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U.S. Students Fare Badly in International Survey of Math Skills

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PARIS, Dec. 6 - High school students in Hong Kong, Finland and South Korea do best in mathematics among those in 40 surveyed countries while students in the United States finished in the bottom half, according to a new international comparison of mathematical skills shown by 15-year-olds.

The United States was also cited as having the poorest outcomes per dollar spent on education. It ranked 28th of 40 countries in math and 18th in reading.

The study, released Monday by the Organization for Economic Cooperation and Development, a group based in Paris representing 30 nations, used tests given to students in 2003 and was intended to assess relative performance and to try to determine reasons for it.

"The gap between the best and worst performing countries has widened," said Andreas Schleicher, the official who directed the study and wrote the report.

The study compared student performance in 29 of the 30 countries in the organization, which includes all major industrialized nations, and in 11 other countries that chose to participate. Because of insufficient participation in the study, figures for Britain were not reported.

The study devoted less attention to reading than did a previous one in 2000, but it provided rankings that showed relatively

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Over all in reading, the top countries were Finland, South Korea, Canada and Australia. The United States finished 18th, higher than nations like Denmark, Germany and Hungary, all of which had students who performed better in math than American students did.

The study looked not only at the average performance of students, but also at how many from each country were top performers. It separated students into seven groups, ranging from Level 6, the best, to Level 1, which the authors viewed as a minimal level of competence. The remaining students were below the first level, a category that included more than half the students in Brazil, Indonesia and Tunisia.

In the United States, 10 percent of the students were in one of the top two groups, less than half as many as in Canada and a third the total of the leader, Hong Kong, which had 30.7 percent of its students in the top two categories.

Finland had the smallest percentage of underperforming students, with 6.8 percent.

The evaluation asked questions that were intended to test the ability of students to recognize what mathematical calculations were needed, and then to perform them, and to deal with questions that they would confront as citizens. Mr. Schleicher said that students in countries that emphasized theorems and rote learning tended not to do as well as those that emphasized the more practical aspects of mathematics.

The survey also questioned students about their own views of themselves and their work, and found that while good students were more likely to think they were good, countries that did well often had a large number of students who did not feel they were doing well. In the United States, 36 percent of the students agreed with the statement, "I am just not good at mathematics," while in Hong Kong, 57 percent agreed. In South Korea the figure was 62 percent.

Of the United States students, 72 percent said they got good grades in mathematics, more than in any other country. In Hong Kong, only 25 percent of the students said they got good marks, the lowest of any country.

The study said that while girls typically did only a little worse than boys on the test, "they consistently report much lower interest in and enjoyment of mathematics" and "much higher levels of helplessness and stress in mathematics classes."

Regarding spending, the study concluded that "while spending

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on educational institutions is a necessary prerequisite for the provision of high-quality education, spending alone is not sufficient to achieve high levels of outcomes."

It noted that while the Czech Republic spent only one third as much per student as the United States did, it was one of the top 10 performing nations in the study, while the United States performed below the average of the nations surveyed.

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