



Views You Can Use

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As I travel throughout the country, it is becoming apparent to me that the key to school reform is to first focus on instruction rather than structure. One of the best ways to do that is to begin planning with struggling students in mind. The most successful elementary, middle, and high schools at meeting the needs of all students will be on the program at the 2007 Model Schools Conference on June 30-July 3 in Washington, D.C.

Please visit our website www.modelschoolsconference.com/ for a preliminary list of Featured Speakers and descriptions of the six PreConferences. The Conference will be the most comprehensive and exciting in our 15-year history. I encourage you not to delay in registering and making your hotel reservations.

Online registration is available. Please see the link on the navigation bar on the right.

Sincerely,
Bill Daggett

Education Trends

College-Access Supports

A recent study by the nonprofit consulting group Bridgespan Group identifies and ranks “college-access supports,” meaning factors other than academic preparedness which influence the likelihood of students earning a college degree. The study concluded that the two most critical supports are (1) an awareness of the link between college and career aspirations and (2) positive attitudes toward college attendance among a student’s closest peer group. Parental involvement and procedural assistance were deemed less significant. The study concludes that every high school needs to develop a culture in which college “is not only a possibility but an expectation.”

Source: www.techprepswohio.org/documents/BridgespancollegeaccessOctober2006.pdf

High School Trends

- High school dropouts are four times as likely to be unemployed as college graduates.
- Dropouts are two and a half times as likely to be arrested as high school graduates.
- Only half of the students who enter 9th grade will enroll in college.
- The level of math taken in high school strongly correlates with college completion.
- Only 14% of high school students who do not meet a rigorous standard of academic preparedness will graduate from college.

The National Educational Longitudinal Study (NELS: 88, 2000) lists “minimally qualified” criteria for college.

Source: www.techprepswohio.org/documents/BridgespancollegeaccessOctober2006.pdf

Information Technology Trends

Virtually Cool Burn Treatment

Adults recovering from severe burns can receive pain relief through drugs, such as morphine, or artificially induced comas. But such treatments are considered too risky for children. That's when virtual reality kicks in to help. The video game, SnowWorld, is the first virtual reality setup to be used to help treat severe pain in children with burns. To play, youngsters don a helmet and enter an Arctic world where they can "lob virtual snowballs at penguins, snowmen, and roaring woolly mammoths while speeding through hairpin turns in a canyon of ice." The idea behind the game was to find a way to ease pain by distracting patients' attention from their suffering. SnowWorld does this by simulating a cold environment, the antithesis of fire, and by engaging youngsters in an interactive game of make-believe.

Source: www.washingtonpost.com December 28, 2006

Thoughts into Actions

The *Scientific American* list of top stories of 2006 includes how Matthew Nagle, a quadriplegic following a severe spine injury, has gained the ability to transform his thoughts into actions with the help of an implanted sensor. A tiny device containing 100 electrodes, each thinner than a human hair, was placed onto the surface of Nagle's motor cortex, the part of the brain that governs movement. The sensor registered electrical signals from nearby neurons and transmitted them through gold wires to a titanium base on Nagle's skull. Cables connected this base to a set of computers, processors, and monitors that assessed the firing of the neurons and converted the impulses into action. Using a neural onscreen cursor, Nagle was able to open e-mail, draw circles, and play a version of Pong. The sensor also enabled him to control his television, open and close the fingers of a prosthetic hand, and use a robotic arm to pick up pieces of hard candy and drop them into a technician's hand.

Source: www.sciam.com/article.cfm?articleID=0004DD3A-6E37-14B5-AE3783414B7F0000&chanID=sa009

Zoom to Earth — NASA Style

NASA's new World Wind technology allows Internet users to zoom in from satellite altitude to any place on Earth. Using Landsat satellite imagery and Shuttle Radar Topography Mission data, World Wind lets visitors experience Earth terrain in visually rich three-dimensional imagery. NASA has released World Wind as an open source program (meaning anyone can use it) to improve its quality through peer review and to maximize the impact of its research. Free usage is subject to the terms of the NASA Open Source Agreement.

Source: <http://worldwind.arc.nasa.gov/index.html>

Biotechnology Trends

Mad Cow Disease Could Be History

Scientists at a South Dakota biotechnology company have devised a way to genetically engineer a line of cattle cells so that the gene vulnerable to bovine spongiform encephalopathy (BSE), otherwise known as mad cow disease, is disabled. They then used the new strain of cells to create a herd of 12 cloned bulls. Now 2 years old, the bulls appear to be perfectly normal in every way other than, from initial results, their

inability to contract BSE. Because the telltale signs of mad cow disease are slow to develop, it will be another year and a half before the cloned bulls are deemed BSE-resistant, but researchers are hopeful that they may have devised a way to prevent the onset of the disease.

Source: www.usatoday.com/tech/science/2007-01-01-genetic-cattle_x.htm

Anti-Terror “Sting” Operation

A UK company has developed a device that harnesses the honeybee’s natural scent-detection abilities to sniff out bombs and other explosives. The technology is being used as experimental explosives detectors for luggage. The portable prototype boxes, each containing three harnessed bees, are passed over a piece of luggage. If it contains even the smallest trace of explosives, the bees react by sticking out their “proboscis,” or tongue. A small video camera inside the box records and sends the tongue reactions to a computer where the information can be monitored.

Honeybees have scent-detecting capabilities that rival dogs’ abilities. But unlike dogs, they can be trained in only a few minutes, are inexpensive to keep, do not become bored or have “off” days, and are better suited to investigating locations where the proximity of a larger sensor might trigger an explosion. In U.S. field trials at the Los Alamos Laboratory, honeybees have sniffed out explosives in a simulated roadside bomb, in a vehicle, and on a person rigged like a suicide bomber. Researchers train the bees individually by exposing them to the odor of an explosive, then giving them sugar water as a reward. After a few practice runs, a bee, anticipating the sugar water, will stick out its tongue at the smell of the explosive.

Sources: BBC World and TVE’s “Hands On” program at www.handson.tv/info/series7/02_animal_magic_reports/report2.html and Los Alamos National Laboratories Web site www.lanl.gov/news/index.php/fuseaction/home.story/story_id/9460

Health Technology Trends

Gene Therapy to Reduce the Effects of Aging

Only one in every 10,000 people lives to be over 100 years old. In a recent study, scientists from the Longevity Genes Project found that centenarians who remain mentally and physically more healthy tend to possess a common variant of the CETP gene that makes cholesterol particles in the blood larger than normal. Smaller cholesterol particles can more readily lodge in the lining of blood vessels, leading to fatty buildups, a risk factor for heart attacks and strokes. The smaller particles also may contribute to Alzheimer’s disease. Pharmaceutical companies are developing drugs that mimic the effect of the CETP gene variant.

Source: *Scientific American*, Jan. 3, 2007.
www.sciam.com/article.cfm?chanID=sa003&articleID=C055A20E-E7F2-99DF-3D3D2252606AAAC8

Positive Thinking Beats a Cold

People with positive emotional style (PES) generally show greater resistance to developing colds than do individuals who have more negative emotions. A study conducted at Carnegie Mellon University and reported in the November/December issue of *Psychosomatic Medicine* concludes that PES frequently

defends against colds. The researchers suspect that positive emotions stimulate enhanced regulation of an infection-fighting substance, interleukin-6.

Source: www.psychosomaticmedicine.org/cgi/content/abstract/68/6/809

Nanotechnology Trends

Year of the Nanotube

This year has been designated by the nanotechnology industry journal *Small Times* as the “Year of the Multiwall Tube,” the latest innovations in carbon nanotube technology. Nanotubes are cylindrical structures about 50,000 times smaller than the width of a human hair. Made of carbon atoms, they have such novel characteristics as extraordinary strength combined with elasticity and such unique electrical properties as the ability to be highly efficient conductors of heat.

Multiwalled nanotubes, which consist of multiple layers of graphite rolled in on themselves to form a tube shape and exhibit additional strength, have a range of potential applications, from electronics such as memory devices to enhanced car tires. The patents of pioneering multiwall nanotube manufacturer Hyperion Catalysis have expired, leaving competition in the research and development market in this area wide open.

Economic Trends

Top 10 Forecasts from Outlook 2007

THE FUTURIST magazine has identified its top forecasts for 2007 and beyond:

1. The United States will see a significant proportion of its Generation Y population emigrate overseas for job opportunities. In addition, by 2025, 75% of Americans will live on the U.S. coasts.
2. China will experience dwindling water supplies.
3. Workers will increasingly value time off over high salaries.
4. India’s more entrenched use of English, democratic government, and more transparent institutions will prove to be advantages over China in the longer term.
5. Children increasingly will suffer from “nature deficit disorder” — less frequent contact with the great outdoors — resulting in lack of physical fitness, more cases of hyperactivity, and more forms of attention deficit disorder.
6. Wireless nanorobotics will enhance human interneuronal connections, improving pattern-recognition abilities, memories, and overall thinking capacities and augmenting human interfaces with computers.
7. As their capacity to automate more workplace activities becomes more prevalent, employers will increasingly have a hiring option – human or robotic.
8. The costs of global-warming-related disasters will reach \$150 billion per year. The world’s total economic loss from weather-related catastrophes has risen 25% in the last decade.
9. By 2012, 19% of the U.S. workforce will be 55 or older, up from 12% today, and the tradition of retiring at age 65 will change significantly.
10. With an increase in the number of Americans who are 65-plus from 35 million today to 65 million in 2025, the number of individuals with special needs will increase significantly. As a result, the public transportation system will be strained.

Source: “The 2007 Outlook Report” in the November-December issue of *THE FUTURIST*
www.wfs.org/forecasts.htm

Internet Usage

The five countries with the most Internet users:

1. United States 159,000,000
2. China 79,500,000
3. Japan 57, 200,000
4. Germany 39,000,000
5. South Korea 29,220,000

Source: CIA World Factbook, as listed at www.aneki.com/about.html

China by the Numbers

- China is now the second largest emitter of energy-related carbon dioxide emissions after the U.S., with emissions having more than doubled in the past 25 years.
- Sulfurous coal is currently China's leading source of energy. Half of the 2 billion tons of coal China burns each year, accounting for two-thirds of the country's energy consumption, feeds industry.
- China is the world's third largest net importer of oil, behind the U.S. and Japan.
- China's 2006 oil consumption is forecast to increase by almost half a million barrels per day from last year's volumes, or 38% of the total growth in world oil demand.
- Chinese bought seven million new cars last year, making it the world's second-largest car market after the U.S.
- World Bank forecasts predict that there will be 170 million vehicles on the roads in China by 2020, by which point the country would have overtaken the U.S. in total car ownership.
- To cut back China's growing oil imports, Beijing has imposed taxes on gas-guzzling vehicles and adopted European auto emissions.
- China already is investing billions of dollars in renewable energy sources such as hydropower and wind power to substitute coal and gas in electricity generation.
- As China continues to emulate U.S. energy consumption rates as well as patterns of energy intensity (the amount of energy required to produce a unit of economic growth), the challenges of matching economic growth with environmental concerns will intensify, and the global stakes will become higher.

Source: Forbes Energy Outlook 2007: Pollution and Prosperity www.forbes.com/2006/11/27/china-india-energy-biz-energy-cx_pm_1127energy.html