

## The Daily Schedule: A Look at the Relationship Between Time and Academic Achievement

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### EDUCATION POLICY BRIEF SERIES ON THE USE OF TIME IN SCHOOLS:

- ✓ *Is It Time to Change Indiana's School-Year Calendar? (January 2007)*
- ✓ *Alternatives to the Traditional School-Year Calendar (May 2007)*
- ✓ ***The Daily Schedule: A Look at the Relationship Between Time and Academic Achievement***

### INTRODUCTION

The National Commission for Excellence in Education warned against the perils of an uninformed society in its 1984 report, *A Nation at Risk*. The report found that compared to students in other industrialized countries, students in the United States spent both less time in school and less time learning while they were in school (USDOE, 2007). As a result, the report challenged the norm in education and prompted widespread reform. In response to calls for change, many educators and policymakers began to focus specifically on school time issues such as school-year length, daily start times, and the structure of academic subjects within the school day.

The No Child Left Behind Act of 2001 (NCLB) was crafted in the same spirit as *A Nation at Risk*, with the goal of raising academic results for a vast number of low-performing students. The law emphasizes the importance of elementary and secondary education in preparing students for the 21<sup>st</sup> century global economy and community. However, many U.S. public schools are facing increasing challenges in preparing all students for life after graduation while still operating with 19<sup>th</sup> and 20<sup>th</sup> century traditional school-time formats.

In an effort to deliver academic instruction in the most effective and efficient manner possible, many school systems have experimented with alternative school-day structures. This Education Policy Brief, part of a series devoted to

school-time issues, will profile nontraditional school initiatives that have emerged across the nation, including a profile of innovative uses of instructional time that have proved effective. The success of alternative school-day structures will also be considered. Finally, issues related to school start time and school-day length will be reviewed.

### Traditional, Block, and Trimester Scheduling

The expectations for U.S. public school children continue to rise and accountability provisions are receiving increasing attention; as a result, some educators and policymakers question the effectiveness of instruction and learning within the format of the traditional school day. The format, only minimally adjusted in the past century, includes seven class periods and lunch, each lasting approximately 45 to 50 minutes (Gould, 2007). The average 180-day school year is followed by a lengthy summer vacation based on the agrarian schedules of the 18<sup>th</sup> and 19<sup>th</sup> centuries. The difficulty in meeting increasing educational demands within this traditional system has prompted many educators and policymakers to explore alternative school-day structures.

One survey of high school principals found that 11 percent of secondary schools in the United States had implemented some form of block scheduling by 1993 (Nichols, 2005). The following year, the National Commission on Time and Learning encouraged educators to

continue to explore new and innovative school-day structures. By 2001, nearly a third of all secondary schools in America were operating under some form of block scheduling (Viadero, 2001), yet opponents to block scheduling say that this alternative scheduling structure has been implemented without substantial research to prove its benefits. In reality, research has shown both positive and negative achievement results within block schedules.

Many variations of block schedules exist, each seeking to allocate longer periods of time for instruction in the core curriculum. The A/B schedule, or alternate-day schedule, features three or four 90-minute classes that are offered on alternating days. Although the classes alternate days, this schedule is seen as advantageous because the classes last for the duration of the school year. Conversely, another popular form of block scheduling, known as the 4x4 schedule, has 90-minute class periods as well, but these four classes are taken every day for an entire semester and then a new set of four classes is given to the students at the commencement of the following semester. A third form of alternative scheduling is the trimester schedule. The trimester schedule typically involves separating the traditional two-semester school year into three distinct terms of study. Each trimester includes four or five academic class periods lasting approximately 70 minutes each.

Proponents of these alternative configurations of the school day contend that the longer class periods foster greater student engagement and a deeper level of study. Additionally, proponents argue that the increased class time reduces discipline problems that arise in between class periods. However, findings are mixed and inconclusive as to whether extended class periods improve student achievement.

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## RESEARCH ON ALTERNATIVE SCHEDULING

One study, conducted at five metropolitan high schools in Indiana, analyzed extensive multi-year data to evaluate whether or not transitioning to a block schedule affected performance in English/Language Arts classes (Nichols, 2005). The researcher evaluated English/Language Arts and not other core subjects because Indiana graduation requirements stipulate that four credits in English are necessary for graduation as opposed to the lesser requirements for mathematics and science (Dr. Joe Nichols, personal communication, June 12, 2007). Additionally, the flexibility of block scheduling often provides more opportunities for students to enroll in elective courses, which may inflate overall GPAs (Nichols, 2005). Although the researcher did not observe large overall gains in GPA when the data were analyzed, he did find modest achievement gains at all five high schools corresponding with the switch to block scheduling. Nichols theorizes that because block scheduling allows students to take more courses per year, students are able to successfully complete their required language arts courses and enroll in additional courses beyond the graduation requirements, thus increasing achievement.

Conversely, a study conducted in North Carolina (Lawrence & McPherson, 2000) found that block schedules did not produce achievement gains when researchers examined end-of-course assessments at two high schools within the same school district. Both of these schools had recently made the transition to block schedules and researchers evaluated achievement (as determined by four end-of-course assessments) both before and after the transition. The socioeconomic background of students at both schools was similar. Researchers expected to find higher achievement within the block scheduled format, yet were surprised to find that students in previous years with a traditional schedule outperformed the students with the block schedule in subsequent years on all four end-of-course examinations. One possible problem with

the results is that the study was conducted in the years immediately following the transition, and this may not have given teachers and students time to learn how to most effectively use the new time configuration. Additionally, the authors suggest that these results indicate that school-day structure changes are not the sole solution to improving student achievement (Lawrence & McPherson, 2000).

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A study by McCreary and Hausman (2001) perhaps best explains the discrepancies within the research on school time. These researchers analyzed achievement in schools with traditional periods, block scheduling, and trimester systems. The results of their study were predominately favorable for schools with traditional schedules, as these schools tended to have higher average GPAs and less student absences than the other two models. Additionally, traditional schedules produced the highest achievement in math, as determined by a standardized exam. Results did show, however, that students on the block and trimester schedules had higher science achievement on the same standardized exam. In addition, the researchers highlighted previous findings that indicate students feel more favorable about their schooling in systems that have alternative scheduling.

All of these findings led McCreary and Hausman to believe that there is actually a “weak relationship between structural change and changes in student outcomes.” (McCreary & Hausman, 2001) They noted that educational leaders often make scheduling changes without also changing the learning environment of the school, such as curriculum, professional development, and school policies. Additionally, researcher Elena Silva notes that teachers must be trained and equipped with strategies for using the extra time provided by block schedules, because without this professional development, teachers will fail to capitalize on the extra time given to them and the students (Silva, 2007). The lack of consistency in teacher training and school reform in conjunction with school scheduling changes may be what has produced varying results in the educational research findings.

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## COMPREHENSIVE SCHOOL REFORM & STUDENT ENGAGEMENT

Researchers ultimately want to know which policies best utilize time in order to produce the greatest student achievement. The need for a more effective use of learning time is emphasized by Dr. Vincent Ferrandino and the Time, Learning, and Afterschool Task Force in their C.S. Mott Foundation report, “A New Day for Learning.” (Ferrandino, 2007) The report notes a need to reevaluate the traditional curriculum in order to make it both more challenging and more relevant to modern students. The report cites that many advantaged students find their part-time jobs to be more fulfilling than their academic work. The High School Survey of Student Engagement (HSSSE), a project at the Center for Evaluation & Education Policy, found that high school students commit more time to their part-time jobs than to written homework, reading, or studying (Yazzie-Mintz, 2006). In its most recent report, “Voices of Students on Engagement: A Report on the 2006 High School Survey of Student Engagement,” HSSSE cited that 21 percent of high school students spend 10 or

more hours per week working for pay. In contrast, only five percent of high school students spend 10 or more hours on written work, and only two percent reported spending that same amount of time on reading and studying for classes.

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The C.S. Mott Foundation report notes that technology must be better incorporated into the classroom so that students, especially those who have little to no access to technology at home, are better prepared for life beyond school. The report discusses the disconnect between school and home and finds a particular need for stimulating after-school activities to help bridge the gap and keep children away from unlawful or sedentary lifestyles. According to Dr. Ferrandino and his co-authors, it is critical for learning to continue past the end of the traditional school day, and comprehensive school reform must account for this void by restructuring attitudes that view learning as something that happens only between 8 a.m. and 3 p.m. approximately 180 days per year (**need citation**).

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## SCHOOL START TIMES

Rather than simply exploring alternative ways of scheduling within the traditional school time frame, a number of educators have sought to alter those hours altogether. Some educators, policymakers, and healthcare providers have advocated for later start times for secondary

schools, and a few schools have experimented with this idea.

A report published in *Pediatrics* (Hansen et al., 2005) confirmed what most parents and educators have long known—adolescents experience sleep deprivation during the academic school year. The report found that students do in fact perform better on academic tasks later in the day as a result of natural circadian rhythms in adolescents (Hansen et al., 2005). The researchers who conducted the study point out that many standardized tests begin earlier in the morning and that student achievement results could possibly increase if these exams were given at times when adolescents were naturally more alert.

Furthermore, a literature review by researchers at Columbia University found that, although longer-term studies are needed, short-term results show benefits to later start times (Mitru, Millrood, & Mateika, 2002). One study highlighted in the review (Kowalski & Allen, 1995) found that students enrolled in schools with later start times recorded a significantly larger amount of sleep during the school week. Many of these students reported that the extra sleep they received allowed them to be more alert during class. Most importantly, the researchers highlight previous findings that suggest it may be futile to attempt teaching during early morning hours when adolescents are naturally inclined to be asleep.

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## MINNEAPOLIS PUBLIC SCHOOLS

In response to research which suggests later start times are beneficial to students, the Minneapolis Public Schools (MPS) initiated later start times beginning in the 1997-98 school year. The start times for the high schools were moved from 7:15 a.m. to 8:40 a.m. and for the middle schools from 7:40 a.m. to 9:40 a.m. The start times for the 71 elementary schools in the district were scattered among three possible start times—7:40 a.m., 8:40 a.m., or 9:40 a.m.—and were scheduled depending on the

school's location and bus availability (Kubow, Wahlstrom, & Bemis, 1999). Following the transition, the school district has registered mixed responses.

Research implies that the impact of school start times in a region is largely dependent on the socioeconomic status of the population (Downs, 2001). The report *Starting Time and School Life: Reflections from Educators and Students* (Kubow et al., 1999) found that the urban Minneapolis-area students reported dissatisfaction with the later start times in focus groups, whereas the suburban-area (known as Edina) students reported satisfaction (Kubow et al., 1999). Students in the urban areas told researchers the later start times gave them less opportunity to participate in athletics and caused some students to have to work later into the evening in order to receive the same amount of work hours as they did prior to the transition. The report mentioned that students in Edina had an overwhelmingly positive response to the change, and the researchers found that the students reported getting extra sleep during the week. Furthermore, 14 of the 15 businesses interviewed in the suburban area reported no negative impact on business as a result of later school start times. Another discrepancy between the two areas was the number of students seeking help before school. Teachers in Edina reported an increase in the number of students seeking academic help before the start of the school day, whereas teachers in urban areas of Minneapolis found that there was no increase. Kubow et al. (1999) suggest that students in suburban areas may have greater access to vehicles and are thus more likely to come to school early for additional help.

The report cited the 9:40 a.m. start time as being highly problematic at the middle school level because it interfered with after-school activities for both students and educators. Additionally, the later start time often meant parents had to go to work before their children began school, which created logistical problems for many families. For the elementary schools, the earlier start times of 7:40 a.m. and 8:40 a.m. were preferred. Teachers reported that the younger students were

more alert in the morning and that their energy lasted throughout the day. Conversely, teachers at elementary schools with the 9:40 a.m. start time reported that many students had been awake long before they arrived at school and were already tired by the beginning of their academic work. Educators also reported more behavioral problems at the end of the day when a school began at 9:40 a.m.

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In their conclusion of the report, Kubow et al. (1999) noted that a flexible school start time was suggested by many of their interview subjects and that they believe that it may be the only way to address all academic and socioeconomic needs in a large area such as Minneapolis. The idea of a flexible start time suggests that students (and possibly teachers) would begin and end their day at various times according to their individual needs; for example, one student may begin the day at 7:30 a.m. and end at 2:30 p.m., whereas another student in the same school may begin and end the day an hour later. A flexible start time, however, is an idea that has not been implemented broadly and has little research to determine its effectiveness.

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## SCHOOL DAY LENGTH

While many school corporations have been switching to later start times, many others have been adding hours to the school day altogether. Massachusetts has begun to aggressively implement longer school days in its public schools, particularly in schools that have failed to meet Adequate Yearly Progress (AYP) targets for NCLB (Zuckerbrod & Trujillo, 2007). Under NCLB, lengthening the school day or year is one option for corrective action afforded to schools in Level III of improvement. Governor Patrick has set aside \$6.5 million in 2007 in order to pay for the longer school day initiatives. The program was projected to cost \$1,300 more per student per year in areas with extended days. Despite the cost, multiple states including New York, Connecticut, New Mexico, California, and Florida have also begun experimenting with longer days (Schemo, 2007).

Education Sector, a think-tank based in Washington, D.C., published *On the Clock: Rethinking the Way Schools Use Time* (Silva, 2007), which examines school time issues being raised around the United States. Most notably, Silva acknowledges a large distinction between simply adding hours to the day and adding learning to the day. The report breaks down four types of school time: allocated school time, allocated class time, instructional time, and academic learning time (Silva, 2007). Previous researchers (Aronson, Zimmerman, & Carlos, 1998) have found that "there is little or no relationship between allocated time and student achievement, some relationship between instructional time and achievement, and a larger relationship between academic learning time and achievement." This suggests added or restructured time will only be effective if it increases academic learning time and is one part of a larger reform plan. This larger plan must include highly qualified teachers and educational leaders, an innovative and challenging curriculum with measured outcomes, and an overall academic environment that nurtures learning and success (Silva, 2007).

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## KNOWLEDGE IS POWER PROGRAM

In recent years, alternative schools have begun to appear that include overhauled time structures as a core part of their programs. Developed by Teach for America Corp veterans, the Knowledge is Power Program (KIPP) is a model that significantly increases academic learning time for its students. While the program focuses on multiple factors for success (high expectations, strong leadership, and accountability), the increased learning time is the most prominent difference between a KIPP school and other public schools. KIPP schools currently operate in 16 states and serve a population of over 12,000 students. The program, typically established as a charter school, targets lower-income, minority students that are at risk of dropping out of high school and/or not attending college. More than 90 percent of KIPP students are minorities and more than 80 percent are eligible for free or reduced-price meals (KIPP, 2007).

KIPP students spend approximately 50 percent more time in school than their peers at other public schools. The average school day begins around 7:30 a.m. and lasts until 5:00 p.m. Additionally, students attend a half day of school on every other Saturday. Finally, the school year extends an additional three weeks into the summer. Therefore, most KIPP students attend school for 9.5 hours a day for 206 days a year, or a total average of 1,957 hours per year (David et al., 2006). This compares to a total of 900 hours for students in Grades 1-6 and 1,080 hours for students in Grades 7-12 in public schools in Indiana (Prendergast, Spradlin, & Palozzi, 2007).

Because of the extended day for KIPP schools, the core academic subjects are each allocated 90 minutes or more for study. The students also have the opportunity to participate in elective courses, such as art, music, and physical education. Research has found, though, that allocated time alone is not sufficient to produce increases in student achievement; there must also be an increase in

academic learning time (Silva, 2007). One study of five KIPP schools in San Francisco found that “the culture of good behavior and having completed homework” present in KIPP schools allowed over 80 percent of the allocated time to result in time on task (David et al., 2006). Given the extended allocated time present in KIPP schools and the large percentage of time found to be academic learning time, it appears that KIPP students receive a substantially larger amount of academic instruction than their counterparts in other public schools.

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Although many communities have been hesitant about proposals to add extra time onto the school day, the KIPP community reported overwhelmingly positive attitudes about the time commitments required at KIPP schools during the San Francisco-based study. All students attending KIPP schools are doing so voluntarily; thus, they and their families made the commitment to fulfill the additional time requirements before enrolling in the program. Although the intense schedule often requires changes to families' lifestyles and prevents KIPP students from participating in some extracurricular activities in the community, both KIPP students and parents reported that the benefits of a KIPP education outweigh the negatives (David et al., 2006). Teachers are perhaps the most

affected by the rigorous time demands, but many teachers felt the cause to be worth the sacrifice. However, despite the nobility of the cause, KIPP teachers have reported feeling overwhelmed and exhausted. The researchers of the San Francisco study cited this as a possible difficulty in sustaining the KIPP model.

Academic results at KIPP schools have thus far been promising. Nearly 80 percent of KIPP graduates have attended or are attending college. Additionally, researchers have reported higher than average results on standardized exams in KIPP schools. The analysis of five KIPP schools in the San Francisco Bay area found that the percentage of students rated as proficient or above proficient on the California Standards Test was consistently higher at KIPP schools than at comparable area schools. A separate study by Virginia-based researchers at the Educational Policy Institute looked at 27 KIPP middle schools and found that the academic gains at these schools were greater than those at similar urban schools (Focus on Results, 2005). More research is needed to accurately understand the impact of KIPP schools in urban areas, yet initial reports signal that the program's commitment to increased time, among other factors, may be responsible for increased achievement.

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## INNOVATIVE SCHOOLS IN INDIANAPOLIS

The Knowledge is Power Program now operates in two locations in Indiana: Gary and Indianapolis. The KIPP Indianapolis College Preparatory is a part of a larger system of charter schools sponsored by Indianapolis Mayor Bart Peterson. During the 2006-07 school year, there were 36 charter schools throughout Indiana, including the 16 Mayor-sponsored schools in Marion County Aaron Smith, Office of the Mayor, personal communication, May 9, 2007). Several of the charter schools in Indianapolis, including KIPP Indianapolis College Preparatory, have longer school days and longer school years as a part of their program. Additionally, many of these

schools format their days with longer blocks of time devoted to core subjects in order to increase educational attainment.

One school in particular has both implemented and demonstrated progress within these non-traditional time structures. The Christel House Academy serves students in Grades K-8 and allocates additional school time in an attempt to improve student achievement. The Christel House Academy runs on a 190-day school calendar, as opposed to the more traditional calendar of 180 days. Moreover, the school day begins at 8:00 a.m. and ends at 4:00 p.m. The school also encourages its students to participate in after-school enrichment activities ranging from dance and art class to remediation and private tutoring. In the 2005-06 school year, Christel House Academy made AYP in all 13 categories as determined by the Indiana Department of Education and was also categorized as making “Exemplary Progress” towards Public Law 221. Charter schools have been a mechanism for educators and policymakers to implement innovative uses of time, backed by research, into public education.

There are also several innovative schools that are a part of the Indianapolis Public School system, including the Julian D. Coleman Academy for Boys and Girls. The Coleman Academy modeled the KIPP school format for the 2006-07 school year, requiring both longer days and a longer school year for its students. The time structure allows students at Coleman Academy to attend approximately 460 more hours of school per year than students at other Indianapolis Public Schools (Principal Stan Law, personal communication, June 14, 2007).

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## CONCLUSIONS AND RECOMMENDATIONS

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### Conclusion

Findings from the High School Survey of Student Engagement provide evidence that highlighted that two out of three students “are bored in class in high school at least every day” due to lack of relevance or too much or too little challenge (Yazzie-Mintz, 2006). Research has shown that while alternative time structures can increase academic achievement, it is the spirit behind the time changes that is perhaps most important in improving student achievement.

### Recommendation

Simply adding time to a curriculum that is less rigorous or less engaging will not increase student learning. Educators must update their curriculum to make it more relevant and rigorous. Technology should also be a regular part of the classroom. Many schools that have had success with their alternative time structures have also had success with a more engaging curriculum that is both rigorous and relevant.

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### Conclusion

Allocated time alone has very little relationship to student achievement; instead, it is what educators do with the extra time that has the largest effect on student learning.

### Recommendation

Teacher quality and training are among the primary factors in determining the success or failure of students. If time structures are going to be adjusted within a school, professional development must accompany the changes so that teachers are prepared to effectively deal with those changes. Academic achievement will depend on teachers making the connection between additional allocated time and additional academic learning time.

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## Conclusion

A comprehensive review of the research related to school time issues reveals that perhaps it is not simply school time that must be adjusted in the 21st century, but rather our attitudes about education in general.

### Recommendation

Change is never easy in any community; therefore, it will be difficult to make changes to school time structures unless there is a sense of community support behind the idea. Change that comes from the community, rather than change that is imposed on the community, has a far greater chance for success. Community forums and debates are an excellent tool for addressing academic issues and concerns.

Very little research is available to speak to the effectiveness of flexible start times in secondary schools. Yet, the idea of staggering student and teacher attendance has been gaining attention in many school districts. Therefore, this strategy merits further consideration and study.

Charter schools have often been the first schools to break from the mold and experiment with innovative uses of time when the traditional schedule is no longer sufficient. Traditional schools do not work for every student in every community, and it is therefore imperative that other public school options exist. Charter schools should be continuously reviewed for progress and academic achievement, and those that show success should be supported.

Finally, as educators and policymakers continue to implement alternative uses of time during the school day and year, evaluation of these models is imperative to determine the most efficient and effective use of time to support academic achievement.

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## Web Resources

### **Knowledge is Power Program (KIPP)**

<http://www.kipp.org>

### **Charter School Association of Indiana, Inc.**

<http://www.indianacharters.org>

### **High School Survey of Student Engagement**

<http://ceep.indiana.edu/hsse>

### **Julian D. Coleman Academy for Girls**

<http://www.511.ips.K12.in.us>

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