

Education Trends

States Lower Proficiency Bar to Drive Up Test Scores

The majority of states have lowered student proficiency standards on their tests in order to meet *No Child Left Behind* (NCLB) requirements by 2014, when all students must master grade-level English and math, according to a study, *Mapping State Proficiency Standards Onto NAEP Scales: 2005-2007*, released by the U.S. Department of Education.

For the study, conducted in 47 states, researchers used student test scores to determine where the proficiency levels on various state tests would fall on the National Assessment of Educational Progress (NAEP), the common test scale for mapping state performance standards at the Proficient level. The study found that 31 states had set proficiency scores in 4th grade reading that were lower than the cutoff for the Basic level of performance on the NAEP. At the 8th grade level, 15 states set standards lower than the Basic level. In grade 4 mathematics, seven states set standards lower than the Basic level. In grade 8 math, eight states set standards that were lower than Basic. (See more statistics in the "By the Numbers" section.)

Some testing experts oppose the study's methodology. They say that the standardized exams that states use and the more rigorous NAEP—the congressionally mandated program known as the "Nation's Report Card"—are too different to put on the same scale. "If two tests don't measure the same thing, then mapping is misleading," said Andrew D. Ho, assistant professor of education at the Harvard Graduate School of Education.

Source:

www.edweek.org/ew/articles/2009/10/29/10nces.h29.html?tkn=TZQFK7dzLhS%2Fsy0e%2FVALPhPM%2BXybi4z3HfM0

Federal Government Prepares to Launch STEM Education Campaign

President Barack Obama is set to unveil a campaign to encourage students, particularly those in middle school and high school, to study science, technology, engineering, and math (STEM). Focusing mainly on extracurricular study, the Educate to Innovate initiative will enlist the help of leaders in STEM fields, which include nonprofits and corporations. The MacArthur Foundation and technology industry organizations, for instance, already are offering prizes in a contest to develop video games that teach science and math. There also will be a two-year focus on science on the children's television show, *Sesame Street*. In addition, a website set up by Time Warner Cable provides a searchable directory of local science activities connectamillionminds.com. For its part, the White House has recruited Sally K. Ride, the first American woman in space. Some educators say that the federal initiative should instead focus on STEM education in the classroom and teacher quality.

Source: www.nytimes.com/2009/11/23/education/23educ.html?_r=1

Study Finds NCLB Law Lifted Math Scores

NCLB has led to increases in math achievement, according to a study released by the National Bureau of Economic Research. The study found large increases in math scores for 4th graders and moderate gains for 8th graders on the NAEP since the federal legislation was enacted in 2002. The study was based on schools in about 40 states. For the study, some states that were determined to have "NCLB-like" accountability systems before the law took effect were placed in the control group. The states had to be testing students, reporting the data at the school level, and using sanctions. The "treatment" group included states that were testing, and perhaps were reporting data at the school level, but did not have sanctions in place. The findings show that "student achievement improved a lot more after 2002 in the treatment states than in the control states," according to Brian Jacob, professor of economics and education policy at the University of Michigan and co-author of the study. "NCLB ... required them to do a lot more. It really was a new policy for them." The study did not find a similar impact on reading scores.

Some education experts who are skeptical of the findings said that states cannot easily be categorized into groups based on whether they had accountability systems like those required under NCLB. For instance, Iowa didn't have an NCLB-like accountability system before 2002 but had a strong record of education achievement, according to Gerald E. Sroufe, the director of government relations for the American Educational Research Association. Moreover, the rate of student gains on NAEP actually slowed after implementation of the NCLB, said Diane Ravitch, a research professor of education at New York University.

Source:

www.edweek.org/ew/articles/2009/11/20/13nclb.h29.html?tkn=UONCVp8D5BxQqcHjzvbvCYC6wkSR8EtAKBB5O

Technology Trends

Jetsons' Robotic Maid "Rosie" Comes Closer to Reality

The Fraunhofer Institute for Manufacturing Engineering and Automation in Stuttgart, Germany, unveiled its latest Care-O-bot at the International Robot Exhibition in Japan last month. The robot can pick up and pass household objects; provide assistance in gripping, lifting, and holding; and perform such household tasks as setting tables and cleaning. It can operate the heating system and light switches and open and close doors and windows. For household tasks, Care-O-bot is equipped with a removable service tray that can be swiveled to the side. A touch screen is integrated in the tray to operate the robot and for Internet access.

The robot also can be directed by spoken commands and recognize and respond to gestures. Numerous household articles are stored in the robot's databases. It knows, for example, what a cup looks like and where to find it in the kitchen. It also learns to recognize new objects. To make that happen, the user places the unfamiliar object in the robot's hand so that it can gain a three-dimensional impression of the item. The first Care-O-bot was developed in 1998 with the ability to move around safely in the human environment.

Sources: <http://dvice.com/archives/2009/12/care-o-bot-offe.php>
www.globalspec.com/FeaturedProducts/Detail/CareObot_Service_Robot_Equipped_by_SCHU_NK/96672/0

Oil Companies Focusing on Alternative Energy

Some of the biggest oil companies are becoming more involved in the renewable energy market. This summer, ExxonMobile announced plans to grow green algae to fuel cars. Chevron recently unveiled the largest carbon-sequestration project in Australia. Over the last several years, Chevron, Shell Oil, ConocoPhillips, and BP America have spent \$3.5 billion on solar, wind, biodiesel, and other energy alternatives. Shell was an early proponent of alternative fuels and energy efficiency. In 2007, it drafted a sustainability report that predicted supplies of easily accessible oil and natural gas will not meet demand after 2015. The study stated: "To close the gap, the world will have no choice but to use energy more efficiently and increase its use of other sources of energy."

The incentives for jumping on the renewable energy bandwagon include a cap-and-trade system that the federal government will likely put in place. Also, China's massive investment in solar, wind, and other sustainable energy systems has opened up a potentially lucrative market for alternative power sources and expertise (see last month's "Views You Can Use" for more on China's renewable market interests).

Sources: www.newsweek.com/id/215758
<http://cbs5.com/national/oil.executives.congress.2.689310.html>

Brain Research Trends

Brain Waves Can Produce Text on a Screen

Neuroscientists from the Mayo Clinic and the University of North Florida have demonstrated how brain waves can be used to type characters on a computer screen. The research provides another step toward a mind-machine interface that could help quadriplegics and other people with special needs and illnesses. The study was conducted in two patients with epilepsy. The patients already were being monitored for seizure activity via electrocorticography (ECoG), in which electrodes are placed on the surface of the brain to record electrical activity produced by the firing of nerve cells. This kind of procedure requires a craniotomy, a surgical incision into the skull. Because these patients already had ECoG electrodes implanted in their brains, the researchers could test their new brain-computer interface software program.

The patients were asked to look at computer screen displaying multiple letters and numbers. Every time a certain letter flashed and the patient focused on it, the computer recorded the brain's response to the flashing letter. The patients were then asked to focus on specific letters, and the computer software recorded the information. The computer then calibrated the system with the individual patient's specific brain wave, and when the patient then focused on a letter, the letter appeared on the screen.

Source:
http://sciencecodex.com/mayo_clinic_researchers_show_brain_waves_can_write_on_a_computer_in_early_tests

By the Numbers

Following are more results relating to the *Mapping State Proficiency Standards Onto NAEP Scales: 2005-2007* study recently released by the U.S. Department of Education (See "Education" section for the full story).

- Most of the variation (about 70%) from state to state in the percentage of students scoring Proficient or above on state tests can be explained by the variation in the level of difficulty of state standards for Proficient performance. States with higher standards (as measured on the NAEP scale) had *fewer* students scoring proficient on state tests.
- In grade 4 math, 14 of the 35 states with available data in both years indicated substantive changes in their assessments. Of those states, 11 showed significant differences between the 2005 and 2007 estimates of the NAEP scale equivalent of their state proficiency standards: six states showed a decrease and five showed an increase.
- In grade 8 mathematics, 18 of the 39 states with available data in both years indicated substantive changes in their assessments. Of those states, 12 showed significant differences between the 2005 and 2007 estimates of the NAEP scale equivalent of their state standards: nine showed a decrease and three showed an increase.

Source: <http://nces.ed.gov/nationsreportcard/pubs/studies/2010456.asp>