



Views You Can Use

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Education by the Numbers at the end of this memo reports on the poor showing by students on the National Assessment of Educational Progress (NAEP) math and reading tests. I have been studying how to move schools from a focus on standards to a focus on curriculum and instruction that will make a real improvement in student learning. I have found that high-performing schools take a different approach to curriculum and instruction. My keynote at the Model Schools Conference will describe my findings and how all schools can make use of them. I hope to see you in Washington, D.C. on June 30-July 3.

Sincerely,

Bill Daggett

Nanotechnology Trends

A New Line of “Functional Clothing”

Taking “functional clothing” to a new level, fashion designers and scientists at Cornell University have created a dress that destroys bacteria and viruses and a jacket that shields against smog and noxious gases. The clothing was dipped in electrostatically charged nanoparticles, which create a protective shield around the cotton fibers in the top part of the dress and on the sleeves, hood, and pockets of the jacket. The dress is coated with silver nanoparticles. Silver possesses antibacterial qualities that are strengthened at the nanoscale. The denim jacket is embedded with palladium nanoparticles, which have the ability to oxidize smog to protect the wearer against allergies and contamination. One drawback is the price tag: one square yard of nano-treated cotton costs about \$10,000.

Source: www.news.cornell.edu/stories/May07/nanofibers.fashion.aj.html

Applying Self-Assembly to Chip Manufacturing

IBM has combined the self-assembling process of nanotechnology to conventional chip manufacturing, advancing a nanotechnology method that had shown promise in laboratories into a commercial manufacturing environment for the first time. The company’s researchers have been able to harness nature’s pattern-creating process, out of which seashells, snowflakes, and tooth enamel are made, to form trillions of self-assembling nanoscopic pores. The pores create insulating vacuums around the miles of nanoscale wires crammed next to each other inside each computer chip. The process allows computer chips to flow 35% faster than the most advanced conventional chips. IBM expects to use the process to make chips by next year.

Source: www.smalltimes.com

Biotechnology Trends

An Enriching Environment for Fighting Alzheimer's Disease

Mice whose brains had atrophied like those of Alzheimer's disease patients regained long-term memory and the ability to learn after living in an enriched environment. Massachusetts Institute of Technology researchers reported their findings in the April 29 online edition of *Nature*. The researchers found that when laboratory mice were exposed to stimuli that enhanced their physical and psychological well-being, the animals' brain cells began to sprout new connections. "This is exciting because our results show that learning ability can be improved and 'lost' long-term memories can be recovered even after a significant number of neurons have already been lost in the brain," said the project's lead researcher, Li-Huei Tsai. "This hints at the possibility that cognitive function can be improved even in advanced stages of dementia."

www.web.mit.edu/newsoffice/2007/alzheimers.html

A New Image for a Better Custom Design

The portable ZScanner 700 is the first mobile device able to digitize the body in real time, creating crisp three-dimensional scans in seconds. When the low-power unit, made from lasers and dual cameras, is waved over a patient's body part, the device analyzes reflected light to assemble a 3-D profile. Doctors can use the data to custom-design orthopedic braces and bone implants.

Source: http://blog.wired.com/sterling/2006/08/spime_watch_a_h.html

New Malaria Drugs on the Horizon

Researchers at Johns Hopkins University have cured malaria-infected mice with single shots of a new series of potent, long-lasting synthetic drugs, modeled on an ancient Chinese herbal folk remedy that has been used to treat malaria and other fevers for thousands of years. The drugs mimic artemisinin, the active agent in the Chinese wormwood plant, which grows throughout the world. The synthetic drugs used on the mice cause the malaria parasites to self-destruct. Malaria afflicts nearly a half-billion people a year, killing up to three million individuals, mostly children in developing nations. The most common fatal species of the parasite now shows strong resistance to many current treatments, making the development of effective new drugs a worldwide priority.

Source: www.jhu.edu/news_info/news/home07/apr07/posner.html

Using Viruses to Kill Bacteria on Food

Intralytix, a biotechnology firm in Maryland, is the first company to receive FDA approval for using a virus-based spray to kill listeria, a potentially deadly bacterium that people typically contract from spoiled processed cheese and uncooked meat. The spray, LMP 02, contains viruses called bacteriophage that eat the bacteria. Bacteriophages are ubiquitous and do not threaten the public's health. People consume them daily in drinking water and fresh foods. The viruses also have been used for decades to treat bacterial infections in humans and animals.

Food manufacturers would use the spray on deli foods that usually aren't cooked or reheated before eaten.

Source: www.intralytix.com/Intral_News_BaltSun.htm

Education Trends

Inadequately Prepared Education Leaders

College and universities are not preparing their future education scholars with the expertise needed to guide school reform, according to a report, titled *Educating Researchers*. Doctoral candidates in education programs are not learning enough about how to develop core education missions and rigorous academic standards. The report is based on a four-year study of schools, departments, and colleges of education that offer doctoral degrees in research. Less than 25% of the faculty members surveyed rated the scholarship produced by their education school colleagues as “good” or “excellent,” and more than 70% rated their schools as “fair” or said that the education programs needed “substantial improvement.” Recommendations include strengthening connections between research and policy areas and practice.

Source: www.edweek.org/ew/index.html

Education by the Numbers

Although students seem to be taking more challenging courses and getting better grades, many of them are scoring poorly on the National Assessment of Educational Progress (NAEP) math and reading tests.

- Nearly 40% of high school seniors scored below the basic level on the math test.
- On the math test, about 60% of high school seniors performed at or above the basic level.
- Only 25% of 12th graders were proficient in math.
- More than 25% of seniors failed to reach the basic level on the reading test.
- On the reading test, about 75% of seniors performed at or above the basic level, while 40% reached the proficient level.
- Math and reading scores showed large achievement gaps between white and minority students.
- Of the white students, 43% scored at or above proficient levels on the reading test, compared with 20% of Hispanic students and 16% of black students.
- On the math test, 29% of white students reached the proficient level, compared with 8% of Hispanics and 6% of blacks.
- The gap in reading scores between white and minority students has remained the same since 2002.

Source: www.wtop.com/?nid=316&pid=0&sid=1069130&page=2