



Views You Can Use

Vol. 5 No. 1

Welcome to a new school year.

In this monthly briefing memo, which you have requested, my colleagues at the International Center and I share information that we have gathered on trends and technologies that will have an impact on education.

This fall semester will bring a continuation and expansion of our ongoing research, in partnership with the Council of Chief State School Officers, on “promising” and “proven” high schools. With the help of a dozen national organizations, we have identified Learning Criteria in four categories: Core Academic Learning, Stretch Learning, Student Engagement, and Personal Skill Development. We will keep you posted on our progress as we collect data over the next five years.

Please visit Just Published on our Web site www.LeaderEd.com for information on our newest resource kits and copies of my two 2005 Conference papers.

Sincerely,
Bill Daggett

INFORMATION TECHNOLOGY

Terrestrial Radio Goes Digital

Satellite digital radio has recently attracted investors, subscribers, and media attention. But almost 500 conventional analog-signal radio stations are now broadcasting in an emerging medium called HD- (or digital-) AM and FM. HD radio technology transmits low-power multiple streams of data over very narrow spaces between frequencies on the AM and FM bands. The separate streams are synchronized and merged by digital radio receivers, which currently sell for about \$400. The streamed signals can simultaneously transmit data – such as information about a song or artist – along with its audio stream. Digital AM has the quality of today’s stereo analog FM; digital FM provides audio close to CD quality.

Digital AM and FM are free to listeners, at least for now. NPR, in fact, is offering five full-time music streams to its affiliated stations for HD radio multicasting.

Source: “Revolution on the Radio,” *New York Times*, July 28, 2005, and Broadcast Electronics at www.bdcast.com/HDRadio/IBOC_and_the_AM_station.html

Digital radio will increase the number of stations available and allow programmers to target ever more specific tastes. Helping students to make the right choices about *how* to listen and what is worth listening to are the best ways to ensure productive uses of media innovations.

Enter the Podcast

A podcast is an audio file posted online that Apple iPod (or other music player) users can access free and listen to at any time – a kind of pre-packaged radio-on-demand. Thousands of podcasts are available and cater to a wide range of tastes – some clearly X-rated. Some podcasts are recorded files of, for example, popular NPR and CNN radio programs. Others are the podcast equivalent of a do-it-yourself garage band jam session. Anyone with a microphone and the right software can produce a podcast and post it to the Internet. “How-to” instructions are available at apple.com/podcasting. Apple’s new (and free) podcast management software, iTunes 4.9 for Mac and Windows, now helps users to find podcasts, transfer them to their iPods, and subscribe to their favorites.

Source: <http://www.apple.com/podcasting/>

The Internet continues to expand our choices of entertainment and information and to “free up” communications. Students who can make informed and prudent evaluations about what to watch, hear, and access will ensure that information technology works for the common good.

Wired for School

For parents of college students, the list of back-to-school “must-haves” raises questions about which technologies to select, including desktop vs. laptop computers, cell phone plans, printers, etc. Parents must increasingly pay attention to operating system compatibility, wireless connectivity, and which size of TV for video games will most easily fit into a dorm room. In fact, most colleges now include technology topics in orientation briefings for parent and student orientation.

Source: John Schwartz, “Packing for the ‘Net Generation’,” *New York Times*, August 3, 2005.
<http://tech2.nytimes.com/2005/08/03/technology/techspecial3/03schwartz.html?oref=login&pagewanted=print>

Today’s students are increasingly digitally adept and comfortable using technology. If we want to reach them, we must make technology a standard part of their daily learning experiences.

BIOTECHNOLOGY

Check Out These Genes

Genome sequencing – decoding the structure of a genome by identifying the exact order of its building block nucleotides –uses a process invented in 1977. However, a new nanotechnology developed by 454 Life Sciences of Branford, Conn. recently sequenced the genome of a small bacterium in just four hours, compared to four to six months and 24,000 separate operations when the same bacterium was first sequenced in 1995. The new nanotech process works at a capacity 100 times greater than current macro-scale technology and is being marketed to pharmaceutical, biotechnology, biodefense, and bioindustrial companies, researchers, and agencies.

Source: 454 Life Sciences Web site at www.454lifesciences.com/index2.html
For more information about genes and genome sequencing, visit
<http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/D/DNAsequencing.html>
www.lexicon-biology.com/biology/definition2_64.html

Biotech and nanotech offer great potential for medicine and the health sciences. Will today’s students have the science, math, technology, and higher-order thinking skills they need to succeed and compete in these rapidly growing global industries?

Pollution-eating Plants

Biotech engineers from Purdue University and University of Georgia are using genetically modified plants and trees to absorb dangerous chemicals such as mercury and selenium from the soil at contaminated industrial sites in Danbury, CT and California’s Central Valley. The scientists alter the botanical genes in lab samples of cottonwood trees and Indian mustard plants to trick them into accepting the soaked up contaminants, which would normally poison such plants. Although plantings would need to be on a large scale to be effective, the process could reduce clean-up costs using an enviro-friendly soil treatment.

Source: “Scientists begin to grow pollution-eating plants,” *The Associated Press*, July 4, 2005.

Despite its promise, biotech solutions worry even some environmentalists. We need to engage students in such debates to ensure that technological know-how is supported by insightful decision making.

Watering Down Trees

Speaking of plants, the World Commission on Water and other agencies are apparently rethinking how well trees preserve the environment. Trees lose water through evaporation (called transpiration in plants) twice as quickly as do grasslands. In arid and semi-arid regions, trees consume far more water than they trap. Moreover, trees do not store carbon (from carbon dioxide) for as long as was previously assumed – only about five years. Scientists are seeking ways to bring water to poor rural areas worldwide. Some estimate that demand for water will increase by over half in the first three decades of this century.

Source: “Down with Trees,” *The Economist*, July 28, 2005, and the United Nations’ Water for Life program at <http://www.un.org/waterforlifedecade/reference.html>

Challenge assumptions, collect new data, weigh the evidence, draw informed conclusions, update as needed. That spirit of scientific inquiry is at the heart of rigorous and relevant instruction and learning, as well as a pathway to school improvement.

Nanotechnology

Dot, Dot, Dot

Quantum dots are nano-engineered “tags” that can be attached to molecules. Once affixed, each ultra-small crystal dot emits fluorescent light when exposed to light waves. Biotech scientists use them to track cells and study biological patterns. Nanocrystal dots, however, are made from cadmium, selenium, and other heavy metals, which can be harmful to humans; their use is already restricted in Japan and Europe. Recent developments – at Cornell University and elsewhere – in the creation of a new generation of quantum dots that do not use heavy metals are promising. Quantum dots may also be useful in the creation of solar cells and electronics, as well as in lighting and energy.

Source: Candace Stuart, “Making Dots Less Toxic Broadens Users’ Options,” *Small Times*, August 2, 2005

In the same way that ensuring a healthy, safe, and secure school environment enables learning, the search for safe applications will drive emerging technologies.

EDUCATION TRENDS

Graduation Counts

The National Governors Association (NGA) and several other national organizations have established for the first time a set of criteria and processes for calculating state graduation rates. The governors have also agreed to set in motion a plan to begin systematically collecting and posting apples-to-apples graduation rate data as a measure of state, district, and institutional performance.

Visit www.nga.org for a copy of the complete report *Graduation Counts: A Report of the NGA Task Force on State High School Graduation Data*.

We applaud the governors’ efforts. Common metrics for determining the numbers of students who fail to graduate from high school will be an important way to measure school success using data-based decision making.

And Speaking of Graduation Rates

Take 100 of this year’s entering ninth graders: 68 of them will eventually graduate from high school, and 40 of those students will enter college immediately. Of those, only 27 will continue as college sophomores, and only 18 will graduate from college within six years.

Source: White House Office of Communications, Sept. 2004, as quoted in the *Cincinnati Enquirer*, Aug. 15, 2005.

Three for Me

Three for Me is a program sponsored by the National PTA through which parents promise, on behalf of their children, to devote three volunteer hours to their school. Adopting the program helps schools to tap into the time and talents that many parents are willing to offer. Parents benefit from learning new skills, meeting new people, and gaining insights into education.

This is important because schools across the country are experiencing a drop in parental involvement. Membership in the National PTA has declined from more than 12 million in 1962 to 6.5 million in 2000.

Sources: *The Indianapolis Star*, July 28, 2005 and National PTA at www.three4me.com/theprogram.htm

Parental and community involvement is a key element in school improvement. Volunteerism also helps ensure a strong base of community support for school improvement. Moreover, engaging parents in their students' learning boosts student performance.

By the Numbers:

- 14% of students aged 12 through 18 reported being bullied at school within the previous six months.
- 15% of white, non-Hispanic students reported being bullied, a higher rate than that experienced by other (12%) or by black (11%) students.
- No measurable differences in bullying reports were detected between public and private schools.
- Students at schools with a gang presence were more likely to report being bullied than students who attended schools with no perceived gang presence. (21% vs. 13%).
- Victims of bullying are more likely to report that they carried weapons to school or were engaged in physical fights than other students (4% vs. 1%).

Source: NCES, U.S. Department of Education, "Student Reports of Bullying," July 2005.

<http://nces.ed.gov/pubs2005/2005310.pdf#search='student%20report%20of%20bullying%20july%202005%20NCES'>