



Views You Can Use

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As the busy school year gets underway, now is the time to register for the 2009 Winter Symposium: Improving K-12 Student Performance - From Successful Practices to Action Plans. The Symposium, on Jan. 23-25 in Washington, D.C., will feature sessions, which include elementary and secondary strands, for administrators and teachers that will provide both insight from experts and practical advice from successful schools on leading change. There will be in-depth discussions of the unifying characteristics found in all types of successful schools. To register or for more information, please visit www.leadered.com/09symposium.html.

Sincerely,

Bill Daggett

Brain Research Trends

Robot with a Biological Brain

A multidisciplinary team at the University of Reading in the United Kingdom has developed a robot controlled exclusively by living brain tissue. The research is the first step in examining how memory manifests itself in the brain and how a brain stores data. The robot's brain is made up of cultured rat neurons placed onto a multi-electrode array (MEA). The MEA is a dish with 60 electrodes that pick up the electrical signals generated by the neurons. Every time the robot nears an object, signals stimulate the brain through the electrodes. In response, the brain's output is used to drive the wheels of the robot, left and right, so that it moves around in an attempt to avoid hitting objects. The robot has no additional control from a human or a computer; its sole means of control is from its own brain. The next step is to get the robot to "learn" by applying different signals by itself as it moves into predefined positions. It is hoped that as the learning progresses, researchers will be able to witness how memory manifests itself in the brain when the robot revisits familiar territory.

Source: www.reading.ac.uk/about/newsandevents/releases/PR16530.asp

In a new International Center DVD, Rigor, Relevance, and Relationships and the Human Brain, Dr. Paul Nussbaum underscores the connection between the latest brain research and education and highlights the long-term positive health benefits from lifelong learning. Dr. Nussbaum is one of two International Center keynote speakers in the area of brain research. The other keynoter is Susan Kovalik, founder of the Center

for Effective Learning. To inquire about presentations by either keynoter, please contact Karen@daggett.com.

Nanotechnology Trends

Putting a Bounce in Electronics

Fragility is the price for miniaturization, especially when it comes to such small devices as cell phones hitting the floor. Now a research team at Clemson University in South Carolina has invented a way to make beds of tiny shock-absorbing carbon nanosprings that could be used to protect delicate objects from damaging impacts. The team has shown that layers of these tiny springs called coiled carbon nanotubes, each a thousand times smaller than a human hair, can act as resilient shock absorbers. After formation, the coiled nanotubes can be peeled off in one piece and placed on other surfaces to form instant cushioning coatings. The nanosprings could be used in military body armor, car bumpers and bushings, and as cushioning elements in shoe soles.

Source: www.clemson.edu/newsroom/articles/top-stories/coiledcarbonnanotubes.php5

Technology Trends

Building the Road to Support Electric Car Use

Car corporation Daimler AG and energy provider RWE, both German-based companies, have launched a joint project in Berlin to jumpstart a worldwide energy infrastructure that will allow electric vehicles to transition into mainstream transportation. For the “e-mobility Berlin” project, Daimler will provide 100 electric cars. RWE will supply the electricity and handle the development, installation, and operation of about 500 charging stations across the city. Charging points will be installed at home, in workplaces, and in public areas such as shopping centers. As part of the plan, the companies will build an “intelligent” payment system in which drivers will use an in-car communication system to pay for refueling. On-board lithium-ion battery packs will be used to store electricity when demand is low and to feed back in the network when demand is high as part of a vehicle-to-grid integration scheme. The companies expect the project to be fully implemented by the end of 2009.

Source: www.cbsnews.com/stories/2008/09/08/tech/livinggreen/main4427081.shtml

Robot “Learns” How to Walk Uphill

Computational neuroscientists at the University of Goettingen in Germany have designed a robot that “teaches” itself how to walk on uneven terrain. By using sensors and an infrared eye, the robot can detect a slope on its path and then adjust on the spot. When it first attempts to climb a new slope, the robot falls backward. It then adjusts its gait in the same way a child learns how to walk. Movement reflexes are driven by sensors, which are regulated by control circuits. These, in turn, are governed by a neural network attached to the infrared eye. The robot has humanlike joints: two hip joints, two knee joints, and a foot contact sensor for each leg. The sensors make sure the joints are not over-stretched and that the next step is initiated as soon as the foot touches the ground. The technology could be used to improve prosthetic limbs.

Sources: www.businessweek.com/magazine/content/07_31/c4044066.htm

www.sciencedaily.com/videos/2007/1210-worlds_fastest_robot.htm

Education Trends

Supporting Sustainable Education Reform

The American Federation of Teachers (AFT), the nation's second-largest teachers union, said it will offer \$1 million in support and seek additional philanthropic funding to help school systems try "sustainable, innovative and collaborative reform projects" developed by AFT teachers over the past several years. One effort the money will support is peer-review teacher evaluations, such as those developed in Toledo, Ohio. Under the peer-review process at Toledo Public Schools, a team of master teachers monitors and evaluates teachers on how they prepare, plan and present lessons; how well they know the material they teach; and how they engage and discipline students. A team of administrators and master teachers meets annually to discuss teachers who have been deemed incompetent. The AFT also will support union-run charter schools similar to those in New York City and pay-for-performance plans as developed in Denver.

Sources: www.usatoday.com/news/education/2008-09-10-aft-plan_N.htm
www.npr.org/templates/story/story.php?storyId=91327130

The International Center provides sustained professional development for education reform. For more information, please visit www.leadered.com/consulting.html

Students Who Use Clickers Score Better on Physics Tests

Hand-held electronic devices called clickers are helping college students learn physics better, according to a series of research studies conducted at Ohio State University. Clickers, also known as "student response systems (SRS)," are wireless devices that resemble small calculators. In "clicker classes," multiple choice questions appear on a large screen at the front of the lecture hall. Students "click" their answers based on their understanding of the part of the lecture just given. A computer registers all student responses, and a bar graph shows the percentage of students voting for each answer.

Students at the university who used the devices to answer multiple-choice questions during physics lectures earned final exam scores that were about 10 percentage points higher — the equivalent of a full-letter grade — than students who didn't use clickers. The clickers also appear to level the playing field between male and female students. In clicker classes, male and female students performed equally well. In the traditional non-clicker classes, male students outperformed their female counterparts. According to researchers, the results suggest that clickers could potentially encourage more women to pursue STEM (science, technology, engineering, and mathematics) disciplines.

Source: <http://researchnews.osu.edu/archive/clickers.htm>

By the Numbers

Average health literacy increases with each higher level of education attainment. Health literacy is defined as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health

decisions.” The study conducted by the National Center for Education Statistics used a four-level scale: below basic, basic, intermediate, and proficient.

- About 50% of adults who had never attended or did not complete high school had below basic health literacy, compared to 15% of adults who ended their education with a high school diploma and 3% of adults with a bachelor’s degree.
- More than 50% had intermediate health literacy.
- 12% of adults in all groups had proficient health literacy.
- 22% had basic health literacy
- 14% had below basic health literacy
- Women had higher average health literacy than men; moreover, 16% of men and 12% of women had below basic health literacy.
- Asian/Pacific Islander adults had higher average health literacy than black, Hispanic, American Indian/Alaska Native, and multiracial adults. Hispanic adults had lower average health literacy than adults in any other racial/ethnic group.
- Adults who spoke only English before starting school had higher average health literacy than adults who spoke other languages alone or other languages and English.
- Adults who were ages 65 and older had lower average health literacy than adults in younger age groups.

Source: http://nces.ed.gov/pubs2006/2006483_1.pdf

The International Center publishes a number of resources to increase student literacy skills including the resource kits Strategic Writing Across the Curriculum in Grades 7-12 and Strategic Reading in the Content Areas — Boosting Achievement in Grades 7-12. For more information, please visit www.leadered.com/litresources.html.