



Views You Can Use

Vol. V No. 3

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.

My staff and I would like to take this opportunity to wish you a Happy Holiday Season and a Wonderful New Year.

Sincerely,
Bill Daggett

Demographic Trends

The High Cost of Long Living. Americans 100 years old or older represent the fastest growing age group today, followed by those 85 and older. By 2050, the U.S. Census Bureau projects that there will be nearly 21 million people age 85 or older, which will account for 5% of the nation's total population — three times more than that age group represents today. Contemplate these statistics along with the fact that the first of an estimated 79 million baby boomers will begin qualifying for Social Security in 2008 and Medicare in 2011. We are faced with the harsh reality that the aging population in the United States threatens to bankrupt the nation unless drastic changes are made. Robert Hall, an economist at Stanford University, predicts that medical spending will double from 15% of the gross domestic product in 2004 to 30% in 2050. Paying for that medical care, says Hall, “through huge tax increases on a shrinking base of workers would create serious problems for the economy.”

Sources:

Kathleen Fackelmann, “Centenarians Increase in Age and Numbers,” *USA TODAY*, October 24, 2005.
Dennis Cauchon, “Who Will Take Care of an Older Population,” *USA TODAY*, October 25, 2005.

Students need to understand the implications of the major demographic changes taking place in the United States today. As breakthroughs in science and medicine continue to push the limits of human longevity, young people need to gain a broad view of how immensely science, government and economic policy, and demographics will affect them as they enter the work force. The challenges that they and the entire nation will face will require a skill set far beyond what they are receiving in schools today.

Education Trends

Marketing Higher Education. In an attempt to inspire young people — mostly underprivileged students who would not otherwise view college as a viable life choice — to enroll in postsecondary education, several states are seeking low-cost ways to get them into admissions offices. Kentucky began running TV ads in 1998 promoting higher education and has since seen enrollments climb 25%. “Every time we ran an ad, we saw requests for information spike,” says James Applegate, Vice President for Academic Affairs at the Kentucky Council for Postsecondary Education. This success has sparked a massive

campaign that is taking root in other states. The National Governors Association has granted nearly \$20 million to 10 states to launch college ad campaigns.

Minority students and students from low-income families are a focus of promotions for higher education. To many of these students, the application process seems particularly daunting because their parents never went through the process themselves. The challenge to marketers is more than running clever commercials, however. “Social marketing can work, but fairly often doesn’t,” says Kathleen Seiders, Associate Professor of Marketing at Boston College. To many underprivileged students, the college campus is unfamiliar and viewed with trepidation. Seiders explains: “The message is one of inclusion, that this will be an accepting and supportive community.”

Source: G. Jeffrey MacDonald, “Going to College Gets the Hard Sell,” *USA TODAY*, August 31, 2005.

To compete in the global economy today requires higher skill levels than ever before. Our relatively small population compared to world powers such as China and India requires that the U.S. place education for *each* student at the top of the list of national priorities. We need to use all means to get the message out.

Biotechnology

Bio-engineered Blood Vessels Hold Promise for Dialysis and Heart Bypass Patients. Scientists from Cytograft Tissue Engineering Inc. in San Francisco reported on November 15 that two kidney dialysis patients have received the world’s first blood vessels grown in a lab dish from samples of their own tissue. Simply stated, the process involves taking a quarter-inch square of skin and portion of vein from a patient, growing it in a lab dish to produce essential proteins, molding the cultured proteins into blood vessels, and replacing damaged blood vessels with the healthy new ones. Since this method does not involve stem cells, it is not bogged down in the ethics debate. Lab-grown vessels are durable and able to withstand the frequent needle punctures, unlike synthetic vessels. The engineered vessels are expected to cost under \$10,000, far less than the cost to maintain shunts and synthetic vessels, for which Medicare pays \$4 to \$5 billion annually.

Source: Marilyn Marchione, “Patients Get World's First Blood Vessels Grown in the Lab from Their Own Skin,” *Associated Press*, November, 16, 2005.

The ingenuity of U.S. scientists continues to be of world-class caliber. Medical breakthroughs as important and cost-effective as this one will contribute tremendously to cutting Medicare spending and, at the same time, maintain our status as a world leader in biotechnology. The newest technologies are not covered in most textbooks. It is up to teachers to raise awareness among students about breakthroughs in science and medicine.

Nanotechnology

Nanotech Cancer Treatment Closer to Becoming Reality. Cancer specialists at the European Cancer Conference in Paris in October came away optimistic about the future of nanotechnology in treating cancer. Experiments on mice have brought scientists closer to using nanotech particles to release drugs that would kill cancerous cells inside the tumors while leaving healthy cells around the tumor and throughout the rest of the body unharmed. The nanoparticle is made up of a hydrogen and carbon polymer that encapsulates bits of drug attached to substances that seek out cancer cells. The polymer dissolves gradually, releasing the drug a little at a time.

Scientists are experimenting with two ways to deliver the nanoparticles to the cancer. The first and most desirable method is injecting the nanoparticles into the bloodstream and having them seek out the tumors, get inside on the own, and kill the cancer. The second method, which works well with cancers that are

accessible and have not spread, is direct injection of the nanoparticles into the tumor itself. Early prostate cancer is a prime candidate for the direct injection treatment, and scientists hope to test it on patients within two years.

Source: Emma Ross, "Nanotechnology May Help Treat Cancer," *The Associated Press*, Nov. 1, 2005. http://news.yahoo.com/s/ap/20051102/ap_on_he_me/nanotechnology_cancer_5

Scientists at Harvard Medical School and the Massachusetts Institute of Technology are at the cutting edge of nanotech research. For the U.S. to remain a powerful presence in the global community, it needs to cultivate a sense of pride in students of becoming scientists and work hard to keep the talent within U.S. borders.

Information Technology

Internet Governance. Managing operators of country-level domain names such as .ly, .de and .co.uk is one way the United States, through the Internet Corporation for Assigned Names and Numbers (ICANN), a nonprofit agency based in California, controls the Internet. ICANN is a consequence of the Internet's development from research in American universities, laboratories, and government agencies in the 1970s. ICANN is the central authority in an essentially decentralized, neutral, and ungoverned global network of networks. So that one computer can easily find another, ICANN runs the addressing system, giving out blocks of unique identifiers to countries and private registries.

The power to hinder or foster freedom of the Internet centralized in a single government is the crucial issue for many of the 12,000 people expected in Tunis this week for a United Nations summit on the information age. Four years of high-level talks on Internet governance will conclude with the meeting. On its eve, a figurative ocean separates the American position — that the Internet works fine as it is — from most of the rest of the world. That includes the European Union, which says the Internet is an international resource whose center of gravity must move away from Washington.

Source: Victoria Shannon, "Other Nations Hope to Loosen U.S. Grip on Internet," *New York Times*, November 15, 2005.

By the Numbers

- The world's population in 2005 is 6.5 billion. The projected increase of 2.6 billion people by 2050 — to 9.1 billion (plus or minus 2 billion) — exceeds the total world population in 1950 (2.5 billion).
- The world population increases by 74-76 million people annually, the equivalent of adding another U.S. to the world every four years.
- Presently, the average woman in a poor country bears twice as many children (2.9) as women in wealthy nations (1.6 children per woman).
- In 1955, the number of children aged four years and younger peaked at 14.5% of the population and gradually declined to 9.5% in 2005.
- The percentage of the population aged 60 years and older increased from a low of 8.1% in 1960 to 10.4% in 2005.
- Around 2000, the group aged 60 years and older surpassed the four years old and younger group for the first time and, most likely, for all time.

Source: Joel E. Cohen, "Human Population Grows Up," *Scientific American*, September 2005. <http://www.sciam.com/article.cfm?chanID=sa006&colID=1&articleID=00085BB8-FBF1-1304-B72683414B7F0000>