Views You Can Use

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Education Trends

Younger Students Improve on Test Scores While High Schoolers Remain Stagnant

The nation's elementary and middle school students have made gains in reading and math proficiency, with 4th graders achieving the highest scores ever in both subject areas. That's according to the latest National Assessment of Educational Progress (NAEP), otherwise known as the "Nation's Report Card," released last month by the U.S. Education Department. The assessment is administered every four years to students in grades 4, 8, and 11.

Black and Hispanic students in 4th grade also reached record reading scores, although not as high as their white peers. The high school students did not fare as well. They have made modest progress in reading since 2004, but their average performance in reading and math has remained nearly the same since the first NAEP was administered in the early 1970s.

Sources: www.washingtonpost.com/wp-dyn/content/article/2009/04/28/AR2009042801244.html?hpid=moreheadlines
www.usnews.com/articles/education/2009/04/28/younger-students-outshine-high-schoolers-in-reading-math.html
The International Center's literacy series for teachers in grades 7-12 and *Algebra Mastery Through Relevant Application in Grades 6-10* can help schools reach all their students to improve reading and math skills.

Writing to Build Confidence

In-class writing assignments designed to reinforce students' sense of identity and personal integrity increased the grade-point averages of African-American middle school students over a two-year period and reduced the rate at which these students were held back or placed in remediation. The results from the study of 416 students in grade 7, conducted by researchers at the University of Colorado at Boulder, suggest that targeted psychological interventions on a wider scale could help narrow the racial achievement gap among U.S. students.

The assignments had no impact on the grades of white students or of black students who already were doing well. Past research has found that school settings in general are stressful to many students regardless of race. However, many African-American students may experience chronic stress in school stemming from negative stereotypes portraying them as less intelligent than their peers, according to the researchers. This in turn leads to decreased academic performance.

Sources: www.nytimes.com/2009/04/17/science/17esteem.html?_r=1
www.physorg.com/news159112193.html

Biotechnology Trends

Algae: the New "Green" Gold for Scientists and Industry

Algae, the slimy green film that can make a body of water inhospitable, are seen as a new hope for staving off climate change and developing more efficient biofuels.

In one study, researchers have decoded genomes of two alga strains, one from the South Pacific and the other from the English Channel. The study, headed in part by the U.S. Department of Energy, highlights the genes that enable the algae to capture carbon. The research could have implications in global management of carbon dioxide, one of the principal greenhouse gasses that cause global climate change, as well as developing better algae-derived biofuels. Like terrestrial plants, the algae consume carbon during photosynthesis. Exposed to sunlight, the algae transform the carbon dioxide into biomass that can later be used as biodiesel.

Meanwhile, OriginOil, an algae biofuel company based in California, has developed a new processing technique to turn algae into biofuel. The process combines ultrasound and an electromagnetic pulse to break the algal cell walls, so the oil can be released. The algae solution is then force-fed carbon dioxide, which lowers its pH and results in the separation of the biomass from the oil. The oil can be skimmed off, the biomass can be further processed, and the water is recycled. The company hopes to develop systems that factories can use to channel their carbon dioxide from smokestacks into tanks that have algae in them. The algae will grow off the carbon dioxide and then processed into fuel.

Sources: www.technologyreview.com/energy/22572/
www.jgi.doe.gov/News/news_09_04_09.html
www.businessinsider.com/originoils-modest-plan-2009-4

Striking a Deal to Fight Blindness with Stem Cells

Scientists at University College London have teamed up with Pfizer drug company to develop a treatment using stem cells to combat age-related macular degeneration (AMD), the most common cause of blindness. In the deal, Pfizer will provide funding and logistical support, as well as the facilities for producing therapeutic cells. In return, the company will have an exclusive option to conduct clinical trials and to commercialize any product that emerges from them. The scientists already have used embryonic stem cells to grow eye tissue and have transplanted it into animals to reverse eye damage from the disease. The deal, the first of its kind, comes in light of recent decision of the U.S. Food and Drug Administration to clear the first patient study of an embryonic stem-cell therapy that is being used as a treatment for spinal paralysis. AMD, which causes progressive loss of cells in the retina, is the most common cause of blindness, affecting 25-30 million people worldwide.

Sources: www.timesonline.co.uk/tol/life_and_style/health/article6157678.ece

http://www.humanware.com/en-usa/products/low_vision/low_vision_conditions/age_related_macular_degeneration_amd

Nanotechnology Trends

Flexible Concrete that Can Repair Itself

Researchers at the University of Michigan have created a concrete material that can heal itself when it cracks, paving the way for safer roads and bridges that are less likely to crumble from earthquakes and overuse. The self-healing concrete works because it can bend. When it's strained, many microcracks form instead of one large crack that causes it to fail. A handful of drizzly days would be enough to mend a damaged bridge made of the new substance. The dry material exposed by the cracks reacts with rainwater and carbon dioxide in the air to form "scars" of calcium carbonate, a strong compound found naturally in seashells. The new material looks like regular concrete, but is 500 times more resistant to cracking and 40% lighter in weight. The concrete is studded with specially-coated reinforcing fibers that hold it together. Nanoparticles that comprise about 2% of the mixture's volume partly account for its performance.

Resources: www.umich.edu/news/index.html?Releases/2005/May05/r050405
http://news.nationalgeographic.com/news/2009/05/090505-self-healing-concrete.html

Economic Trends

Men Hit Hardest in U.S. Economic Downturn

Men have been hit the hardest, accounting for 80% of the job losses since the U.S. recession began in December 2007. The statistic, which shows the biggest gap between men and women unemployment rates since records began in 1948, may mean that that women could soon overtake men as the majority of the U.S. workforce. Men have been disproportionately hurt because they dominate the industries that have been hit hardest — nine of every 10 construction workers are male, as are seven of every 10 manufacturing workers. Women, in contrast, make up 75% of the most insulated sectors: healthcare and education.

The widening gap between male and female joblessness means more U,S. families are solely reliant on the income the woman brings in. Women earn on average 20% less than men, and that is putting extra strain on many households.

Source: www.ft.com/cms/s/0/d28c79d6-2d11-11de-8710-00144feabdc0.html

By the Numbers

The current top jobs include those in the following fields:

1. **Nursing and medical services:** With an increase in the number of retirees obtaining medical care, more than 50,000 new nursing and medical technician jobs are expected to be created this year alone in the United States.

2. **Computing and engineering:** Computer-related jobs are projected to grow by more than 20% in the next decade. Software engineering is particularly in demand, with network systems and data communications analysis also booming.

3. **Education:** As more students wait out the recession in college and graduate programs, the need for teachers, administrators, assistants and other staff will grow. Moreover, as high schools and universities expand to meet demand for nurses, computer engineers, and teachers, the demand for teachers and college professors will grow commensurately.

4. **Energy.** With the federal government supporting renewable energy approaches, experts say startup companies, particularly in the area of producing biofuels, may have enough investment to start growing and adding employees to their payroll as a result. This job niche will require electrical and mechanical engineers, grid managers, biofuel chemists, and civil engineers.

5. **Infrastructure:** President Barack Obama's stimulus package aimed at repairing and building new infrastructure such as roads, bridges, broadband infrastructure, and financial oversight will send employers looking for not only construction workers and engineers, but also auditors, accountants, and compliance officers.

Source: www.fastcompany.com/articles/2009/01/top-jobs-2009.html