News Release

Media Contact:
Patricia Delaney
Boston College
patricia.delaney@bc.edu
617-552-3352

TIMSS Project Contact:
Michael O. Martin
Ina V.S. Mullis
Co-Directors
TIMSS & PIRLS
International Study Center
617-552-1600

EMBARGOED UNTIL DECEMBER 14, 2004 AT 10:00 AM EASTERN TIME

NEW INTERNATIONAL ASSESSMENT FINDS ASIAN COUNTRIES AGAIN DOMINATE IN STUDENT MATH AND SCIENCE ACHIEVEMENT

TIMSS 2003 Shows Student Performance at Fourth and Eighth Grade; Nearly 50 Countries Participated

CHESTNUT HILL, MA (12-14-04) – Singapore students were among the top performers in both mathematics and science at the fourth and eighth grade levels, according to the most recent major reports of the Trends in International Mathematics and Science Study (TIMSS), released today by the study's international directors at Boston College. Students from the Republic of Korea, Chinese Taipei and Hong Kong SAR also performed very well across the two subject areas.

Specifically, in mathematics, at both the eighth and fourth grades, Singapore was the top-performing country, having significantly higher average achievement than the rest of the participating countries. At the eighth grade, the Republic of Korea, Hong Kong SAR and Chinese Taipei also had significantly higher average achievement than other participating countries. At the fourth grade, Hong Kong SAR, Japan and Chinese Taipei outperformed the rest of the countries.

In science, at the eighth grade, Singapore and Chinese Taipei were the top-performing countries, having significantly higher average achievement than the rest of the participating countries. The Republic of Korea and Hong Kong SAR also performed very well. At the fourth grade, Singapore was the top-performing country with higher average science achievement than all other participating countries. Chinese Taipei, Japan, Hong Kong SAR and England outperformed the rest of countries surveyed.

TIMSS 2003 represents a landmark event. Being the third in the continuing cycle of international assessments conducted every four years, it is the first international assessment to monitor trends in achievement over time. The first round of TIMSS was in 1995 and the second in 1999.

More than 360,000 students in 49 countries participated in TIMSS 2003. The new report contains math and science results for 46 countries and four benchmarking participants at the eighth grade and for 25 countries and three benchmarking

– MORE –

participants at the fourth grade. [Note: a list of participating countries is at the end of this release.]

Trend data are provided at the eighth and fourth grades for those countries that also participated in 1995 and 1999.

"TIMSS 2003 data provide invaluable international benchmarks that can be used to help define world-class performance in mathematics and science at the middle or lower-secondary school level," according to TIMSS International Study Directors Michael O. Martin and Ina V.S. Mullis of Boston College. "Beyond comparisons in mathematics and science test scores, however, the reports provide a wealth of information on educational policies and practices around the world."

"TIMSS is truly a rich resource," they added. "The reports provide considerable grist for the discussion of what we want schools to accomplish and how we can improve the teaching and learning of math and science."

TIMSS 2003 not only identifies changes in mathematics and science achievement, but also provides a wealth of information on gender performance, home environment, curriculum and instructional approaches, and teacher preparation in mathematics and science.

Key findings include:

Countries Reaching an International "Advanced" Benchmark

- In mathematics, the highest performing countries at the eighth grade level – Singapore, Chinese Taipei, Republic of Korea and Hong Kong SAR – had about one-third of their students or more reaching the advanced benchmark identified by TIMSS, followed by Japan with 24 percent. In contrast, all other countries had 11 percent or less of their students reaching the advanced benchmark. Singapore had 38 percent of its fourth grade students reaching the advanced benchmark followed by 21 to 22 percent of the students in Hong Kong SAR and Japan.

- In science, the highest performing countries at eighth grade – Singapore and Chinese Taipei – had one-third to one-fourth of their students reaching the advanced benchmark. Next came the Republic of Korea, followed by England, Japan, Hungary, Hong Kong SAR, Estonia, and the United States. At the fourth grade, Singapore had 25 percent of its students reaching the advanced benchmark, followed by England, Chinese Taipei, the United States, Japan, the Russian Federation and Hungary.

Trends in Achievement

- In mathematics, at the eighth grade, countries with significant increases in achievement over the 8-year period from 1995 to 2003 included the Republic of

Korea, Hong Kong SAR, Latvia, the United States and Lithuania. A number of countries had declines during this period, including Japan, Belgium (Flemish), the Russian Federation, the Slovak Republic, Sweden, Bulgaria, Norway and Cyprus. At the fourth grade, countries showing significant gains between 1995 and 2003 included Hong Kong SAR, Latvia, England, Cyprus, New Zealand and Slovenia. Only the Netherlands and Norway had significant decreases in achievement.

- In science, at the eighth grade, countries that showed significant improvement from 1995 to 2003 included the Republic of Korea, Hong Kong SAR, the United States, Australia, Slovenia, Lithuania and Latvia. Countries with significant decreases included Sweden, the Slovak Republic, Belgium (Flemish), Norway, Bulgaria, Iran and Cyprus. At the fourth grade, many countries showed significant improvement between 1995 and 2003, including Singapore, Hong Kong SAR, England, Hungary, Latvia, New Zealand, Slovenia, Cyprus and Iran. Declines were found in Japan, Scotland and Norway.

Gender Differences in Achievement

- In mathematics, at the eighth grade, gender difference in TIMSS 2003 was negligible in many countries. However, girls had significantly higher average achievement than boys in Serbia, Republic of Macedonia, Armenia, Moldova, Singapore, the Philippines, Cyprus, Jordan and Bahrain. In contrast, boys had higher achievement in the United States, Italy, Hungary, Lebanon, Belgium (Flemish), Morocco, Chile, Ghana and Tunisia. Fourth grade girls had significantly higher average achievement in Singapore, Moldova, the Philippines and Armenia; boys had higher average achievement in the Netherlands, the United States, Italy, Cyprus and Scotland.

- In science, in the majority of eighth grade participants, boys outperformed girls in science, often by a substantial margin. This was attributable mainly to higher performance by boys in physics and earth science, although girls had, on average, higher achievement in life science. At the fourth grade, the average gender difference in science achievement was negligible, although girls had significantly higher average achievement in Armenia, Moldova, the Philippines and Islamic Republic of Iran, and boys had higher average achievement in the United States, Chinese Taipei, Cyprus, the Netherlands and Scotland.

Home Environment

- Across subject area and grade level, higher levels of parents' education were associated with higher student achievement in almost all countries. Also, students expecting to finish university had substantially greater average mathematics and science achievement.

- At both the eighth and fourth grades, in both math and science, students from homes where the language of the test was always or almost always spoken had higher average achievement than those who spoke it less frequently.
- At both eighth and fourth grade, across countries on average in both disciplines, there was a clear relationship between the number of books at home and achievement.
- In both disciplines, achievement was positively related to computer use, particularly at eighth grade.

The Curriculum & the Classroom

- Most countries had mathematics and science curricula defined at the national level (except Australia and the United States) and often supported by ministry directives, instructional guides, school inspections and recommended textbooks.
- Across the content areas assessed, teachers were well experienced in teaching the subject matter (with many holding university degrees) and reported readiness to teach nearly all the major topics tested by TIMSS at the eighth grade.
- At both grade levels, average mathematics and science achievement was higher for students in schools with few students from economically disadvantaged homes than for students attending schools with more than half their students from disadvantaged homes.
- At both grades and across both disciplines, there was a positive relationship between school safety and achievement.

About TIMSS

TIMSS, the Trends in International Mathematics and Science Study, is a project of the International Association for the Evaluation of Educational Achievement (IEA) headquartered in Amsterdam, and is directed by the TIMSS and PIRLS International Study Center at Boston College in collaboration with a worldwide network of organizations and representatives from the participating countries.

TIMSS is designed to help countries all over the world improve student learning in mathematics and science. It collects educational achievement data at the fourth and eighth grades to provide information about trends in performance over time together with extensive background information to address concerns about the quantity, quality and content of instruction.

Approximately 50 countries from all over the world participate in TIMSS.

– MORE –

TIMSS 2003 Participants

Countries that participated in the mathematics and science assessment at the eighth grade level include Armenia, Australia, Bahrain, Belgium (Flemish), Botswana, Bulgaria, Chile, Chinese Taipei, Cyprus, Egypt, England, Estonia, Ghana, Hong Kong SAR, Hungary, Indonesia, Islamic Republic of Iran, Israel, Italy, Japan, Jordan, Republic of Korea, Latvia, Lebanon, Lithuania, Republic of Macedonia, Malaysia, Moldova, Morocco, Netherlands, New Zealand, Norway, Palestinian National Authority, Philippines, Romania, Russian Federation, Saudi Arabia, Scotland, Serbia, Singapore, Slovak Republic, Slovenia, South Africa, Sweden, Syrian Arab Republic, Tunisia and the United States.

Countries that participated in the mathematics and science assessment at the fourth grade level include Armenia, Australia, Belgium (Flemish), Chinese Taipei, Cyprus, England, Hong Kong SAR, Hungary, Islamic Republic of Iran, Italy, Japan, Latvia, Lithuania, Moldova, Morocco, Netherlands, New Zealand, Norway, Philippines, Russian Federation, Scotland, Singapore, Slovenia, Tunisia, United States and the Republic of Yemen.

Benchmarking participants include Basque Country, Spain; Indiana, United States; Ontario Province, Canada; and Quebec Province, Canada at the eighth grade and Indiana, United States; Ontario Province, Canada; and Quebec Province, Canada at the fourth grade.

Media Note:

The full TIMSS 2003 reports will be available on-line at the TIMSS & PIRLS International Study Center's web site at timss.bc.edu or by calling 617-552-1600. To arrange interviews with the TIMSS International Study Co-Directors Michael O. Martin or Ina V.S. Mullis, or to obtain charts, please call the Boston College Office of Public Affairs at 617-552-3352.

– END –