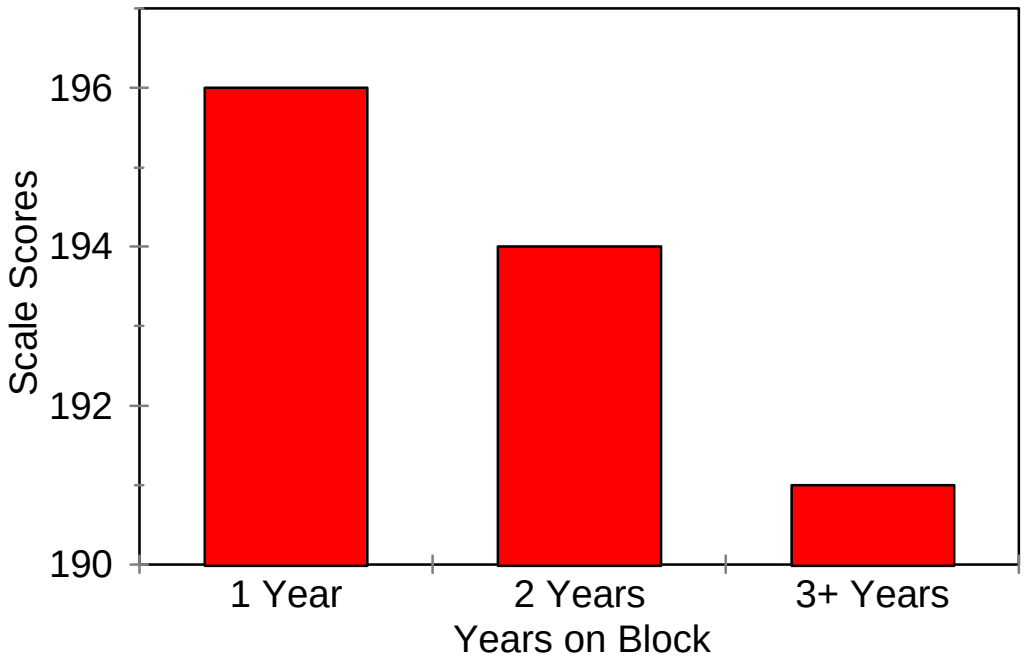
	1 Year	2 Years	3+ Years
Mean Scale Scores	201	194	192
N	6	9	14
SD	7.21	8.73	9.51
% Change		-3.48%	-1.03%

Figure 80. Written Expression mean scale scores on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) in responding Virginia 7A/B block schedule schools based on length-of-time on block scheduling.



	1 Year	2 Years	3+ Years
Mean Scale Scores	203	198	194
N	6	9	14
SD	8.04	10.16	10.10
% Change		-2.46%	-2.02%

Figure 81. Sources of Information mean scale scores on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) in responding Virginia 7A/B block schedule schools based on length-of-time on block scheduling.



	1 Year	2 Years	3+ Years
Mean Scale Scores	196	194	191
N	6	9	14
SD	6.97	8.29	6.80
% Change		-1.02%	-1.55%

Figure 82. Social Studies mean scale scores on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) in responding Virginia 7A/B block schedule schools based on length-of-time on block scheduling.

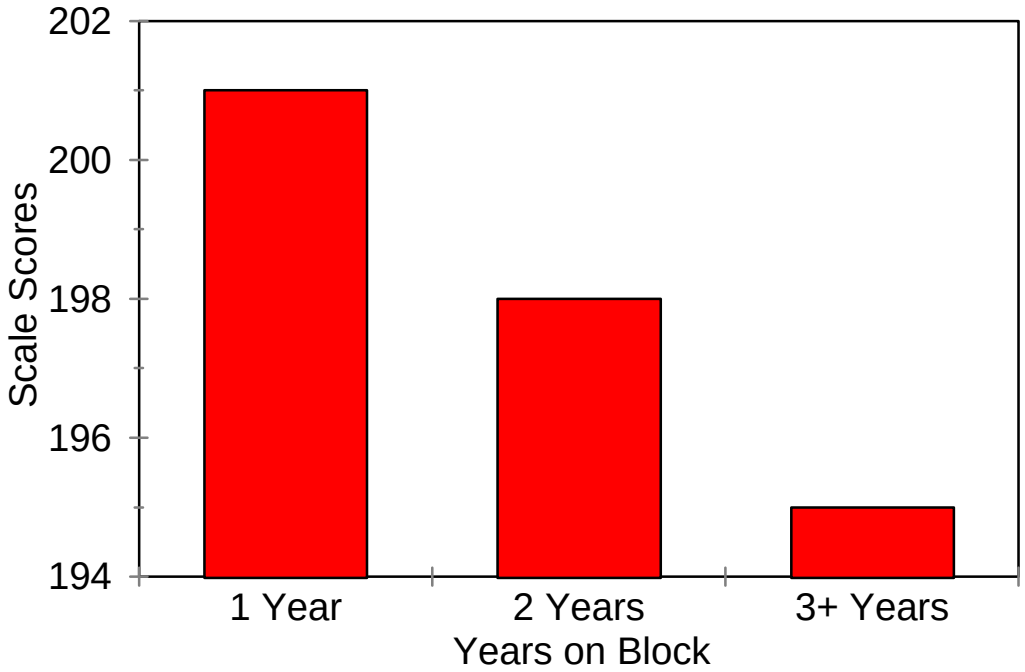
outperformed third or more year block schedule schools by three mean scale score points (see Figure 83).

The TAP Composite showed that schools in their first year of 7A/B block scheduling in 1996 outperformed second year block schedule schools by four mean scale score points, and outperformed third or more year block schedule schools by seven mean scale score points. Second year block schedule schools outperformed third or more year block schedule schools by three mean scale score points (see Figure 84).

Summary

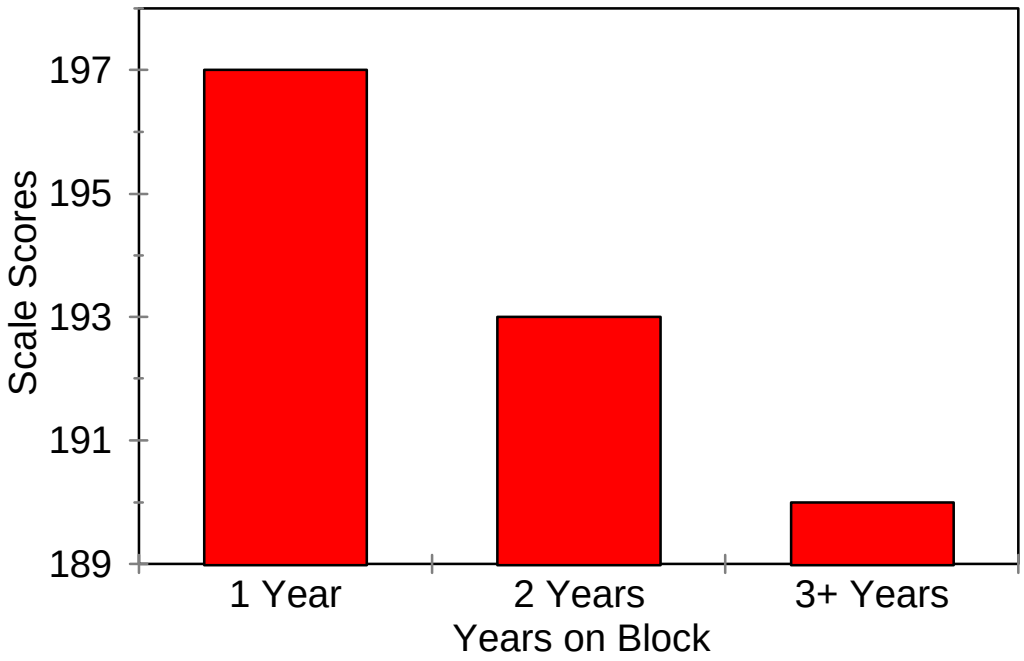
The 1996 eleventh-grade TAP mean scale scores of 7A/B block schedule schools were compared according to length-of-time on block scheduling--one year, two years, or three or more years.

In all six TAP test areas, first year block schedule schools outperformed second and third or more year block schedule schools. Second year block schedule schools outperformed third or more year block schedule schools in all six TAP test areas.



	1 Year	2 Years	3+ Years
Mean Scale Scores	201	198	195
N	6	9	14
SD	8.42	8.86	7.90
% Change		-1.49%	-1.52%

Figure 83. Science mean scale scores on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) in responding Virginia 7A/B block schedule schools based on length-of-time on block scheduling.



	1 Year	2 Years	3+ Years
Mean Scale Scores	197	193	190
N	6	9	14
SD	7.54	6.85	6.52
% Change		-2.03%	-1.55%

Figure 84. Complete Composite mean scale scores on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) in responding Virginia 7A/B block schedule schools based on length-of-time on block scheduling.

Research Question 3

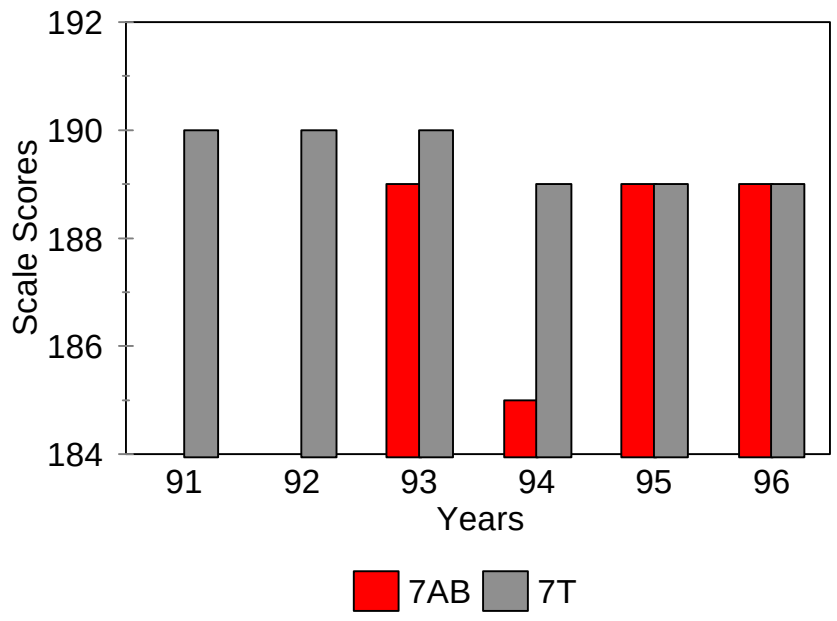
What were the comparative TAP scale score mean differences in achievement between public, 9-12 high schools in Virginia on 7A/B block scheduling and 7-period traditional scheduling?

To answer this research question, descriptive data tables and bar graphs were constructed for the mean scale scores of the TAP test areas for the responding 7A/B block schedule schools and the 7-period traditional schedule schools for the 1991-1996 period. Since the 1992-1993 school year TAP test data were the earliest data available from the responding 7A/B block schedule schools, no 7A/B TAP test data appeared for 1991 and 1992.

In the TAP Reading Comprehension test area, 7A/B block schedule schools show a 1.5 point mean scale score deficit compared to the 7-period traditional schedule schools over the 1993-1996 period (see Figure 85).

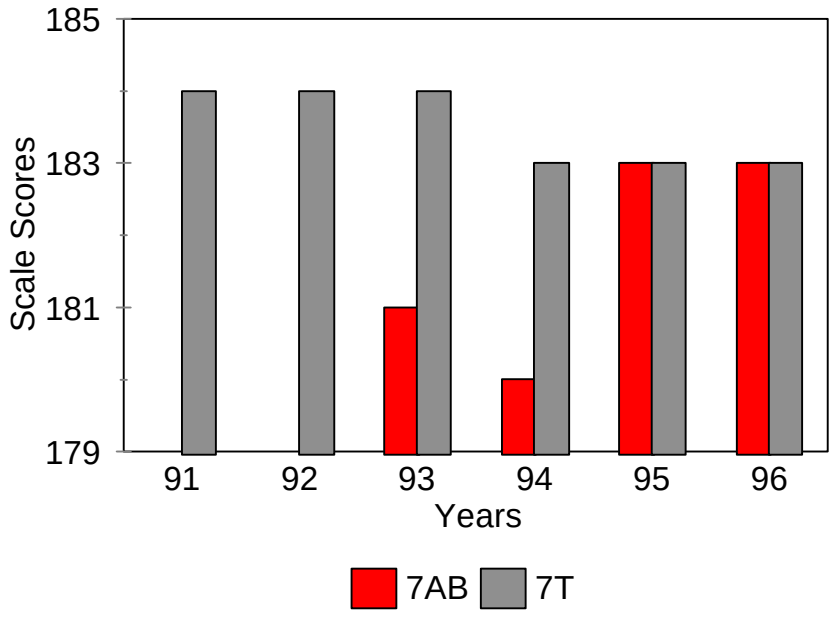
In the TAP Mathematics test area, 7A/B block schedule schools show a 1.75 point mean scale score deficit compared to the 7-period traditional schedule schools over the 1993-1996 period (see Figure 86).

In the TAP Written Expression test area, 7A/B block schedule schools show a 0.58 point mean scale score gain compared to the 7-period traditional schedule schools over the 1993-1996 period (see Figure 87).



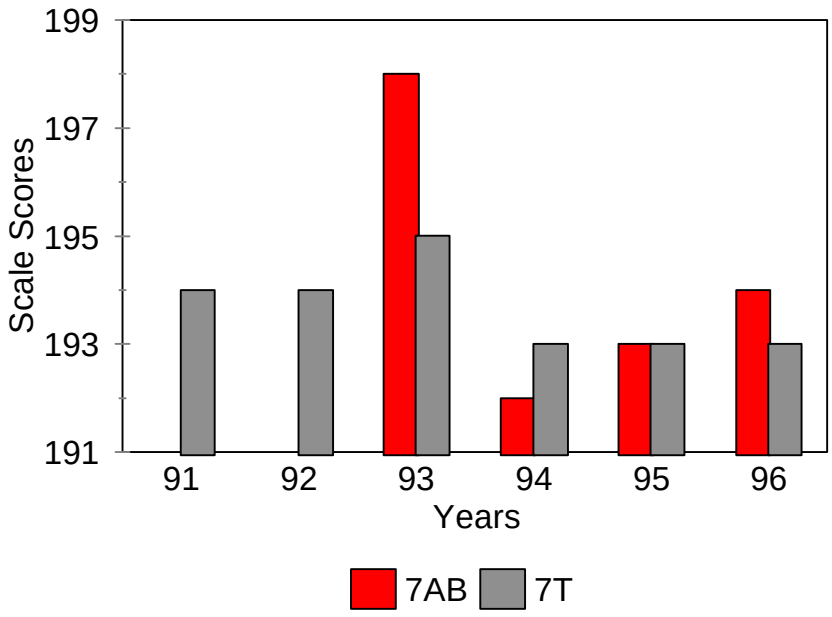
	91	92	93	94	95	96	Avg
7 A/B			189	185	189	189	188.00
N			5	14	23	29	
SD			4.45	14.88	8.01	9.77	
7 T	190	190	190	189	189	189	189.50
N	64	64	64	64	64	64	
SD	6.96	7.73	7.79	8.24	8.22	8.63	
% Change			0.53%	2.12%	0.00%	0.00%	

Figure 85. Reading Comprehension mean scale score comparisons on the Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	91	92	93	94	95	96	Avg
7 A/B			181	180	183	183	181.75
N			5	14	23	29	
SD			2.61	14.07	7.00	8.41	
7 T	184	184	184	183	183	183	183.50
N	64	64	64	64	64	64	
SD	7.33	7.84	7.89	8.27	8.29	7.70	
% Change			1.63%	1.64%	0.00%	0.00%	

Figure 86. Mathematics mean scale score comparisons on the Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	91	92	93	94	95	96	Avg
7 A/B			198	192	193	194	194.25
N			5	14	23	29	
SD			4.07	9.34	8.49	9.54	
7 T	194	194	195	193	193	193	193.67
N	64	64	64	64	64	64	
SD	8.49	8.68	8.36	9.05	8.27	8.40	
% Change			1.54%	0.52%	0.00%	0.52%	

Figure 87. Written Expression mean scale score comparisons on the Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

In the TAP Sources of Information test area, the 7A/B block schedule schools show a 0.50 point mean scale score deficit compared to 7-period traditional schedule schools over the 1993-1996 period (see Figure 88).

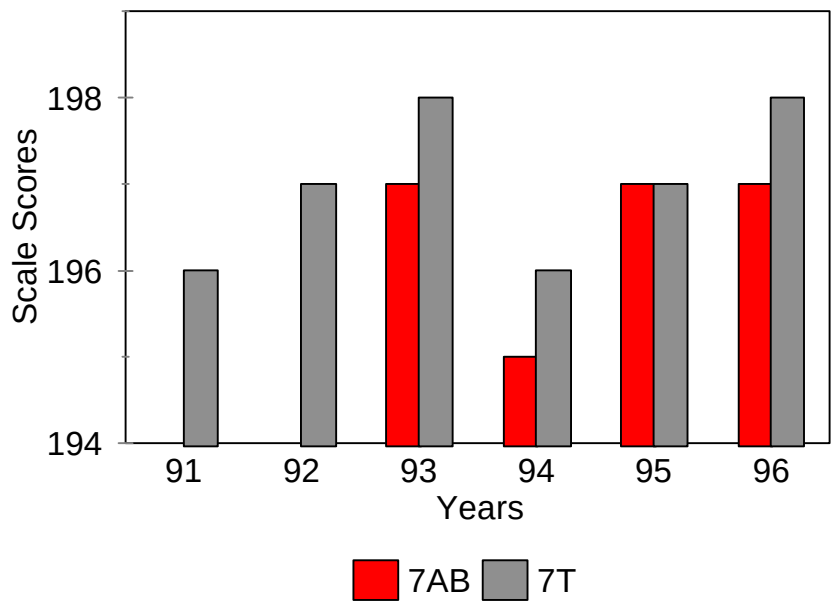
In the TAP Social Studies test area, 7A/B block schedule schools show a 1.08 point deficit compared to 7-period traditional schedule schools over the 1993-1996 period (see Figure 89).

In the TAP Science test area, 7A/B block schedule schools show no mean scale score difference compared to 7-period traditional schedule schools over the 1993-1996 period (see Figure 90).

The TAP Composite showed that 7 A/B block schedule schools experienced a 0.58 point mean scale score deficit compared to 7-period traditional schedule schools over the 1993-1996 period (see Figure 91).

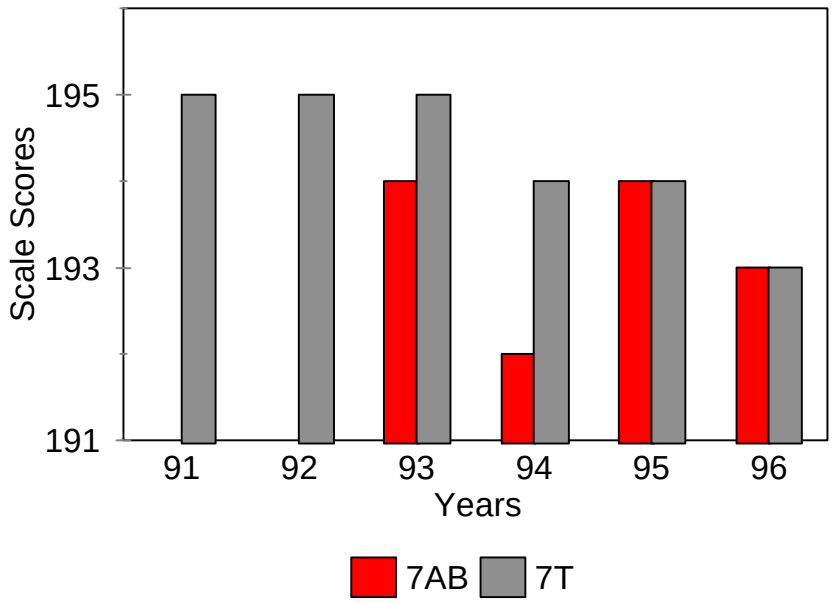
Summary

The TAP mean scale score differences between 7A/B block schedule schools and 7-period traditional schedule schools were compared for each of the TAP test areas over the 1993-1996 period. The 7A/B block schedule schools bettered the 7-period traditional schedule schools in mean scale score points in one TAP test area. The 7-period traditional schedule schools bettered the 7A/B block schedule schools in mean scale score points in four TAP test areas. No



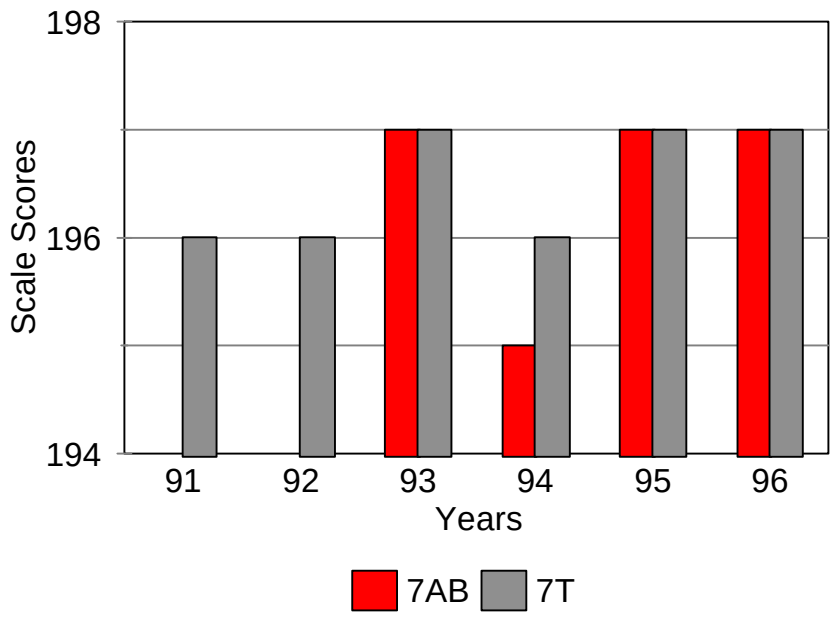
	91	92	93	94	95	96	Avg
7 A/B			197	195	197	197	196.50
N			5	14	23	29	
SD			3.93	9.80	8.63	10.24	
7 T	196	197	198	196	197	198	197.00
N	64	64	64	64	64	64	
SD	8.34	9.11	8.71	9.25	8.57	8.96	
% Change			0.51%	0.51%	0.00%	0.51%	

Figure 88. Sources of Information mean scale score comparisons on the Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



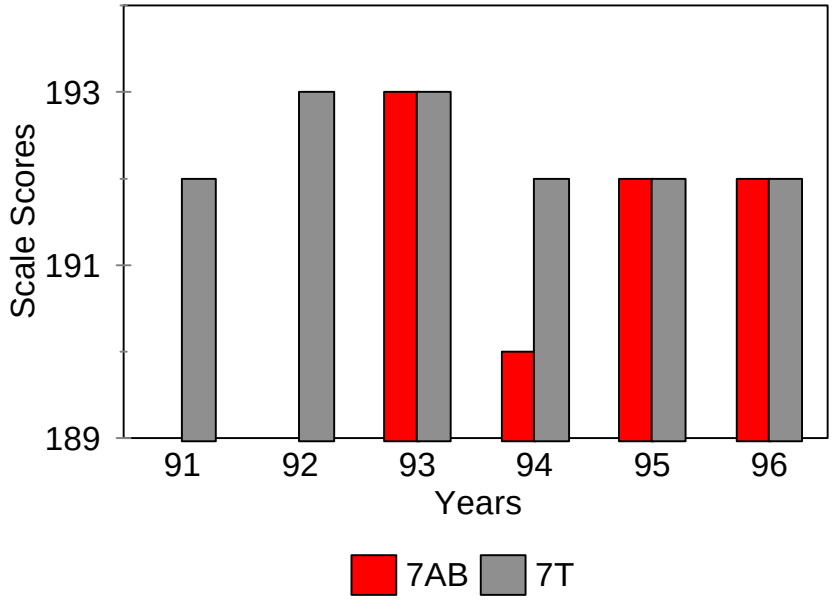
	91	92	93	94	95	96	Avg
7 A/B			194	192	194	193	193.25
N			5	14	23	29	
SD			2.94	6.42	7.27	7.65	
7 T	195	195	195	194	194	193	194.33
N	64	64	64	64	64	64	
SD	6.41	6.99	7.07	6.88	6.64	7.07	
% Change			0.51%	1.03%	0.00%	0.00%	

Figure 89. Social Studies mean scale score comparisons on the Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	91	92	93	94	95	96	Avg
7 A/B			197	195	197	197	196.50
N			5	14	23	29	
SD			4.27	7.42	6.57	8.72	
7 T	196	196	197	196	197	197	196.50
N	64	64	64	64	64	64	
SD	7.34	7.99	7.90	8.12	7.24	7.87	
% Change			0.00%	0.51%	0.00%	0.00%	

Figure 90. Science mean scale score comparisons on the Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	91	92	93	94	95	96	Avg
7 A/B			193	190	192	192	191.75
N			5	14	23	29	
SD			3.06	8.73	6.76	8.30	
7 T	192	193	193	192	192	192	192.33
N	64	64	64	64	64	64	
SD	7.06	7.64	7.53	7.97	7.46	7.78	
% Change			0.00%	1.04%	0.00%	0.00%	

Figure 91. Complete Composite mean scale score comparisons on the Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

change in mean scale score points was recorded in one TAP test area. However, the overall difference in mean scale score points for the 1993-1996 period for the 7A/B block schedule schools and the 7-period traditional schedule schools was less the one mean scale score point.

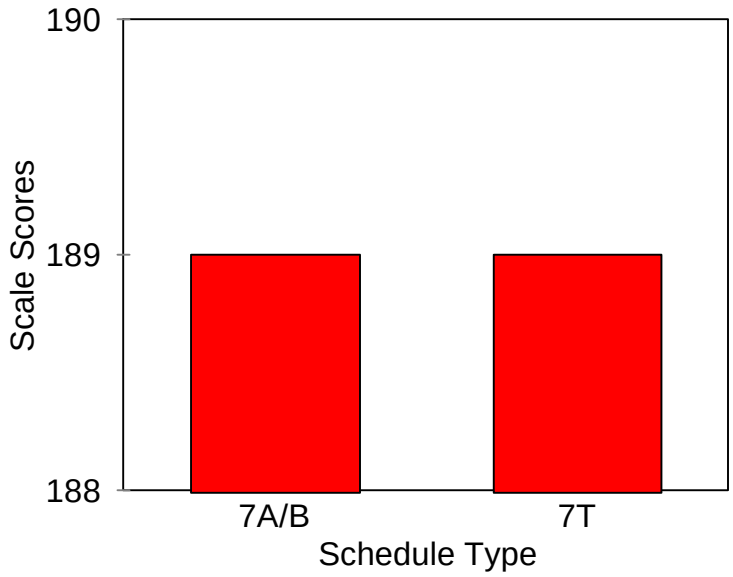
Research Question 4

What were the comparative mean scale score differences on the 1996 eleventh-grade TAP between schools on 7A/B block schedules and 7-period traditional schedules?

To answer this research question, descriptive data tables and bar graphs were constructed for the mean scale score results of the 1996 eleventh-grade TAP test areas for the responding 7A/B block schedule schools and the responding 7-period traditional schedule schools.

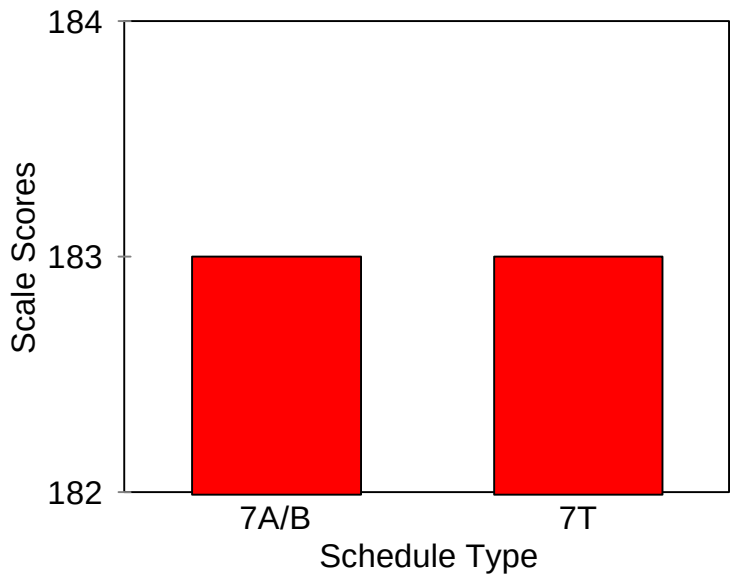
In the TAP Reading Comprehension test area, 7A/B block schedule schools and 7-period traditional schedule schools experienced identical mean scale scores for 1996 (see Figure 92).

In the TAP Mathematics, Social Studies, and Science test areas, 7A/B block schedule schools and 7-period traditional schedule schools recorded the same mean scale scores in each test area for 1996 (see Figures 93, 94, and 95).



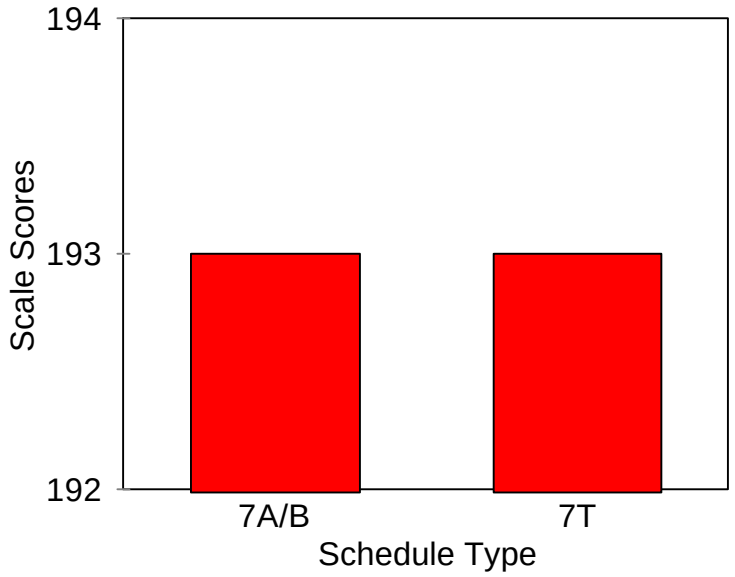
7A/B Mean Scale Score	189.00
N	29
SD	9.77
7T Mean Scale Score	189.00
N	64
SD	8.63
% Change	0.00%

Figure 92. Reading Comprehension mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



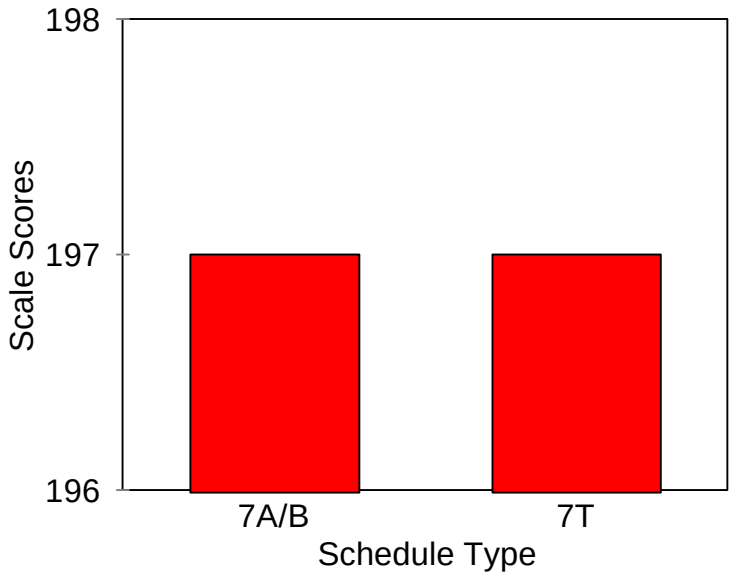
7A/B Mean Scale Score	183.00
N	29
SD	8.41
7T Mean Scale Score	183.00
N	64
SD	7.70
% Change	0.00%

Figure 93. Mathematics mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



7A/B Mean Scale Score	193.00
N	29
SD	7.65
7T Mean Scale Score	193.00
N	64
SD	7.07
% Change	0.00%

Figure 94. Social Studies mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



7A/B Mean Scale Score	197.00
N	29
SD	8.72
7T Mean Scale Score	197.00
N	64
SD	7.87
% Change	0.00%

Figure 95. Science mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

In the TAP Written Expression test area, 7A/B block schedule schools experienced a one point mean scale score advantage over 7-period traditional schedule schools for 1996 (see Figure 96).

In the TAP Sources of Information test area, 7-period traditional schedule schools experienced a one point mean scale score advantage over 7A/B block schedule schools for 1996 (see Figure 97).

The TAP Composite showed 7A/B block schedule schools and 7-period traditional schedule schools having identical mean scale scores for 1996 (see Figure 98).

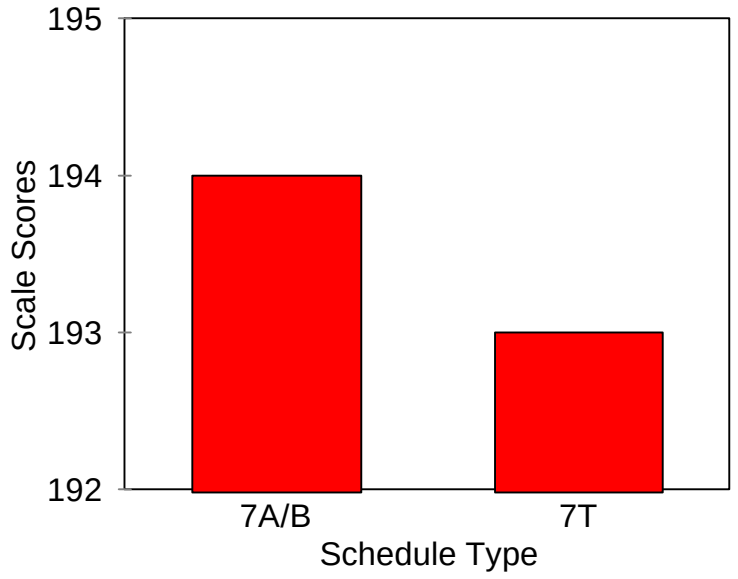
Summary

The 7A/B block schedule schools and the 7-period traditional schedule schools were compared on 1996 mean scale scores from the six TAP test areas and the composite.

The 7A/B block schedule schools outperformed the 7-period traditional schedule schools in one TAP test area by one mean scale score point.

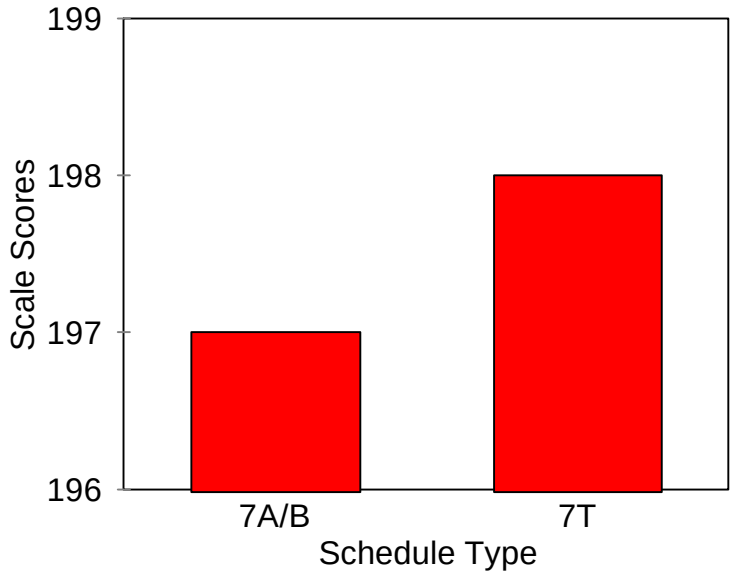
The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in one TAP test area by one mean scale score point.

In four TAP test areas, 7A/B block schedule schools and 7-period traditional schedule schools experienced identical mean scale scores.



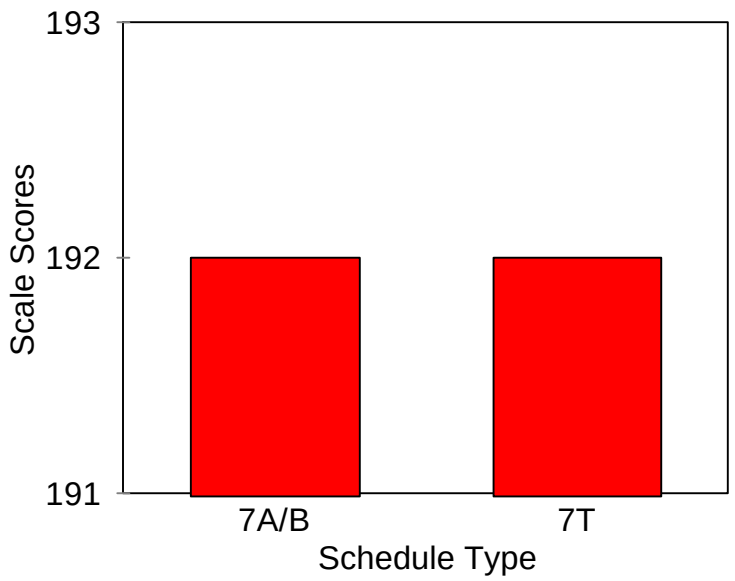
7A/B Mean Scale Score	194.00
N	29
SD	9.54
7T Mean Scale Score	193.00
N	64
SD	8.40
% Change	0.52%

Figure 96. Written Expression mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



7A/B Mean Scale Score	197.00
N	29
SD	10.24
7T Mean Scale Score	198.00
N	64
SD	8.96
% Change	0.51%

Figure 97. Sources of Information mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



7A/B Mean Scale Score	192.00
N	29
SD	8.15
7T Mean Scale Score	192.00
N	64
SD	7.78
% Change	0.00%

Figure 98. Complete Composite mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

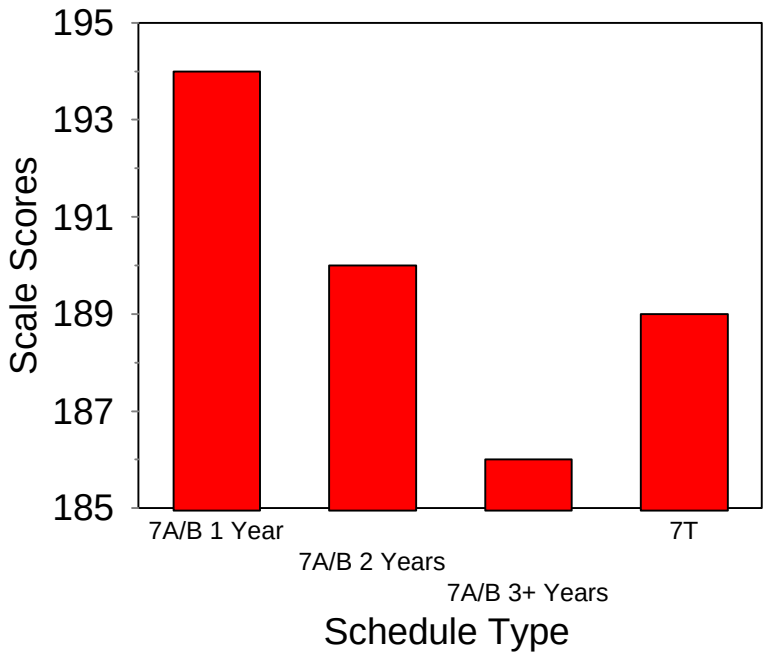
Research Question 5

What were the mean scale score differences on the 1996 eleventh-grade TAP among schools who had been on 7A/B block schedules for one, two, and three or more years, and schools on 7-period traditional schedules?

To answer this research question, descriptive data tables and bar graphs were constructed for the 1996 TAP mean scale score results for 7A/B block schedule schools and 7-period traditional schedule schools. The 7A/B block schedule schools were disaggregated according to length-of-time on block schedule in 1996.

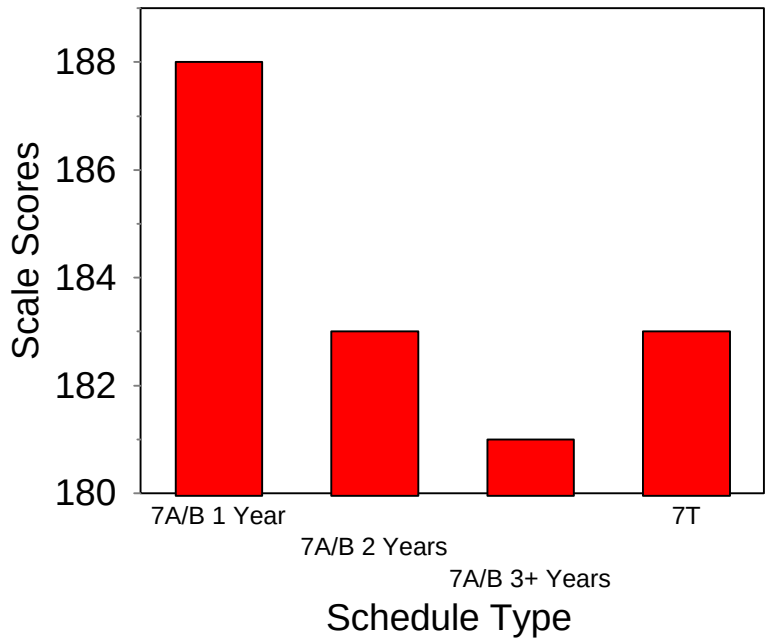
In the TAP Reading Comprehension test area, first and second year 7A/B block schedule schools outperformed 7-period traditional schedule schools by a five point and one point mean scale score margin respectively. The 7-period traditional schedule schools outperformed the third or more year block schedule schools by three mean scale score points (see Figure 99).

In the TAP Mathematics test area, first year block schedule schools outperformed 7-period traditional schedule schools by five mean scale score points. Second year block schedule schools had the same mean scale score as the 7-period traditional schedule schools. The 7-period traditional schedule schools outperformed the third or more year block schedule schools by two mean scale score points (see Figure 100).



	7A/B 1 Year	7A/B 2 Years	7A/B 3+ Years	7T
Mean	194.00	190.00	186.00	189.00
N	6	9	14	64
SD	8.49	10.16	8.81	8.63
% Change Compared to 7T	2.65%	0.53%	-1.59%	

Figure 99. Reading Comprehension mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between one year, two years, and three or more years 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7A/B 1 Year	7A/B 2 Years	7A/B 3+ Years	7T
Mean	188.00	183.00	181.00	183.00
N	6	9	14	64
SD	7.67	7.79	8.20	7.70
% Change Compared to 7T	2.73%	0.00%	-1.09%	

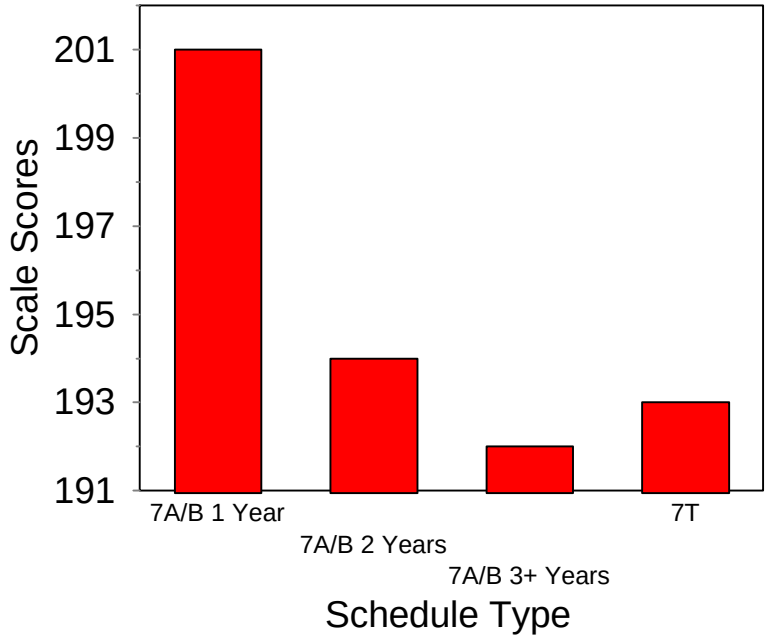
Figure 100. Mathematics mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between one year, two years, and three or more years 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

In the TAP Written Expression test area, first and second year 7A/B block schedule schools outperformed 7-period traditional schedule schools by eight and one mean scale score points respectively. The 7-period traditional schedule schools outperformed the third or more year block schedule schools by one mean scale score point (see Figure 101).

In the TAP Sources of Information test area, first and second year 7A/B block schedule schools outperformed the 7-period traditional schedule schools by five and one mean scale score points respectively. The 7-period traditional schedule schools outperformed the third or more year 7A/B block schedule schools by four mean scale score points (see Figure 102).

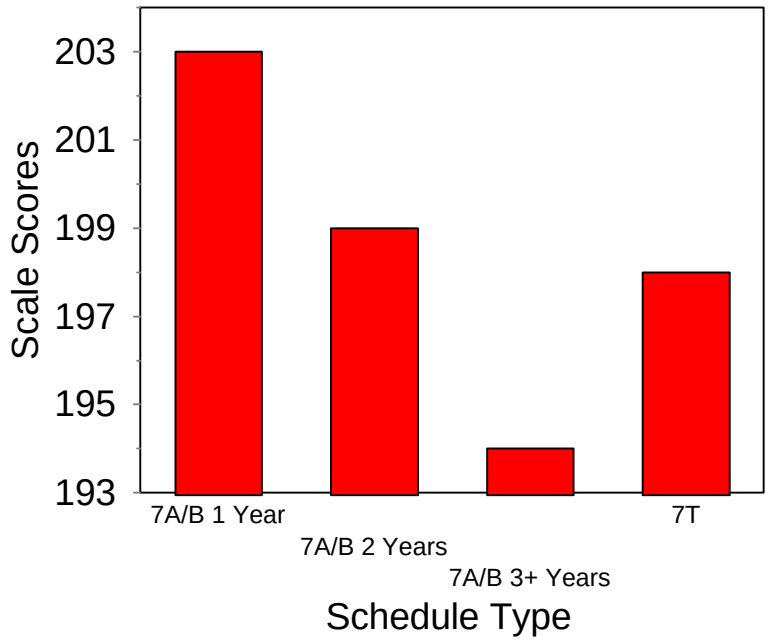
In the TAP Social Studies test area, first and second year block schedule schools outperformed 7-period traditional schedule schools by three and one mean scale score points respectively. The 7-period traditional schedule schools outperformed the third or more year block schedule schools by two mean scale score points (see Figure 103).

In the TAP Science test area, first and second year 7A/B block schedule schools outperformed 7-period traditional schedule schools by four and one mean scale score points respectively. The 7-period traditional schedule schools



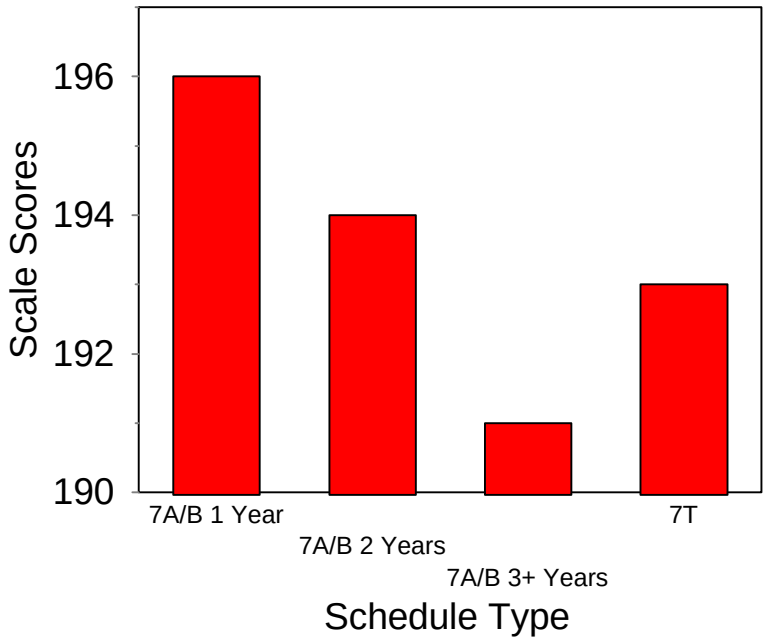
	7A/B 1 Year	7A/B 2 Years	7A/B 3+ Years	7T
Mean	201.00	194.00	192.00	193.00
N	6	9	14	64
SD	7.21	8.73	9.51	8.40
% Change Compared to 7T	4.15%	0.52%	-0.52%	

Figure 101. Written Expression mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between one year, two years, and three or more years 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7A/B 1 Year	7A/B 2 Years	7A/B 3+ Years	7T
Mean	203.00	199.00	194.00	198.00
N	6	9	14	64
SD	8.04	9.40	10.15	8.96
% Change Compared to 7T	2.53%	0.51%	-2.02%	

Figure 102. Sources of Information mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between one year, two years, and three or more years 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7A/B 1 Year	7A/B 2 Years	7A/B 3+ Years	7T
Mean	196.00	194.00	191.00	193.00
N	6	9	14	64
SD	6.97	8.29	6.80	7.07
% Change Compared to 7T	1.55%	0.52%	-1.04%	

Figure 103. Social Studies mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between one year, two years, and three or more years 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

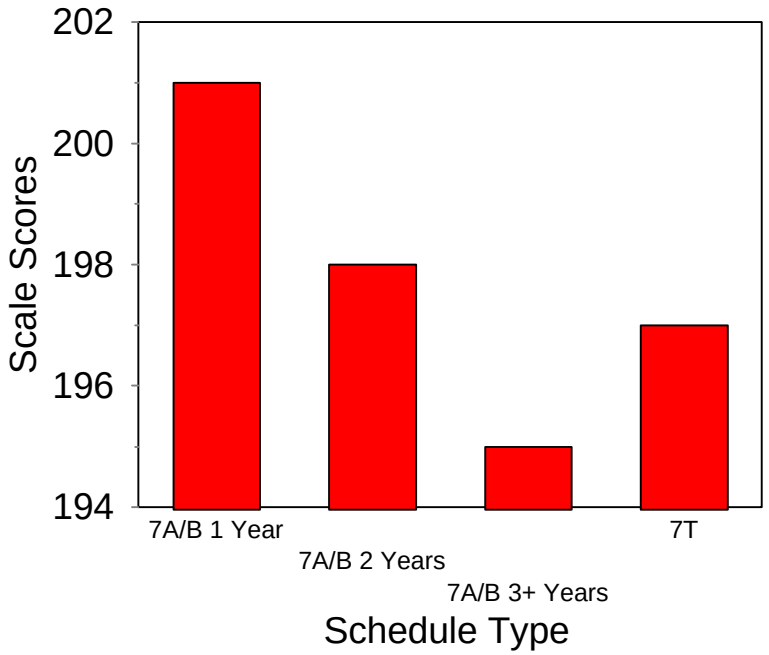
outperformed the third or more year block schedule schools by two mean scale score points (see Figure 104).

The TAP Composite showed that first and second year 7A/B block schedule schools outperformed 7-period traditional schedule schools by five and one mean scale score points respectively. The 7-period traditional schedule schools outperformed the third or more year 7A/B block schedule schools by two mean scale score points (see Figure 105).

Summary

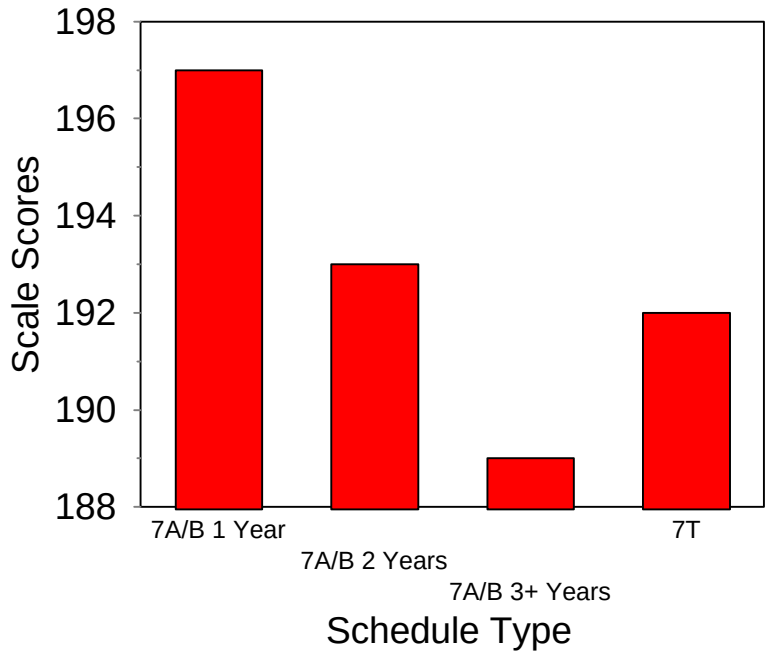
The 7A/B block schedule schools were disaggregated according to length-of-time on block scheduling in 1996. Their 1996 eleventh-grade TAP mean scale scores were then compared to 1996 TAP mean scale scores for 7-period traditional schedule schools.

Schools in their first year of 7A/B block scheduling outperformed the 7-period traditional schedule schools in all six TAP test areas for 1996. Schools in their second year of 7A/B block scheduling outperformed 7-period traditional schedule schools in five TAP test areas and recorded identical mean scale scores in one TAP test area. The 7-period traditional schedule schools outperformed the three or more year block schedule schools in all six TAP test areas for 1996.



	7A/B 1 Year	7A/B 2 Years	7A/B 3+ Years	7T
Mean	201.00	198.00	195.00	197.00
N	6	9	14	64
SD	8.42	8.86	7.90	7.87
% Change Compared to 7T	2.03%	0.51%	-1.02%	

Figure 104. Science mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between one year, two years, and three or more years 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7A/B 1 Year	7A/B 2 Years	7A/B 3+ Years	7T
Mean	197.00	193.00	189.00	192.00
N	6	9	14	64
SD	7.54	7.96	7.34	7.78
% Change Compared to 7T	2.60%	0.52%	-1.56%	

Figure 105. Complete Composite mean scale score comparisons on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between one year, two years, and three or more years 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

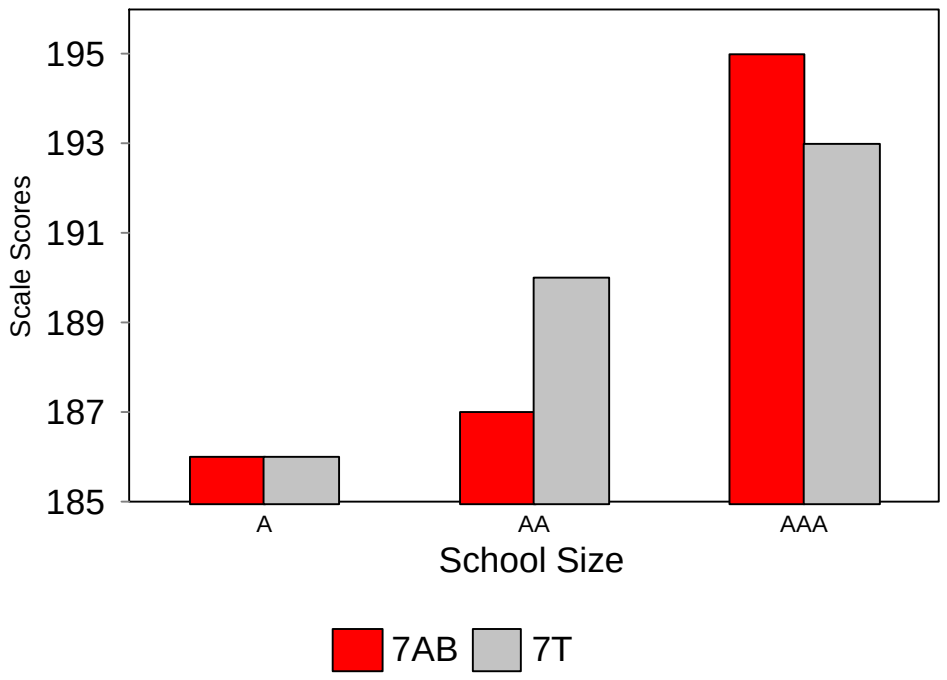
Research Question 6

What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools based on school size?.

To answer this research question, the schools in the population were disaggregated according to school size--A (0-500 students), AA (501-999 students), and AAA (more than 999 students). Descriptive data tables and bar graphs were constructed for the 1996 TAP mean scale scores for each school size of the 7A/B block schedule schools and the 7-period traditional schedule schools.

In the TAP Reading Comprehension test area, A schools on 7A/B block schedules and 7-period traditional schedules experienced identical mean scale scores. AA schools on 7-period traditional schedules outperformed 7A/B block schedule schools by three mean scale score points (1.58% difference). AAA schools on 7A/B block schedule outperformed 7-period traditional schedule schools by two mean scale score points (1.04% difference) (see Figure 106).

In the TAP Mathematics test area, A schools on 7A/B block schedule outperformed 7-period traditional schedule schools by one mean scale score point (0.56% difference). AA schools on 7-period traditional schedule outperformed 7A/B block schedule schools by three mean scale score points (1.64% difference).



	7AB	7T	% Change
A	186	186	0.00%
N	11	25	
SD	10.58	6.19	
AA	187	190	1.58%
N	10	23	
SD	7.54	7.14	
AAA	195	193	1.04%
N	8	16	
SD	7.89	11.55	

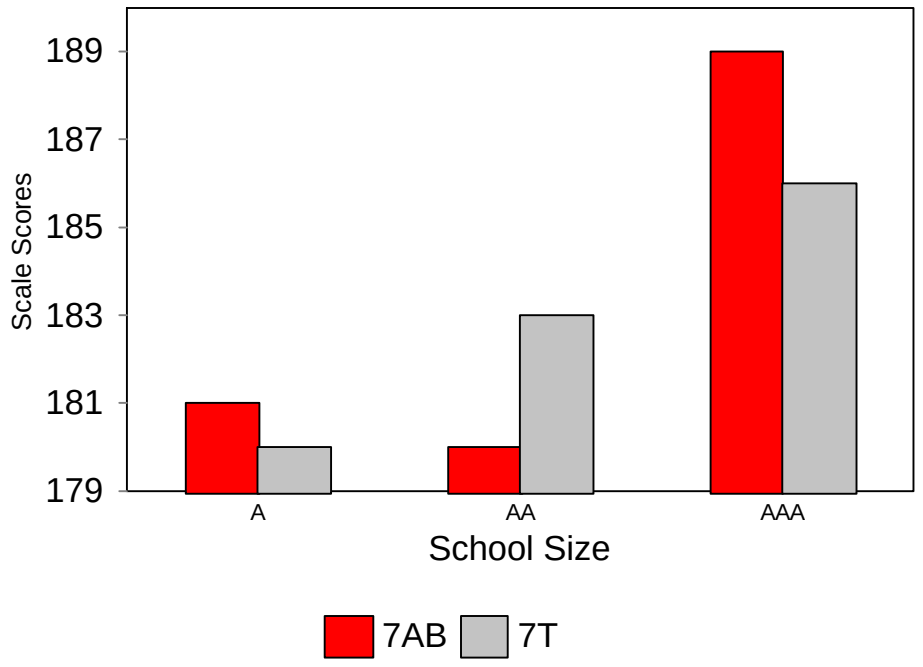
Figure 106. Reading Comprehension mean scale score comparisons based on school size on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

AAA schools on 7A/B block schedule outperformed 7-period traditional schedule schools by three mean scale score points (1.61% difference) (see Figure 107).

In the TAP Written Expression test area, A and AAA 7A/B block schedule schools outperformed A and AAA 7-period traditional schedule schools by two (1.05% difference) and three (1.52% difference) mean scale score points respectively. AA schools on 7-period traditional schedule outperformed AA 7A/B block schedule schools by two mean scale score points (1.04% difference) (see Figure 108).

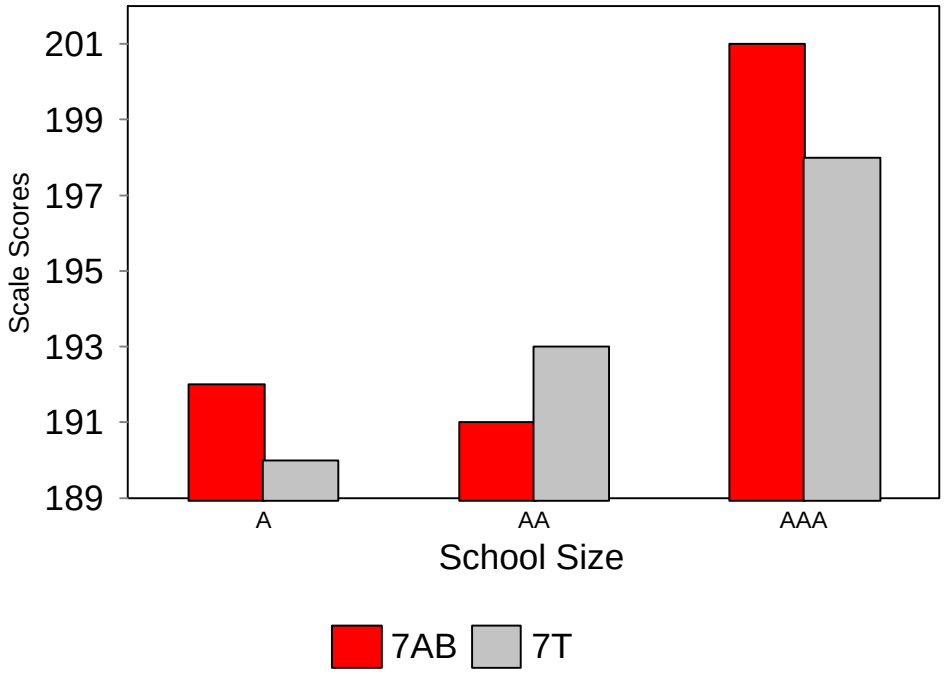
In the TAP Sources of Information test area, A schools on 7A/B block schedule outperformed 7-period traditional schedule schools by one mean scale score point (0.52% difference), and AAA block schedule schools outperformed AAA 7-period traditional schedule schools by three mean scale score points (1.49% difference). AA schools on 7-period traditional schedule outperformed 7A/B block schedule schools by five mean scale score points (2.51% difference) (see Figure 109).

In the TAP Social Studies test area, A schools on 7A/B block schedule and A schools on 7-period traditional schedule experienced identical mean scale scores. AA schools on 7-period traditional schedule outperformed AA schools on 7A/B block scheduling by four mean scale score points (2.06% difference). AAA



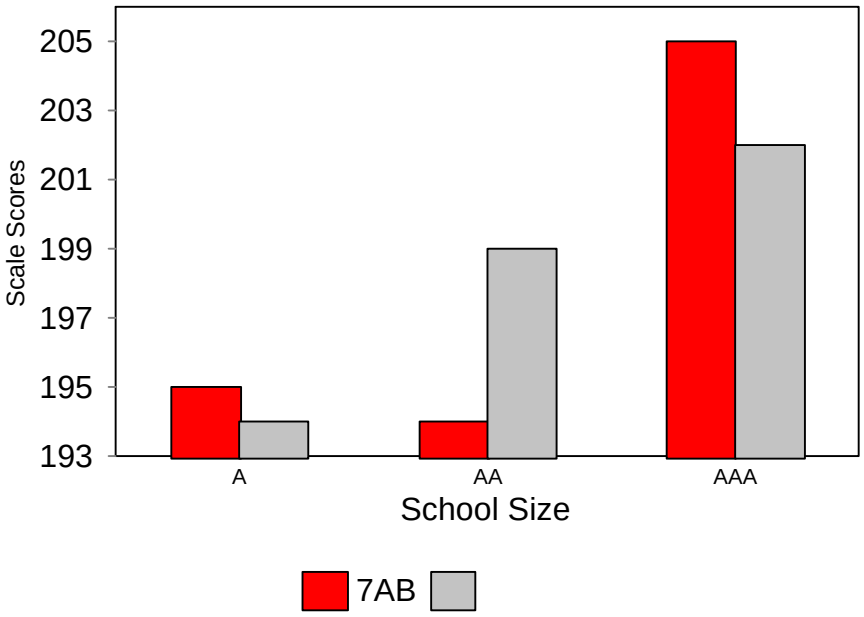
	7AB	7T	% Change
A	181	180	0.56%
N	11	25	
SD	7.84	5.37	
AA	180	183	1.64%
N	10	23	
SD	6.86	6.34	
AAA	189	186	1.61%
N	8	16	
SD	7.79	10.53	

Figure 107. Mathematics mean scale score comparisons based on school size on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7AB	7T	% Change
A	192	190	1.05%
N	11	25	
SD	9.16	5.96	
AA	191	193	1.04%
N	10	23	
SD	9.57	7.80	
AAA	201	198	1.52%
N	8	16	
SD	6.22	9.71	

Figure 108. Written Expression mean scale score comparisons based on school size on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7AB	7T	% Change
A	195	194	0.52%
N	11	25	
SD	10.23	6.28	
AA	194	199	2.51%
N	10	23	
SD	8.06	7.48	
AAA	205	202	1.49%
N	8	16	
SD	8.30	11.57	

_____ Sources of Information mean scale score comparisons based on school size on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP)

Virginia.

schools on 7A/B block schedule outperformed AAA schools on 7-period traditional schedule by two mean scale score points (1.02% difference) (see Figure 110).

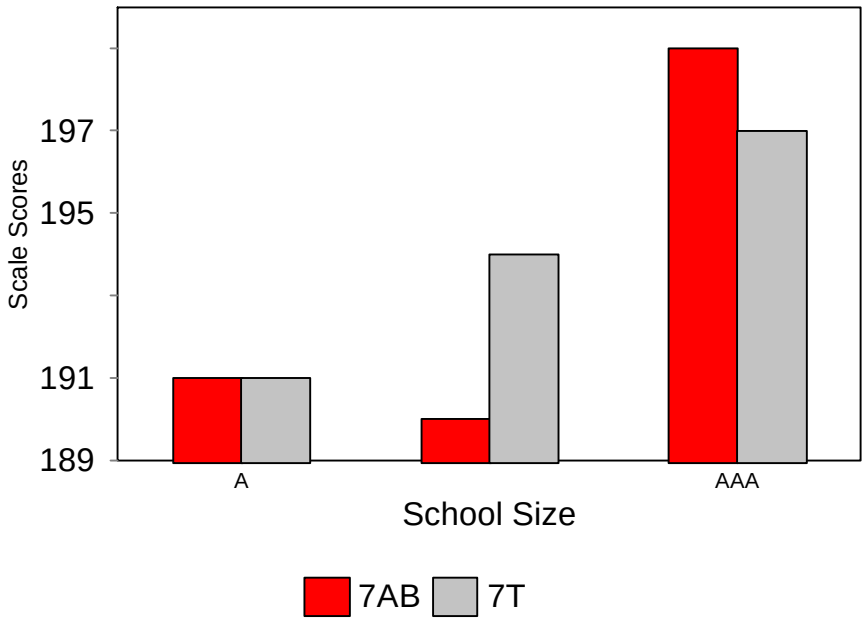
In the TAP Science test area, A and AA 7-period traditional schedule schools outperformed A and AA 7A/B block schedule schools one (0.52% difference) and two (1.01% difference) mean scale score points respectively. AAA 7A/B block schedule schools outperformed AAA 7-period traditional schedule schools by two

The TAP Composite showed that A 7A/B block schedule schools outperformed A 7-period traditional schedule schools by one mean scale score point

7A/B block schedule schools by three mean scale score points (1.55% difference). AAA 7A/B block schedule schools outperformed AAA 7-period traditional schedule

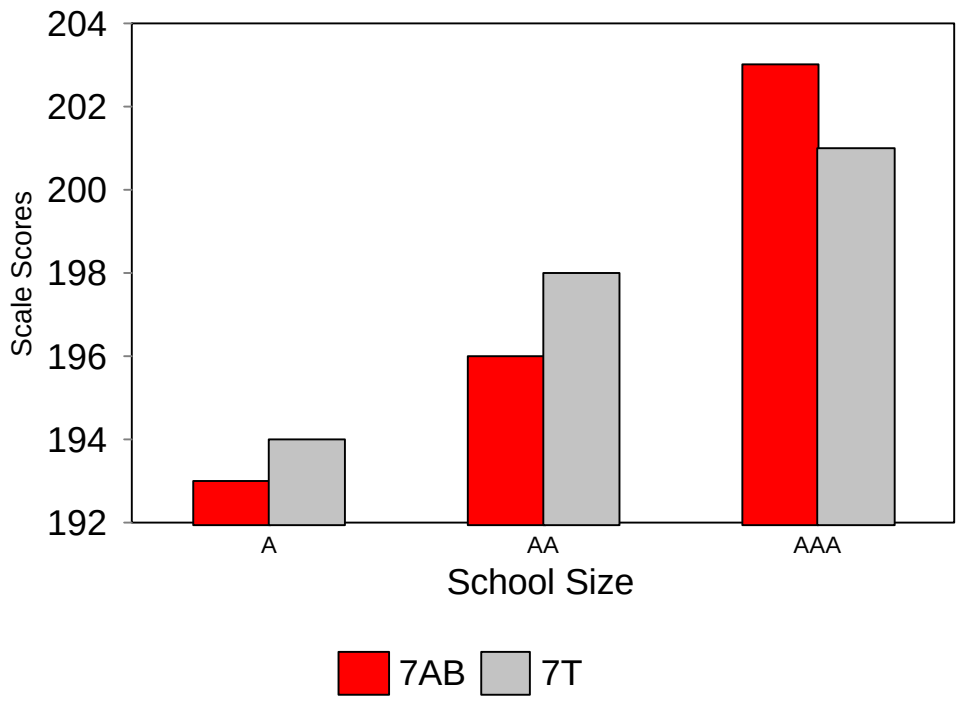
Summary

The 7A/B block schedule schools and the 7-period traditional schedule



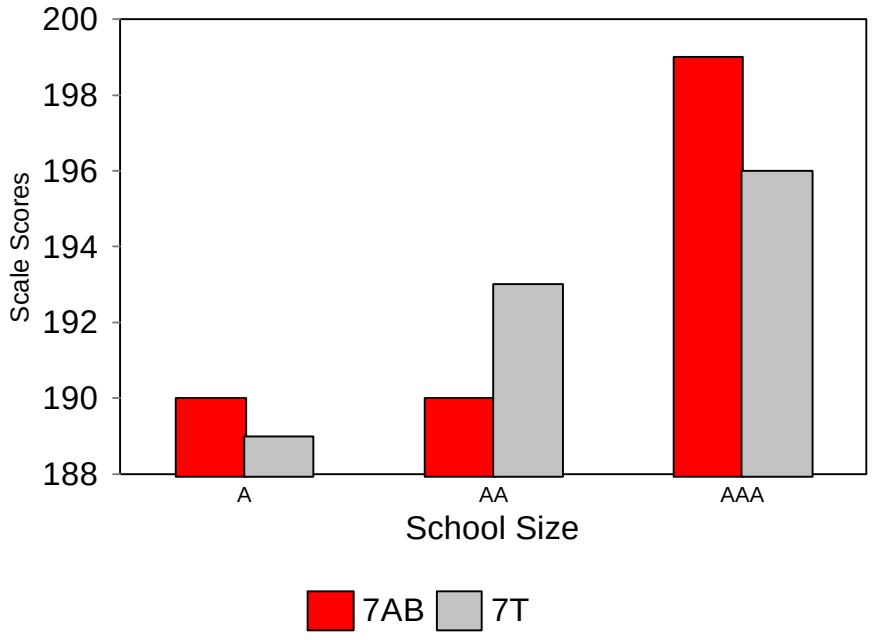
	7AB	7T	% Change
A	191	191	0.00%
N	11	25	
SD	7.37	4.60	
AA	190	194	2.06%
N	10	23	
SD	6.45	6.54	
AAA	199	197	1.02%
N	8	16	
SD	5.84	8.79	

Figure 110. Social Studies mean scale score comparisons based on school size on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7AB	7T	% Change
A	193	194	0.52%
N	11	25	
SD	9.12	5.63	
AA	196	198	1.01%
N	10	23	
SD	6.33	6.71	
AAA	203	201	1.00%
N	8	16	
SD	7.24	10.42	

Figure 111. Science mean scale score comparisons based on school size on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7AB	7T	% Change
A	190	189	0.53%
N	11	25	
SD	5.58	5.11	
AA	190	193	1.55%
N	10	23	
SD	5.18	6.71	
AAA	199	196	1.53%
N	8	16	
SD	4.77	10.23	

Figure 112. Complete Composite mean scale score comparisons based on school size on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

AAA. Their 1996 TAP mean scale scores were compared on the test areas and the composite.

The 7A/B block schedule A schools outperformed the 7-period traditional schedule A schools in three TAP test areas and experienced identical scores in two TAP test areas. The 7-period traditional schedule A schools outperformed the 7A/B block schedule A schools in one TAP test area. The overall difference in performance was less than 1%.

The 7-period traditional schedule AA schools outperformed the 7A/B block schedule AA schools in all six TAP test areas. The overall difference in performance was less than 2%.

The 7A/B block schedule AAA schools outperformed the 7-period traditional schedule AAA schools in all six TAP test areas. The overall difference in performance was less than 2%.

Research Question 7

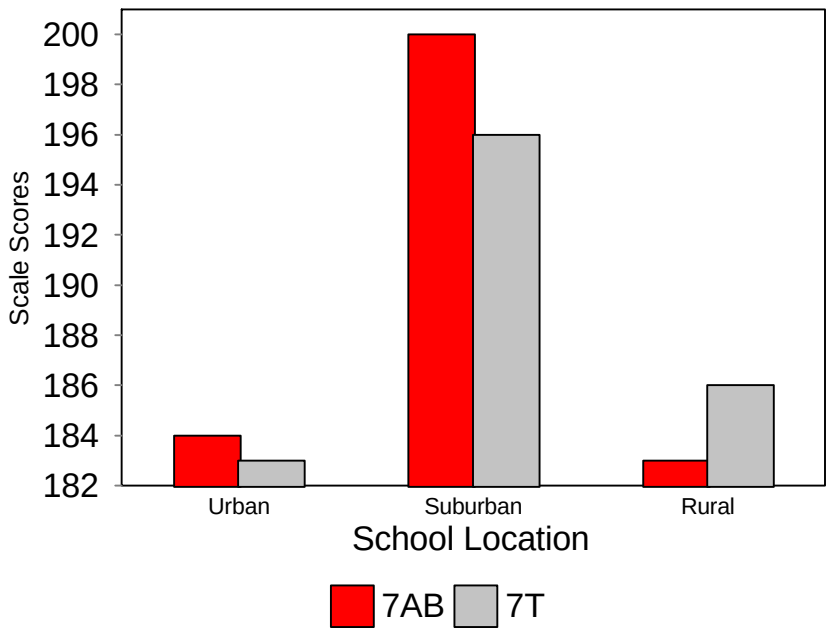
What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools based on school location?

To answer this research question, the 7A/B block schedule schools and the 7-period traditional schedule schools of this study were disaggregated according to

school location--urban, suburban, or rural. Descriptive data tables and bar graphs were constructed for the 1996 TAP mean scale scores of the 7A/B block schedule schools and the 7-period traditional schedule schools according to school location.

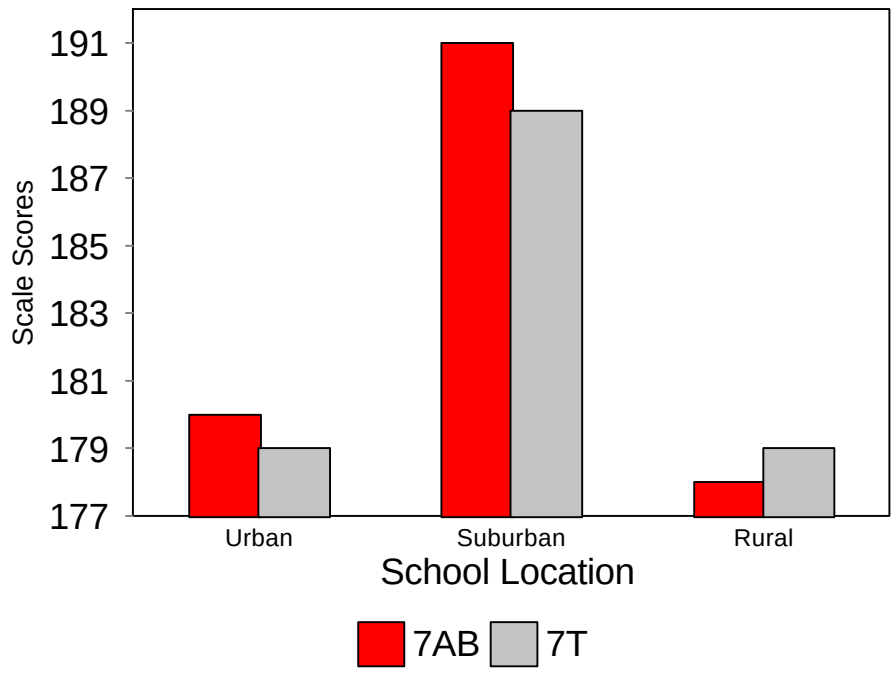
In the TAP Reading Comprehension test area, 7A/B block schedule urban schools outperformed 7-period traditional schedule urban schools by one mean scale score point (0.55% difference). Suburban schools on 7A/B block schedule outperformed suburban schools on 7-period traditional schedule by four mean scale score points (2.04% difference). Rural schools on 7-period traditional schedule outperformed rural schools on 7A/B block schedule by three mean scale score points (1.61% difference) (see Figure 113).

In the TAP Mathematics test area, urban schools on 7A/B block schedule outperformed urban schools on 7-period traditional schedule by one mean scale score point (0.56% difference). Suburban schools on 7A/B block schedule outperformed suburban schools on 7-period traditional schedule by two mean scale score points (1.06% difference). Rural schools on 7-period traditional schedule outperformed rural schools on 7A/B block schedule by one mean scale score point (0.56% difference) (see Figure 114).



	7AB	7T	% Change
Urban	184	183	0.55%
N	2	7	
SD	2.00	5.04	
Suburban	200	196	2.04%
N	10	24	
SD	7.16	8.63	
Rural	183	186	1.61%
N	17	33	
SD	5.58	5.62	

Figure 113. Reading Comprehension mean scale score comparisons based on school location on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



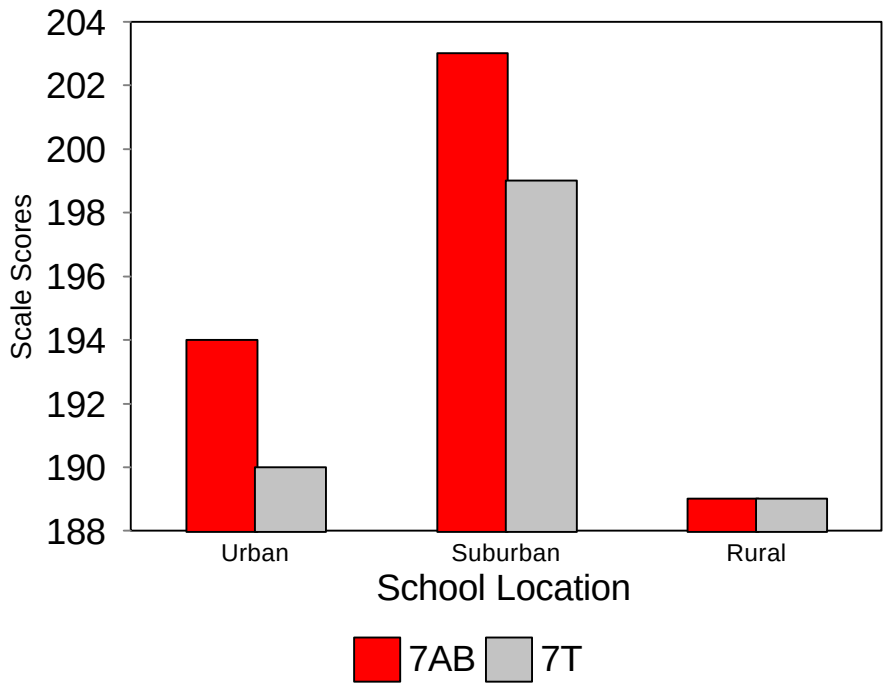
	7AB	7T	% Change
Urban	180	179	0.56%
N	2	7	
SD	0.00	4.64	
Suburban	191	189	1.06%
N	10	24	
SD	7.56	8.11	
Rural	178	179	0.56%
N	17	33	
SD	4.54	4.52	

Figure 114. Mathematics mean scale score comparisons based on school location on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

In the TAP Written Expression test area, urban schools on 7A/B block schedule outperformed urban schools on 7-period traditional schedule by four mean scale score points (2.11% difference). Suburban schools on 7A/B block schedule outperformed suburban schools on 7-period traditional schedule by four mean scale score points (2.01% difference). Rural schools on 7-period traditional schedule and 7A/B block schedule experienced the same mean scale score (see Figure 115).

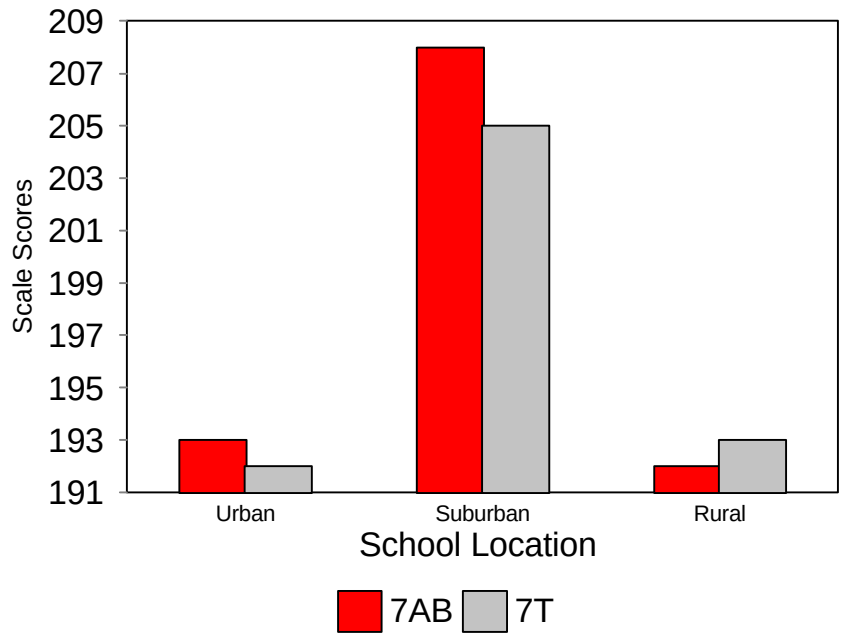
In the TAP Sources of Information test area, urban schools on 7A/B block schedule outperformed urban schools on 7-period traditional schedule by one mean scale score point (0.52% difference). Suburban schools on 7A/B block schedule outperformed suburban schools on 7-period traditional schedule by three mean scale score points (1.46% difference). Rural schools on 7-period traditional schedule outperformed rural schools on 7A/B block schedule by one mean scale score point (0.52% difference) (see Figure 116).

In the TAP Social Studies test area, urban schools on 7A/B block schedule outperformed urban schools on 7-period traditional schedule by one mean scale score point (0.53% difference). Suburban schools on 7A/B block schedule outperformed suburban schools on 7-period traditional schedule by two mean scale score points (1.01% difference). Rural schools on 7-period traditional



	7AB	7T	% Change
Urban	194	190	2.11%
N	2	7	
SD	0.00	3.20	
Suburban	203	199	2.01%
N	10	24	
SD	9.00	8.80	
Rural	189	189	0.00%
N	17	33	
SD	6.20	5.59	

Figure 115. Written Expression mean scale score comparisons based on school location on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7AB	7T	% Change
Urban	193	192	0.52%
N	2	7	
SD	0.00	3.07	
Suburban	208	205	1.46%
N	10	24	
SD	8.24	8.86	
Rural	192	193	0.52%
N	17	33	
SD	6.51	5.77	

Figure 116. Sources of Information mean scale score comparisons based on school location on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

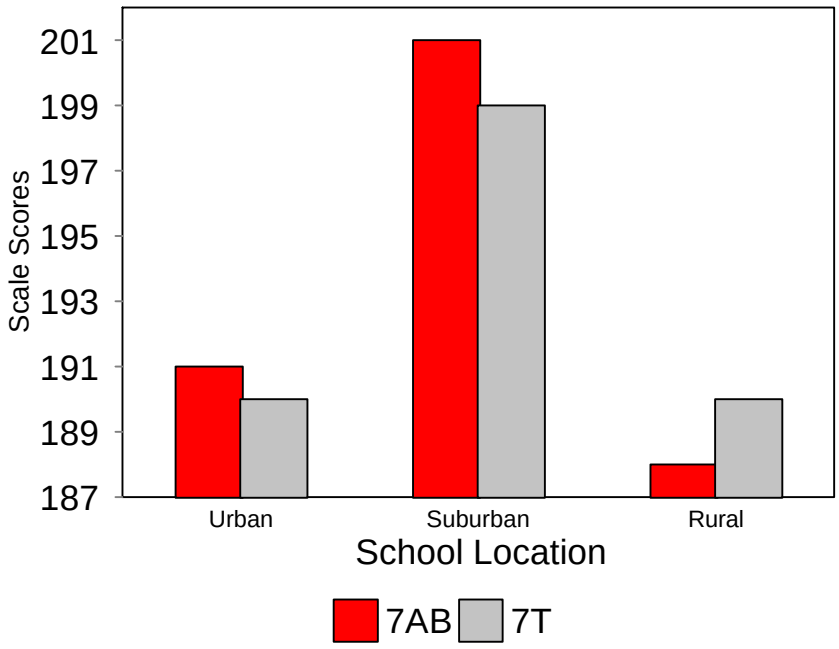
schedule outperformed rural schools on 7A/B block schedule by two mean scale score points (1.05% difference) (see Figure 117).

In the TAP Science test area, urban schools on 7A/B block schedule and 7-period traditional schedule had equivalent mean scale scores. Suburban schools on 7A/B block schedule outperformed suburban schools on 7-period traditional schedule by four mean scale score points (1.97% difference). Rural schools on 7-period traditional schedule outperformed rural schools on 7A/B block schedule by two mean scale score points (1.03% difference) (see Figure/118).

The TAP Composite showed that urban 7A/B block schedule schools outperformed urban 7-period traditional schools by one mean scale score point (0.53% difference). Suburban 7A/B block schedule schools outperformed suburban 7-period traditional schedule schools by three mean scale score points (1.51% difference). Rural 7-period traditional schedule schools outperformed rural 7A/B block schedule schools by two mean scale score points (1.06% difference) (see Figure 119).

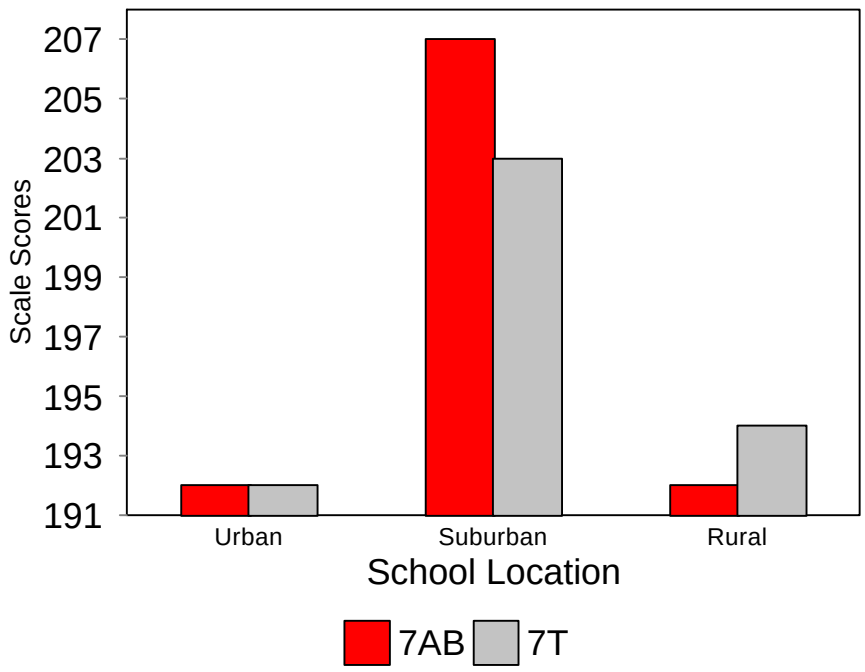
Summary

The 7A/B block schedule schools and the 7-period traditional schedule schools of this study were disaggregated according to school location--urban,



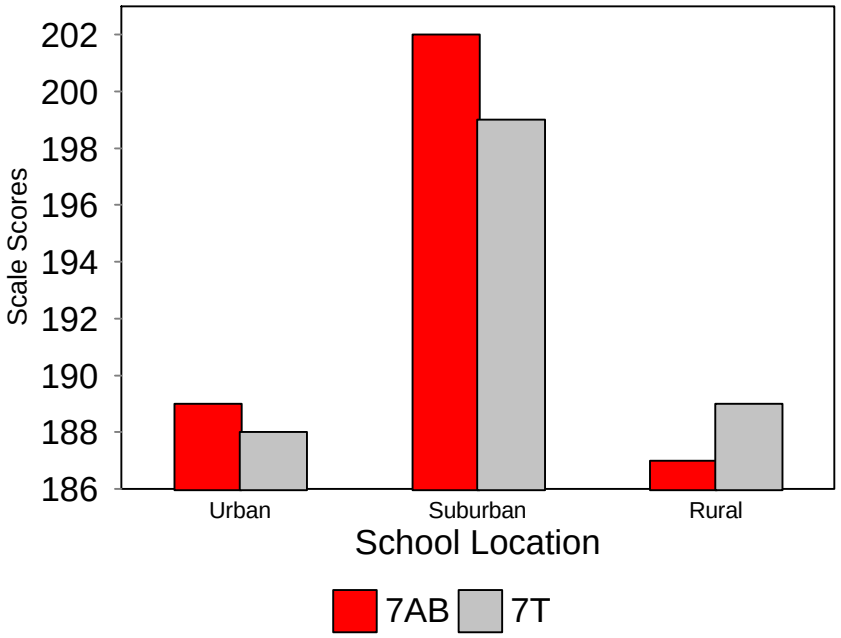
	7AB	7T	% Change
Urban	191	190	0.53%
N	2	7	
SD	1.00	3.54	
7Suburban	201	199	1.01%
N	10	24	
SD	5.79	6.96	
Rural	188	190	1.05%
N	17	33	
SD	4.66	4.39	

Figure 117. Social Studies mean scale score comparisons based on school location on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7AB	7T	% Change
Urban	192	192	0.00%
N	2	7	
SD	2.50	4.56	
Suburban	207	203	1.97%
N	10	24	
SD	5.04	7.90	
Rural	192	194	1.03%
N	17	33	
SD	5.04	5.19	

Figure 118. Science mean scale score comparisons based on school location on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7AB	7T	% Change
Urban	189	188	0.53%
N	2	7	
SD	0.92	3.34	
Suburban	202	199	1.51%
N	10	24	
SD	6.88	7.95	
Rural	187	189	1.06%
N	17	33	
SD	4.88	4.64	

Figure 119. Complete Composite mean scale score comparisons based on school location on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

suburban, or rural. Their 1996 TAP mean scale scores were compared on the test areas and the composite.

The urban 7A/B block schedule schools outperformed the urban 7-period traditional schedule schools in five TAP test areas. On one TAP test area there was no difference in scores between the two schedule types.

The suburban 7A/B block schedule schools outperformed the suburban 7-period traditional schedule schools in all six TAP test areas.

The rural 7-period traditional schedule schools outperformed the rural 7A/B block schedule schools in five TAP test areas. In one TAP test area there was no difference in scores between the two schedule types.

Research Question 8

What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools based on free and reduced-price meal eligibility?

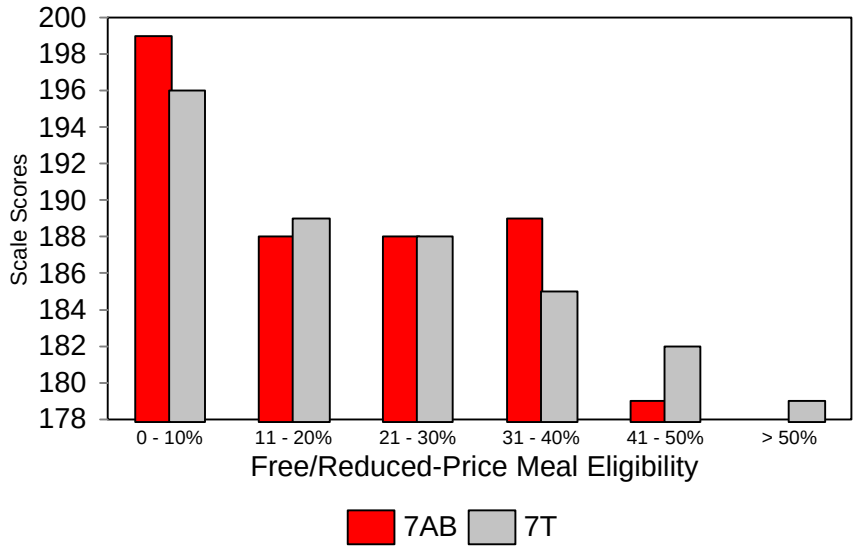
To answer this research question, the 7A/B block schedule schools and the 7-period traditional schedule schools of this study were disaggregated according to their free and reduced-price meal eligibility percentages, a proxy for socio-economic status. The meal eligibility percentage bands were 0-10%, 11-20%, 21-30%, 31-40%, 41-50%, and >50%. Descriptive data tables and bar graphs were constructed

for the 1996 TAP mean scale scores of the 7A/B block schedule schools and the 7-period traditional schedule schools.

Since there were no 7A/B block schedule schools reporting in the >50% meal eligibility range, no comparisons could be done on that meal eligibility range.

In the TAP Reading Comprehension test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 0-10% and 31-40% meal eligibility ranges by three (1.53% difference) and four (2.16% difference) mean scale score points respectively. Schools on 7-period traditional schedule outperformed schools on 7A/B block schedule in the 11-20% and 41-50% meal eligibility ranges by one (0.53% difference) and three (1.65% difference) mean scale score points respectively. The 7A/B and 7-period traditional schedule schools in the 21-30% meal eligibility range showed no difference in mean scale scores (see Figure 120).

In the TAP Mathematics test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 0-10%, 21-30%, and 31-40% meal eligibility ranges by three (1.59% difference), one (0.55% difference), and four (2.22% difference) mean scale score points respectively. Schools on 7-period traditional schedule outperformed schools on 7A/B block schedule in the



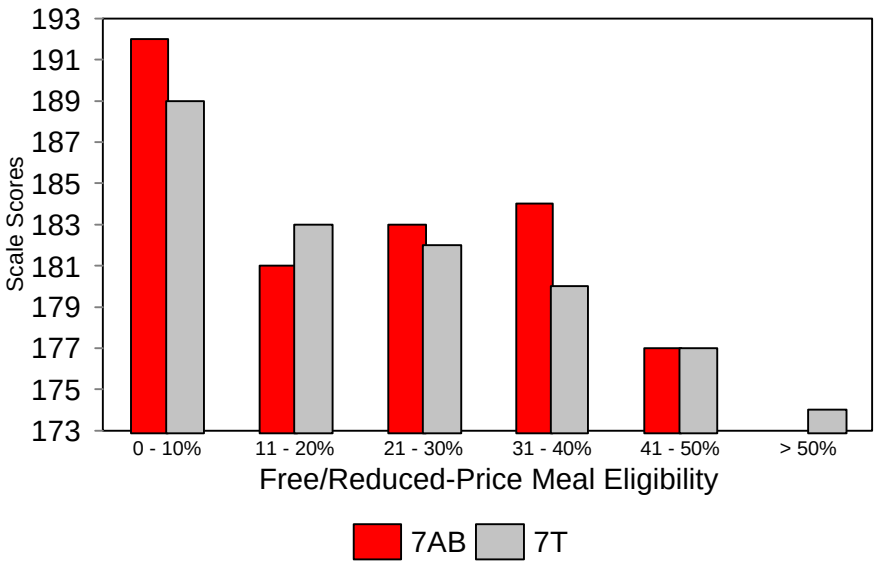
	7AB	7T	% Change
0 - 10%	199	196	1.53%
N	5	20	
SD	4.96	6.28	
11 - 20%	188	189	0.53%
N	14	12	
SD	8.89	7.62	
21 - 30%	188	188	0.00%
N	4	11	
SD	8.77	8.27	
31 - 40%	189	185	2.16%
N	2	8	
SD	6.50	6.42	
41 - 50%	179	182	1.65%
N	4	7	
SD	7.26	2.77	
> 50%		179	
N	0	5	
SD		3.43	

Figure 120. Reading Comprehension mean scale score comparisons based on free and reduced-price meal eligibility on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

11-20% meal eligibility range by two mean scale score points (1.09% difference). The 7A/B block schedule schools and the 7-period traditional schedule schools in the 41-50% meal eligibility range showed no difference in mean scale scores (see Figure 121).

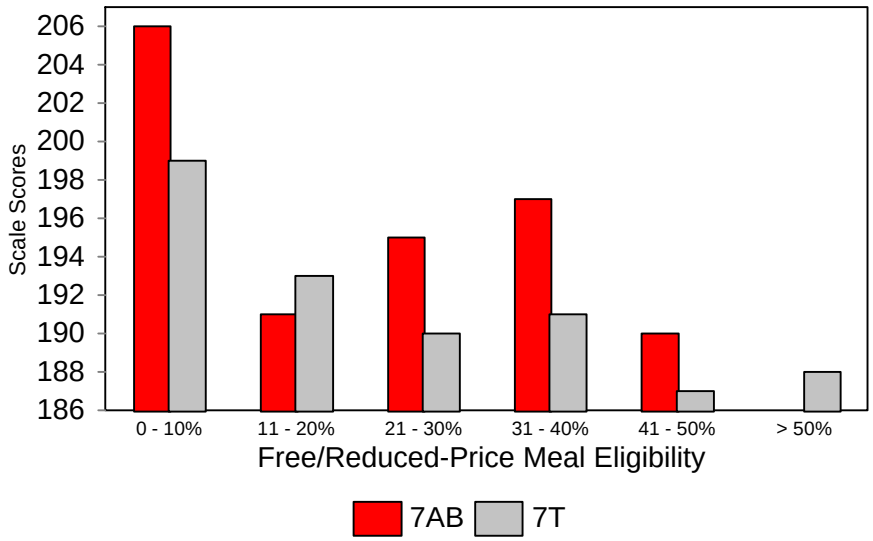
In the TAP Written Expression test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 0-10%, 21-30%, 31-40% and 41-50% meal eligibility ranges by seven (3.52% difference), five (2.63% difference), six (3.14% difference), and three (1.60% difference) mean scale score points respectively. The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in the 11-20% meal eligibility range by two (1.04% difference) mean scale score points (see Figure 122).

In the TAP Sources of Information test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 0-10%, 21-30%, and 31-40% meal eligibility ranges by four (1.94% difference), two (1.03% difference), and six (3.11% difference) mean scale score points. The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in the 11-20% and 41-50% meal eligibility ranges by two (1.02% difference) and three (1.57% difference) mean scale score points (see Figure 123).



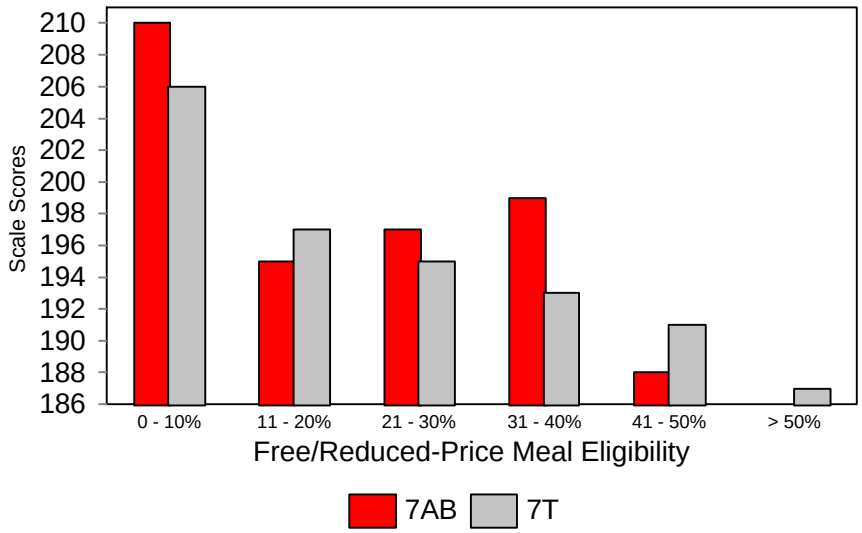
	7AB	7T	% Change
0 - 10%	192	189	1.59%
N	5	20	
SD	6.72	6.73	
11 - 20%	181	183	1.09%
N	14	12	
SD	6.86	6.51	
21 - 30%	183	182	0.55%
N	4	11	
SD	9.91	6.63	
31 - 40%	184	180	2.22%
N	2	8	
SD	3.50	5.70	
41 - 50%	177	177	0.00%
N	4	7	
SD	5.59	4.21	
> 50%		174	
N	0	5	
SD		2.68	

Figure 121. Mathematics mean scale score comparisons based on free and reduced-price meal eligibility on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7AB	7T	% Change
0 - 10%	206	199	3.52%
N	5	20	
SD	7.06	7.46	
11 - 20%	191	193	1.04%
N	14	12	
SD	8.61	7.31	
21 - 30%	195	190	2.63%
N	4	11	
SD	6.84	8.35	
31 - 40%	197	191	3.14%
N	2	8	
SD	2.50	7.57	
41 - 50%	190	187	1.60%
N	4	7	
SD	8.69	4.21	
> 50%		188	
N	0	5	
SD		4.71	

Figure 122. Written Expression mean scale score comparisons based on free and reduced-price meal eligibility on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



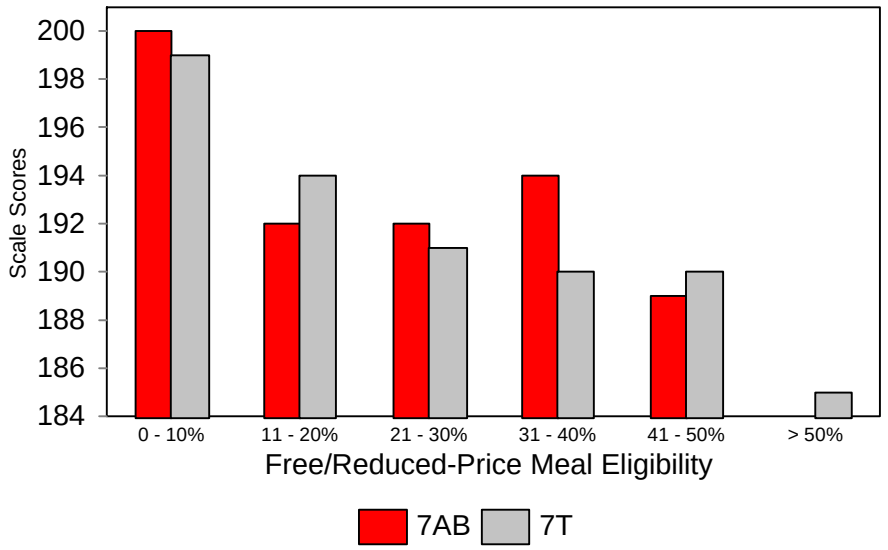
	7AB	7T	% Change
0 - 10%	210	206	1.94%
N	5	20	
SD	5.04	6.58	
11 - 20%	195	197	1.02%
N	14	12	
SD	8.39	7.57	
21 - 30%	197	195	1.03%
N	4	11	
SD	9.12	8.70	
31 - 40%	199	193	3.11%
N	2	8	
SD	6.00	4.97	
41 - 50%	188	191	1.57%
N	4	7	
SD	7.83	4.26	
> 50%		187	
N	0	5	
SD		3.76	

Figure 123. Sources of Information mean scale score comparisons based on free and reduced-price meal eligibility on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

In the TAP Social Studies test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 0-10%, 21-30%, and 31-40% meal eligibility ranges by one (0.50% difference), one (0.52% difference), and four (2.11% difference) mean scale score points respectively. The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in the 11-20% and 41-50% meal eligibility ranges by two (1.03% difference) and one (0.53% difference) mean scale score points respectively (see Figure 124).

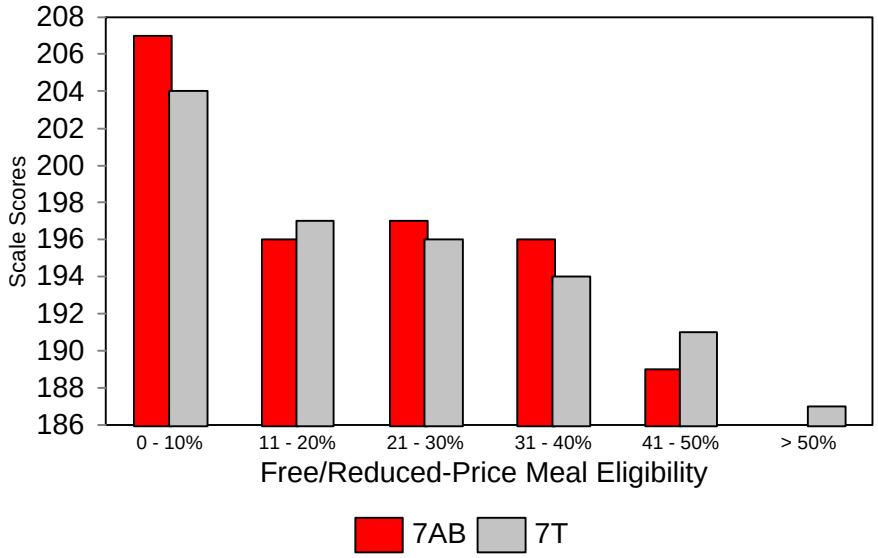
In the TAP Science test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 0-10%, 21-30%, and 31-40% meal eligibility ranges by three (1.47% difference), one (0.51% difference), and two (1.03% difference) mean scale score points. The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in the 11-20% and 41-50% meal eligibility ranges by one (0.51% difference) and two (1.05% difference) mean scale score points (see Figure 125).

The TAP Composite showed that 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 0-10%, 21-30%, and 31-40% meal eligibility ranges by three (1.51% difference), two (1.05% difference), and four (2.12% difference) mean scale score points respectively. The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in the



	7AB	7T	% Change
0 - 10%	200	199	0.50%
N	5	20	
SD	3.98	5.71	
11 - 20%	192	194	1.03%
N	14	12	
SD	7.64	6.32	
21 - 30%	192	191	0.52%
N	4	11	
SD	9.07	7.57	
31 - 40%	194	190	2.11%
N	2	8	
SD	3.50	5.19	
41 - 50%	189	190	0.53%
N	4	7	
SD	3.96	1.85	
> 50%		185	
N	0	5	
SD		2.40	

Figure 124. Social Studies mean scale score comparisons based on free and reduced-price meal eligibility on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7AB	7T	% Change
0 - 10%	207	204	1.47%
N	5	20	
SD	2.76	5.42	
11 - 20%	196	197	0.51%
N	14	12	
SD	7.97	6.53	
21 - 30%	197	196	0.51%
N	4	11	
SD	8.03	7.21	
31 - 40%	196	194	1.03%
N	2	8	
SD	7.00	4.03	
41 - 50%	189	191	1.05%
N	4	7	
SD	5.80	4.05	
> 50%		187	
N	0	5	
SD		5.83	

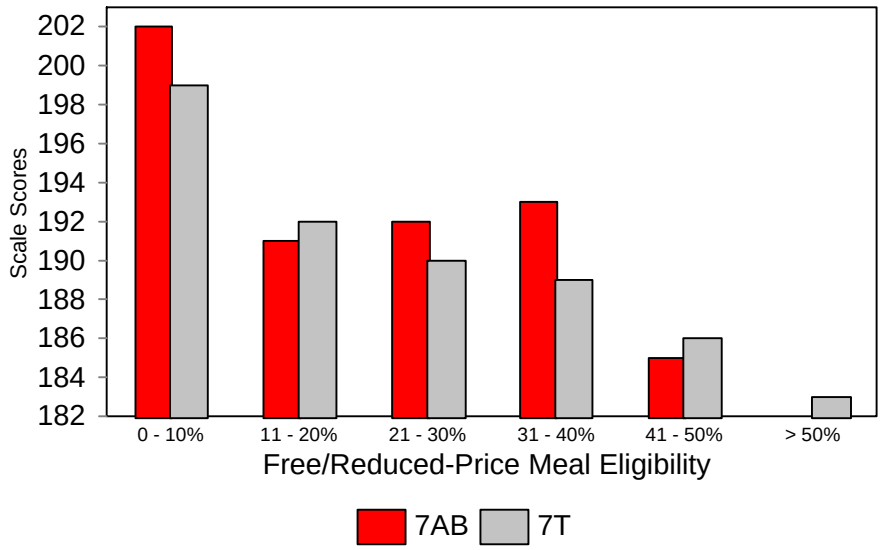
Figure 125. Science mean scale score comparisons based on free and reduced-price meal eligibility on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

11-20% and 41-50% meal eligibility ranges by one mean scale score point each (0.52% and 0.54% difference each) (see Figure 126).

Summary

The 7A/B block schedule schools and the 7-period traditional schedule schools of this study were disaggregated according to their free and reduced-price meal eligibility percentages. The schools were then arrayed according to free and reduced-price meal eligibility percentage ranges, and their 1996 TAP mean scale scores were compared on each of the test areas and the composite.

In the 0-10% free and reduced-price meal eligibility category, the 7A/B block schedule schools outperformed the 7-period traditional schedule schools in all six TAP test areas. In the 11-20% free and reduced-price meal eligibility category, 7-period traditional schedule schools outperformed 7A/B block schedule schools in all six TAP test areas. In the 21-30% free and reduced-price meal eligibility category, 7A/B block schedule schools outperformed 7-period traditional schedule schools in five TAP test areas and had identical mean scale scores in one TAP test area. In the 31-40% free and reduced-price meal eligibility category, 7A/B block schedule schools outperformed 7-period traditional schedule schools in all six TAP test areas. In the 41-50% free and reduced-price meal eligibility category, 7-period traditional schedule schools outperformed 7A/B



	7AB	7T	% Change
0 - 10%	202	199	1.51%
N	5	20	
SD	5.09	6.36	
11 - 20%	191	192	0.52%
N	14	12	
SD	8.06	6.98	
21 - 30%	192	190	1.05%
N	4	11	
SD	8.62	7.79	
31 - 40%	193	189	2.12%
N	2	8	
SD	4.83	5.65	
41 - 50%	185	186	0.54%
N	4	7	
SD	6.52	3.56	
> 50%		183	
N	0	5	
SD		3.80	

Figure 126. Complete Composite mean scale score comparisons based on free and reduced-price meal eligibility on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

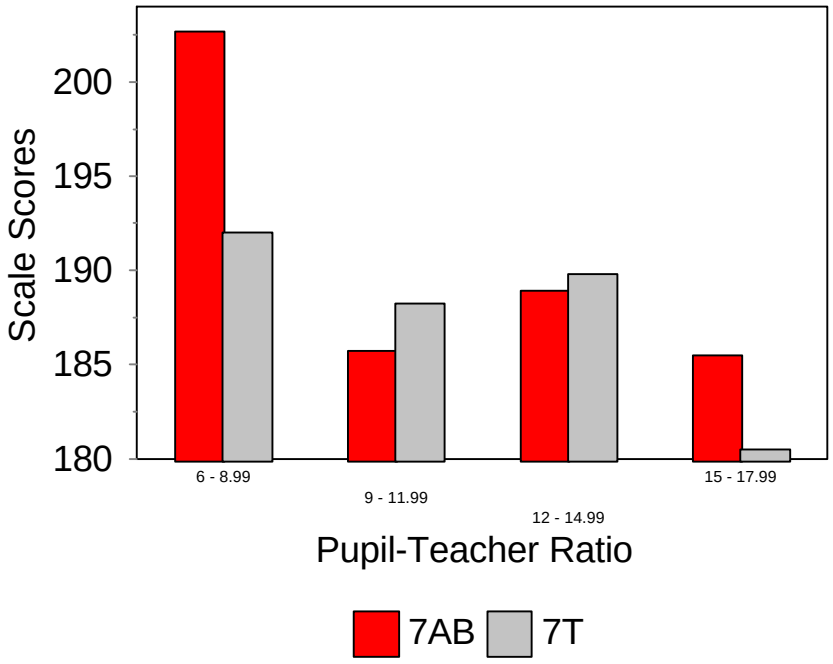
block schedule schools in four TAP test areas and had identical mean scale scores in one TAP test area. In this category, 7A/B block schedule schools outperformed 7-period traditional schedule schools in one TAP test area.

Research Question 9

What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools according to pupil-teacher ratio?

To answer this research question, the 7A/B block schedule schools and the 7-period traditional schedule schools of this study were disaggregated and arrayed according to their 1996 pupil-teacher ratio. The ratio categories were 6-8.99, 9-11.99, 12-14.99, and 15-17.99. Descriptive data tables and bar graphs were constructed for the 1996 TAP mean scale scores of the 7A/B block schedule schools and the 7-period traditional schedule schools.

In the TAP Reading Comprehension test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 6-8.99 and 15-17.99 ratio categories by 11 (5.26% difference) and five (2.70% difference) mean scale score points. The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in the 9-11.99 and 12-14.99 ratio categories by two (1.35% difference) and one (0.46% difference) mean scale score points (see Figure 127).



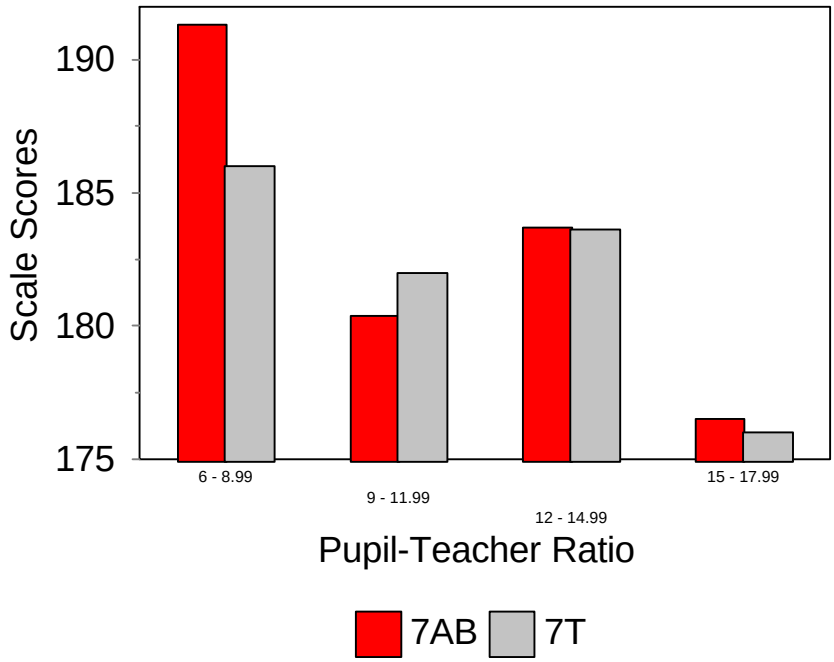
	7AB	7T	% Change
6 - 8.99	203	192	5.26%
N	3	3	
SD	7.59	1.41	
9 - 11.99	186	188	1.35%
N	11	25	
SD	5.53	7.87	
12 - 14.99	189	190	0.46%
N	13	34	
SD	10.89	9.22	
15 - 17.99	186	181	2.70%
N	2	2	
SD	2.50	7.50	

Figure 127. Reading Comprehension mean scale score comparisons based on pupil-teacher ratio on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

In the TAP Mathematics test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 6-8.99 and 15-17.99 ratio categories by five (2.79% difference) and one (0.28% difference) mean scale score points respectively. The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in the 9-11.99 ratio category by two mean scale score points (0.91% difference). In the 12-14.99 ratio category, both 7A/B block schedule schools and 7-period traditional schedule schools recorded identical mean scale scores (see Figure 128).

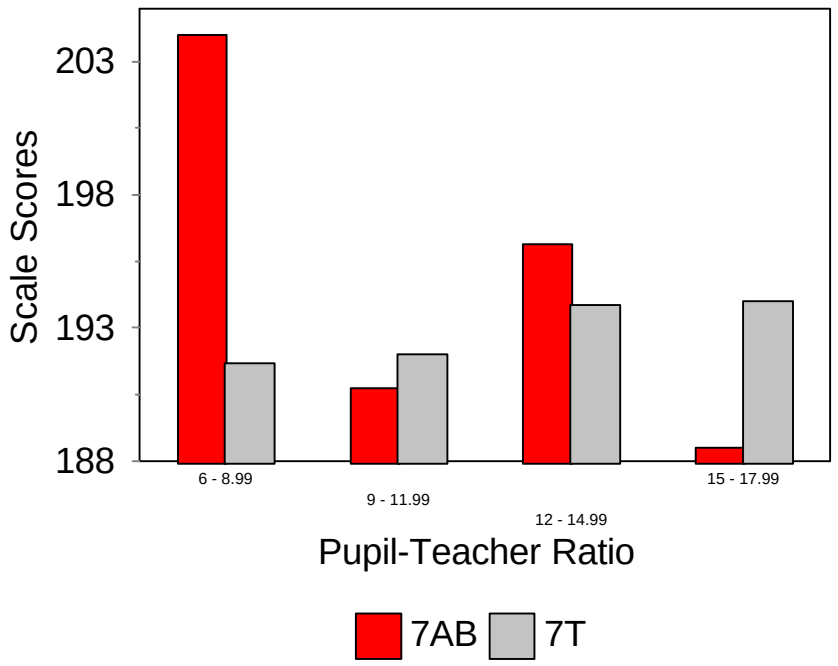
In the TAP Written Expression test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 6-8.99 and 12-14.99 ratio categories by 12 (6.05% difference) and two (1.17% difference) mean scale score points. The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in the 9-11.99 and 15-17.99 ratio categories by one (0.67% difference) and five (2.92% difference) mean scale score points (see Figure 129).

In the TAP Sources of Information test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 6-8.99 ratio category by 11 mean scale score points (5.11% difference). The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in the 9-11.99 and 15-17.99 ratio categories by three (1.50% difference) and one (0.26% difference)



	7AB	7T	% Change
6 - 8.99	191	186	2.79%
N	3	3	
SD	6.85	4.08	
9 - 11.99	180	182	0.91%
N	11	25	
SD	5.77	6.90	
12 - 14.99	184	184	0.04%
N	13	34	
SD	9.49	8.37	
15 - 17.99	177	176	0.28%
N	2	2	
SD	0.50	2.00	

Figure 128. Mathematics mean scale score comparisons based on pupil-teacher ratio on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



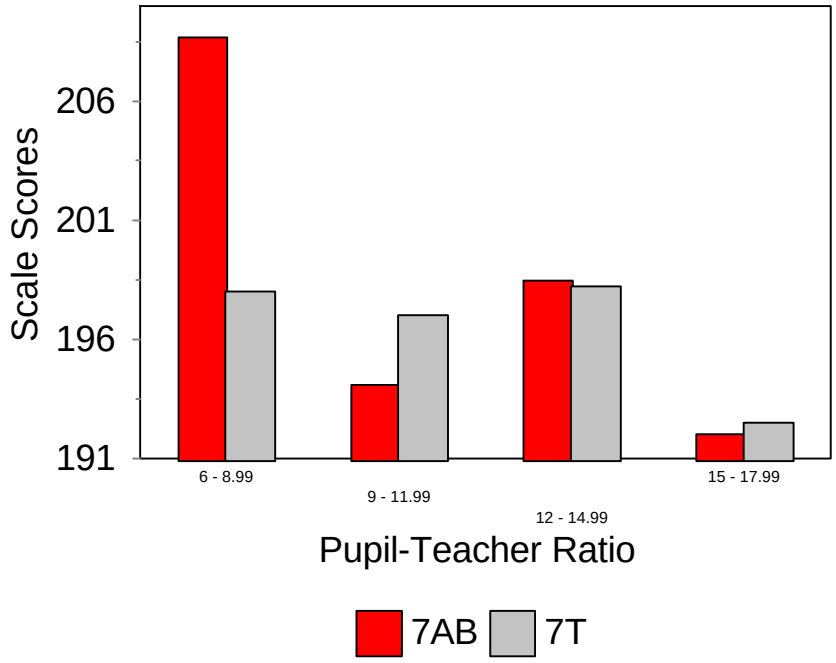
	7AB	7T	% Change
6 - 8.99	204	192	6.05%
N	3	3	
SD	6.38	0.47	
9 - 11.99	191	192	0.67%
N	11	25	
SD	9.10	7.46	
12 - 14.99	196	194	1.17%
N	13	34	
SD	9.07	9.35	
15 - 17.99	189	194	2.92%
N	2	2	
SD	0.50	7.00	

Figure 129. Written Expression mean scale score comparisons based on pupil-teacher ratio on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

mean scale score points respectively. In the 12-14.99 ratio category, both 7A/B block schedule schools and 7-period traditional schedule schools recorded identical mean scale scores (see Figure 130).

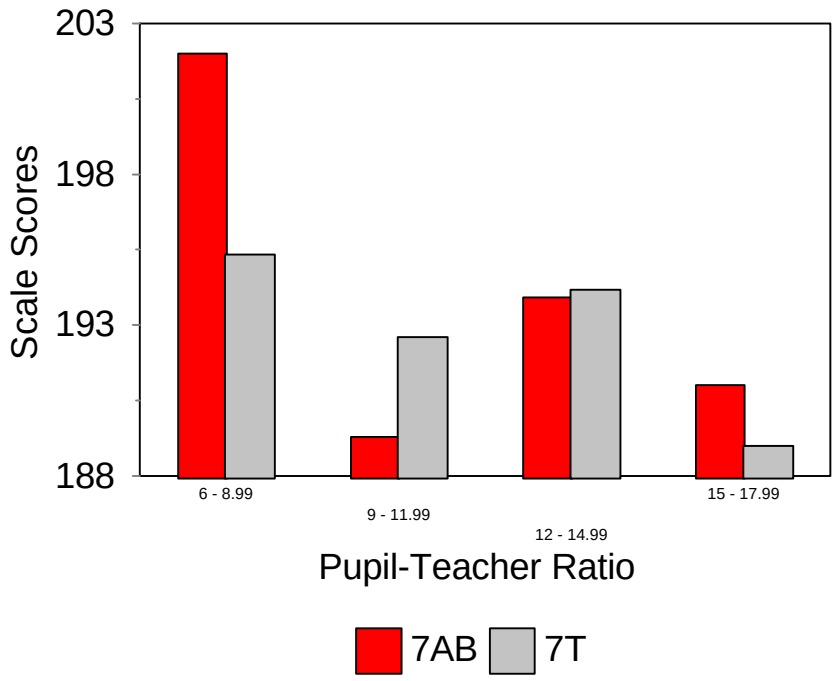
In the TAP Social Studies test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 6-8.99 and 15-17.99 ratio categories by seven (3.30% difference) and two (1.05% difference) mean scale score points respectively. The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in the 9-11.99 ratio category by four mean scale score points (1.76% difference). In the 12-14.99 ratio category, both 7A/B block schedule schools and 7-period traditional schedule schools reported identical mean scale scores (see Figure 131).

In the TAP Science test area, 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 6-8.99 ratio category by nine mean scale score points (4.49% difference). The 7-period traditional schedule schools outperformed the 7A/B block schedule schools in the 9-11.99 ratio category by three mean scale score points (1.46% difference). In the 12-14.99 and 15-17.99 ratio categories, both 7A/B block schedule schools and 7-period traditional schedule schools reported identical mean scale scores (see Figure 132).



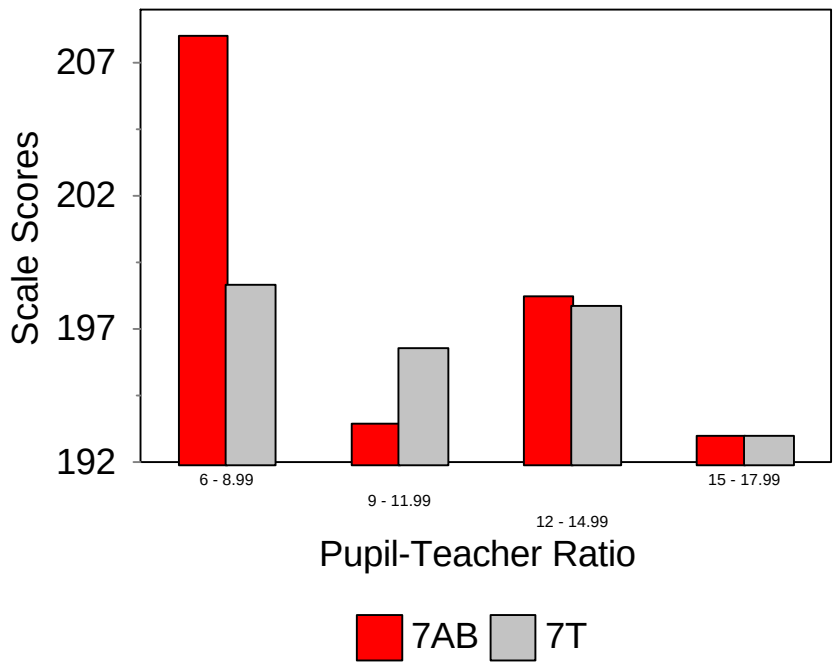
	7AB	7T	% Change
6 - 8.99	209	198	5.11%
N	3	3	
SD	5.91	2.16	
9 - 11.99	194	197	1.50%
N	11	25	
SD	6.33	7.82	
12 - 14.99	198	198	0.11%
N	13	34	
SD	11.83	10.14	
15 - 17.99	192	193	0.26%
N	2	2	
SD	1.00	3.50	

Figure 130. Sources of Information mean scale score comparisons based on pupil-teacher ratio on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7AB	7T	% Change
6 - 8.99	202	195	3.30%
N	3	3	
SD	5.72	1.25	
9 - 11.99	189	193	1.76%
N	11	25	
SD	4.97	6.42	
12 - 14.99	194	194	0.13%
N	13	34	
SD	8.35	7.78	
15 - 17.99	191	189	1.05%
N	2	2	
SD	2.00	3.00	

Figure 131. Social Studies mean scale score comparisons based on pupil-teacher ratio on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.



	7AB	7T	% Change
6 - 8.99	208	199	4.49%
N	3	3	
SD	5.72	1.89	
9 - 11.99	193	196	1.46%
N	11	25	
SD	6.26	7.69	
12 - 14.99	198	198	0.18%
N	13	34	
SD	9.28	8.33	
15 - 17.99	193	193	0.00%
N	2	2	
SD	1.00	4.00	

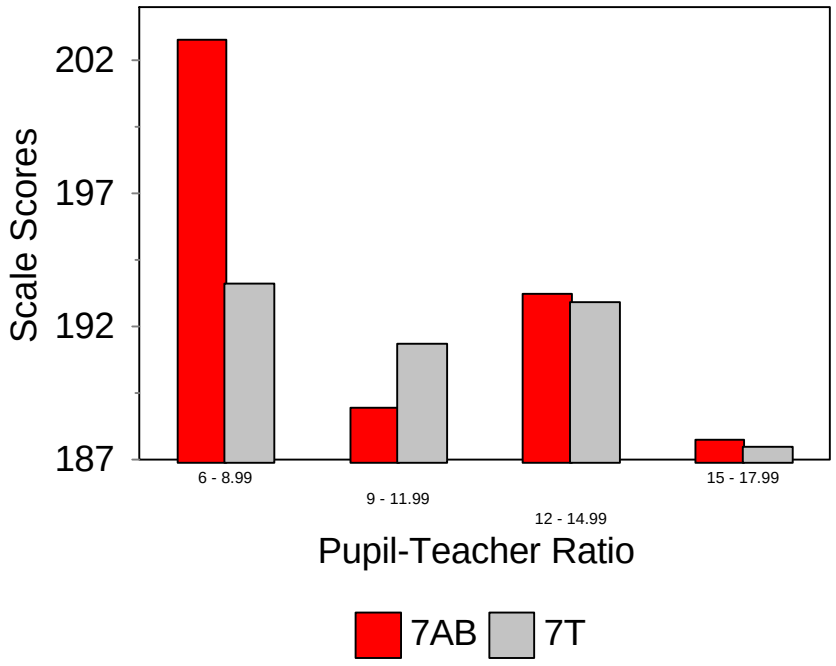
Figure 132. Science mean scale score comparisons based on pupil-teacher ratio on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

The TAP Composite showed that 7A/B block schedule schools outperformed 7-period traditional schedule schools in the 6-8.99 ratio category by nine mean scale score points (4.52% difference). The 7-period traditional schedule schools outperformed 7A/B block schedule schools in the 9-11.99 ratio category by two mean scale score points (1.28% difference). In the 12-14.99 and 15-17.99 ratio categories, both 7A/B block schedule schools and 7-period traditional schedule schools reported identical mean scale scores (see Figure 133).

Summary

The 7A/B block schedule schools and the 7-period traditional schedule schools were disaggregated according to their 1996 pupil-teacher ratios. Then, the schools were arrayed according to pupil-teacher ratio categories and their 1996 TAP mean scale scores were compared on the test areas and the composite.

In the 6-8.99 ratio category, 7A/B block schedule schools outperformed 7-period traditional schedule schools in all six TAP test areas. In the 9-11.99 ratio category, 7-period traditional schedule schools outperformed 7A/B block schedule schools in all six TAP test areas. In the 12-14.99 ratio category, 7A/B block schedule schools outperformed 7-period traditional schedule schools in one TAP test area. Schools on 7-period traditional schedule outperformed schools on 7A/B block schedule in one TAP test area, and both 7-period traditional schedule



	7AB	7T	% Change
6 - 8.99	203	194	4.52%
N	0	3	
SD	6.31	1.36	
9 - 11.99	189	191	1.28%
N	0	25	
SD	5.78	7.03	
12 - 14.99	193	193	0.16%
N	0	34	
SD	9.54	8.58	
15 - 17.99	188	188	0.13%
N	0	2	
SD	1.08	4.50	

Figure 133. Complete Composite mean scale score comparisons based on pupil-teacher ratio on the 1996 Eleventh Grade Tests of Achievement and Proficiency (TAP) between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia.

schools and 7A/B block schedule schools recorded identical mean scale scores on four TAP test areas. In the 15-17.99 ratio category, 7A/B block schedule schools outperformed 7-period traditional schedule schools in three TAP test areas. Schools on 7-period traditional schedule outperformed schools on 7A/B block schedule in two TAP test areas. In one TAP test area, the scores were identical.

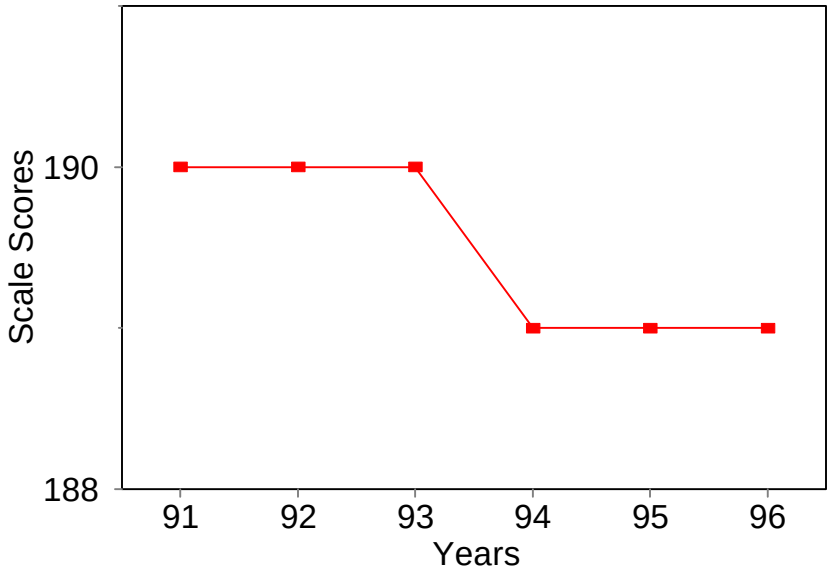
Research Question 10

What were the mean scale score trends of the responding schools on the TAP from 1991-1996?

To answer this question, the scale scores of the responding 7A/B block schedule schools and the responding 7-period traditional schedule schools were combined for each of the testing years 1991-1996. Mean scale scores were determined for each of the testing years 1991-1996 on the six TAP test areas and the composite. Descriptive data tables and time-series graphs were constructed for the mean scale score results.

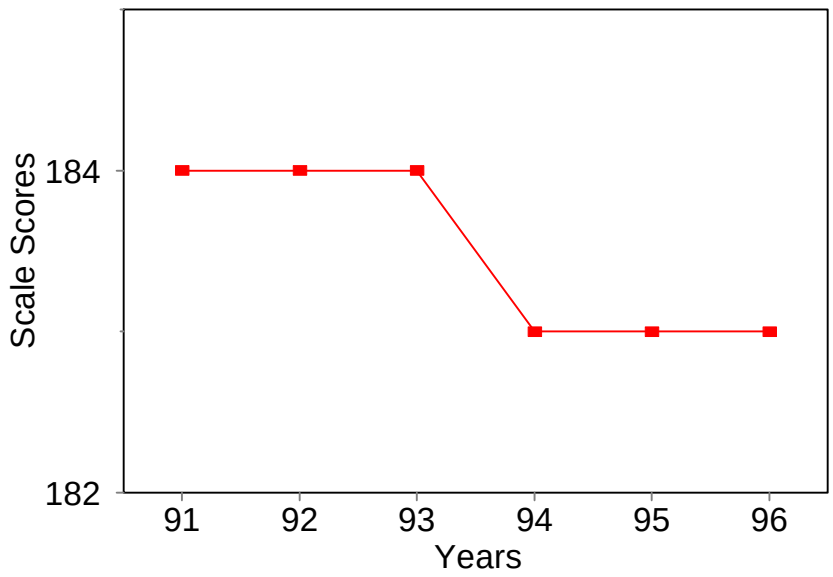
In the TAP Reading Comprehension test area, a negative mean scale score trend was noted from 1991 to 1996 (see Figure 134)

In the TAP Mathematics test area, a negative mean scale score trend was noted from 1991 to 1996 (see Figure 135).



Years	91	92	93	94	95	96
Populations' Mean Scale Scores	190	190	190	189	189	189
N	93	93	93	93	93	93
SD	7.73	7.60	8.41	9.78	8.10	9.00
% Change		0.00%	0.00%	-0.53%	0.00%	0.00%

Figure 134. Reading Comprehension mean scale scores from 1991-1996 on the Eleventh Grade Tests of Achievement and Proficiency (TAP) for combined 7A/B block schedule schools and 7-period traditional schedule schools.



Years	91	92	93	94	95	96
Populations' Mean Scale Scores	184	184	184	183	183	183
N	93	93	93	93	93	93
SD	7.59	7.63	7.95	9.54	7.97	7.93
% Change		0.00%	0.00%	-0.54%	0.00%	0.00%

Figure 135. Mathematics mean scale scores from 1991-1996 on the Eleventh Grade Tests of Achievement and Proficiency (TAP) for combined 7A/B block schedule schools and 7-period traditional schedule schools.

In the TAP Written Expression test area, a negative mean scale score trend was noted from 1991-1996 (see Figure 136).

In the TAP Sources of Information test area, a positive mean scale score trend was noted from 1991-1996 (see Figure 137)

In the TAP Social Studies test area, a negative mean scale score trend was noted for 1991-1996 (see Figure 138).

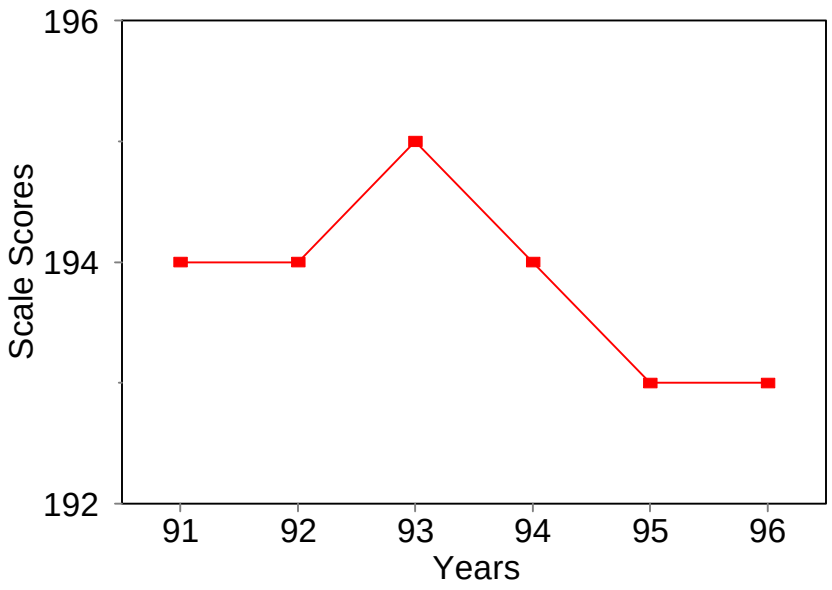
In the TAP Science test area, a positive mean scale score trend was noted for 1991-1996 (see Figure 139).

On the TAP Composite, a negative mean scale score trend was noted for 1991-1996 (see Figure 140).

Summary

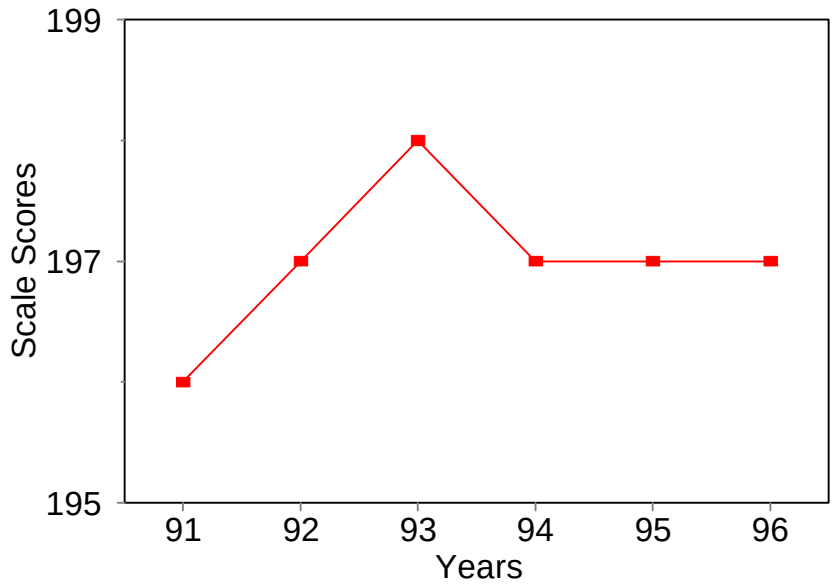
The TAP scale scores of the 29 7A/B block schedule schools and the 64 7-period traditional schedule schools were averaged for each of the 1991-1996 test years. A positive or negative trend was determined for each of the TAP test areas for 1991-1996.

A negative mean scale score trend was noted in four TAP test areas while a positive mean scale score trend was noted in two TAP test areas.



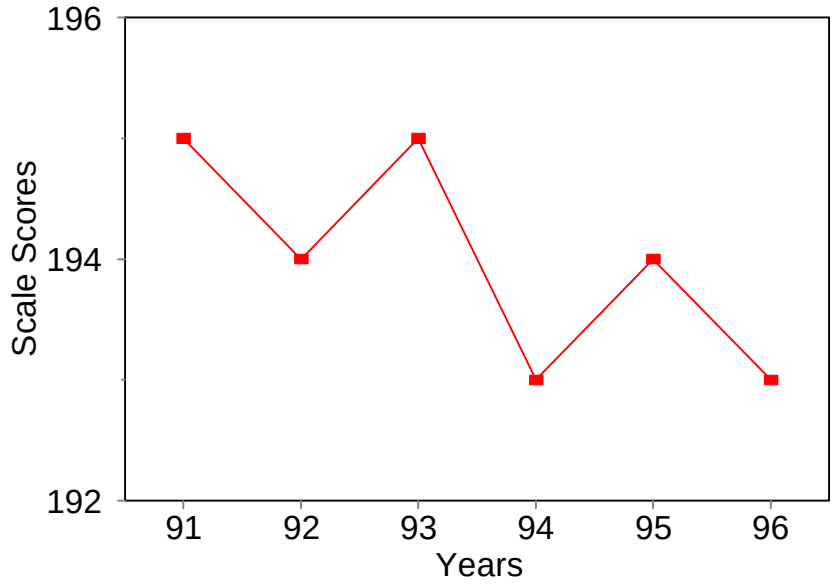
Years	91	92	93	94	95	96
Populations' Mean Scale Scores	194	194	195	194	193	193
N	93	93	93	93	93	93
SD	8.60	8.48	8.59	9.20	8.35	8.79
% Change		0.00%	0.52%	-0.51%	-0.52%	0.00%

Figure 136. Written Expression mean scale scores from 1991-1996 on the Eleventh Grade Tests of Achievement and Proficiency (TAP) for combined 7A/B block schedule schools and 7-period traditional schedule schools.



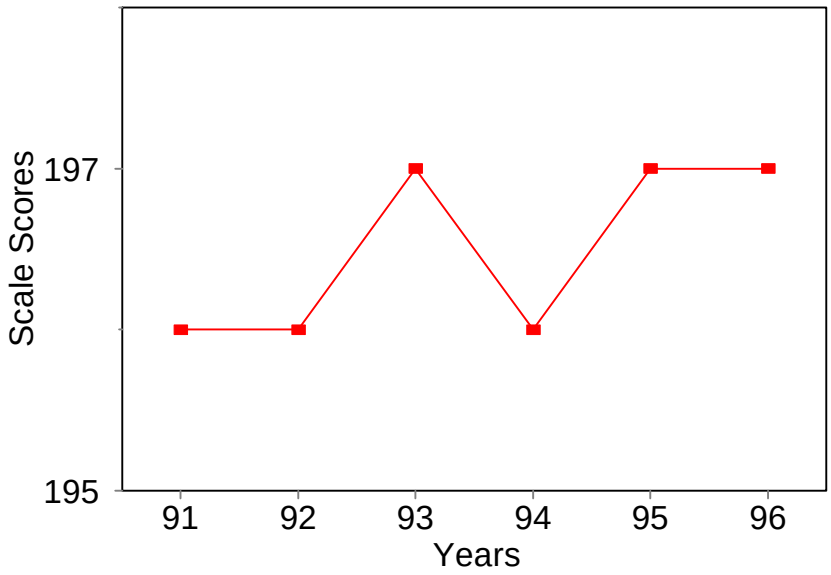
Years	91	92	93	94	95	96
Populations' Mean Scale Scores	196	197	198	197	197	197
N	93	93	93	93	93	93
SD	8.68	9.11	9.07	9.32	8.55	9.38
% Change		0.51%	0.51%	-0.51%	0.00%	0.00%

Figure 137. Sources of Information mean scale scores from 1991-1996 on the Eleventh Grade Tests of Achievement and Proficiency (TAP) for combined 7A/B block schedule schools and 7-period traditional schedule schools.



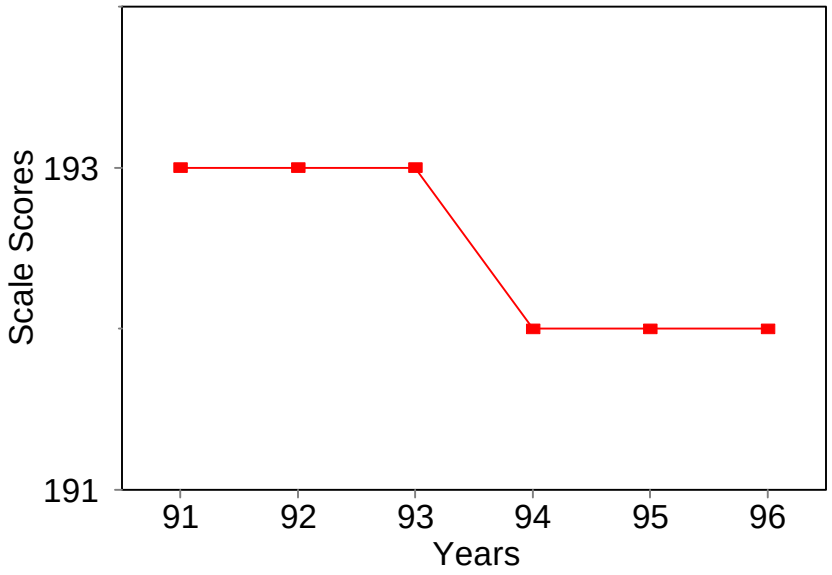
Years	91	92	93	94	95	96
Populations' Mean Scale Scores	195	194	195	193	194	193
N	93	93	93	93	93	93
SD	6.95	7.01	7.44	7.05	6.73	7.26
% Change		-0.51%	0.52%	-1.03%	0.52%	-0.52%

Figure 138. Social Studies mean scale scores from 1991-1996 on the Eleventh Grade Tests of Achievement and Proficiency (TAP) for combined 7A/B block schedule schools and 7-period traditional schedule schools.



Years	91	92	93	94	95	96
Populations' Mean Scale Scores	196	196	197	196	197	197
N	93	93	93	93	93	93
SD	7.86	7.95	8.12	8.20	7.11	8.14
% Change		0.00%	0.51%	-0.51%	0.51%	0.00%

Figure 139. Science mean scale scores from 1991-1996 on the Eleventh Grade Tests of Achievement and Proficiency (TAP) for combined 7A/B block schedule schools and 7-period traditional schedule schools.



Years	91	92	93	94	95	96
Populations' Mean Scale Scores	193	193	193	192	192	192
N	93	93	93	93	93	93
SD	7.33	7.36	7.68	8.24	7.26	7.94
% Change		0.00%	0.00%	-0.52%	0.00%	0.00%

Figure 140. Complete Composite mean scale scores from 1991-1996 on the Eleventh Grade Tests of Achievement and Proficiency (TAP) for combined 7A/B block schedule schools and 7-period traditional schedule schools.

CHAPTER V

SUMMARY, CONCLUSIONS, DISCUSSION, IMPLICATIONS

The first purpose of this study was to determine what effect the introduction of 7A/B block scheduling had on eleventh-grade Tests of Achievement and Proficiency (TAP) mean scale scores in public, 9-12 high schools in Virginia. The second purpose of this study was to determine the 1996 eleventh-grade Tests of Achievement and Proficiency (TAP) mean scale score differences between 7A/B block schedule schools and 7-period traditional schedule schools in Virginia. In addition, 1991-1996 trends in TAP mean scale scores of the combined populations of this study were determined.

The research questions developed for study were

1. What effect did the introduction of 7A/B block scheduling have on eleventh-grade TAP scores?
2. What were the mean scale score differences on the 1996 eleventh-grade TAP among schools who had been on 7A/B block schedules for one, two, and three or more years?

3. What were the comparative TAP scale score mean differences in achievement between public, 9-12 high schools in Virginia on 7A/B block scheduling and 7-period traditional scheduling?

4. What were the comparative mean scale score differences on the 1996 eleventh-grade TAP between schools on 7A/B block schedules and 7-period traditional schedules?

5. What were the mean scale score differences on the 1996 eleventh-grade TAP among schools who had been on 7A/B block schedules for one, two, or three or more years, and schools on 7-period traditional schedules?

6. What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools based on school size?

7. What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools based on school location?

8. What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools based on free and reduced-price meal eligibility?

9. What were the mean scale score differences on the 1996 eleventh-grade TAP between 7A/B block schedule schools and 7-period traditional schedule schools according to pupil-teacher ratio?

10. What were the TAP mean scale score trends of the responding schools from 1991-1996?

Summary of Related Literature

A setting of a context for school reform and school restructuring began this study. Block scheduling was one element of school restructuring. The review of the literature investigated time and learning, secondary school schedules, block scheduling models, block scheduling advantages, block scheduling disadvantages, and block scheduling achievement.

Research established that the amount of time allocated for learning was a major variable in the learning process. National reports of the 1990's continued to call for restructuring the way schools allocated time for learning.

The idea of restructuring the way schools allocated time for learning had led to attempts to “improve” the secondary school schedule. Block scheduling--the use of extended periods of time--had become the way most schools met the “time” challenge.

Canady and Rettig (1995) identified five basic scheduling models in use in American schools. Four of these five basic scheduling models in use are considered block scheduling models. Two of the most popular block scheduling models are the 4x4 schedule and the alternating day schedule.

Proponents of block scheduling asserted that the schedule created better teaching and learning opportunities for students and teachers. Critics of block scheduling asserted that hard data on the effectiveness of the scheduling was lacking.

Block scheduling achievement as reported in the literature was scarce in terms of hard, empirical data. Most of the studies cited were inconclusive. This dearth of information suggested a need for further study of student achievement under conditions of block scheduling.

Summary of Methodology

The focus of this study was the eleventh-grade Tests of Achievement and Proficiency (TAP) mean scale scores from 1991-1996. The populations of this study were public, 9-12 high schools in Virginia that were on 7A/B block schedule or 7-period traditional schedule during the 1995-1996 school year.

Data were collected through the use of mail questionnaires and through the examination of extant, archival records. Descriptive comparisons of eleventh-grade

TAP scale score mean differences between the populations and separate time-series comparisons on 7A/B block schedule schools were made in order to answer the research questions.

Conclusions

The school reform and restructuring movements of the last decade have had schools searching for solutions to the problem of how to educate children for the twenty-first century. One popular response to the restructuring movement and the concomitant time and learning debate has been the adoption of block scheduling--the use of extended periods of time for learning. As with many "innovations" in education, schools rush-in to try the innovation based on purported advantages and without any real hard, empirical data on which to support the innovation.

This study sought to provide empirical data on the effects of 7A/B block scheduling on the Tests of Achievement and Proficiency (TAP) mean scale scores and to provide a comparison of mean scale score achievement between schools on 7A/B block scheduling and schools on 7-period traditional scheduling in Virginia. The results of this study, that schools that adopt block schedules will find achievement gains, achievement declines, but primarily achievement status quo, were consistent with the few findings on block scheduling achievement in the literature.

One phase of this study involved those schools in Virginia who were on 7A/B block schedule in 1996. Time-series comparisons of those schools using TAP mean scale score data from 1991-1996 were made. The time-series mean scale score comparisons were made overall on the six TAP test areas and the composite and according to several variables identified by the researcher from the 7A/B Block Schedule Information Questionnaire (Appendix A). To draw conclusions about the effects of the introduction of 7A/B block scheduling on TAP mean scale scores, the researcher constructed data tables of increases, decreases, or no changes in TAP mean scale scores for the six TAP test areas across all the time-series comparison areas (see Appendices H and I). These data tables were constructed for the implementation year and the second year of schools reporting 7A/B block schedules.

During the implementation year of 7A/B block scheduling, the reporting schools showed an increase in mean scale scores for the six TAP test areas across all comparison areas 65% of the time. During the implementation year of 7A/B block scheduling, decreases in mean scale scores occurred 16% of the time, and no change in mean scale scores was reported 19% of the time (see Appendix H). However, these increases and decreases in mean scale scores were usually one mean scale score point of less than 1% difference. In the researcher's opinion, these

increases and decreases in mean scale score points did not constitute a meaningful or practical difference. The implementation year time-series results of 7A/B block scheduling appeared to be consistent with the scarce reported literature on achievement in block schedules. While Eineder and Bishop (1997) reported first year block scheduling gains in achievement in honor rolls, grade point averages, and numbers of A's and F's earned; Sturgis (1995) reported that achievement in block scheduling would primarily remain unchanged. Van Mondfrans and others (1972) reported no advantages in achievement under conditions of block scheduling.

The researcher did note that the mean scale scores on the TAP Mathematics test area showed the least favorable results during the implementation year of 7A/B block scheduling. Lindsay (1996) predicted that block scheduling would result in less effective learning, especially in math and science. A middle school mathematics achievement study by Schroth and Dixon (1995) yielded results that would support the claim that mathematics achievement does not increase under conditions of block scheduling. Lockwood's (1995) research found no significant difference in algebra or geometry standardized test scores between block and traditional scheduling patterns.

In the second year of 7A/B block scheduling, the time-series comparisons revealed more decreases than increases in mean scale scores in the six TAP test

areas. Decreases in mean scale scores were noted in 53% of the comparison areas. Increases in mean scale scores were noted in 24% of the comparison areas, and no change occurred in 23% of the comparison areas. While there was a majority of decreased mean scale scores during the second year of block scheduling, these decreases were generally one mean scale score point (see Appendix I). In the researcher's opinion, the second year changes in mean scale scores of the reporting 7A/B block schedule schools did not constitute a meaningful or practical difference. Again, the researcher noted that during the second year of 7A/B block scheduling the TAP Mathematics test area had the greatest number of decreased mean scale scores. Again, this seemingly greater occurrence of decreased mathematics mean scale scores is supported in the literature. Raphael and others (1986) reported negative mathematics achievement findings in block scheduled schools in Canada in the course of the Second International Mathematics Study. In the United States, Freeman (1995) reported a study done by the Center for Applied Research and Educational Improvement (CAREI) which revealed no mathematics mean score gains on district tests under conditions of block scheduling.

Another phase of this study sought to compare the 1996 TAP mean scale scores of 7A/B block schedule schools according to length-of-time on block scheduling. Two advantages of block scheduling according to Cawelti, as cited by

Canady and Rettig (1995), were the ability to use a variety of instructional activities and the flexibility to tailor lessons to the needs of the learner. It could be assumed then, that these improvements brought on by block scheduling would lead to greater achievement gains. However, the comparison results of this study showed that in 1996 schools who were in the first year of block scheduling outperformed schools in the second and third or more year of block scheduling by 2.03% and 3.55% respectively. Second year block scheduled schools outperformed third or more year block scheduled schools by 1.55%. Therefore, length-of-time on 7A/B block scheduling does not guarantee better achievement test scores. The results of this comparison did not support all of John Carroll's (1963) elements important to achievement and the time and learning relationship. In the researcher's opinion, the mean scale score differences reported for the first year 7A/B block schedule schools did constitute a meaningful or practical difference. However, the mean scale score differences for second and third or more years block schedule schools did not constitute a practical difference.

Another part of this study dealt with the comparison of TAP mean scale scores between 7A/B block schedule schools and 7-period traditional schedule schools from 1991-1996. Sturgis (1995), Freeman and Maruyama (1995),and the North Carolina Department of Public Instruction (1997) reported in the literature

that their studies of block scheduling versus traditional scheduling yielded status quo results. The results of this comparison of 7A/B block schedule schools and 7-period traditional schedule schools supported the findings in the literature in that no meaningful or practical differences between the schedule types were shown.

In looking at the 1996 TAP mean scale score comparisons between 7A/B block schedule schools and 7-period traditional schedule schools, the researcher found no meaningful or practical difference. When compared based on length-of-time on block schedule, schools that had been on 7A/B block schedule for one and two years outperformed the 7-period traditional schedule schools. Schools on 7A/B block schedule for three or more years were outperformed by schools on 7-period traditional schedule. In the researcher's opinion, the differences between the mean scale scores of the two scheduling types did not constitute a meaningful difference.

Neither school size nor school location constituted a meaningful or practical difference in mean scale scores between 7A/B block schedule schools and 7-period traditional schedule schools. While A and AAA block schedule schools outperformed A and AAA traditional schedule schools, AA traditional schedule schools outperformed AA block schedule schools. The difference between the two scheduling types was less than 1%. Urban and suburban block schedule schools outperformed urban and suburban traditional schedule schools. Rural traditional

schedule schools outperformed rural block schedule schools. Again, the differences between the two scheduling types was less than 1%.

In comparing mean scale score differences based on free and reduced-price meal eligibilities between 7A/B block schedule schools and 7-period traditional schedule schools, no meaningful or practical differences were shown. Free and reduced-price meal eligibility was a proxy for socio-economic status. Expected higher mean scale scores were found for the lowest eligibility range regardless of scheduling type.

Theodore Sizer stated in a public hearing on time and learning that "children will be motivated, and thus engaged, when they are known and respected" (National Education Commission on Time and Learning Public Hearing, 1993, p.14). Sizer (1984) also asserted that teachers have too many students; thus, he advocated smaller class sizes. In comparing 1996 TAP mean scale scores between the 7A/B block schedule schools and the 7-period traditional schedule schools of this study, those schools with the lowest pupil-teacher ratios recorded the greatest mean scale scores. The 7A/B block schedule schools outperformed the 7-period traditional schedule schools in the lowest pupil-teacher ratio category by nine mean scale score points (4.49% difference). In the researcher's opinion this mean scale score difference was a meaningful or practical difference. In the other pupil-teacher ratio

categories, the differences in mean scale score points did not constitute a meaningful or practical difference. Based on the results of the pupil-teacher ratio mean scale score comparisons between 7A/B block schedule schools and 7-period traditional schedule schools of this study, the researcher concluded that a 6-8:1 pupil-teacher ratio range was most beneficial under conditions of block scheduling.

As a final exercise, the researcher combined the TAP mean scale scores from 1991-1996 of the 7A/B block schedule schools and the 7-period traditional schedule schools reporting in this study. This exercise was done to establish a trend line of the responding schools for TAP mean scale scores. Over the six year period from 1991-1996, the TAP Composite mean scale scores showed a negative trend of one mean scale score point (0.52% difference). For some reason unknown to the researcher, mean scale scores in 1994 in all test areas experienced at least a one point decline. It should be noted, however, that the decrease in mean scale score points did not constitute a meaningful or practical difference.

Discussion

This study began with the idea of collecting 1991-1996 TAP test data and other specific information from every school in Virginia that was on 7A/B block scheduling and 7-period traditional scheduling. The researcher soon found that not all the information he sought was available from extant, archival records at the

Virginia Department of Education. At this point, the researcher realized that a mail information questionnaire would be needed to gather the information he sought.

A questionnaire was developed for 7A/B block schedule schools and for 7-period traditional schedule schools. The researcher, full of hope that all of them would be returned, sent out the questionnaires. Not only did the researcher not get all the questionnaires returned, he got incomplete returns, empty returns, hateful note returns, and no returns. The researcher soon realized that this was not an uncommon reaction to mail questionnaires. The researcher also realized that the design of the questionnaire was probably to blame for decreased returns.

The 7A/B Block Schedule Information Questionnaire (Appendix A) was twelve items and eight pages long. Detailed information was requested so that the researcher could control for "history" in the time-series comparisons and thus be able to make generalizations to the populations. This resulted in fewer overall returns and a response rate of 45% completed returns. The 7-Period Traditional Schedule Information Questionnaire (Appendix C) was four items and one page long. This relative brevity resulted in greater returns and ease of answering. The overall response rate was 62% completed returns. For both questionnaires, three follow-up requests were made for return of the questionnaires.

As the data were analyzed and arrayed, it was evident that block schedule schools realized increases in mean scale scores during the implementation year of block scheduling, but that most of those increases were gone by the second year of block scheduling. At any rate, the increases and decreases in mean scale score points were not meaningful overall or indicative of a practical difference. The researcher determined that unless differences in mean scale scores were greater than five points, there were not practical or meaningful differences.

There were some surprises in the data. One surprise in the data was the drop in overall mean scale scores in 1994. Another surprise in the data was the overall disparity in the mean scale score increases and decreases from the implementation year to the second year of 7A/B block scheduling. A third surprise was the lack of responses to the questionnaires from the educational community who could use the data to make informed decisions about how to arrange the school day to help students learn.

Implications of this Study

Czaja and McGee (1995) summarized very precisely the implications for this study when they wrote that time would answer the question of whether block scheduling created a learning boom or bust. Time-series studies of achievement will be one answer to whether block scheduling is a learning boom or bust.

The findings of this study showed that 7A/B block scheduling did not necessarily increase overall achievement as measured by Tests of Achievement and Proficiency (TAP) mean scale scores. It did show, however, that schools implementing 7A/B block scheduling can expect an increase in mean scale scores during the implementation year, but that increase in mean scale scores might be negated during the subsequent years of block scheduling. The researcher is hopeful this study will contribute in some small way to the empirical data so badly needed in evaluating the effects of block scheduling on student achievement. Perhaps this study will be helpful to those who make decisions about how to arrange the school day to help children learn.

While eleventh-grade student achievement as measured by the Tests of Achievement and Proficiency did not show meaningful gains under conditions of 7A/B block scheduling, neither did they show any harm. For schools considering the move to block scheduling, factors other than standardized test score achievement should be examined more closely.

Implications for Further Research

The findings of this study indicated the need for further research:

1. Study all 7A/B block schedule schools for a longer period of time.

2. Study 7A/B block schedule schools and 7-period traditional schedule schools on the Stanford 9 test.

3. Study the achievement differences between schools on 4X4 block scheduling and schools on 7A/B block scheduling.

4. Study the achievement differences between schools on 4X4 block scheduling and schools on 7-period traditional scheduling.

5. Study the change process from traditional scheduling to block scheduling.

6. Study the achievement differences in one discipline between block scheduled schools and traditional scheduled schools.

7. Study the relationship between grade achievement and standardized test achievement in block and traditional scheduled schools.

8. Study the effect of class size on achievement in block and traditional scheduled schools.

9. Study the implementation year of schools on 7A/B block scheduling to determine factors that improved achievement.

10. Study what happened in Virginia schools in 1994 that could account for the overall decline in TAP scores.

11. Study teacher training methods in higher education for implications for teaching in a block schedule.

12. Study what instructional strategies work best under conditions of block scheduling.

13. Study what staff development factors or methods make block schedule implementation most effective.

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Appendix A

7A/B BLOCK SCHEDULE
INFORMATION QUESTIONNAIRE

1. Please send a copy of your eleventh-grade Tests of Achievement and Proficiency (TAP) group-profile sheet for each school year between 1990-1991 and 1995-1996 inclusive.

2. Your length-of-time on the 7A/B block schedule as of the end of the 1995-1996 school year. (Circle number of your answer)

   1. ONE YEAR

   2. TWO YEARS

   3. THREE OR MORE YEARS

3. Which of the following categories best describes the percentage of children in your school who received free or reduced-price meals in the following school years? (Circle number in each column.)

1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996
1. 0-10%	1. 0-10%	1. 0-10%	1. 0-10%	1. 0-10%	1. 0-10%
2. 11-20%	2. 11-20%	2. 11-20%	2. 11-20%	2. 11-20%	2. 11-20%
3. 21-30%	3. 21-30%	3. 21-30%	3. 21-30%	3. 21-30%	3. 21-30%
4. 31-40%	4. 31-40%	4. 31-40%	4. 31-40%	4. 31-40%	4. 31-40%
5. 41-50%	5. 41-50%	5. 41-50%	5. 41-50%	5. 41-50%	5. 41-50%
6. > 50%	6. > 50%	6. > 50%	6. > 50%	6. > 50%	6. > 50%

4. How would you describe your school's location? (Circle number)

1. URBAN

2. SUBURBAN

3. RURAL

5. Your school's classification for the following school years. (Circle number in each school year listed.)

<u>1990-1991</u>
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

<u>1991-1992</u>
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

<u>1992-1993</u>
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

<u>1993-1994</u>
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

<u>1994-1995</u>
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

<u>1995-1996</u>
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

6. Please record any changes made to your school's instructional practices in the years indicated. If no changes were made in a given year, please write "none" in box on the right.

YEAR	**CHANGES IN INSTRUCTIONAL PRACTICES**
1990-1991	
1991-1992	
1992-1993	
1993-1994	
1994-1995	
1995-1996	

7. Please record any changes made to your school's curriculum in the years indicated. If no changes were made in a given year, please write "none" in box on the right.

YEAR	**CHANGES IN CURRICULUM**
1990-1991	
1991-1992	
1992-1993	
1993-1994	
1994-1995	
1995-1996	

8 Please record any changes in textbooks in your school in the years indicated. If no changes were made in a given year, please write “none” in box on the right.

YEAR	**CHANGES IN TEXTBOOKS**
1990-1991	
1991-1992	
1992-1993	
1993-1994	
1994-1995	
1995-1996	

9. In the year your school implemented 7A/B block scheduling, what is your best estimate of any change in the pupil-teacher ratio? (Circle number)

1. INCREASED

2. DECREASED

3.REMAINED ABOUT THE SAME

10. In the year your school implemented 7A/B block scheduling, how much staff development on block scheduling did your school have? (Circle number)

1. NONE

2. ONE DAY

3. TWO DAYS

4. THREE TO FIVE DAYS

5. MORE THAN FIVE DAYS

11. If your school had staff development on block scheduling, please record the focus of that staff development in the years indicated.

YEAR	**FOCUS OF STAFF DEVELOPMENT**
1990-1991	
1991-1992	
1992-1993	
1993-1994	
1994-1995	
1995-1996	

12. Please record any other major changes in your school in the years indicated. If no other changes were made in a given year, please write "none" in box on the right.

YEAR	OTHER CHANGES
1990-1991	
1991-1992	
1992-1993	
1993-1994	
1994-1995	
1995-1996	

PLEASE RETURN THIS QUESTIONNAIRE TO: **Douglas E. Arnold**
8 Marion Heights
Galax, Virginia 24333

Appendix B
7 A/B Cover Letter

October 14, 1997

FIELD(Title)FIELD(FirstName) FIELD(LastName)
FIELD(Address)

Dear FIELD(FirstName):

I am Doug Arnold, Principal of Galax High School in Galax, Virginia. As a part of my doctoral work at Virginia Tech, I am conducting a study of the achievement of students on block and traditional schedules. The results may be helpful to those who make decisions about how to arrange the school day to help children learn.

Your school is one of fifty-one public high schools in Virginia identified as having been on a 7A/B block schedule during the 1995-1996 school year. I am seeking your help in collecting data on the academic performance of students on this schedule. Would you please complete the enclosed questionnaire or ask your guidance director or your director of testing to do so? A pre-addressed, stamped envelope is enclosed for your convenience.

Your school may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. Your school will not be identified in the final report.

The results of this study will be published on Virginia Tech's homepage under "Electronic Theses and Dissertations."

I would be happy to answer any questions you might have. Please call 540-236-2991 or e-mail darnold@pen.k12.va.us or darnold@tcia.net.

Thank you for your assistance.

Sincerely,

Douglas E. Arnold
Principal
Galax High School
Galax, Virginia 24333
Fax: 540-236-8011
Doctoral Candidate
Virginia Tech
Blacksburg, Virginia 24061

David J. Parks
Professor

Appendix C

7-PERIOD TRADITIONAL SCHEDULE
INFORMATION QUESTIONNAIRE

1. Please send a copy of your eleventh-grade Tests of Achievement and Proficiency (TAP) group-profile sheet for each school year between 1990-1991 and 1995-1996 inclusive.

2. Which of the following categories best describes the percentage of children in your school who received free or reduced-price meals in the following school years? (Circle number in each column.)

1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996
1. 0-10%	1. 0-10%	1. 0-10%	1. 0-10%	1. 0-10%	1. 0-10%
2. 11-20%	2. 11-20%	2. 11-20%	2. 11-20%	2. 11-20%	2. 11-20%
3. 21-30%	3. 21-30%	3. 21-30%	3. 21-30%	3. 21-30%	3. 21-30%
4. 31-40%	4. 31-40%	4. 31-40%	4. 31-40%	4. 31-40%	4. 31-40%
5. 41-50%	5. 41-50%	5. 41-50%	5. 41-50%	5. 41-50%	5. 41-50%
6. > 50%	6. > 50%	6. > 50%	6. > 50%	6. > 50%	6. > 50%

3. How would you describe your school's location? (Circle number)

   1. URBAN
   2. SUBURBAN
   3. RURAL

4. Your school's classification for the following school years. (Circle number in each school year listed.)

1990-1991
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

1991-1992
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

1992-1993
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

1993-1994
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

1994-1995
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

1995-1996
1. A (0-500)
2. AA (501-999)
3. AAA (MORE THAN 999)

PLEASE RETURN THIS QUESTIONNAIRE TO: **Douglas E. Arnold**
8 Marion Heights
Galax, Virginia 24333

Appendix D

7-Period Traditional Schedule Cover Letter

October 14, 1997

FIELD(Title)FIELD(FirstName) FIELD(LastName)
FIELD(Address)

Dear FIELD(FirstName):

I am Doug Arnold, Principal of Galax High School in Galax, Virginia. As a part of my doctoral work at Virginia Tech, I am conducting a study of the achievement of students on block and traditional schedules. The results may be helpful to those who make decisions about how to arrange the school day to help children learn.

Your school is one of 104 public high schools in Virginia identified as having been on a 7-period traditional schedule during the 1995-1996 school year. I am seeking your help in collecting data on the academic performance of students on this schedule. Would you please complete the enclosed questionnaire or ask your guidance director or your director of testing to do so? A pre-addressed, stamped envelope is enclosed for your convenience.

Your school may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. Your school will not be identified in the final report.

The results of this study will be published on Virginia Tech's homepage under "Electronic Theses and Dissertations."

I would be happy to answer any questions you might have. Please call 540-236-2991 or e-mail darnold@pen.k12.va.us or darnold@tcia.net.

Thank you for your assistance.

Sincerely,

Douglas E. Arnold
Principal
Galax High School
Galax, Virginia 24333
Fax: 540-236-8011
Doctoral Candidate
Virginia Tech
Blacksburg, Virginia 24061

David J. Parks
Professor

Appendix E

Follow-up Postcard

October 21, 1997

Last week a questionnaire seeking information about eleventh-grade TAP scores and other data specific to your school was mailed to you. Your school's name was selected from a directory of Virginia schools who were on either a 7A/B block schedule or a 7-period traditional schedule during the 1995-1996 school year.

If you have already completed and returned the questionnaire to me, please accept my sincere thanks. If not, please do so today. Your school's information is extremely important so that the results of this study may be helpful to those who make decisions about how to arrange the school day to help children learn.

If by some chance you did not receive a questionnaire, or it got misplaced, please call me right now (540-236-2991), and I will get another one in the mail to you today.

Sincerely,

Douglas E. Arnold
8 Marion Heights
Galax, Virginia 24333
Doctoral Candidate
VA Tech
Blacksburg, Virginia 24061

Appendix F

Second Follow-up Letter

November 5, 1997

FIELD(Title)FIELD(FirstName) FIELD(LastName)
FIELD(Address)

Dear FIELD(FirstName):

About three weeks ago I wrote to you seeking your help in collecting data on the academic performance of students on block scheduling. Specifically, I was seeking the completion of a questionnaire and copies of eleventh-grade TAP group profile sheets. The results of this data collection may be helpful to those who make decisions about how to arrange the school day to help children learn. As of today, I have not received your completed questionnaire and TAP scores.

I am writing to you again because of the significance your questionnaire and TAP scores have to the usefulness of this study. Your school was one of fifty-one schools in Virginia identified as having been on a 7A/B block schedule during the 1995-1996 school year. In order for this study to be representative of 7A/B block scheduling achievement in Virginia, it is important that your school's questionnaire and TAP scores are returned.

In the event that your questionnaire has been misplaced, I have enclosed a replacement.

Your cooperation and help is greatly appreciated.

Sincerely,

Douglas E. Arnold
Principal
Galax High School
Galax, Virginia 24333
(540) 236-2991
Doctoral Candidate
Virginia Tech
Blacksburg, Virginia 24061

David J. Parks
Professor

Appendix G

Third Follow-up Letter

December 1, 1997

Dear Principal:

I am writing to you about my study comparing academic performance of students on 7A/B block scheduling and 7-period traditional scheduling. I have not yet received your completed questionnaire.

The number of questionnaires returned is encouraging. But, whether this study will be representative of the sample populations will be dependent upon you and others who have not yet responded.

Your school is important to this study. Your school was identified as having been on a 7A/B block schedule or a 7-period traditional schedule during the 1995-1996 school year. The results of this study may be useful to those who make decisions about how to arrange the school day to help children learn.

I urge you to complete and return the questionnaire as soon as possible.

Your cooperation, help, and your contribution to the success of this study are greatly appreciated.

Sincerely,

Douglas E. Arnold
Principal
Galax High School
Galax, Virginia 24333
(540) 236-2991
Doctoral Candidate
Virginia Tech
Blacksburg, Virginia 24061

David J. Parks
Professor

Appendix H

Implementation Year Block Schedule Changes

+ = Increase; - = Decreases, NC = No Change

Variable	Reading	Mathematics	Written Expression	Sources of information	Social Studies	Science
Composite	NC	-	+	+	+	+
A	_	-	+	+	+	+
AA	+	NC	+	NC	+	NC
AAA	NC	_	NC	+	NC	NC
Urban	+	-	-	+	+	+
Suburban	+	-	+	+	+	NC
Rural	-	-	+	+	+	+
0-10%	NC	NC	+	+	+	+
11-20%	NC	-	NC	NC	+	NC
21-30%	+	-	+	+	+	+
31-40%	+	+	+	+	+	+
41-50%	-	-	+	+	+	+
1 Year	+	+	+	+	+	+
2 Years	NC	+	NC	+	+	+
3+Years	-	-	+	+	+	+
None	+	+	+	+	+	+
One or more	+	NC	+	+	+	+
None	+	NC	+	+	+	+
2 Days	-	-	-	+	+	+
3 Days	+	+	NC	+	+	+
5+ Days	NC	NC	+	+	NC	+
No Change	-	-	+	+	+	+
Change	NC	NC	NC	+	+	+
No Change	NC	-	+	+	+	+
Change	+	NC	NC	+	+	+
No Change	NC	NC	NC	+	+	+
Change	+	NC	+	+	+	+
Increase	-	NC	-	+	+	+
Decrease	NC	-	-	-	-	-
No Change	+	+	+	+	+	+
Total +	13	6	19	27	27	25
Total -	7	14	4	1	1	1
Total NC	10	10	7	2	2	4

Appendix I
Second-year Block Schedule Changes
+ = Increase; - = Decreases, NC = No Change

Variable	Reading	Mathematics	Written Expression	Sources of information	Social Studies	Science
Composite	NC	-	-	-	-	NC
A	+	+	-	-	-	NC
AA	-	-	-	-	-	-
AAA	+	-	+	NC	+	+
Urban	+	NC	NC	NC	NC	+
Suburban	-	-	-	-	-	+
Rural	+	NC	NC	NC	-	NC
0-10%	+	-	-	+	+	+
11-20%	NC	-	NC	NC	-	+
21-30%	-	-	-	-	-	-
31-40%	X	X	X	X	X	X
41-50%	+	+	-	-	-	NC
1 Year	X	X	X	X	X	X
2 Years	-	-	NC	-	-	-
3+Years	+	+	+	+	+	+
None	+	-	NC	NC	-	-
One or more	-	-	-	NC	-	NC
None	NC	-	NC	NC	-	-
2 Days	+	NC	+	+	-	+
3 Days	NC	-	+	+	+	-
5+ Days	-	-	-	-	-	-
No Change	+	+	NC	NC	-	NC
Change	-	-	-	-	-	-
No Change	NC	-	-	-	-	NC
Change	-	-	NC	-	NC	-
No Change	-	-	NC	NC	-	NC
Change	-	-	-	-	-	-
Increase	+	-	NC	NC	-	+
Decrease	NC	+	+	+	+	+
No Change	-	-	-	-	-	-
Total +	11	5	5	5	5	9
Total -	11	20	13	13	21	11
Total NC	6	3	10	10	2	8

VITA

Douglas E. Arnold
8 Marion Heights
Galax, Virginia 24333
(540) 236-3496
darnold@pen.k12.va.us
darnold@tcia.net

Administrative and Teaching Experience

Principal, Galax High School, Galax, Virginia. 1989-Present.

Assistant Principal, Holston High School, Damascus, Virginia. 1982-1989.

English Teacher, Holston High School, Damascus, Virginia. 1972-1982.

Athletic Director, Holston High School, Damascus, Virginia. 1982.

Degrees Earned

Doctorate in Educational Leadership, Virginia Tech, Blacksburg, Virginia. 1998.

Certificate of Advanced Graduate Studies, Virginia Tech, Blacksburg, Virginia. 1997.

M. A. in English Education, Virginia Tech, Blacksburg, Virginia. 1977.

B. S. in Education, East Tennessee State University, Johnson City, Tennessee. 1972.

Teaching and Administrative Licenses

Teaching License for Spanish and English, Commonwealth of Virginia.

Administrative License for Secondary Principal, Middle Principal, General Supervisor,

Director of Instruction, Assistant Superintendent for Administration, Commonwealth of Virginia.

Division Superintendent License, Commonwealth of Virginia.

Professional Organizations

Galax Education Association.	1989-Present.
Virginia Education Association.	1972-Present.
National Education Association.	1972-Present.
Phi Delta Kappa.	1982-Present.
Association for Supervision and Curriculum Development.	1988-Present.
Virginia Association for Supervision and Curriculum Development.	1990-Present.
American Educational Research Association.	1996-Present.
National Association for Secondary School Principals.	1982-Present.
Virginia Association for Secondary School Principals.	1989-Present.
Virginia High School Coaches' Association	1982-Present.

Publications

"Action Research in Action." NASSP Bulletin	1998

Date of Birth

September 16, 1949.

Family

Wife - Thalia J. Arnold

Daughter - Ashley J. Arnold