Views You Can Use

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I want to mention two upcoming events that can help bring clarity to school improvement efforts. Our *Whole School Reform Symposium: Best Practices to Engage 21st Century Learners* on February 8-10 in San Diego, will showcase what successful school reinvention looks like in high schools, middle grade programs, and elementary schools. The 16th Annual Model Schools Conference on June 22-25 in Orlando is the International Center's signature event, bringing all the components of our work together in support of our basic mission: a rigorous and relevant education for all students. For additional information, please use the links to the right.

Sincerely,

Bill Daggett

Information Technology Trends

Identifying Warped Fingerprints at Precise Speed

Researchers at the University of Warwick have developed a way to identify partial, distorted, scratched, and smudged fingerprints in just a few seconds. Previous techniques have tried to identify a few key features on a fingerprint and laboriously match them against a database of templates. But, the University of Warwick researchers consider the entire detailed pattern of each print and transform the pattern into a standard coordinate system, which defines standard positions on an image. This allows the researchers to "unwarp" any fingerprint that has been distorted and create a clear digital representation that can then be quickly mapped onto an "image space" of all other fingerprints on a database. The researchers are exploring a number of opportunities for their new technology including commercial access control systems, financial transaction authorization systems, and ID cards, passports, or border control systems.

Source: http://www2.warwick.ac.uk/newsandevents

Mapping Out the Best Route

Researchers at the Massachusetts Institute of Technology (MIT) are using "wikis," or shared information sites, and the Semantic Web to change the way pedestrians map and navigate their cities. The researchers are developing a product that will permit anyone with a cell phone or a PDA and access to GPS technology to upload content to a map to cross-search multiple layers of information. For example, a jogger might use the technology to search for a running course based on a city's traffic and air quality, as well as the runner's stamina. A shopper might use the technology to locate a store with a specific bottle of wine and plot a course from the store to a friend's home. Pedestrians eventually may turn to these interactive maps to catch a bus, as their movements become part of the map's display so they know where they are.

Source: *PC World*, Sept. 23, 2007

If Your Computer Could Read Your Mind

Someday soon your computer may be able to determine whether you are frustrated because of work overload. Applying non-invasive and easily portable emerging imaging technology in new ways, Tufts University researchers hope to gain real-time insight into the brain's more subtle emotional cues and help provide a more efficient way to get work done.

The researchers are studying functional near-infrared spectroscopy (fNIRS) technology that uses light to monitor brain blood flow as a proxy for workload stress a user may experience when performing an increasingly difficult task. The researchers say that the particular area of the brain where the blood flow change occurs should provide indications of the brain metabolic changes and by extension workload, which could be a proxy for emotions like frustration.

Source: www.eurekalert.org/pub_releases/2007-10/tu-tce100107.php

Biotechnology Trends

Tracing Ancestry — Anonymously

A group of computer scientists, mathematicians, and biologists from around the world has developed a computer program that can help trace the genetic ancestry of thousands of individuals in minutes, without any prior knowledge of their background. Unlike other computer programs that require an individual's family history and other background information, this one looks for specific DNA markers, known as single nucleotide polymorphisms, or SNPs, by incorporating a DNA sample from a cheek swab.

Understanding each individual's unique genetic makeup is a crucial step to unraveling the genetic basis for complex diseases. Although the human genome is 99% the same from person to person, it is the 1% that can have a major impact on individual responses to diseases, viruses, medications, and toxins. If researchers can uncover the minute genetic details that set each of us apart, biomedical research and treatments can be better customized for an individual.

Source: http://news.rpi.edu/update.do?artcenterkey=2315

Personal Prescribed Diet

While some people can eat a high-fat diet with little risk of heart disease, others face serious cardiovascular problems if they do so. The motivation behind the emerging field of nutrigenomics is to identify the links between nutrition and disease based on an individual's genome, so that people will know ahead of time what kind of diet is best suited for them. While scientists specializing in this nascent field cannot yet offer personal dietary advice for the average consumer, research has uncovered links among genes, diet, and heart disease. A team of researchers at Tufts University, for example, recently analyzed data from the Framingham Heart Study, a large-scale study that traced the health of 5,000 people since 1948. The researchers found that certain genetic variants can protect people from diet-induced cardiovascular disease or put them at increased risk.

Source: *Technology Review*, January 31, 2007

Education Trends

New Connections for Overcoming Dyslexia

Using new software developed to investigate how the brains of dyslexic children are organized, University of Washington researchers have found that key areas for language and working memory involved in reading are connected differently in dyslexics than in children who are good readers and spellers. However, once the children with dyslexia received a three-week instructional program, their patterns of functional brain connectivity normalized and were similar to those of good readers when deciding if sounds went with groups of letters in words. The findings could provide insight into the development of new teaching methods geared toward students who are dyslexic.

Source: http://uwnews.washington.edu/ni/article.asp?articleID=36405

Education by the Numbers

According to the recently released 2007 National Assessment of Educational Progress (NAEP), students in grades 4 and 8 have made progress in math and reading, but schools have a long way to go in helping all students achieve at high levels.

- More than 700,000 students in all 50 states and the District of Columbia took the tests last winter.
- Since 1990, the percentage of 4th graders who test at the proficient level or better in math has tripled, from 13% to 39%.
- White, black, and Hispanic students all scored higher in 2007 than in the first assessment 15 years ago at both grades 4 and 8. However, only the white–black gap at grade 4 was smaller in comparison to the gaps in 2005 and 1992.
- Reading skills are improving for both 4th and 8th graders, particularly among lower- and middle-performing students.
- In 2007, 4th graders scored higher in reading than in all previous assessment years, with higher percentages of students performing at basic and proficient achievement levels. “The average reading score was up 2 points since 2005 and 4 points compared to the first assessment 15 years ago,” according to NAEP.
- The average reading score for 8th graders was up only 1 point since 2005 and 3 points since 1992.
- In 2007, female students scored 7 points higher than male students at grade 4 and 10 points higher at grade 8. These gender gaps were not significantly different from the gaps seen 15 years ago.

Source: http://nces.ed.gov/nationsreportcard/pubs/main2007/2007496.asp#section1