

Research Brief

Length of Classes and Student Achievement

Question: What does the research say about the relationship between the length of a class and student achievement?

In a Nutshell

The research on student achievement for those on traditional and block schedules is varied and inconclusive. The research has identified both advantages and disadvantages for each schedule. What is most important is how the needs of one's students are most effectively being met. Alternative models may impact school climate as much as student learning.

Summary of Findings:

Public schools in the United States, through the strong influence of Horace Mann and Henry Barnard, were established to provide the country with a knowledgeable and democratic citizenry. During the Industrial Revolution, people were needed to work in factories so the public schools were organized so students could be successful in this type of work. Many schools are still organized as they were in earlier decades even though the model may no longer be appropriate. But alternative models have emerged and provide a variety of options for organizing the school day.

There are many organizational models, each with their own unique design. The traditional six or seven period day was established during the Industrial Revolution and remains the most common design for secondary schools. The concept of block scheduling, where students have longer class periods and take fewer classes during a semester or trimester, emerged in the 1980's. Other models including alternating day schedules and rotating schedules are also used in middle and high schools (Williamson, 2009).

Research has not found any single model to be better than others. There are many factors to consider when making a decision about your school's schedule. Most important is the needs of students.

The Needs of Today's Students

The current generation of students, born 1980-2000, is known as the Millennials. This generation was born into a world where technology is the norm and using it, while multitasking, is how they process information, thus they are known as Digital Natives. As a generation they:

- Believe they are special as they have been rewarded and/or recognized for the vast majority of their efforts and work
- Expect to have meaningful relationships with adults, since this has been their experience with the adults in their world
- Work well in groups, although they often lack strong one-on-one skills, especially in the area of communication

- Prefer visuals, especially before words, such as in a PowerPoint
- Dislike long lectures
- Think in technological ways, so utilizing computers, iPad's, Smart Boards, etc. is more beneficial to them and their long term learning
- Often lack strong analysis skills, since they are accustomed to the quick answer, i.e. Google and
- Are accustomed to writing more informally, such as in texting, so they need more formal experience in writing (Meyer-Looze & Williamson, 2010; Monaco & Martin, 2007; Walker, 2006).

How Students Learn

President George H. Bush declared the 1990's as the decade of the brain. As a result of this initiative, a great deal of information has been learned about how the brain takes in, stores and retrieves information. Given what is now known about how people learn, it is important to consider the most recent research about the brain, and the way people learn, when considering changes to the school day. In order maximize long-term learning these conditions work best and the brain functions best when:

- the class is de-stressed, then it is more open to taking in information.
- attention is obtained, curiosity is aroused and the presentation has some form of novelty.
- different colors are used by the teacher and learner for emphasis on particular concepts.
- concepts being introduced have personal meaning and relevance to the learner and is connected to their prior knowledge.
- there is an opportunity to rehearse information learned in a variety of ways (Willis, 2009-2010)

Selecting a Scheduling Model

Which schedule best meets the needs of today's students and positively impacts their learning? Research is mixed at best. A representative sample of studies is reported below.

- A study conducted in a high school during the mid 1990s gathered data from two years prior to implementing a block schedule and two years afterwards. When these data were compared it was found that 1) grade point averages increased in almost every subject; 2) there were higher state proficiency scores; 3) there were improved ACT scores; 4) there were no changes in SAT scores; and 5) there were fewer discipline problems because of less passing time in the hallway (Chalka, 1999).
- A study from North Carolina in the 1990s found that students who were in a block schedule scored higher on year end and state wide tests and completed more courses in the same amount of time as did those on the traditional schedule (Chalka, 1999).
- A five year study conducted in a Virginia high school found that students who were on a block schedule found that 1) SAT scores rose for a combined average from 978 to 1029; 2) a higher percentage of students, from 70 to 81, scored a three or higher on the AP exams; 3) a higher percentage, from 51 to 60, earned an advanced standards diploma (Chalka, 1999).
- A study of 10 Broward County, FL high schools that were on block and 12 on a traditional seven period day reported no significant differences in attendance and suspension data. However one-third of the teachers on block reported that students were more prompt, paid better attention and had better conduct. The principals said that on the block schedule there were fewer discipline problems because of fewer class changes. There were no significant differences on student outcomes on standardized tests (Laitsch, 2004).

- A Mississippi study of 69 schools, 34 on block and 35 on traditional schedules found that students in the block had significantly higher mean scores in Biology, U.S. History and English 2 on multiple choice tests, however there were no significant differences on the essay portion of the tests in Algebra 1 and English 2. There was a higher passing rate for those on block on the multiple choice tests in Algebra 1, Biology and English 2, yet no significant difference on the essay tests in U.S. History and English 2 (Smith, 2009).
- Another study from North Carolina compared test scores of students who were on a 4 X 4 block schedule and those on a traditional schedule in Algebra 1 and Biology during the 2001-2002 and 2002-2003 school years. It was found that there was no significant difference in student achievement regardless of the schedule (Ellis, 2004).
- Yet another study in North Carolina looked at two high schools, one on block schedule and the other on traditional schedule. The course tests in Algebra 1, Biology, English 1 and U.S. History were compared. The mean scores in all four test were higher from those on the traditional schedule (Lawrence & McPherson, 2000).

There are several other *Research Briefs* that discuss a variety of scheduling and organizational models. They include:

Trimester Schedules (2008) - www.principalspartnership.com/TrimesterSchedulesApr08.pdf

Four Day Week Schedule (2007) - www.principalspartnership.com/fourdayweek.pdf

High School Starting Times (2010) –

www.principalspartnership.com/HighSchoolStartingTimes.pdf

High School Schedules (2005) - www.principalspartnership.com/hsschedules.pdf

Seven Period Day (2010) - www.principalspartnership.com/SevenPeriodDay.pdf

Block Scheduling (2003) - www.principalspartnership.com/block scheduling.pdf

Conclusion

Regardless of the schedule, the underlying question is how to best meet the needs of a school's students. Ultimately, the school's organizational pattern is merely a way to organize teachers and students. It is the commitment to sound, high quality teaching practices that makes the difference in student learning. Every school should routinely look at the design of their school day to make sure that it takes advantages of instructional practice and technology, and addresses the needs of the students being served. It may no longer be appropriate to continue to organize the school day as it was done during the Industrial Revolution. An alternative approach may positively impact both student learning and school climate.

Online Resources:

- Chalka, G. (1999). Around the block: The benefits and challenges of block scheduling. Retrieved online http://www.educationworld.com/a_admin/admin/admin127.shtml
Although an older article, it cites some early research about block scheduling.
- Ellis, G. H. (2004). A comparison between selected 4 x 4 block schedule schools and seven-period traditional schools as measured by the public schools in North Carolina end of course tests in algebra and biology. Retrieved online <http://digitalcommons.uncfsu.edu/dissertations/AAI3287764/>
This abstract describes a study that was done comparing students in Algebra and Biology who were in block and traditional schedule courses.

- Gugerly, J. & Bottge, B. (2004, January). Block scheduling: Some benefits but no magic fix. Retrieved online
http://www.wcer.wisc.edu/news/coverstories/block_scheduling.php
A brief report about research conducted comparing teachers' perceptions about their jobs both in block and traditional schedules.
- Irmsher, K. (1996). Block scheduling. ERIC Digest, Number 104. Retrieved online
<http://www.ericdigests.org/1996-4/block.htm>
“This Digest looks at problems inherent in the traditional scheduling pattern. Then it examines the benefits and challenges of block scheduling, and ends with a few tips for making the transition.”
- Johnson, J. (2009, November 29). Calvert high school turns them loose at lunch. Retrieved online
<http://www.washingtonpost.com/wp-dyn/content/article/2009/11/28/AR2009112802194.html>
This is a description of several high schools that have an hour for lunch and the way that time is used for the benefit of the students.
- Kelly, M. (n.d.). Modular (block) schedules. Retrieved online
<http://712educators.about.com/cs/blockschedule/a/blockschedule.htm>
A brief description of some pros and cons of block scheduling are presented in this article.
- Laitsch, D. (2004). The effects of block scheduling on teacher perceptions and student performance. Retrieved online
<http://www.ascd.org/publications/researchbrief/v2n10/toc.aspx>
This brief provides a succinct description of a study done in Florida comparing student achievement and discipline data for those on a block and a traditional schedule.
- Lawrence, W. W. & McPherson, D. D. (2000). A comparative study of block scheduling and traditional scheduling on academic achievement. Retrieved online
<http://carolynwright.org/BlockScheduleStudy.pdf>
This article reports on a study done in North Carolina comparing the end of year test scores in the four major academic areas for students who were on block and traditional schedules.
- Lim, K. (2007, June). Block scheduling pros and cons. Retrieved online
http://www.lifescrpt.com/Life/Family/Parenting/Block_Scheduling_Pros_and_Cons.aspx
Many of the pros and cons of block scheduling are provided in this article.
- Meyer-Looze, C. & Williamson, R. (2010). Working with Gen Y Teachers: Dealing with a Changing Teacher Workforce. - This article describes the characteristics of Gen Y teachers and their interest in working in schools that are organized in ways that vary from the traditional design. www.principalspartnership.com/feature510.html
- Monaco, M. & Martin, M. (2007). The Millennial student: A new generation of learners. Retrieved online <http://www.nataej.org/2.2/EJMonaco.pdf>
This article describes students that are just entering college and ways in which they learn.

- NEA. (n.d.). Research spotlight on block scheduling. Retrieved online <http://www.nea.org/tools/16816.htm>
A very brief piece on a few pros and cons of block scheduling are given.
- Smith, R. D. (2009). Block and traditional school schedules: Comparison of student achievement by MSAT scores and high school science teachers' views. Retrieved online <http://gradworks.umi.com/33/67/3367206.html>
This is an abstract from a dissertation on a study done in 69 Mississippi high schools comparing student achievement of those in block and traditional schedules.
- Vestal, B. D. (n.d.). The effects of a block schedule on student achievement. Retrieved online <http://faculty.mwsu.edu/west/maryann.coe/coe/Projects/epaper/blockschedule.htm#Kramer>
This is a brief review of the literature conducted on the effects of block schedules on student achievement.
- Walker, K. (2006). Millennials and schools of the future. Retrieved online <http://www.principalspartnership.com/millennials.pdf>
This is an overview of the characteristics of the Millennial generation.
- Willis, J. (2009-2010). Master brain-based learning in 10 simple steps. Retrieved online <http://www.teachhub.com/news/article/cat/14/item/20>
A succinct list of 10 ways in which the brain can take in information for the long term is described in this article.

Written Resources

- Sadker, D. M. & Zittleman, K.R. (2010). *Teachers, schools, and society* (ninth edition). McGraw Hill: NY. pp. 236-272.
- Williamson, R. (2009). *Scheduling to improve student learning*. Westerville, OH: National Middle School Association.

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By: Dr. Karen Walker, Lebanon Valley College

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