

# Samples faulted in poor U.S. science test result

By Mark Weinraub

WASHINGTON, May 14 (Reuters) - The poor performance of American students on a recent international math and science test may not reflect their true ability, an education expert said Thursday.

Iris Rotberg, a research professor of education policy at George Washington University, said the Third International Mathematics and Science Study (TIMSS), published in March, was "seriously flawed" because it did not compare like with like.

It ranked American high school seniors 18th out of the 21 countries that participated, and the results caused an outcry, from President Bill Clinton downwards, for better science and math education.

But Rotberg, in a commentary in the journal *Science*, said the comparisons may not have been fair. "The most important thing that somebody can do from international studies is not to make comparisons," she said in a telephone interview. "To measure how students are doing in science and math is very difficult."

Rotberg said different countries tested students of different abilities, ages and experience, although the test really required equivalent samples from each country.

"In the real world very few countries are able to follow that sampling plan," she said.

She said some countries had a higher percentage of low-income students taking the test, and countries varied in the percentage of private school students involved. Differences in students' ages and the years they had spent in school also caused problems with the study, she added.

For the data to be valid, all of the countries would need to have the same percentages of the same types of students, Rotberg said.

TIMSS tested students in their last year of secondary education, which in some countries came after 10 years of schooling and in others after 14 years.

Rotberg said that was like comparing a high school basketball team with a college team and saying that one country has better athletic programs than the other, Rotberg said.

Scientific ability within countries could be better measured by looking at factors such as research opportunities in higher education, retention and graduation rates in science and math education, and the supply of qualified science and math teachers in elementary and secondary schools, she said. ^REUTERS@

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