

## BETTER INSTRUCTION, NOT MORE TIME

A longer school day and year will be North Carolina's next education fad

**KEY FACTS:** • There is no consistent relationship between in-school instructional time in mathematics and a nation's average score on an international mathematics test.

• Researchers from Pennsylvania State University concluded that there was no statistically significant correlation between instructional time in math, science, reading, and civics and test scores on international assessments of those subjects.

• It would cost taxpayers as much as an additional \$656,500 per year to implement a longer school day at a typical North Carolina elementary school.

• Although extending the school day is not the panacea that advocates make it out to be, the North Carolina public school system should still give parents the option to send their child to a school with an alternative schedule, which may include longer or shorter days, if parents believe it to be in the best interest of their child's education.

Over the last year, the idea of extending the school day and year has gained favor among those who are looking for new ideas to improve North Carolina's struggling public schools. While the General Assembly has yet to translate the chatter into legislation, lengthening the school day and year will likely follow in the footsteps of proposals – reducing class size and raising the compulsory attendance age – that also promote facile solutions to complex problems.<sup>1</sup>

Indeed, the reasoning used to support proposals to lengthen the school day and year is straightforward. Additional instructional time should allow teachers to better teach material and allow students more time to learn it. And everybody appears to be doing it. Successful charter schools, like Knowledge Is Power Program (KIPP) schools, employ a longer school day, suggesting that increasing instructional time will yield higher achievement, particularly for at-risk students.<sup>2</sup> States are forging ahead with pilot programs; the *Expanded Learning Time Initiative* in Massachusetts increases instructional time by as much as 30 percent.<sup>3</sup> Democratic Senator Edward Kennedy recently proposed

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If North Carolina aspires to be internationally competitive, it is difficult to see how it can “spot” students around the world 20 to 50 days of instruction each year and expect to excel academically.

— N.C. Public School Forum, *Getting Internationally Competitive Schools*, December 2006

More than 60 percent of voters in *Triangle Business Journal's* latest weekly poll indicated that Triangle school systems should increase classroom time for students. ... Out of 365 total responses to the unscientific poll, 61.6 percent, or 225 voters, said the schools should expand either the school day, or the school year, or both.

— *Triangle Business Journal*, “Poll: 62% say expand classroom time,” March 14, 2007

Many of the strategies that have helped foster success at KIPP schools can be employed at traditional schools, too. One of those strategies — a longer school day — is gaining a foothold in schools nationwide. The extended day idea is set to come to Charlotte-Mecklenburg Schools next year.

— *Charlotte Observer*, “Knowledge is power; KIPP schools, extended day programs help at-risk students,”  
March 28, 2007

The amount of time spent in school could eventually emerge on the state board’s agenda. [State Board of Education Chairman Howard] Lee says no plans are being discussed now, but he supports lengthening the school day and increasing the number of days students are in class each year. Most Tar Heel students attend class six hours or less each day for 180 days each year. Lee said the school day is “much longer” in other nations, and their academic years often include 220 days of instruction.

— Update 100, Lee County Committee of 100, “Radical change is needed for Tar Heel students to succeed,”  
July 17, 2007

increasing federal No Child Left Behind funds to train teachers how to adapt content to a longer school day.<sup>4</sup> Finally, countries that outperform the United States on international tests seem to spend much more time in school, thereby giving them a competitive advantage in the global marketplace.

### **Instructional Time and Mathematics Achievement**

For many Americans, the last argument is the most compelling one.<sup>5</sup> Nevertheless, comparisons of test results and instructional time show that more is not necessarily better. According to the Organization for Economic Cooperation and Development (OECD), students in the United States spend an average of 4.7 hours per week or 169 hours per year of in-school time for mathematics instruction.<sup>6</sup> The average for the 41 OECD and partner nations is 4.1 hours per week and 149 hours per year. In other words, students in the United States receive the equivalent of four more weeks of mathematics instruction than the average nation.<sup>7</sup>

Given the additional instructional time, some expect our students to score above the average on mathematics assessments, but the opposite is true. Students in the United States score far below average on tests like the Program for International Student Assessment (PISA) math exam, a test given every three years to a sample of students in each OECD country. On the 2003 PISA math test, students in the United States ranked 27th out of the 39 countries tested.

The five top performing countries on the PISA mathematics assessment do not necessarily spend the most amount

**Figure 1. Instructional Time and Math Performance: Highest Performing Countries and U.S.<sup>8</sup>**

<i>Rank</i>	<i>Country</i>	<i>PISA Math Average Scale Score</i>	<i>Hours Per Week</i>	<i>Hours Per Year</i>
1.	Hong Kong/China	550	5.0	177
2.	Finland	544	3.0	114
3.	South Korea	542	6.2	221
4.	Netherlands	538	2.9	110
5.	Liechtenstein	536	3.8	148
27.	United States	483	4.7	169
	AVERAGE	N/A	4.1	149

of time on in-school mathematics instruction. Hong Kong/China and South Korea spent more time per week on mathematics than the United States. Students in Hong Kong spent 5 hours of in-school time on math, while the South Korean education system dedicated 6.2 hours per week on math. Liechtenstein, Finland, and the Netherlands spent considerably less time in mathematics instruction per week (see Figure 1).

Over the course of the school year, Hong Kong/China and South Korea provided more total instructional hours in math than the United States. School systems in Finland, the Netherlands, and Lichtenstein spent much less time per year on math. For example, Finland’s 114 hours per year is 55 hours or the equivalent of 12 weeks less than what the United States spent on in-school math instruction.

Similarly, the five lowest performing countries do not necessarily spend the least amount of time on in-school math instruction. In fact, yearly instructional time in Thailand, Mexico, Tunisia, and Brazil are above the average for OECD nations. In comparison with the U.S. average, Uruguay and Tunisia spend less time in math classes per year, while Thailand, Mexico, and Brazil spend more (see Figure 2).

Overall, there was no consistent relationship between in-school instructional time in mathematics and the country’s average score on the PISA mathematics test.<sup>10</sup> In fact, there is a slight decrease in math performance as the instructional time increases (see Figure 3).<sup>11</sup>

To examine this phenomenon in greater detail, a group of researchers from Pennsylvania State University conducted a statistical analysis that compared instructional time and student performance on international assessments, including the PISA, the Trends in International Mathematics and Science Study (TIMSS), and the International Study of Civic Education. Most of the research studies related to time and achievement, particularly those conducted in the 1970s and 1980s, suffered from methodological flaws or captured educational conditions that are no longer ap-

**Figure 2. Instructional Time and Math Performance: Lowest Performing Countries and U.S.<sup>9</sup>**

<i>Rank</i>	<i>Country</i>	<i>PISA Math Average Scale Score</i>	<i>Hours per Week</i>	<i>Hours per Year</i>
27.	United States	483	4.7	169
35.	Uruguay	422	3.3	112
36.	Thailand	417	4.5	179
37.	Mexico	385	8.1	194
38.	Tunisia	359	5.1	163
39.	Brazil	356	4.6	187
	AVERAGE	N/A	4.1	149

plicable. Their 2004 study, “Instructional Time and National Achievement: Cross National Evidence,” attempts to fill the void in quality cross-national research on instructional time and achievement.<sup>13</sup>

The authors concluded that there was *no statistically significant correlation* between instructional time in math, science, reading, and civics and test scores on international assessments of those subjects. For example, the authors found no relationship between hours of instruction and math achievement on the TIMSS assessment:

... in the TIMSS data, students attending math class for 5 hours or more during the week score 481 on achievement tests, while students who receive less than 2 hours of math per week score on average of 485. About 90% of the students receive between 2 and 5 hours of math class and they get on average 491 points on the math achievement test. Evidently, more hours of math class does not result in better achievement scores cross nationally.<sup>14</sup>

In addition, there was little variation in math instructional time among the 37 nations included in the study. With the exception of Morocco and Indonesia, most countries were providing between 3 and 4 hours of math instruction per week. The relationship between math achievement and instructional time was typically weak *within* nations, as well.

The researchers’ policy recommendation could not be more direct,

Instructional time should not be considered as a major policy lever. Do not waste resources in marginal increases in instructional time, as long as the system falls within world norms. If there is a choice between using resources to increase time versus improving teaching and the curriculum, give priority to the latter.<sup>15</sup>

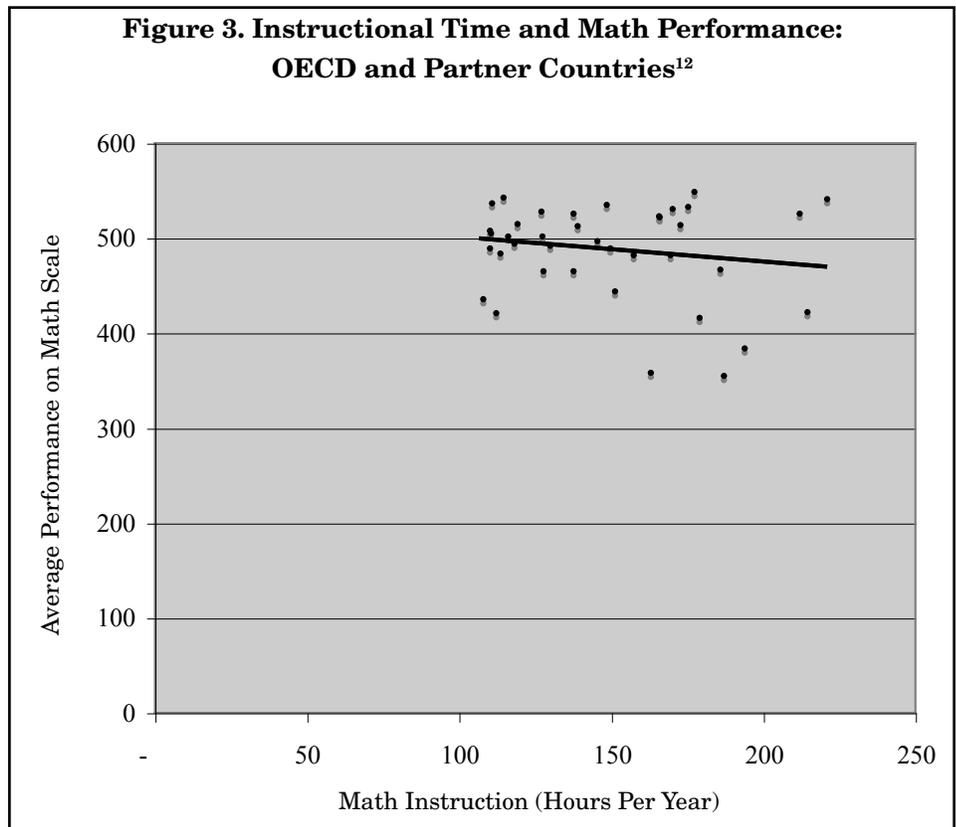
Indeed, high-performing countries are successful because they employ strong leaders, focus on measurable results, and maintain very high expectations for all teachers, parents, and students. Our public schools should focus on the same.

### Practical Considerations: The Experiment in Massachusetts

A report from the Center for American Progress pointed out that lengthening the school day is not just a matter of adding an hour to the current school day. Instead, it involves a comprehensive redesign of the educational program, additional training for all school personnel, and a significant increase in recurring funding for additional staff and resources. It is unlikely that many proponents of lengthening the school day are aware of the considerable costs and requirements associated with the measure.<sup>16</sup>

For example, Massachusetts provides an additional \$1,300 per student for schools that extend the school

**Figure 3. Instructional Time and Math Performance: OECD and Partner Countries<sup>12</sup>**



day.<sup>17</sup> The average elementary school in North Carolina has 505 students.<sup>18</sup> At the Massachusetts funding level, it would cost taxpayers an additional \$656,500 per year to implement a longer school day at a typical North Carolina elementary school. A modest pilot program at five elementary schools would cost nearly \$3.3 million per year.

## Recommendations

Although it is not the panacea that advocates make it out to be, an extended school day and year may be well suited for students who could benefit from high-quality supplemental instruction. The North Carolina public school system should give parents the option to send their child to a school with an alternative schedule, which may include longer or shorter days, if parents believe it to be in the best interest of their child's education. Otherwise, the measure becomes one in a long list of one size fits all reforms that invariably fail to deliver on the promise of increasing student achievement.

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## End Notes

1. See Terry Stoops, "Honey, I Shrunk the Class!: How Reducing Class Size Fails to Raise Student Achievement," John Locke Foundation Spotlight No. 276, January 10, 2006, [johnlocke.org/spotlights/display\\_story.html?id=123](http://johnlocke.org/spotlights/display_story.html?id=123). See also Stoops, "Raise the Bar, Not the Age: Why raising the compulsory school age won't reduce dropouts," John Locke Foundation Spotlight No. 321, May 31, 2007, [johnlocke.org/spotlights/display\\_story.html?id=170](http://johnlocke.org/spotlights/display_story.html?id=170).
2. According to the KIPP website ([www.kipp.org](http://www.kipp.org)): "KIPP, the Knowledge Is Power Program, is a national network of free, open-enrollment, college-preparatory public schools in under-resourced communities throughout the United States. KIPP Schools share a core set of operating principles known as the Five Pillars. They include the following: 1) high expectations; 2) choice and commitment; 3) more time; 4) power to lead; and 5) focus on results." There are two KIPP charter schools in North Carolina.
3. For a summary of the program, see Hilary Pennington, "The Massachusetts Expanding Learning Time To Support Student Success Initiative," Center For American Progress, January 2007.
4. Diana Jean Schemo, "Failing Schools See A Solution In Longer Day," *The New York Times*, March 26, 2007, Section A, Page 1.
5. See Elena Silva, "On the Clock: Rethinking the Way Schools Use Time," *Education Sector*, January 2007, pp. 4-5.
6. According to the OECD website ([www.oecd.org](http://www.oecd.org)): "The OECD brings together the governments of countries committed to democracy and the market economy from around the world to: support sustainable economic growth; boost employment; raise living standards; maintain financial stability; assist other countries' economic development, and contribute to growth in world trade."
7. Organisation For Economic Co-Operation And Development (OECD), "Learning For Tomorrow's World: First Results From PISA 2003," 2004. Overall, students in the United States spend fewer total hours in school than the average. The average number of hours (per year) spent in school in the United States was 907 hours, while the average for OECD and partner nations was 935 hours. To put this into perspective, the average country spent the equivalent of one additional week in school compared with the United States average. I use a subject area comparison to avoid the problem of differences in curricula among nations, which the above averages cannot take into account.
8. John Locke Foundation analysis of OECD data.
9. John Locke Foundation analysis of OECD data.
10. The OECD analysis of PISA data found that there was a modest correlation between mathematics performance and socioeconomic factors ( $R^2=0.28$ ) and a weak correlation between mathematics performance and spending per student ( $R^2=0.15$ ). They conclude that the effectiveness with which resources are invested likely plays a prominent role in student performance. See OECD, pp. 99-105.
11.  $R^2=0.0295$ . The r-squared indicates the variation in test scores attributable to instructional time. In this case, a paltry 3 percent of the variance in test scores was due to instructional time.
12. John Locke Foundation analysis of OECD data;  $n=39$  and  $R^2=0.0295$ . The r-squared indicates the variation in test scores attributable to instructional time. In this case, a paltry 3 percent of the variance in test scores was due to instructional time.
13. David P. Baker, Rodrigo Fabrega, Claudia Galindo and Jacob Mishook, "Instructional Time and National Achievement: Cross-National Evidence," *Prospects*, Vol. 34, No. 3, September 2004.
14. *Ibid.*, p. 322.
15. *Ibid.*, p. 331.
16. Pennington, pp. 4-5.
17. *Ibid.*, p. 2.
18. Office of the Governor, State of North Carolina, "North Carolina School Report Cards," July 2007, [www.ncreportcards.org/src](http://www.ncreportcards.org/src).