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Abstract

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Keywords

Block scheduling, Georgia, High school, Test score indicators

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Block Scheduling Effectiveness: A 10-Year Longitudinal Study of One Georgia School System's Test Score Indicators

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Abstract: A case study of the effectiveness of high school block scheduling in an urban school system was examined by considering whether the changed schedule resulted in an increase in test scores on several measures such as the Scholastic Aptitude Test (SAT), Advanced Placement Tests (AP), and state mandated graduation examinations. Ten years of data were gathered from the public report card on the state website. In the school system under investigation, student scores on quantitative and verbal Scholastic Aptitude Test (SAT) showed a significant upward trend over 10 years. Over the same 10 years, Advanced Placement Test (AP) passing rates showed an upward development. An upward trend was also found for student scores on the state mandated graduation examinations in all four subject areas: mathematics, language arts, science, and social studies. The authors suggested school systems should consider the impact of block scheduling on student achievement measures.

The high school landscape is often characterized by two competing ends of the organizational change spectrum. On one end is the high school that wishes to be fluid and agrees to look forward to transformational challenges and on the other end is the high school that remains constant in its structures and processes and prefers a traditional approach to time-honored instructional arrangements. The fluid high school recognizes the need to challenge customary institutions such as the nine-month calendar, Carnegie units, "seat time", and the two semester treatment of high school curriculum. The traditional school is less likely to do so (Canady & Rettig, 1995; Murphy, Beck, Crawford, Hodges, & McGaughy, 2001).

In the present decade, schools and school systems are being increasingly pressed to emphasize ways to increase student achievement (Zepeda & Mayers, 2006). Research suggests a number of opportunities to make these positive changes and to improve the learning culture of high schools (Murphy et al., 2001). One such modification is the reorganized school day and the restructuring of academic time. Since the 1990's, block scheduling has been recognized as a challenge to the time-honored organization of the school day and the Carnegie unit plan, which many high schools have followed for decades (Murphy et al.; Queen, 2000; Zepeda & Mayers).

Traditional Carnegie high school configurations call for students to take five to seven courses per year and the class assignments for these courses are divided into two semesters of study (Carroll, 1994; Zepeda & Mayers, 2006). Block schedule plans allow students to take fewer classes during a 90-day semester, stay in a class for longer periods of time during the day, and complete the coursework in one semester. Ideally, under block scheduling it is possible for a student to complete 8–10 courses in a school year (LAB, 1998).

Under the popular 4x4 block scheduling plan, students take four courses during a 90-day semester and then take an additional four courses for 90 days in the second semester. Other

configurations include an A/B block in which students alternate classes every other day during the school year. Block scheduling changes the way the school day is organized and how instructional time is spent. In a 4x4 block schedule students meet in class for about 90 minutes before they change to their next class. During an average day a student takes four classes per semester. Fewer class changes and fewer disruptions allow for more time spent in the academic arena (Fager, 1997; Irmsher, 1996; LAB, 1998).

In the present 10-year case study of a large Georgia school system, we analyzed indicators suggested in the original Block Scheduling Proposal submitted by the school system as measurable gauges of success or failure of block scheduling for high school students. Prior to the 1998-1999 pilot year, the school system had chosen increases in standardized test scores as one indicator of success of block scheduling. Standardized tests included in the study were: the Scholastic Aptitude Test (SAT), the Advanced Placement Test (AP), and all portions of the Georgia High School Graduation Test (GHS GT). In this study a 10-year longitudinal analysis of these data points was conducted to see if block scheduling had a positive effect in any of the areas evaluated. The indicators of success were (a) increase in mean SAT scores, (b) number of students passing AP tests with the possibility of obtaining college credit, and (c) percentage of students passing the GHS GT.

Review of Literature

Donahoe (1993) proposed that restructuring of American schools is about comprehensive and formal changes in organizational culture and the way school time is used. Others have concluded that many organizational change issues can be tackled by a willingness to be innovative and visionary in our approaches to schools (Fullan, 2006; Goodlad, 1984). All of the above have been suggestive that the most effective schools were willing to embrace issues in non-traditional ways for the betterment of children and their academic success. Additional researchers have recommended that lasting and fundamental change in school organizations required the acknowledgment that change is a process not a one-time event and that the change process requires time (Hall & Hord, 1987; Murphy & Hallinger, 1993; Murphy et al., 2001). Joseph Murphy (1992) and Gordon Cawelti (1995) urged alternative scheduling and changes in the instructional day. These authors noted improving student learning required teachers to expand pedagogical skills. Much later Murphy et al. endorsed block scheduling as one of the many unique opportunities schools have to create learning environments conducive to increasing student achievement.

Block scheduling was first suggested as a challenge to high school structures by Lloyd Trump (1959) who proposed Flexible Modular Scheduling. The Trump Plan called for flexible scheduling arrangements, depending on the academic needs of the students. In essence, Trump advocated for teachers and administrators to be flexible in instructional strategies and how the school day was used. Trump further proposed the school day should be flexible, fluid, and dependant upon the wish to improve student learning (Queen, 2000). Since Trump's ideas of non-traditional high school scheduling others have raised similar questions (Carroll, 1994; Donahoe, 1993; Queen & Gaskey, 1997; Rettig & Canady, 2003).

Formally introduced by Joseph M. Carroll in 1990, the Copernican Plan quickly became known as block scheduling (Gee, 1997). Block scheduling became popular during the 1990's and

continued as a force in U.S. high schools. By 1996, more than 50% of American high schools used forms of block scheduling (Rettig & Canady, 1996). Block scheduling has been heralded as a way to combat dropout prevention (Cotton, 2000; LAB, 1998), with encouraging teachers to use a variety of pedagogical strategies (Canady & Rettig, 1995; LAB; Staunton & Adams, 1997; Queen & Isenhour, 1998; Veal & Schreiber, 1999), with decreasing student discipline issues (Evans, Tokarczyk, Rice, & McCray, 2002; Hackman & Waters, 1998; Queen, 2000; Queen, Algozzine & Eaddy, 1997; 1998; Zapeda & Mayers, 2006), with raising student test scores (Evans et al.; Payne and Jordan, 1996; Queen et al.) and with improving academic achievement (Evans et al.; Payne and Jordan; LAB; Trenta & Newman, 2002; Zapeda & Mayers). Some have questioned the usefulness of the block schedule in remedying the above issues and have suggested educators should return to a more traditional Carnegie plan (Gruber & Onwuegbuzie, 2001).

Over recent decades educators in the United States looked for ways to challenge traditional high school structures and curriculum to increase student achievement of America's high school youth (Goodlad, 1984; Louis & Miles, 1990; Murphy et al., 2001). For example, in schools where teachers were highly trained and used a variety of instructional methods, student scores appeared significantly better on national achievement measures (Darling-Hammond, 2000; Woolfolk-Hoy & Hoy, 2006). In addition, where school improvement and student achievement were embedded as part of the mission and vision of a school, student scores were better (Marzano, 2003; Marzano, Waters, & McNulty, 2005). Finally, while Dufour and Eaker (1998) did not relate their discussion of school improvement and student success directly to block scheduling they did suggest some schools were more likely to try innovative and non-traditional arrangements of the school day and time. Those schools which organized as learning communities and were focused on a vision and mission of student success were more likely to embrace change and pioneer new ways of thinking than those schools who were not learning communities.

Advantages of Block Scheduling

Generally block scheduling meant less administrative use of time and more instructional/classroom time because teachers have fewer administrative responsibilities, a smaller number of classes, and less students during the day than teachers on a traditional schedule (Canady & Rettig, 1995; Carroll, 1994). Teachers were able to get to know their students personally and had more time to give students individual attention (Payne & Jordan, 1996; Weller & McLeskey, 2000). In addition, because there were fewer class changes, there was more time available for academic instruction and fewer opportunities for discipline issues to arise (Evans et al., 2002; O'Neil, 1995; Queen & Isenhour, 1998; Zapeda & Mayers, 2006). Block scheduling allowed students to take more courses during a high school career, earn more credits and accelerate their studies (LAB, 1998; Queen, 2000; 2009). Students who failed a course could have immediate remediation because a course would be repeated during the next semester (Evans et al; Irmsher, 1996; LAB, 1998; Queen; Zapeda & Meyers).

Under block scheduling teachers were encouraged to expand their pedagogical repertoire and promote learning through smaller more intimate classes where students and teachers have more time to form relationships and bonds. Finally, block scheduling provided more focus on the

academic needs of the students, thus increasing student achievement (Canady & Rettig, 1995; Evans et. al, 2002; LAB, 1998; Queen & Isenhour, 1998; Rettig & Canady, 2003; Rettig & Canady, 1996; Zapeda & Meyers, 2006).

National Standardized Achievement Test Scores

Increasing student achievement was a primary reason many school systems converted from traditional scheduling patterns to forms of block scheduling. Under block scheduling typical measures of student achievement such as state standardized end-of-course tests and/or graduation tests, state mandated yearly performance tests as well as the SAT, and AP exams have yielded mixed results (Veal & Schreiber, 1999). Using national achievement math test scores Schroth and Dixon (1996) found slightly higher performance in schools with block scheduling. Hottenstein (1998) employed a pretest and posttest design in one Pennsylvania high school and compared student scores 2 years prior and 3 years after block scheduling was instituted. Several standardized student achievement measures were used. When analyzed over a 5-year period, the change in Preliminary Scholastic Aptitude Test (PSAT) scores were not statistically significant. Verbal SAT scores increased 12 points and math decreased 4 points. Evans et al. (2002) found New Jersey students in three schools increased scores on the SAT and increased the pass rate from 67% to 73% on the New Jersey High School Proficiency Test (HSPT). Wronkovich, Hess, and Robinson (1997), used SAT II Achievement tests and the Otis-Lennon Scholastic Aptitude test as a covariate and found no statistically significant differences in student achievement comparing 4x4 and traditional student schedules in geometry and history, but there was a statistically significant difference in the two schedules in English and biology. Four-by-four (4x4) block scheduling appeared to benefit students in English and biology.

In a study conducted by the College Board (1998) students in extended traditional-schedule AP biology and AP calculus classes did significantly better than those in 4x4 block scheduled classes. Students in traditional AP U.S. history also did significantly better than those students in 4x4 block scheduled classes. Using a 4x4 block schedule, Edwards (1995) reported an increased number of students passing the AP tests with a score of 3 or 4 in the Orange County, Virginia school system. Evans et al. (2002) also found increases in AP tests after block scheduling was implemented. Apparently AP scores under block and traditional class schedules produced varied results.

State Mandated Tests

Investigations in block scheduling effects on state mandated high school tests produced mixed results as well. The North Carolina Department of Public Instruction reported no statistically significant difference on end-of-course test results comparing students scheduled in block courses and those students scheduled in traditional course arrangements (Queen, 2000). Shortt and Thayer (1999) found on several state standardized test indices Virginia students who were on block schedules outperformed students who were not.

Block or traditional class scheduling effects appear to be dependant on subject area i.e. reading, language arts, and mathematics. Student performance on the Indiana Statewide Testing for Educational Progress (ISTEP) in the areas of reading and language arts did not appear to be

influenced by block or traditional schedule but block scheduling had a negative effect on mathematics. Martin-Carreras (2006) found block scheduling did not improve scores on Florida state high school examinations, such as the Florida Comprehensive Assessment Test (FCAT-SSS) in mathematics and reading but did improve local measures of student achievement, such as final course grades and grade point average (GPA) upon graduating. In another study, results indicated students in 4x4 block scheduling made greater gains in reading and mathematics than traditionally scheduled and certain other variations of block scheduling (Lewis, Dugan, Winokur, & Cobb, 2005).

Georgia Mandated Tests

Although not related to Georgia High School Graduation Tests (GHS GT), Domaleski (2004) examined block scheduling practices in relation to Georgia End of Course Tests (EOCT). Mean scale scores for each of the criterion-referenced EOCT tests i.e. Algebra, Geometry, 9th-Grade Literature, American Literature, U.S. History, Economics, Physical Science, and Biology were computed for all grade 9-12 students participating in block schedules compared to grade 9-12 students in a traditional schedule. To identify the relative effects of different types of block schedules, the student scores were grouped as follows: 4x4 block, block-8, other or combination of 1 and 2, and non-block or traditional schedule. Domaleski concluded that no scheduling practice examined is consistently associated with higher EOCT performance. Overall, there was very little difference between EOCT performance for non-block schools compared to block schools. The only area where there was an exception to this was in Algebra where block schools slightly outperformed non-block schools.

In Georgia, statistically significant differences were found on the GHS GT in all areas except the writing portion of the state examination (Gruber & Onwuegbuzie, 2001). Moderate but statistically significant group differences (based on scheduling) were reported in language arts while large differences were reported in mathematics, social studies and science. Gruber and Onwuegbuzie reported a moderate to large negative effect on academic performance on the GHS GT. In an earlier study Payne and Jordan (1996) determined that there was a positive relationship between students 4x4 block scheduled courses and scores on the GHS GT.

Purpose of the Study

In the current study, standardized test scores over a 10-year period were assessed to investigate the continued influence of a switch to block scheduling subsequent to the baseline year (1997–1998). Specific research questions include:

- 1) Did student performance on the Scholastic Aptitude Test (SAT) increase after adoption of block scheduling?
- 2) Did number of students taking the Advance Placement Examination (AP) increase after adoption of block scheduling?
- 3) Did student performance on the Georgia High School Graduation Test (GHS GT) increase after adoption of block scheduling?

Design

For the purpose of this study the researchers examined questions concerning the high school 4x4 block scheduling in one urban, southwest Georgia public school system. According to the 2000 U.S. Census report, the total population for the metropolitan area was 276,000 with 186,300 in the city proper (U.S. Census Bureau, 2009). A large U.S. Army infantry base was located on the southern border of the city. The base was expected to grow by over 15,000 troops during the next 3- to 5-year period. The city area population was expected to increase by 30,000 to 40,000 residents because of the expansion of the military headquarters. Due to this expansion, a significant impact was expected for the school system under investigation. Presently, this school system has approximately 32,000 students and with the influx of military personnel in the near future, it was expected to expand student enrollment by 5,000 to 8,000 students (U.S. Department of Defense, 2009). The six high schools (grades 9–12) serve students in specified neighborhoods defined by the school system and were considered regular attendance zone schools. All schools ranged in population from 1,000 students to approximately 1,300 students. The ethnic data for composition of the student body consisted of 59% Black, 31% Caucasian, and 10% Asian, Hispanic, and Other (Georgia Department of Education, 2006).

During the 1998–1999 year three of the six high schools were selected to participate in the state-wide pilot of block scheduling. The three remaining high schools adopted block scheduling for the 1999–2000 school year. Data from the school year 1997–1998 were used as baseline, and data from each year through 2007 were reported.

The SAT “is one of the best predictors of college success” (College Board, 2008, p. 1). SAT scores used in this research are in the public domain on the state website. Mean SAT scores are from the most recent administration for the school district. The SAT is a national test most often used to predict college readiness and is used by colleges to help place students in college courses (College Board, 2008).

The number of AP tests taken and passed is reported on the state report card. The goal set by the system was to increase the number of students who passed AP exams in all subjects combined. Block scheduling allowed more students to take the AP courses which resulted in more students passing the AP exams.

The GHSGT is a criterion-referenced test based on the required curriculum of the state public schools. The exit exam is given to all juniors in the state each year. Students are required to pass the tests in order to receive a regular diploma. Before the end of a student’s senior year, they will have 5 opportunities to have a passing score on all portions of the test. Scores used for this research were from first-time test takers in the eleventh grade (See Table 1). All scores were reported on the state website.

Table 1

Number of Students Taking Each Test in Each Year the Data Was Available

Scholastic Aptitude Test - Number of Students Taking Test Reported by Answer Sheet which Contains Both Tests										
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
SATverb & math	904	957	1029	1082	1097	1012	935	981	957	984

High School Graduation Test - N not reported on Report Card before 2000										
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
HGTela			1941	1810	1793	1729	1711	1817	1851	1786
HGTmath			1944	1810	1796	1727	1719	1824	1848	1789
HGTsoc			1938	1800	1795	1710	1708	1818	1846	1778
HGTsci			1934	1809	1796	1711	1709	1817	1845	1788

Advanced Placement Test - Number of Students Taking Test and Number Passed - Years 2005-2007 Include IB Tests										
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
AP taken	453	377	379	547	630	509	528	867	1072	1122
AP passed	244	233	222	222	286	286	315	437	515	541

The case study (Yin, 1994) was chosen to show the description of the achievement in one school district. Other objectives that were used in the implementation of block scheduling, but not in this study, were dropout rate, student satisfaction, parent satisfaction, teacher efficacy with the new schedule, and teachers' implementations of new strategies.

Results

Comparisons were made beginning with the benchmark year 1998 and included each year through 2007. Student performance was measured using the SAT, AP, and all portions of the GHS GT. District mean scores on the SAT and passing rate on the GHS GT were analyzed across the 10 years from the 1997–1998 school year (baseline data previous to block scheduling)

through the 2006–2007 school year. The numbers of students passing the AP exams in all subjects are reported for the same time period.

The Scholastic Aptitude Test (SAT)

The first research question asked if performance on the SAT increased after implementation of block scheduling. In this school system, the number of students who took the SAT ranged from 904 in 1998 to 1024 in 2002 with the number declining after 2002. The measures used to show increase in performance were the mean SAT verbal and math scores. Scores were reported by College Board as the most recent scores for college-bound seniors.

Though scores dropped slightly from the 2000 to 2001 testing, immediately after all schools adopted block scheduling, they increased consistently until 2005. The next two years the trend reversed, but the scores never dropped below the pre-block scheduling implementation. Figure 1 shows the trend across time. Unexpectedly, math scores showed the greater gain.

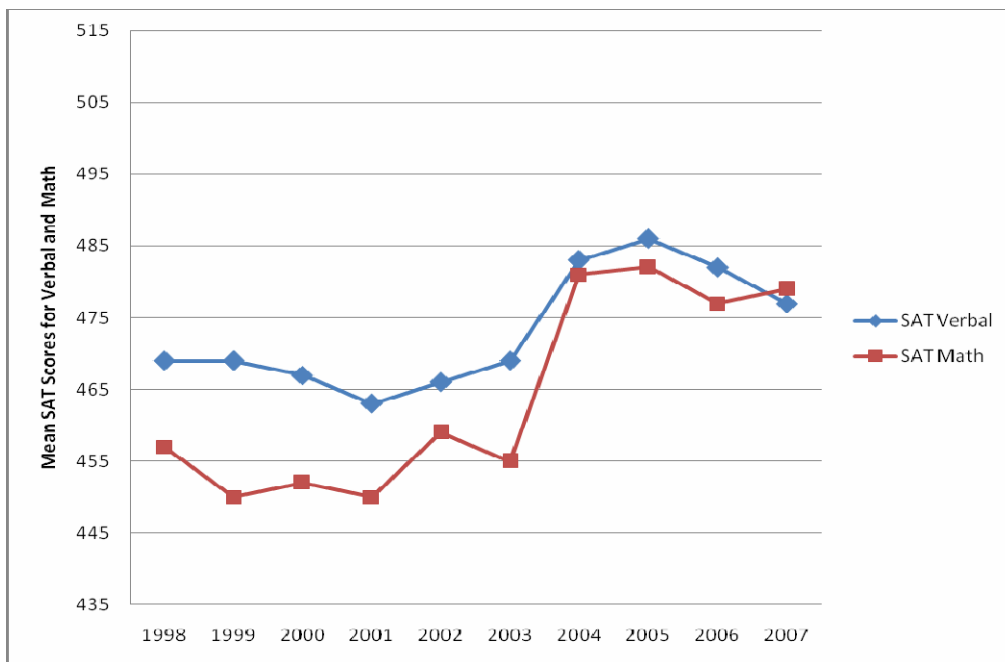


Figure 1. Mean SAT scores for each year for 10 years (n = 900–1000 increasing every year)

The Advanced Placement Test (AP)

The second research question asked if the number of students passing AP Tests increased after implementation of block scheduling. District administrators were looking for a schedule that would allow more students the opportunity to obtain college credit before leaving high school. The number of AP tests taken increased from 453 to 1122. The number has increased each year for the last 10 years.

Though all scores were not available Figure 2 shows that the number of students who passed AP exams dropped slightly from the 1999 to 2000 testing. After full implementation of block scheduling, the number of students who could possibly receive college credit for AP exams increased consistently.

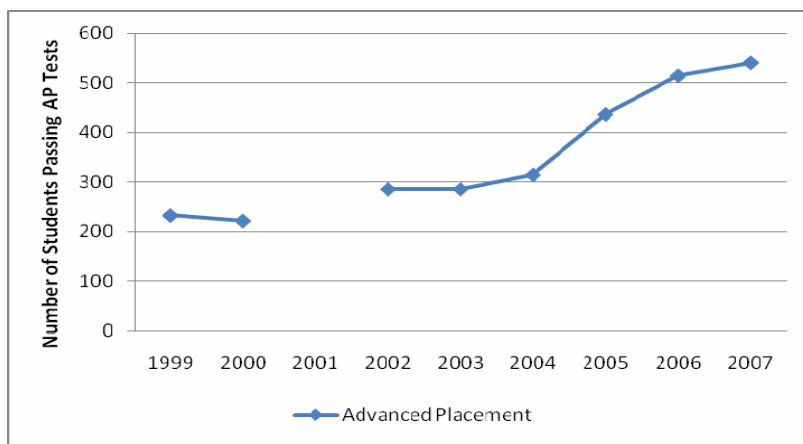


Figure 2. Number of students who passed the Advanced Placement with a score of 3 or higher. Scores not reported for 2000-2002 due to format change of Georgia Report Card-information not available.

The Georgia High School Graduation Test (GHSGT)

The third research question addressed student performance on all four measures of the Georgia High School Graduation Test: social studies, mathematics, English/language arts, and science. Administrators expected the greatest gains to be in science and social studies because more time would be allotted in the daily block to allow for laboratory experiments and projects. Mathematics was expected to suffer decrease in scores because of lack of year-long courses. English language arts was not expected to show much change. The scores, in all four areas, show an upward trend with the largest gain made in social studies.

As expected social studies and science made important gains. Most students, who were not able to graduate because they could not pass all sections of the exit exam, most often failed

the science test. This important gain allowed a greater percentage of students to complete high school with a regular diploma. The unanticipated benefit was an increase in the graduation rate from 60.2% in 2003 to 70.6% in 2007 (method of computation of graduation rate changed in 2003 making previous years not comparable). Figure 3 shows consistent increases in all subjects after full implementation.

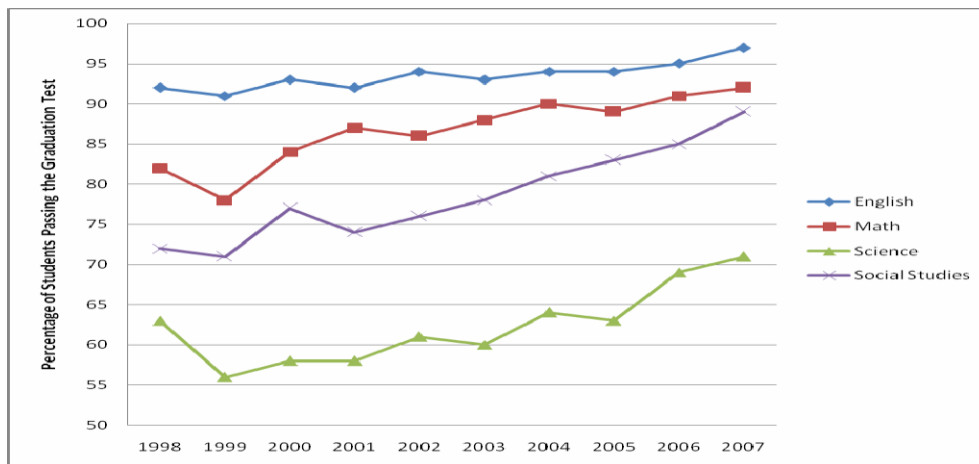


Figure 3. Percentage of students passing the graduation tests

Discussion

Student Outcomes

On standardized test measures, SAT and GHSGT, student achievement scores showed an upward trend. Students continued to improve their scores over the period beginning in 1999. AP tests showed gains in the number of students receiving passing scores for the same period. The triangulation of the three different measures shows that block scheduling can be a good use of class time to improve achievement in schools. As with other research findings consistent improvements were found on state mandated tests (Evans et. al, 2002; Queen, Algozzine, & Eaddy, 1997; 1998). In addition, this research was consistent with the findings of Evans et. al, (2002) and Payne and Jordan, (1996) concerning AP exams. Students do better on Advanced Placement tests while using block scheduling.

Although achievement scores indicated a significant gain, there were other initiatives in this school system's high schools during the research years. Because of this, we may not say that all increases in test scores are attributed to the change from traditional Carnegie class scheduling to block scheduling. Staff development was used to support teaching and pedagogical efforts of high school teachers who were undergoing the change from traditional to block scheduling.

Most teachers were given instructional support in their subject areas as well as general knowledge of block scheduling. Staff development has continued to occur throughout the ten year period. Another important development which occurred during the move to block scheduling was the school systems emphasis on additional review sessions which were developed for the GHSGT. Saturday review sessions were put in place early on and maintained throughout the years of block scheduling. Additional after school review sessions for the SAT were also available at the high schools. While the above interventions and support systems were put in place there should be recognition that block scheduling appears to be a successful school organizational structure for the school system and it did not hinder AP courses and programs or student achievement on standardized outcome measures such as the GHSGT or the SAT.

In addition to the increased test scores as reported above, during the 10 years of block scheduling students were able to take more courses and earn additional credits. Positive student outcomes related to this include increased number of electives offered and fewer courses repeated in summer school. The 4x4 block used by this school system allowed students who failed courses to repeat the courses during the school year and still complete high school in 4 years. Gone are the days that students are forced to make-up failures during summer months. In addition a 4x4 block means a student can earn 32 Carnegie units in four years. Georgia only requires 28 units to graduate. This allows students to explore six additional electives or alternatives to the required courses. There have been no follow up studies done with students or teachers concerning block scheduling and their perceptions of this time arrangement. It might be of use to continue research in this direction by either student and teacher surveys or focus groups.

Teachers, staff development and block scheduling

“Everything depends on what the teacher does in the classroom”

Robert Lynn Canady (as cited in Kenney, p. 4)

While this study did not explore outcomes or perceptions of block scheduling in relation to teachers it warrants discussion because there were positive student outcomes in this school system while under block scheduling and it is well documented that teachers are one of the more important factors in making a difference in students lives (Brophy & Good, 1986; Darling-Hammond, 2000; Lortie, 1975; Marzano, 2004; Rosenholtz, 1989). Students did do significantly better on the GHSGT, AP tests, and SAT and it surely involved the instruction and teacher component in some way.

In looking at other studies, teacher perceptions of block scheduling included more time to prepare and plan for class. In addition, teachers reported they were more effective and engaging with their students (Queen et al., 1997; 1998) and collaborated more with colleagues (Rettig & Canady, 1996). Teachers described deeper interpersonal relationships with their students because block scheduling allowed them to have more time each day with their students (Rettig & Canady). In another study over 70% of the teachers reported because of block scheduling they had gone beyond the lecture approach and were using interactive instructional methods such as cooperative learning, inquiry, case study, and seminars (Jenkins, Queen, & Algozzine, 2002; Queen, et al.). As Hackman (2004) suggested just changing the time without changing

fundamental teaching strategies is merely longer blocks of the same old thing. Giving teachers longer periods of time does allow them to use unique constructivist instructional practices and develop a repertoire of pedagogical practices which secondary schools have often ignored (Hackman; Hackman & Waters, 1998; Queen, 2000; 2009).

“A growing body of research suggests that schools can make a difference, and a substantial portion of that difference is attributable to teachers” (p.5). What happens in their classrooms can determine how well students achieve (Darling-Hammond, 2000). The relationships teachers establish with their students (Hamre & Pianta, 2001); the credentials and professional organizations they become members of (Darling-Hammond, 2000); and the experience they gain along the way as teachers (Weinstein & Mignano, 2003) all play an important role in determining student success in their classrooms. In addition to these issues are the professional development experiences which are provided to teachers.

Research has shown a link between successful implementation of block scheduling and professional development experiences for faculty and administrators (Kenney, 2003; Queen, 2009). For block to work and impact student learning it must be sustained with professional development opportunities (Queen, 2009). In very recent research (Queen, Algozzine, & Watson, 2008 cited in Queen, 2009) there are instances where continuous block scheduling staff development, increased the variety of instructional practices, and dramatically increased student achievement. Because block scheduling has had consistent use for a number of years, researchers are now able to look at the phenomenon in a longitudinal way and it does appear to show evidence of increasing student achievement. Staff development appears to be an integral part of the developing picture (Kenney, 2003; Queen, 2000; Queen, Algozzine, & Watson, 2008 cited in Queen, 2009).

Time does matter so make every moment count

The logic of time reform is simple—more time in school should result in more learning and better student performance. But this seemingly straightforward calculation is more complex than it appears (Silva, 2007, p. 1)

Block scheduling was in part, conceived to put more focus on instruction and learning. Block scheduling has been heralded as a way to use the school day in a more efficient way but time alone has little impact on student performance or achievement. It is how innovative we are with the time that makes a difference (Silva, 2007). Recent works have suggested we need to be more flexible in our approach to the school day (NASSP, 2007; Silva, 2007; Stanley, Spradlin, & Plucker, 2007). The National Association for Secondary School Principals (2007) suggested master schedules be used to provide teachers with ample opportunities to work and plan together. This more adaptable approach to the school day includes integrating curriculum, cross-disciplinary teams and implementing flexible scheduling like block scheduling. All in all, NASSP is encouraging educators and stakeholders to not force students to “fit into” a regimented school day but instead look at alternative ways of viewing the education world because innovating the school day is the key to student success and academic achievement.

Silva (2007) suggested that it is not how much time children spend in school but how that time is spent. Is it spent on assemblies, administrative issues and changing classes or is it spent in

instructional venues? She draws from the work of Cotton (1989, 2000) and WestEd researchers Aronson, Zimmerman, and Carlos (1998). Student achievement increases when it is directly tied to an increase in instructional time not other types of school time. Silva (2007) as well as others such as McCreary and Hausman (2001) noted that with block scheduling, teachers must be trained and equipped with strategies for using the extra time. This is done through professional development. The varying degrees of success associated with block scheduling and student outcomes may be tied to the lack of consistency in providing support systems for teachers instructing under block systems.

Some studies have suggested modifications of block scheduling i.e. arrangements other than the traditional 4X4 plan may be more appropriate for school needs and may help achievement scores on various state and national indices (Nichols, 2000, 2005; Veal & Schreiber, 1999). Recently, several Georgia systems met and discussed scheduling plans whereby block courses are taught in the morning and courses which need a traditional year treatment are taught in the afternoons (Bradshaw, personal communication, February, 2008). There appears to be some success with these hybrid compositions and further research will be needed as these are put in place (Childers & Ireland, 2005).

In conclusion, some systems in Georgia are reverting to traditional Carnegie plans. In part the return has been contemplated because of competing interests for the school day. In recent times the return to traditional schedules will be encouraged by Federal and state funding. Block scheduling costs more money. More classes are offered and there are more teachers hired. In today's climate of deficit state budgets, legislators will be cutting funding in a number of areas. Block scheduling may be one of these. Before school systems abandon block scheduling they should look at their original reasons for embracing this innovation. If their goals can or are being met then careful consideration should be given to continue. It may not be a question of "in" or "out" but more of a question of what is appropriate for individual schools and systems. It may be the filter used to assess the reform. It may be the communities view and collective thoughts in the process (Kenney, 2003).

References

- Aronson, J., Zimmerman, J., & Carlos, L. (1998, April). Improving student achievement by extending school: Is it just a matter of time? *WestEd*, Retrieved February 15, 2009, from http://www.wested.org/online_pubs/po-98-02.pdf
- Brophy, J., & Good, T. L., (1986). Teacher behavior and student achievement. In M. C. Wittrock (Ed), *Handbook of research on teaching 3rd ed.*(pp. 328-375). New York, NY: Macmillan.
- Canady, R. L., & Rettig, M. D. (1995). *Block scheduling: A catalyst for change in high schools*. Princeton, NJ: Eye on Education.
- Carroll, J. M. (1994). The Copernican plan evaluated. *Phi Delta Kappan*, 76, 104–112.
- Cawelti, G.P. (1995). High school restructuring: What are the critical elements? *NASSP Bulletin*, 79(569), 1–15.
- Childers, G., & Ireland, R. (2005). Mixing block and traditional scheduling. *Education Digest*, 71(November), 43–49.
- College Board, (1998). Block schedules and student performance on AP Examinations. *Research News*, RN-3. New York, NY: College Entrance Examination Board.
- College Board. (2008). *SAT Facts* [Brochure]. New York, NY
- Cotton, K. (1989). *Educational Time Factors*. Portland, OR: Northwest Regional Education Laboratory (NWREL).
- Cotton, K. (2000). *The schooling practices that matter most*. Portland, OR: Northwest Educational Research Laboratory (NWREL).
- Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Educational Policy Analysis Archives*, 8(1), 1-48.
- Domaleski, C.S. (2004). An examination of block scheduling practices and End of Course Test (EOCT) performance. Atlanta, GA: Georgia Department of Education. Retrieved March 1, 2009, from http://www.doe.k12.ga.us/DMGetDocument.aspx/eoct_block_report_2004.pdf?p=4BE1EECF99CD364EA5554055463F1FBBF5D074D5FB1F2CAEB3B63B3ECB220CDD26C2114F3C57D8D264F0552D6F613DC9&Type=D
- Donahoe, T. (1993). Finding the way: Structure, time, and culture in school improvement. *Phi Delta Kappan*, 75, 298–305.
- Dufour, R. & Eaker, R. (1998). *Professional learning communities at work: Best practices for*

enhancing student achievement. Bloomington, IN: Solution Tree.

Edwards, C. M. (1995). Virginia's 4x4 high schools: High school, college, and more. *NASSP Bulletin*, 79, 23–41.

Evans, W., Tokarczyk, J., Rice, S., & McCray, A. (2002). Block scheduling: An evaluation of outcomes and impact. *The Clearing House*, 75, 319–323.

Fager, J. (1997). Scheduling alternatives: Options for student success. *By Request Series*. Retrieved August 8, 2007, from <http://www.nwrel.org/request/feb97/article3.html>.

Fullan, M. (2006). *Turnaround Leadership*. San Francisco, CA: Jossey-Bass.

Gee, W. D. (1997). The Copernican plan and year-round education. *Phi Delta Kappan*, 78, 793-796.

Comment: Do not include the issue number unless every issue starts with page number 1.

Georgia Department of Education (GDOE). (2006). 2005–2006 K–12 Public Schools Annual Report Card. Atlanta, GA: Georgia Department of Education (GDOE). Retrieved August 8, 2007, from <http://reportcard2006.gaosa.org/k12/default.aspx>

Goodlad, J. I. (1984). *A place called school*. New York, NY: McGraw-Hill.

Gruber, C. D., & Onwuegbuzie, A. J. (2001). Effects of block scheduling on academic achievement among high school students. *High School Journal*, 84, 32–42.

Hackman, D. G. (2004). Constructivism and block scheduling: Making the connection. *Phi Delta Kappan*, 85, 697–702.

Comment: See note above

Hackman, D. G., & Waters, D. L. (1998). Breaking away from tradition: The Farmington high school restructuring experience. *NASSP Bulletin*, 82, 83–92.

Hall, G. E., & Hord, S. M. (1987). *Change in schools*. Albany, NY: SUNY.

Hamre, B. K., & Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development*, 72, 625-638.

Hottenstein, D. S. (1998). *Intensive scheduling: Restructuring America's secondary schools through time management*. Thousand Oaks, CA: Corwin Press.

Irmsher, K. (1996). Block scheduling. *ERIC Digest*, #104, Eugene, OR: Clearinghouse on Educational Management. Retrieved August 30, 2007, from http://www.ed.gov/databases/ERIC_Digests/ed393156.html

Jenkins, E. D., Queen, J. A., & Algozzine, R. F. (2002). To block or not to block: That's not the

question. *Journal of Educational Research*, 95, 196–202.

Kenney, S. C. (2003). Back from the block—or not. *School Administrator*, 60, 21–25.

LAB. (1998). *Block scheduling: Innovations with time*. Providence, RI: The Education Alliance at Brown University.

Lewis, C. W., Dugan, J. J., Winokur, M. A., & Cobb, R. B. (2005). The effects of block scheduling on high school achievement. *NASSP Bulletin*, 89, 72–87.

Lortie, D. C. (1975). *School teacher: A sociological study*. Chicago, IL: The University of Chicago Press.

Louis, K. S., & Miles, M. B. (1990). *Improving the urban high school: What works and why*. New York, NY: Teachers College Press.

McCreary, J., & Hausman, C. (2001). *Differences in student outcomes between blocks, semester, and trimester scheules*. (ERIC Document Reproduction Service No. ED457590)

Martin-Carreras, V. (2006). A comparative study of block scheduling and traditional scheduling on academic achievement. Retrieved August 15, 2007, from *ETD Collection for Florida International University*, <http://digitalcommons.fiu.edu/dissertations/> (AAI3249714).

Marzano, R.J. (2003). *What works in schools: Translating research into action*. Alexandria, VA: Association of Supervision and Curriculum Development.

Comment: Spaces are needed between initials

Marzano, R.J. (2004). *Building background knowledge for academic achievement*. Alexandria, VA: Association of Supervision and Curriculum Development.

Marzano, R.J., Waters, T. & McNulty, B.A.(2005). *School leadership that works: From research to results*. Alexandria, VA: Association of Supervision and Curriculum Development.

Murphy, J. (1992). Strategies for principals in instructional leadership: Focus on time to learn, *NASSP Bulletin*, 79, 107–109.

Murphy, J., & Hallinger, P. (1993). *Restructuring schooling: Learning from ongoing efforts*. Newbury Park, CA: Corwin Press.

Murphy, J., Beck, L.G., Crawford, M., Hodges, A., & McGaughy, C.L. (2001). *The productive high school: Creating personalized academic communities*. Thousand Oaks, CA: Corwin Press.

National Association for Secondary School Principals (2007). Making every moment count: View of effective use of time in secondary schools. Making every moment count: Maximizing quality instructional time, Retrieved January 15, 2009, from

http://www.reading.org/Libraries/Reports_and_Standards/MEMC_070620.sflb.ashx

Nichols, J.D. (2000). Scheduling reform: A longitudinal exploration of high school block scheduling structures. *International Journal of Educational Reform*, 9, 134-147.

Nichols, J. D. (2005). Block-scheduled high schools: Impact on achievement in English and language arts. *Journal of Educational Research*, 98, 298–309.

O'Neil, J. (1995). Finding time to learn. *Educational Leadership*, 53, 11-15.

Payne, D. A., & Jordan, M. M. (1996). The evaluation of a high school block schedule: Convergence of teacher and student data. *American Secondary Education*, 25, 16-19.

Queen, J.A. (2000). Block scheduling revisited. *Phi Delta Kappan*, 82, 214–222.

Queen, J.A. (2009). *The block scheduling handbook*. 2nd ed. Newbury Park, CA: Corwin Press.

Queen, J.A. & Gaskey, K.A. (1997). Steps for improving school climate in block scheduling. *Phil Delta Kappan*, 79, 158-161.

Queen, J. A., Algozzine, R. F., & Eaddy, M. A. (1997). The road we traveled: Scheduling in the 4 x 4 block. *The NAASP Bulletin*, 81, 88-99.

Queen, J. A., Algozzine, R. F., & Eaddy, M. A. (1998). Implementing 4 x 4 block scheduling: Pitfalls, promises, and provisos. *The High School Journal*, 81, 107-114

Queen, J.A., & Isenhour, K.G. (1998). *The 4x4 block schedule*. Larchmont, NY: Eye on Education.

Queen, J.A., Isenhour, K.G. & Gaskey, K. A. (1998). Building a climate of acceptance for block scheduling. *NAASP Bulletin*, 82, 95-105.

Rettig, M.D., & Canady, R. L. (1996). All around the block: The benefits and challenges of a non-traditional school schedule. *The School Administrator*, 8, 8–15.

Rettig, M. D., & Canady, R. L. (2003). Block scheduling's missteps, successes and variables. *School Administrator*, 60, 26–31.

Rosenholtz, S.J. (1989). *Teachers' workplace: The social organization of schools*. New York, NY: Longman.

Schroth, G., & Dixon, J. (1996). The effects of block scheduling on student performance. *International Journal of Education Reform*, 5, 472–476.

- Shortt, T., & Thayer, Y. (1999). Block scheduling can enhance school climate. *Educational Leadership*, 56, 76-81. Washington, D.C.: Education Sector.
- Silva, E. (2007). On the clock: Rethinking the way schools use time. Washington, DC: Education Sector. Retrieved February 8, 2009 from http://www.educationsector.org/research/research_show.htm?doc_id=442238
- Stanley, K.R., Spradlin, T.E. & Plucker, J.A. (2007). The daily schedule: A look at the relationship between time and academic achievement. *Education Policy Brief*, 5, 1-7. Bloomington, IN: Center for Evaluation & Education Policy.
- Staunton, J. & Adams, T. (1997) What do teachers in California have to say about block scheduling? *NAASP Bulletin*, 81, 81-84.
- Trenta, L., & Newman, I. (2002). Effects of a high school block scheduling program on students: A four-year longitudinal study of the effects of block scheduling on student outcome variables. *American Secondary Education*, 31, 54-66.
- Trump, J. (1959). *Images of the future: A new approach to the secondary school*. Washington, DC: National Association of Secondary School Principals.
- United States. Department of Commerce. Office of the Census Bureau (2009, May) *Muscogee county quick facts*. Retrieved June 1, 2009 from the Department of Commerce website: <http://quickfacts.census.gov/qfd/states/13/13215.html>
- United States. Department of Defense. Office of Economic Adjustment and Valley Partnership Joint Development Authority (VPDJA) (2009, February) *The Regional Growth Management Plan*. Retrieved June 1, 2009 from <http://www.fortbenningandthevalley.com/muscogee.php>
- Veal, W.R., & Schreiber, J. (1999). Block scheduling effects on a state mandated test of basic skills. *Education Policy Analysis Archives*, 7(29), 1-14.
- Weinstein, C.S., & Mignano, A. (2003). *Elementary classroom management: Lessons from research and practice* (3rd ed.). New York, NY: McGraw-Hill.
- Weller, D.R., & McLeskey, J. (2000). Block scheduling and inclusion in a high school. *Remedial and Special Education*, 21, 209-218.
- Woolfolk-Hoy, A. & Hoy, W.K. (2006). *Instructional leadership: A research-based guide to learning in schools*. Boston, MA: Allyn & Bacon.
- Wronkovich, M., Hess, C. A., & Robinson, J. E. (1997). An objective look at math outcomes based on new research into block scheduling. *NAASP Bulletin*, 81,32-41.

Yin, R.K. (2009). *Case study research: Design and methods* (4th ed). Thousand Oaks, CA: Sage.

Zepeda, S. J., & Mayers, R. S. (2006). An analysis of research on block scheduling. *Review of Educational Research*, 76, 137–170.