



Views You Can Use

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In this monthly briefing memo, which you have requested, my colleagues at the International Center for Leadership in Education and I share with you our research on trends and technologies that will have an impact on education, learning, and life.

I would like to take this opportunity to wish everyone a happy and productive New Year.

Sincerely,
Bill Daggett

Globalization

American Technology Firms Invest in India

Bill Gates, Microsoft chairman and co-founder, announced in early December that the company plans to nearly double its workforce in India over the next four years. Microsoft will invest \$1.7 billion and add 3,000 jobs to one of the world's two most rapidly growing economies. "We are keen to grow Microsoft activities in India," said Gates. "The growth in employment for Microsoft will be more in India than the United States."

Microsoft is only the latest in a line of American tech firms investing in India. Intel Corp. plans to invest more than \$1 billion over the next five years in Indian technology companies. In October, Cisco Systems Inc. announced plans to spend \$1.1 billion in India over the next three years.

India is quickly establishing itself as a world leader in information technology innovation. Its high-skill, low-wage population makes India a desirable destination for foreign investment. As advancements in information technology make it easier to move work to workers anywhere in the world, such breakthroughs as computers that respond to speech in various languages without need for a keyboard become highly important. According to Gates, "India is a place where breakthroughs like these are necessary and will take place."

Source: Rajesh Mahapatra, "Microsoft to Invest in India, Add Jobs," *Associated Press*, Dec. 7, 2005.

Biotechnology

Mice Grow Human Brain Cells

The Salk Institute for Biological Sciences in La Jolla, CA, reports that it has created living mice with working human brain cells inside their skulls. The work was published in the December 13 issue of the *Proceedings of the National Academy of Sciences*. Scientists at the Salk Institute injected the brains of fetal mice with human embryonic stem cells, which have the ability to develop into every kind of human

cell. The human brain cells had no apparent effect on the mice's behavior, but provided proof that human embryonic brain cells can become functional cells that are able to make connections with surrounding brain cells.

About 100,000 stem cells were injected into each of the mice. Scientists estimate that as few as 100 of the cells survived to become functional brain cells. Since mouse brains typically contain 75 to 90 million cells, the experiments are avoiding many of the ethical objections that oftentimes arise around stem cell research. "Interesting, good and ethical" is how Henry Greely, a Stanford law professor and ethicist, described the research. Scientists hope this research will lead to stem cell-based therapies for such human neurodegenerative diseases as Alzheimer's, Lou Gehrig's or Parkinson's.

Source: Rick Weiss, "Human Brain Cells are Grown in Mice," *Washington Post*, Dec. 13, 2005.

www.washingtonpost.com/wp-dyn/content/article/2005/12/12/AR2005121201388.html?nav=rss_nation/science

Information Technology

Automotive Companies Demonstrate Smart Vehicles

The 12th Annual World Congress on Intelligent Transport Systems, an automotive industry conference held in San Francisco in November, showcased some of the newest technologies that may appear in cars in the near future. Toyota demonstrated its Intelligent Parking Assist technology, which is currently available in Japan and Europe, and will likely be sold in the United States in 2006. "The idea is to reduce the driver's workload," said Toyota engineer Masato Okuda, who demonstrated the Intelligent Parking Assist feature. A driver using Intelligent Parking Assist essentially places the action of parallel parking in the hands of the car, using only the break pedal to control speed.

Cars in the future might also provide drivers real-time information on traffic jams, traffic light cycles, and available parking spaces. Engineers are working on technology that will allow a vehicle to communicate with another in close proximity. This technology is still a few years away but, in theory, cars equipped with wireless transponders will be able to broadcast such information as speed and braking status to nearby cars with similar transponders. "Our vision is zero fatalities and zero delays," said Neil Schuster, CEO of the Intelligent Transport Society of America.

Sources:

"Cars May Find Parking Spots," Red Herring, November 5, 2005.

www.redherring.com/Article.aspx?a=14330&hed=Cars+May+Find+Parking+Spots

Cyrus Farivar, "Cars Chat and Park Themselves," Wired News, November 9, 2005.

www.wired.com/news/autotech/0,2554,69517,00.html?tw=wn_tophead_6

Education News

Nanotechnology Education and Research (N.E.A.R.) at North Penn High School

Students at North Penn High School Engineering Academy in Lansdale, PA, will be conducting some highly advanced research in the rapidly emerging field of nanotechnology this school year. The students will research, design, and produce nanofibers – using a process called electrospinning – that will be less than 300 nanometers in diameter.

Each team of three students will be assigned a different polymer to research. The research process will require engineering documentation, Web-based proposal development, a societal-impact study, material

properties, and high-level instrumentation and measurement. Students will have specific responsibilities such as communications, safety, or process and materials

The nanotechnology research at North Penn does an exceptional job of getting students interested in science and engineering while delivering ultra-high levels of rigor and real-world relevance. Please visit www.thefutureisnear.org for more information.

Workforce Trends

Young Adults Show Concern for Their Financial Future

The Millennials (or Gen-Y) refers to the generation young people in K-12 schools and colleges today. They number 70 million, with the oldest just now entering the workforce. Students are coming of age at a time when there are major storms on the horizon for the U.S. economy – increasing trade deficits, dwindling reserves to pay for Social Security, Medicaid/Medicare, concerns about inflation, etc. Economists recommend that young people plan for their retirement now by saving assets that they won't touch until they are older. "The pendulum has shifted," said Andrew Eschtruth of the Center for Retirement Research. "The more you can do on your own, the better off you will be."

As outsourcing of work to other countries continues, the U.S. job market will shrink. Education will be the determining factor as to whether a person is successful in the global economy or not. The U.S. Census Bureau reports that a worker over 18 years of age and holding a Bachelor's degree will earn nearly twice as much as a worker over 18 with a high school diploma.

Sources:

Ieva M. Augstums, "Millenials Need to Be Alert in these 'Freaky' Financial Times," *The Dallas Morning News*, December 13, 2005.

U.S. Census Bureau, "College Degree Nearly Doubles Annual Earnings," *U.S. Census Bureau News*, March 28, 2005. www.census.gov/Press-Release/www/releases/archives/education/004214.html

China – By the Numbers

- As of 2005, China has up to 160 cities with a population of one million people or more. In contrast, the U.S. has nine and all of Europe has 36.
- Estimates of the number of people in China who have migrated from the countryside to the cities on the coast range from 90 to 300 million. Numbers at the low end of this estimate match the entire workforce of the United States.
- In China, \$1.00 buys roughly what \$4.70 does in Indianapolis, Indiana.
- China is closing in on a 30-year run during which it has seen its economy double nearly three times over.
- In 2005, China manufactured 40% of all furniture sold in the United States.
- According to Morgan Stanley chief economist Stephen Roach, in 2003, China bought 7% of the world's oil, one quarter of the world's aluminum and steel, nearly one third of the world's iron ore and coal, and 40% of the world's cement.

- 90% of Microsoft products in China are pirated. The annual loss in sales to the world's software industry due to Chinese piracy is estimated to be \$3.82 billion.

Source: Fishman, Ted C. *China, Inc.* Scribner: New York, 2005.