



# Issue Brief

## International Benchmarking--Time

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International benchmarking tests such as PISA (Programme for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study) consistently show nations surpassing the achievement levels of American students. For the performance of U.S. 15-year-old students on the mathematics tests in 2006, the United States came in 25th. Performance of our 15-year-old students on the science tests that same year resulted in 21st place. Reading assessment during the 2003 tests resulted in U.S. students taking 15th place. Problem solving in that 2003 test placed the U.S. at 24th.<sup>1</sup> In the 2003 reading tests, the United States ranked 15th of 29 Organisation for Economic Co-Operation and Development (OECD) countries in reading literacy, with its score of 495 coming in near the OECD average of 500.

Countries consistently performing at the top of the list are Finland, Korea, Japan, Germany, Australia, New Zealand, Netherlands, Singapore, Taipei and the Czech Republic.

What are these countries doing that might drive learning results for U.S. students?

What are the possible reasons (or handy excuses) for the performance of the United States? This paper reports on a handful of potential drivers policymakers might consider: (1) Time spent learning; (2) establishing world-class standards; (3) teacher selection and preparation; (4) professional development; (5) assessment and curriculum review.

### Time Spent Learning

At what ages are students required to be in school?<sup>2</sup>

Country	Compulsory Age	Grades Required	Grades Provided
Australia	6 through 16	1 through 10	1 through 12
Chinese Taipei	6 through 15	1 through 9	1 through 12
Czech Republic	6 through 15	1 through 9	1 through 12 or 13
Finland	7 through 16	1 through 9	K through higher ed.
Germany	6 through 16	1 through 10	1 through 12 or 13
Japan	6 through 15	1 through 9	1 through 12
Korea	6 through 14	1 through 9	1 through 12
New Zealand	6 through 16	1 through 11	K through 12
Singapore	6 through 12	1 through 6	1 through 10
United Kingdom	5 through 15	K through 10	K through 12
United States	6 through 16, 17 or 18	Not applicable*	1 through 12

\*Each state sets compulsory attendance age

How many days of instruction are included in the school year and what are the differences in required instructional time in the high-performing countries?<sup>3</sup>

From *Education at a Glance, OECD Indicators 2008*

Country	Days of Instruction			Average Number of Hours of Intended Instruction Time*		
	Primary	Lower Sec.	Upper Sec.	Primary	Lower Sec.	Upper Sec.
Finland	187	187	187	608	829	913
Korea	204	204	204	612	867	1020
Germany	193	193	193	622	875	900
Japan	210	210	210	707	868	m
New Zealand	197	194	190	985	985	985
Australia	198	198	198	978	1033	1024
Czech Republic	194	194	194	655	892	960
<i>Average without U.S.**</i>	197	197	196	738	907	967
United States	180	180	180	m	m	m
<i>Average including U.S.</i>	194	193	193	m	m	m

Notes:

m – Missing data for Japan and United States. Not included in average for net hours.

– Data not available for Chinese Taipei, the Netherlands and Singapore, so these high-performing entities are not included here.

\*Total intended instruction time is an estimate of the number of hours during which students are taught both compulsory and non-compulsory parts of the curriculum as per public regulations.

\*\*Averages rounded to the nearest whole number.

Looking only at “time” does not capture the quality of the learning opportunities provided or at the level or quality of the human and material resources involved.<sup>4</sup> Some would argue that it makes more sense to focus on what students learn rather than what they are taught and that we should set standards for what they must learn.

### Time For National Standards or World-Class Standards?

While doing so might be contentious because of the state concerns about federal intrusion, there is a growing push for the establishment of national standards. The membership of the National Governors Association (NGA) approved a policy statement in February 2009 supportive of a common set of standards. Recent efforts have shown states are eager to cooperate in voluntary, state-led initiatives to set common core standards for what students will need to succeed in college or the workplace of a 21st century global economy.

The Common Core State Standards Initiative has the backing of the Council of Chief State School Officers, the National Governors Association, the National Association of State Boards of Education, the Business Roundtable, Achieve, the National Education Association and the Alliance for Excellent Education. States involved in the voluntary standard-setting as members of Achieve’s American Diploma Project included Arizona, Arkansas, Georgia, Indiana, Kentucky, Louisiana, Maryland, Michigan, Minnesota, New Jersey, New Mexico, Ohio, Oklahoma, Rhode Island, Tennessee and Texas.

Some states already have begun benchmarking to international standards. Massachusetts, New Hampshire and Utah agreed to participate in a high-profile effort to establish pilot programs aimed at creating new, world-class approaches to public education. These pilots are funded by The New Commission on the Skills of the American Workforce, based on the recommendations generated in the Commission’s report, *Tough Choices or Tough Times*.<sup>5</sup> Each of the states will be focusing on becoming more internationally competitive.

Three other states are, separately, making strides on their standards. Michigan’s standards were compared by the Commission on the Skills of the American Workforce to standards from other states and nations that are considered to be of high quality and were evaluated for rigor, clarity, specificity, focus and progression. Florida has embarked on creating World Class Education Standards (WCES) to prepare students to compete at the highest levels internationally. Ohio enlisted support from Achieve, Inc. and

McKinsey and Company to internationally benchmark Ohio's K-12 system and identify best practice implications for the state. During the effort, Ohio learned that the world's highest-performing educational systems exhibit three common attributes, which reinforce each other to ensure system alignment and focus on delivering high levels of student achievement: High challenge, high support and aligned incentives.<sup>6</sup>

### What Top Performers Do

- Japan's national standards are set by the Ministry of Education, Culture, Sports, Science and Technology. The curriculum is considered to be a balanced and basic education that provides equal treatment of all students.<sup>7</sup>
- Germany has a decentralized education system guided largely by state and local entities. The system has been criticized as promoting inequity. Recently, state and national officials have cooperated to promote general national academic standards.<sup>8</sup>
- Finland has worked to ensure that there is uniform high performance across its entire system. Finland's national curriculum specifies only general outcome goals, rather than the path by which to attain them.<sup>9</sup>
- Korea's Education Law 155 establishes the standard curriculum for each level up to high school as well as the criteria for textbooks and instructional materials. Korea's national curriculum and regional guidelines allow schools to implement criteria and adopt textbooks according to their individual characteristics and objectives.<sup>10</sup>
- Countries included in the European Union are working to establish education standards across the union to make it easier for citizens to move across boundaries and meet workforce needs.

### **Time Spent on Teacher Selection and Preparation**

The McKinsey and Company report, *How the World's Best-Performing School Systems Come Out on Top*, asserts that comparing how the United States and top-performing countries handle the selection of those who will educate the nation's children is strikingly different. Most of the top-performers select candidates before they begin their training and limit training program slots to those selected. A great deal of attention is given to the training process and the mentoring of beginning teachers. The McKinsey report suggests that the lack of a rigorous pre-selection process for prospective teachers in the United States contributes to an oversupply of teacher candidates, which has a significant negative effect on teacher quality.<sup>11</sup>

It also notes that the experiences of the top 10 high-performing school systems suggest three things matter most: 1) getting the right people to become teachers, 2) developing them into effective instructors and 3) ensuring that the system is able to deliver the best possible instruction for every child.<sup>12</sup>

In *What Do We Know About Effective Fourth Grade Teachers and Their Classrooms*, Richard Allington and Peter Johnston found top-performing schools acknowledge that for a person to become an effective teacher, they need to possess a certain set of characteristics that can be identified before they enter teaching, including: a high overall level of literacy and numeracy, strong interpersonal and communication skills, a willingness to learn and the motivation to teach.<sup>13</sup> Selection of candidates for teaching positions is designed to test for these skills and attributes.

### What Top Performers Do

- In Finland, only 10% of undergraduates are accepted into teacher-training programs and, since 1979, all teachers in Finland must have a master's degree. The candidates enter the teaching program at the graduate school level.<sup>14</sup>
- Singapore's teacher-training institute recruits students from the top third of each graduating high school class for their initial screening. Once the final selection has been made, candidates enter a fully paid, four-year teacher-education program and are placed on the government's payroll during their education.<sup>15</sup> The Singapore system invests heavily in its teacher candidates learning to teach a curriculum focused on critical thinking and inquiry.
- Teachers in Singapore have three career tracks — master teacher, content specialist and leadership. Young teachers receive counseling to help them find the track that works best for them.<sup>16</sup>

- In Japan, only 14% of candidates pass the initial selection process of teacher education programs.<sup>17</sup>

### **Adequate Time for Professional Development**

States vary in their approaches to professional development, although most do set aside — or allocate — a number of days for it. For example, Idaho allows up to 22 hours for staff development each year. Kentucky allows four days. Maryland allows no more than five in-service, conference or student records days. In Minnesota, boards that want to provide (and have salaries funded) for professional development days must adopt a 240-day calendar and use differences between instructional days and the 240 days as professional development.

In the countries with the top-performing schools, however, attention is given to collegial, professional learning communities where educators interact with each other to perfect the skills required to be effective teachers. This type of exchange takes place in the teacher's own classroom — the place in which such efforts can be the most effective and relevant.

#### What Top Performers Do

- In both Finland and Japan, teachers visit each others' classrooms and plan lessons together in a system that includes "rounds" similar to those in the medical profession.<sup>18</sup>
- Teachers in Finland get an afternoon a week off for joint planning and curriculum development. Finnish teachers get 200 hours of professional development time each year and use that time to learn how to create programs that regularly engage students in research and inquiry.<sup>19</sup>
- In Japan, the learning culture is based around "lesson study" with groups of teachers working together to refine lessons, jointly plan, execute and evaluate different instructional strategies. There is a strong emphasis in Japan on making sure that best practices are shared throughout the schools.<sup>20</sup>
- Teachers in Singapore get 100 hours of professional development time each year, and they receive additional funding to pursue independent learning opportunities.<sup>21</sup>
- More than 85% of schools in Belgium, Denmark, Finland, Hungary, Ireland, Norway, Sweden and Switzerland provide time each week for teachers' professional collaboration.<sup>22</sup>
- In South Korea, Japan and Singapore teachers spend only about 35% of their working time in the classroom teaching. The rest of the time is for sharing, planning and working together.<sup>23</sup>

#### Noteworthy U.S. Efforts

- In Boston, teachers are "time-tabled" so that all the teachers who teach the same subject at the same grade level have "free classes" together. Time is used for jointly planning and analyzing teacher practice based on assessment data to uncover differences between the instructional practices of various teachers and to understand how these differences impact results. Facilities often are built without doors between classrooms and sometimes without walls. This facilitates collaborative teaching and encourages teachers to learn from each other. Over six years, Boston increased the number of students meeting standards in math from 25 to 74%. In English the number of students meeting standard went from 43 to 77%.<sup>24</sup>
- The Montgomery, Maryland public school system and the teachers union are jointly operating a program. In the program, novice teachers are paired with master teachers who visit them in the classroom regularly and monitor their progress.

### **Time Critiquing Assessment and Curriculum**

United States schools typically attempt to arm students with a rich field of information on a vast number of topics. Critics contend that the breadth of the curricular offerings may have negative impacts on the depth of content knowledge. U.S. systems often do not differentiate clearly between essential and less important standards. Where U.S. tests rely primarily on multiple-choice items that evaluate recall and recognition of discrete facts, most high-achieving countries rely largely on open-ended items that require students to analyze, apply knowledge and write extensively.<sup>25</sup>

High-achieving countries that have steeply improved student learning have focused explicitly on creating curriculum guidance and assessments targeting 21st century skills, including the abilities to: find and organize information to solve problems, frame and conduct investigations, analyze and synthesize data, apply learning to new situations, self-monitor and improve one's own learning and performance, communicate well in multiple forms, work in teams and learn independently.<sup>26</sup>

### What Top Performers Do

- Japan's national curriculum exposes students to a "balanced and basic education" known for its equal treatment of students. Academic content in Japanese schools is "narrow and deep."<sup>27</sup>
- Singapore's math assessment expects greater rigor and depth in mathematical knowledge. To test that knowledge, tests employ fewer multiple choice questions and more problems that require multi-step solutions and finding unknowns. Singapore's 6th-grade assessment proved more challenging than the 8th-grade math tests given in seven states, as well as the 8th-grade level of the National Assessment of Educational Progress.<sup>28</sup>
- In both Finland and Japan, the goal is to equip students with both skills and logic so they can take responsibility for lifelong learning. Students learn the concepts of math, for example, and then are expected to solve problems in front of the rest of the class.

The following table illustrates the importance of conceptual understanding.

**Table 6. Average mathematics content and cognitive domain scores of 4th-grade students, by country: 2007<sup>29</sup>**

Country	Content domain			Cognitive domain		
	Number	Geometric shapes and measures	Data display	Knowing	Applying	Reasoning
TIMSS scale average	500	500	500	500	500	500
Hong Kong SAR	606	599	585	599	617	589
Singapore	611	570	583	590	620	578
Chinese Taipei	581	556	567	569	584	566
Japan	561	566	578	566	565	563
Kazakhstan	556	542	522	547	559	539
Russian Federation	546	538	530	547	538	540
England	531	548	547	540	544	537
Latvia	536	532	536	540	530	537
Netherlands	535	522	543	539	525	534
Lithuania	533	518	530	524	520	526
United States	524	522	543	531	541	523
Germany	521	528	534	528	514	528
Denmark	509	544	529	523	513	524

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## ***Equipping Education Leaders, Advancing Ideas***

### **Endnotes**

<sup>1</sup> Organisation for Economic Co-Operation and Development and U.S. Department of Education

<sup>2</sup> International Association for the Evaluation of Educational Achievement, *TIMSS 2007 Encyclopedia* (Amsterdam, International Association for the Evaluation of Educational Achievement, 2007), <http://timss.bc.edu/TIMSS2007/encyclopedia.html>, (accessed March 2009).

<sup>3</sup> *Education at a Glance, OECD Indicators 2008*, Organisation for Economic Co-Operation and Development, 2008, <http://www.oecd.org/dataoecd/23/46/41284038/pdf>

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- <sup>4</sup> Ibid.
- <sup>5</sup> National Center on Education and the Economy, 2007.
- <sup>6</sup> *International Benchmarking Toolkit*, Education Commission of the States, April 2009.
- <sup>7</sup> Ibid, *TIMSS 2007 Encyclopedia*.
- <sup>8</sup> Ibid.
- <sup>9</sup> A. Schleicher and V. Stewart, "Learning from World Class Schools," *Educational Leadership*, October 2008.
- <sup>10</sup> Ibid, *TIMSS 2007 Encyclopedia*.
- <sup>11</sup> *How the World's Best-Performing School Systems Come out on Top*, McKinsey and Company, September 2007.
- <sup>12</sup> Ibid.
- <sup>13</sup> Richard Allington and Peter Johnston, *What Do We Know About Effective Fourth Grade Teachers and Their Classrooms, 2000 Interviews in Singapore, South Korea and Hong Kong*. CELA Research Reports.
- <sup>14</sup> W. Norton Grubb, "Dynamic Inequality and Intervention: Lessons from a Small Country", *Phi Delta Kappan*, October 2007.
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- <sup>17</sup> Craig C. Wiecek, "Comparative Analysis of Educational Systems of American and Japanese Schools: Views and Visions," *Educational Horizons*, Winter 2008.
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- <sup>21</sup> Ibid.
- <sup>22</sup> Marge Scherer, "All Teachers Can Learn", *Educational Leadership*, Vol. 6, No. 5, February 2009.
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- <sup>24</sup> Ibid, *How the World's Best-Performing School Systems Come Out on Top*.
- <sup>25</sup> Linda Darling-Hammond and Laura McCloskey, "Assessment for Learning Around the World: What Would it Mean to be Internationally Competitive?," *Phi Delta Kappan*, December 2008.
- <sup>26</sup> Ibid.
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