



# KENTUCKY DEPARTMENT OF EDUCATION

## NEWS RELEASE

No. 13-108

October 24, 2013

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## **STUDY: KENTUCKY STUDENTS BEAT INTERNATIONAL AVERAGES IN SCIENCE AND MATHEMATICS**

(FRANKFORT, Ky.) –Kentucky 8th-grade students perform better than their international counterparts, on average, in science and about equal to them in math, according to a new study released today.

The study, [U.S. States in a Global Context](#), links results on the 2011 National Assessment of Educational Progress (NAEP), known as the Nation's Report Card, with scores on the Trends in International Mathematics and Science Study (TIMSS). Based on United States students' NAEP scores, the study predicts students' TIMSS scores and compares them with the actual TIMSS scores of students in 47 education systems around the world. In the nine U.S. states where TIMSS was given, actual scores were used to validate the study.

"This is a good yardstick on how well Kentucky students measure up to students in other states and nations," said Education Commissioner Terry Holliday. "That's important not only for those who will one day be competing for jobs, but also for Kentucky as we work to build a better educated workforce that can attract higher paying jobs and new businesses that will secure the state's economic future."

### **Science**

Kentucky's average score of 534 in science beat not only the average of public school students in the United States (522) but also the TIMSS average score (500); that put Kentucky in 24th place among the all the state and international education systems in the study and on par with Kansas, Michigan, Indiana, Hong Kong and England. Singapore ranked first in science with an average score of 590; Ghana was in last place with an average score of 306. The highest scoring state was Massachusetts (567), in second place. Overall, United States public school students ranked 31st.

The study also reported the performance levels of students against four international benchmarks. Nearly 80 percent of Kentucky students reached the intermediate level or above – more than 40 percent scored high or above.

(more)

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PERCENTAGE OF STUDENTS SCORING AT OR ABOVE EACH BENCHMARK IN SCIENCE					
Education System	Average Score <sup>1</sup>	Low At or above 400	Intermediate At or above 475	High At or above 550	Advanced At or above 625
Singapore <sup>2</sup>	590	96%	87%	69%	40%
Massachusetts	567	96%	87%	61%	24%
<b>Kentucky</b>	<b>534</b>	<b>96%</b>	<b>79%</b>	<b>43%</b>	<b>9%</b>
United States <sup>4</sup>	522	93%	73%	39%	9%
Ghana <sup>3</sup>	396	22%	6%	1%	0%

<sup>1</sup> On a scale of 0-1,000    <sup>2</sup> Highest scoring country    <sup>3</sup> Lowest scoring country    <sup>4</sup> Represents public schools only

The science benchmarks indicate what 8th graders should know and be able to do in science.

- Low (400) – Students show some elementary knowledge of life, physical and earth sciences.
- Intermediate (475) – Students have basic knowledge and understanding of practical situations in the sciences.
- High (550) – Students apply their knowledge and understanding of the sciences to explain phenomena in everyday and abstract contexts.
- Advanced (625) – Students apply knowledge and understanding of scientific processes and relationships and show some knowledge of the process of scientific inquiry.

### Mathematics

In mathematics, Kentucky's score of 505 put it ahead of the TIMSS average score of 500, but just below the national average for public schools (507). Kentucky's 36th place score was comparable to the scores of Hawaii, South Carolina, England, Alberta (Canada), Hungary and Australia. Five education systems – the Republic of Korea (613), Singapore (611), Chinese Taipei (609), Hong Kong (586) and Japan (570) recorded TIMSS mathematics scores that were higher than the scores for any U.S. state. Ghana, once again, was in last place in the study with a score of 331.

PERCENTAGE OF STUDENTS SCORING AT OR ABOVE EACH BENCHMARK IN MATHEMATICS					
Education System	Average Score <sup>1</sup>	Low At or above 400	Intermediate At or above 475	High At or above 550	Advanced At or above 625
Korea, Republic of <sup>2</sup>	590	99%	93%	77%	47%
Singapore	611	99%	92%	78%	48%
Chinese Taipei	609	96%	88%	73%	49%
Hong Kong	586	97%	89%	71%	34%
Japan	570	97%	87%	61%	27%
Massachusetts	561	98%	88%	57%	19%
United States <sup>4</sup>	507	92%	67%	29%	6%
<b>Kentucky</b>	<b>505</b>	<b>92%</b>	<b>65%</b>	<b>27%</b>	<b>5%</b>
Ghana <sup>3</sup>	331	22%	6%	1%	0%

<sup>1</sup> On a scale of 0-1,000    <sup>2</sup> Highest scoring country    <sup>3</sup> Lowest scoring country    <sup>4</sup> Represents public schools only

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The math benchmarks indicate what 8th graders should know and be able to do in mathematics.

- Low (400) – Students have some knowledge of whole numbers and decimals, operations and basic graphs.
- Intermediate (475) – Students can apply basic mathematical knowledge in a variety of situations.
- High (550) Students can apply their understanding and knowledge in a variety of relatively complex situations.
- Advanced (625) Students can reason with information, draw conclusions, make generalizations and solve linear equations.

“This study makes a good case for why we need more rigorous academic standards for our students,” said Holliday. “The Kentucky Core Academic Standards in English/language arts, mathematics and science focus on applied knowledge, critical thinking and problem solving – the same skills outlined in the international benchmarks. As our teachers become more familiar with what the standards require and build students’ mastery of them, we should see Kentucky’s performance on global studies like this improve.”

For more than 30 years, NAEP has been the country’s only nationally representative and continuing survey of students’ educational achievement. The assessment is authorized by Congress and directed by the National Center for Education Statistics (NCES). NAEP does not report individual student, teacher, and school or district data.

TIMSS is an international comparative study of student achievement developed and implemented by the International Association for the Evaluation of Educational Achievement (IEA). Since 1995, TIMSS has assessed the mathematics and science knowledge of 4th- and 8th-grade students. In addition to some states in the U.S., more than 50 countries participate in TIMSS.

NCES initiated the study to link the NAEP scale to the TIMSS scale so states could compare their students’ performance with that of students in other countries. The results of the study were linked using three different methods – all with similar results.

While NAEP and TIMSS both measure student achievement in mathematics and science -- who, when and how they test are different. For instance, NAEP results were based only on public school students; TIMSS results were based on public and private school students. NAEP assesses students in the winter; TIMSS assesses students at different times of the year depending on the country. NAEP also allows students certain accommodations, such as extra testing time. TIMSS does not provide testing accommodations.

For more information on the study click [here](#).

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