



## Views You Can Use

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## Education Trends

### Latest Community College Offerings: Overnight Classes and 24-Hour Computer Labs

In light of the recession, community colleges around the nation are preparing for an enrollment surge that hasn't been seen for 20 years. The trend, which in part stems from laid-off workers looking to increase their skill range for new jobs, has community colleges scurrying to come up with ways to handle the expected deluge of students, including stretching schedules, increasing class sizes, and even turning away students altogether. Some community colleges also are considering more creative ways, such as offering overnight class schedules and 24-hour computer labs. Applications to Suffolk and Nassau community colleges, the two largest in New York state, are up as much as 33% over this time last year. Suffolk is expanding its schedule, which already runs seven days a week, with more dawn, late-night, and weekend classes. In Massachusetts, Bunker Hill Community College is offering classes that run from 11:45 p.m. to 2:30 a.m. to accommodate shift workers seeking retraining.

While economic downturns historically boost community college enrollment, this recession is unique, officials say, because the combination of job losses, tight credit markets, and home foreclosures have more people across all demographic groups considering college.

[www.newsday.com/long-island/nassau/weak-economy-spurs-surge-in-community-college-enrollment-1.1327187](http://www.newsday.com/long-island/nassau/weak-economy-spurs-surge-in-community-college-enrollment-1.1327187)

### Playful Learning Thwarted by Narrow Vision of Education

Experts in early childhood development recently expressed their concern to federal lawmakers that child initiated play, which is critical to brain development, is being threatened in elementary school by a narrow focus on academics and testing. The concerns were based on a new study, *Crisis in the Kindergarten*, released by the Alliance for Childhood. The study argues that creative play is "the engine of learning in early childhood and a vital force for young children's physical, social, and emotional development." It also suggests that rich experiences of creative play have been linked to higher level thinking and problem solving skills.

The report makes a series of recommendations to educators, policymakers, and parents for restoring play to early education, including reassessing kindergarten standards, making room for the many different kinds of play that contribute to healthy development, and ending the inappropriate uses of standardized tests.

Source:

[www.allianceforchildhood.org/sites/allianceforchildhood.org/files/file/kindergarten\\_report.pdf](http://www.allianceforchildhood.org/sites/allianceforchildhood.org/files/file/kindergarten_report.pdf)

## **Culture, Not Biology, Key to Math Gender Gap**

University of Wisconsin-Madison researchers have found that there is no innate gender difference when it comes to being mathematically savvy. A newly published report, *Gender, Culture and Mathematics Performance*, builds on a previous paper by providing a closer look at students who display high-end math skills. The study has found that, in the United States, girls at all grade levels now perform on par with boys on the standardized mathematics tests required of all students. Moreover, U.S. girls are taking calculus in high school at the same rate as boys, and the percentage of U.S. doctorates in the mathematical sciences awarded to women has climbed to 30% in the 21<sup>st</sup> century, up from 5% in the 1950s.

Although some gender disparities can be found, the report strongly suggests they are due mainly to sociocultural factors and not biological differences. "In countries where there is little or no measured gap between boys and girls in math performance, those are the countries with the greatest gender equality. That leads us to believe any math gender gap is cultural, not biological," said Janet Mertz, co-author of the study. The report also states that the United States must do a better job of identifying and developing young people who display talent in math regardless of gender, because median math scores of students in some East Asian countries are higher than the scores of the top 10% of U.S. students on standardized tests.

Sources: [www.madison.com/tct/news/453256](http://www.madison.com/tct/news/453256)  
[www.eurekalert.org/pub\\_releases/2009-06/uow-cnb052709.php](http://www.eurekalert.org/pub_releases/2009-06/uow-cnb052709.php)

## **Brain Research Trends**

### **Adding Spice to New Treatments for Parkinson's Disease**

Parkinson's disease is well known for impairing movement and causing tremors, but many patients also develop other serious problems, including sleep disturbances and dementia. In an effort to test potential new treatments for these additional Parkinson's symptoms, researchers at Washington University School of Medicine in St. Louis have modeled Parkinson's-associated dementia for the first time. Scientists showed that a single night of sleep loss in genetically altered fruit flies caused long-lasting disruptions in the flies' cognitive abilities comparable to aspects of Parkinson's-associated dementia. They then blocked this effect by feeding the flies large doses of the spice curcumin, a derivative of the spice turmeric.

More than 74% of Parkinson's patients have trouble sleeping, and up to 80% of patients 65 and older who have the disease for seven years will develop dementia, according to the researchers. Their lab has linked sleep loss to changes in the dopaminergic system of the brain, which produces the neurotransmitter dopamine and is at the center of the damage caused by Parkinson's. Dopamine, commonly associated with the pleasure system of the brain, plays a role in controlling the flow of information from other areas of the brain. The researchers studied fruit flies genetically modified to make a human protein called alpha-synuclein in their brains. The protein aggregates in the brains of Parkinson's disease patients, and scientists believe the processes that cause the aggregations are harming dopamine-producing cells. The researchers also have found that curcumin blocks the alpha-synuclein aggregation in cell models of the disease.

Source: [www.newswise.com/articles/view/554827/?sc=rsmn](http://www.newswise.com/articles/view/554827/?sc=rsmn)

## **Biotechnology Trends**

### **Blue Food Coloring to Treat Spinal Cord Injuries**

The same blue food coloring used for M&Ms and Gatorade may offer promise for preventing the major swelling that immediately follows a traumatic injury to the spinal cord and often worsens the initial injury. In 2004, researchers discovered that swelling around the cord is caused by the rapid release of ATP, the molecule that normally provides energy for neurons. Excessive amounts of ATP, levels hundreds of times higher than normal, overstimulate the cells and cause them to die of metabolic stress. The researchers found that blocking an ATP receptor called P2X7 prevented much of the inflammation associated with spinal cord injury. Then, while searching for chemicals with structures similar to the P2X7 receptor, the scientists came across FD&C blue dye No. 1, the commonly used nontoxic dye approved by the FDA in 1928.

Researchers found that when they injected the dye into rats suffering spinal cord injuries, the rodents were able to walk again, although with a limp. There was one side effect: the treated mice temporarily turned blue. Since the dye crosses the blood-brain barrier, it can be delivered directly into vein, as opposed to injecting the medicine into the spine, which is dangerous to perform on an injured patient.

Sources: [www.urmc.rochester.edu/news/story/index.cfm?id=2562](http://www.urmc.rochester.edu/news/story/index.cfm?id=2562)  
[www.wired.com/wiredscience/2009/07/bluerats](http://www.wired.com/wiredscience/2009/07/bluerats)

## **Nanobiotechnology Trends**

### **Nanotubes and a Laser Zap to Target Tumors**

By injecting nanotubes into tumors and heating them with a zap of a laser, a team of scientists from universities around the country has discovered a way to kill kidney tumors. The research could be a step in finding better cancer treatments for people. Nanotubes are long thin nanoscopic tubes made of carbon. For the study, researchers used multiwalled nanotubes (MWCNTs), which contain several nanotubes nested within each other. When exposed to laser-generated near-infrared radiation, the tubes respond by vibrating, creating heat. If enough heat is conducted, tumor cells near the tubes begin to shrink and die.

Using a mouse model, researchers injected kidney tumors with different quantities of MWCNTs and exposed the area to a three-watt laser for 30 seconds. The mice who received no treatment for their tumors died about 30 days into the study. Mice who received the nanotubes alone or laser treatment alone survived for a similar length of time. However, in the mice who received the MWCNTs followed by a 30-second laser treatment, researchers found that the higher the quantity of nanotubes injected, the longer the mice lived and the less tumor re-growth was seen. In the mouse group that received the highest dose of MWCNTs, tumors completely disappeared in 80% of the mice. Before the nanotube treatment can be tested in humans, however, studies need to be done to test its toxicity and safety.

Source: [www.physorg.com/news168525725.html](http://www.physorg.com/news168525725.html)

## **By the Numbers**

Although most women were discouraged to pursue mathematics as a profession until well into the 20<sup>th</sup> century, women from ancient times have had a special flair for math. Following is a list of 10 notable female mathematicians of their time.

1. **Hypatia of Alexandria (355 or 370-415)** was a Greek philosopher, astronomer, and mathematician who was the salaried head of the Neoplatonic School in Alexandria, Egypt. She taught male students from around the empire.
2. **Elena Cornaro Piscopia (1646-1684)** was an Italian mathematician and theologian known as the first woman in the world to receive a Ph.D. in philosophy. She earned the degree from the University of Padua, where she lectured afterward in mathematics.
3. **Maria Agnesi (1718-1799)** was an Italian mathematician who wrote a textbook to explain math to her brothers. The textbook became a noted math source, and Agnesi was the first woman in her country appointed a university professor of mathematics.
4. **Sophie Germain (1776-1830)** was a French mathematician who studied geometry. Her notable achievements included her work to prove Fermat's Last Theorem.
5. **Mary Fairfax Somerville (1780-1872)** was a Scottish and British mathematician, known as the "queen of 19<sup>th</sup> century science," who produced the first geography text in England.
6. **Ada Lovelace (Augusta Byron, Countess of Lovelace 1815-1852)** was a British mathematician who devised a method of using punch cards to calculate Bernoulli numbers, thus becoming the first computer programmer. In her honor, the U.S. Department of Defense named its computer language "Ada" in 1980.
7. **Charlotte Angas Scott (1848-1931)** was an English and American mathematician and educator whose work to standardize testing for college entrance resulted in the formation of the College Entrance Examination Board.
8. **Sofia Kovalevskaya (1850-1891)** was a Russian mathematician whose research in mathematics included the Kovalevskaya Top, which examined how Saturn's rings rotated.
9. **Alicia Stott (1860-1940)** was an English mathematician who translated Platonic and Archimedean solids into higher dimensions.
10. **Amalie Emmy Noether (1882-1935)** was a German-born mathematician whom Albert Einstein called "the most significant creative mathematical genius thus far produced since the higher education of women began." She taught in the United States and is known for her groundbreaking contributions to abstract algebra and theoretical physics.

Source: <http://womenshistory.about.com/od/sciencemath1/tp/aatpmathwomen.htm>