



## Time and Learning: A Brief Review of Research

Two areas of research point to how the quantity of time spent learning relates to student performance. These areas are described below and include several key sources. A list of additional relevant sources follows.

### 1. Time as a core characteristic of high-performing schools

The researchers in this area start by identifying schools that have produced high student performance over several years and then try to unpack the characteristics that make these schools successful. In study after study, both expanded time and the particular ways in which it is deployed and managed are pinpointed as essential elements of creating an effective school.

Key sources:

Farbman, D. and Kaplan, C. (2005). *Time for a change: The promise of extended-time schools for promoting student achievement*. Boston, MA: Massachusetts 2020.

Hoxby, C. M., Murarka, S. and Kang, J. (2009, September). *How New York City's charter schools affect achievement, August 2009 Report. Second report in series*. Cambridge, MA: New York City Charter Schools Evaluation Project.

Merseth, K. et al. (2009). *Inside urban charter schools: Promising practices and strategies in five high-performing schools*. Cambridge, MA: Harvard Education Press.  
<http://www.hepg.org/hepg/book/94/InsideUrbanCharterSchools>

Shields, R.A. and Miles, K.H. (2008). *Strategic designs: Lessons from leading edge small urban high schools*. Watertown, MA: Education Resource Strategies.  
[http://www.educationresourcestrategies.org/documents/FINALREPORTSTRATEGICDESIGNERS\\_5-19\\_000.pdf](http://www.educationresourcestrategies.org/documents/FINALREPORTSTRATEGICDESIGNERS_5-19_000.pdf) (See esp. pp. 38-52.)

### 2. Connecting learning time to outcomes

Several scholars have conducted experiments to identify the link between time spent learning in schools and academic outcomes more precisely. These studies have shown that the amount of time students spend learning is clearly related to how much they learn, both in terms of

content knowledge and application of knowledge (i.e., “knowledge transfer”). In addition, some researchers have shown that time out of school can have a negative effect on student performance. For instance, a meta-analysis of studies on summer learning loss found that all students experience a loss of approximately one month in math, while in reading, losses were limited to students of lower socio-economic status.

Key sources:

Berliner, D. (1990). What’s all the fuss about instructional time? in *The Nature of Time in Schools: Theoretical Concepts, Practitioner Perceptions*. New York: Teacher College Press.

Clark, D., and Linn, M.C. (2003). Designing for knowledge integration: The impact of instructional time. *The Journal of Learning Sciences*, 12(4): 451-493.

Cooper, H., Nye, B., Charlton, K., Lindsay, J., & Greathouse, S. (1996). The effects of summer vacation on achievement test scores: A narrative and meta-analytic review. *Review of Educational Research*, 66 (3), 227-268.

Gettinger, M. (1985). Time allocated and time spent relative to time needed for learning as determinants of achievement. *Journal of Educational Psychology*, 77(1), 3-11.

Marcotte, D. E. (2007). *Unscheduled school closings and student performance* (IZA Discussion Paper 2923). Bonn, Germany: The Institute for the Study of Labor.

## **ADDITIONAL SOURCES**

### **Identifying Time as Key Element of High-Performing Schools**

Chenoweth, K. (2007). *It’s being done: Academic success in unexpected schools*. Cambridge, MA: Harvard Education Press.

*Examines a wide variety of schools where students perform better than their socioeconomic profile would dictate. Author identifies setting high expectations for students, data-driven instruction, the wise use of school time, ongoing professional development of teachers, and comprehensive leadership teams as key elements of good schools.*

Fryer, R. and Dobbie, W. (2009, April). Are high-quality schools enough to close the achievement gap? Evidence from a bold social experiment in Harlem. Unpublished manuscript. <http://www.economics.harvard.edu/faculty/fryer/files/hcz%204.15.2009.pdf>

*This evaluation of the Harlem Children’s uses a couple of different methodologies (including a randomized control sample), to test the impact of the Zone’s charter middle school, Promise Academy. Researchers found that the school demonstrated outstanding success at enabling black children to achieve at high levels and close the achievement gap with white students. Promise Academy provides up to twice the learning time as the typical NYC student has (both through extended day and year schedule and supplementary tutoring).*

Miles, K.H. and Frank, S. (2008). *The strategic school: How to make the most of people, time and money*. San Francisco: Corwin Press.

*Using their extensive research in urban schools and districts, the authors explore how educational leaders can develop successful and strategic schools by assessing how well they use all available resources—people, time, and money – and stress, in particular, that increasing instructional time within the confines of the school day is paramount.*

### **Analyzing the Time – Learning Connection: Theory and Experimentation**

Anderson, L. (1976). An empirical investigation of individual differences in time to learn. *Journal of Educational Psychology* 68: 226-233.

*Sets up an experiment showing that the amount of time required to learn a task can be diminished over time if taught properly. Shows that prior inequalities in ability to learn can be reduced.*

Aronson, J., Zimmerman, J. and Carlos, L. (1999). *Improving student achievement by extending school: Is it just a matter of time?* San Francisco: WestEd.

*Uses the Academic Learning Time model to analyze proposals to extend the school calendar. States that the first task for schools is to maximize ALT within the current school day and to extend the school day once in-school time is being used efficiently.*

Bransford, J.D., Brown, A.L. & Cocking, R.R. (Eds.) (2000.) *How people learn: Brain, mind, experience and school*. Washington, DC: National Academy Press.

*This synthesis of research on learning explains that learning is most likely to endure when students have the opportunity to encounter subject material through a mixture of learning contexts and media. Such contextual variety is more likely to occur when the time is available to engage in several separate but related and mutually reinforcing activities.*

Carroll, J. (1963). A model of school learning. *Teachers College Record*, 64: 723-733.

*Provides a theoretical model of how instructional time factors into learning. Learning is a function of the time spent on a learning task and the time that student would need to complete the task.*

### **Analyzing the Time – Learning Connection: In Practice**

Adelman, N. (1996). *The uses of time for teaching and learning, [Volume I: Findings and Conclusions.] Studies of Education Reform*. Washington, DC: Policy Studies Associates, Inc.

*Assesses experiments with the quantity and quality of time in 14 schools across the country, including extended time, block scheduling, multi-age grouping and residential schools. The study identified two strategies that altered school uses of time—multiage groupings and flexible school schedules.*

Alexander, K.L., Entwisle, D.R., Olson, L. S. (2001). Schools, achievement, and inequality: A seasonal perspective. *Educational Evaluation and Policy Analysis*, 23:2, 171-91.

*A five-year study comparing the mathematics achievement of middle- and low-income children over the school year and the summer months using data for a representative sample of urban school children. Findings show that the increase in the achievement gap over the primary grades can be pinpointed to the summer months.*

Deuel, L. S. (1999). Block scheduling in large, urban high schools: Effects on academic achievement, student behavior, and staff perceptions. *The High School Journal* 83 (1) 14-25. *Compares block scheduled high schools in Broward County, FL with traditionally scheduled high schools. Finds a significant difference in the grades received in block scheduled schools and much better perceptions of the school environment.*

Florian, J. (1999.) Teacher survey of standards-based instruction: Addressing time. Aurora, CO: Mid-Continent Research for Education and Learning.

*This small study engaged veteran teachers to determine how many hours of teaching would be needed to adequately cover the state standards at several grade levels and in four subject areas. Teachers determined that schools would need to devote significantly more time than was allotted to sufficiently teach to expected standards.*

Frazier, J.A. and Morrison, F.J. (1998). The influence of extended-year schooling on growth of achievement and perceived competence in early elementary school. *Child Development* 69 (2): 495-497.

*Compares kindergarteners with traditional summer breaks to those who attend school for an additional 30 school days. Study findings indicate that the children in the extended-year program learn at an equal rate during the year but make significant gains in cognitive abilities, reading and especially mathematics over the summer.*

Lazarin, M. (2008). A race against the clock: The value of expanded learning time for English Language Learners. Washington D.C.: Center for American Progress.

*Indicates that expanded learning time facilitates greater language development for English Language Learners (ELL) and could be a key step in closing the achievement gap between ELL and non-ELL students. Also suggests that the greatest results would come from whole-school implementation of an expanded time program.*

Mattox, K., Hancock, D., Queen, J.A. (2005). The effect of block scheduling on middle school students' mathematics achievement. *NASSP Bulletin* 89 (642): 3-13.

*Examines the math scores of five middle schools before and after switching to block scheduling. Finds that scores are significantly higher in a block scheduling model.*

Worthen, B. and Zsiray, S. (1993). *What twenty years of educational studies reveal about year-round education*. Chapel Hill: North Carolina Educational Policy Research Center, University of North Carolina.

*Analyzes a collection of studies examining year-round education and finds that overall, year-round education improves academic achievement, improves attendance and attitudes toward school for both students and teachers and costs the same or less than traditional school schedules.*

### **Commission Reports**

National Academy of Education. (2009). Time for learning: Education policy white paper. Washington, D.C.

*This summary of research describes the current state of expanded-time programming, both within and after the traditional school day. Emphasizes that more learning time will only produce positive results if time is spent well, and points out that more research needs to be done, especially in school contexts.*

National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform*. Washington, DC: U.S. Department of Education.

*The study that launched the standards-reform movement called for more time in core academics as one of its five key recommendations. The time recommendation has been the only one of the five not to be implemented on a broad scale.*

National Education Commission on Time and Learning. (1994). *Prisoners of Time*. Washington, DC: U.S. Department of Education.

*This report explains that “time is the missing element in our great national debate about learning and the need for higher standards for all students.. ...The reform movement of the last decade is destined to founder unless it is harnessed to more time for learning.” The report recommends lengthening the school day and year, as part of the standards-based reform movement.*