Students Test Below Average

In World, U.S. Fares Poorly in Math, Science

By Mary Jordan
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A new international comparison of schoolchildren shows American students performing below average in mathematics and science, a "clear warning" that even good schools are not properly preparing students for world competition, Education Secretary Lamar Alexander said yesterday.

The survey of 175,000 students worldwide, which Alexander called "the best international comparison of student abilities in 25 years," also shows American students watching more television and doing less homework than almost all of their counterparts around the world.

Alexander noted that the results show that the top 10 percent of American students "can compete with the best students in any country."

However, he said, the results also show that the vast majority of American students perform below the international average.

"It means this is not just an inner-city problem or a rural poverty problem," he said. "It's a problem in the suburbs and in the middle-class families all over the country."

Education officials said the $2 million study was designed to answer criticisms of past international comparisons. It tested 9-year-olds in 14 countries and 13-year-olds in 20 countries. Notably

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missing from the list are Japan and Germany, which declined to participate in the survey funded by the Education Department, the National Science Foundation and the Carnegie Foundation.

The average American 13-year-old scored 55 percent out of 100 on the math test administered last March in 6,000 classrooms worldwide. By comparison, Taiwanese and Korean students scored 18 percentage points higher. In science, 13-year-olds in America fared better, scoring an average of 67 percent, 11 points below the leaders.

The brightest news for the United States were the science scores of 9-year-olds, who performed only behind Korea and Taiwan and only by 3 percentage points. The Educational Testing Service, which administered the test, said the survey suggests American students fell behind as they got older and began being tested on more complicated sciences, like chemistry.

The survey appeared to challenge some notions about what leads to academic success. Small class size, a longer school year, and more money spent on books, computers, and teachers did not make a notable difference in student achievement, according to the survey.

Korea, which along with Taiwan scored at the top, had 49 students in an average class, the largest of any country. Hungarian students scored in the top half in math and science, but go to school only 177 days, about the same as Americans and near the bottom of those surveyed. The United States is at or near the top on dollars spent per student.

The study did suggest, however, a correlation between achievement and time spent watching television, doing homework, and reading.

In the United States, 22 percent of the 13-year-olds tested in science watched at least five hours of television a day. In Korea, the top performer, 10 percent watched at least five hours a day; in Taiwan and Switzerland, also at the top, 7 percent watched that much TV.

"This suggests that within all of those countries, the more time students spend watching television, the less well they do in science," said Archie E. Lapointe, one of the study's authors.

On the average, American 13-year-olds spend, at most, an hour a week on math homework and the same on science. Chinese students spend at least four times that on math and Russians study science at home for at least four hours a week.

Previous international comparisons have been criticized for including too few countries, not accounting for curriculum differences—such as what year students in different countries learn geometry—and because only a small percentage of students attend school in some countries, effectively comparing a cross-section of American students with the elite of another country.

Iris C. Rotberg, a senior social scientist at the Rand Corp. on a leave of absence from the National Science Foundation, said she believes many of those flaws remain in the new study.

"The practicality of making comparisons across diverse societies and educational systems make it difficult to interpret the findings." She noted that "only elite schools and regions were sampled" in some countries.

"There are different curriculum emphases in different countries and the test results could reflect those," she said. "We make policy based on these findings and the findings could be misleading because of technical glitches on these tests."

In the survey of 13-year-olds, Britain, China, Portugal, Brazil and Mozambique had a low participation rate, so they were not included in the main ranking. Of the 15 countries where a large percentage of students were included, Jordan was the only country to rank below the United States in math. Ireland and Jordan were the only countries whose students had worse scores in science.

Among the countries whose students performed better than those in the United States: the former Soviet Union (Russian-speaking students in 14 republics surveyed), Italy, Israel (Hebrew-speaking schools tested only), France, Scotland and Spain.