

## NAEP, PISA, & TIMSS: A Brief Comparison

| <b>NAEP: National Assessment of Educational Progress</b> |   |
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| <b>Main question addressed</b>                           | What do U.S. students know and what are they able to do in each of the content areas tested?  |
| <b>Units of comparison</b>                               | States  |
| <b>Year begun</b>  | 1969 (first testing of science); 1973 (first testing of mathematics)  |
| <b>Countries participating</b>                           | United States   |
| <b>Content area(s)</b>                                   | The national version of NAEP gathers data in the areas of reading, writing, mathematics, science, reading, writing U.S. history, geography, civics, the arts, and foreign languages.  |
| <b>Grade/age of test takers</b>                          | Grade 4 (9-year-olds); grade 8 (13-year-olds); grade 12 (17-year-olds)  |
| <b>Testing cycle</b>                                     | Mathematics and Science are tested at all three grade/age levels every 4 years. The most recent testing was in 2004.  |
| <b>Comments</b>  | <p>1. The content of NAEP is determined wholly by the United States. Items are designed to sample what is sometimes called the U.S. "intended curricula."</p> <p>2. NAEP results are a measure of what students have learned of the "intended curricula." Hence, it is sometimes said to measure the "attained curricula." NAEP survey data collected from students and teachers also provides a measure of what actually is taught and how it is taught (sometimes called the "implemented curricula" or "delivered curricula.")</p> <p>3. NAEP has three forms.</p> <ul style="list-style-type: none"> <li>□ <u>TrendNAEP</u> consists of test items that have been used repeatedly over the last 30 years. Currently, trend items in mathematics and science are administered about every two years to national samples at all three grade/age levels.</li> <li>□ <u>MainNAEP</u> consists of items that reflect current thinking about what student can/should know and be able to do in a content area. It is administered to national samples. Each content area has its own cycle of administration; for mathematics and science, the cycle is every four years.</li> <li>□ <u>StateNAEP</u> once was voluntary, but now is required of all states (in mathematics and reading) at grades 4 and 8 in order to remain eligible for certain forms of federal funding. It still is voluntary at grade 12, although there is an effort to get all states to participate. State NAEP is limited to four content areas (mathematics, science, reading, writing); mathematics and science are tested every four years.</li> </ul> |
| <b>Oversight organization</b>                            | National Assessment Governing Board   |
| <b>Website</b>   | <a href="http://nces.ed.gov/nationsreportcard">http://nces.ed.gov/nationsreportcard</a>   |

| <b>PISA: Programme for International Student Achievement</b> |   |
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| <b>Main question addressed</b>                               | What can students do with the mathematics and science they have learned?  |
| <b>Units of comparison</b>                                   | Countries   |
| <b>Year begun</b>  | 2000  |
| <b>Countries participating</b>                               | The countries choosing to participate varies from administration to administration. The United States and 40 other countries participated in the 2003 administration.   |
| <b>Content area(s)</b>                                       | Mathematics and science   |
| <b>Grade/age of test takers</b>                              | Grade 10 (15-year-olds)   |
| <b>Testing cycle</b>   | Every 3 years; both areas are tested at each administration, but only one of the two emphasized. Mathematics was the area of emphasis in 2003.  |
| <b>Comments</b>  | <p>1. It is said that PISA measures students' ability to apply what they have learned to real-world situations and to communicate their solutions to others.</p> <p>2. PISA tests mathematical literacy, scientific literacy, and problem solving. It defines the three terms as follows.</p> <ul style="list-style-type: none"> <li>□ <u>Mathematicalliteracy</u> is <i>an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgments, and to use and engage with mathematics in ways that meet the needs of that individual's life as a constructive, concerned, and reflective citizen.</i></li> <li>□ <u>Scientificliteracy</u> is <i>having the capacity to use scientific knowledge, to identify questions and draw evidence-based conclusions in order to understand and help make decisions about the natural world and the changes made to it through human activity.</i></li> <li>□ <u>Problemsolving</u> is <i>an individual's capacity to use cognitive processes to confront and resolve real, cross-disciplinary situations where the solution is not immediately obvious and where the literacy domains or curricular areas are not isolated within the single domain of mathematics, science, or reading.</i></li> </ul> |
| <b>Oversight organization</b>                                | Organisation for Economic Co-operation and Development (OECD)   |
| <b>Website</b>   | <a href="http://www.pisa.oecd.org">http://www.pisa.oecd.org</a>   |

| <b>TIMSS: Trends in International Mathematics and Science Study</b> |  |
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| <b>Main question addressed</b>                                      | Based on the country's school curricula in mathematics and science, what knowledge and skills have students acquired by grade 4 and grade 8?   |
| <b>Units of comparison</b>  | Countries  |
| <b>Year begun</b>   | 1995   |
| <b>Countries participating</b>                                      | The countries choosing to participate varies from administration to administration. In 2003, 25 countries participated at grade 4; 41 countries participated at grade 8.   |
| <b>Content area(s)</b>  | Mathematics and science  |
| <b>Grade/age of test takers</b>                                     | Grade 4 (9-year-olds); grade 8 (13-year-olds)  |
| <b>Testing cycle</b>  | Testing in both mathematics and science is done every 4 years; there is variation in the grade/age levels tested. The most recent testing was in 2003.   |
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| <b>Comments</b>   | <ol style="list-style-type: none"> <li>1. It is said that TIMSS measures what students' have learned from each country's implemented curricula in mathematics and science.</li> <li>2. TIMSS survey and video data also provide a measure of <i>what is actually taught</i> in different countries and <i>how that "what" is taught</i> in a sample of countries.</li> <li>3. The 1995 testing also sampled students from "the final year of secondary school." There has been no testing at that grade level since 1995, and it is not part of the 2007 study now being planned.</li> <li>4. The IEA also has oversight of PIRLS (Progress in International Reading Literacy Study). PIRLS, initiated in 2006, is administered every 5 years to students at grade 4.</li> </ol> |
| <b>Oversight organization</b>                                       | International Association for Evaluation of Educational Achievement (IEA)  |
| <b>Website</b>  | <a href="http://www.timss.org">http://www.timss.org</a>  |