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## The Fifth Annual Look at Leading Edge E-Learning Technologies

*"...it should come as little surprise that the Internet (as we know it) headlined the top 25 innovations of the past quarter century." [CNN.com](#), 1/18/05*

2004 saw leading edge become the norm, as new technologies were increasingly and rapidly added to both e-learning and daily life applications. Looking at BEEP's opening quote, it should come as no surprise that most innovations featured in this issue are Web-related or somehow connected to cell phones and/or PC's, which Lemelson-MIT panelists ranked as 2nd and 3rd top innovations since 1980.

Included this year are some technologies that, although previously highlighted in BEEP, continue to remain on the leading edge; examples of the latest breakthroughs in the ever-more-ubiquitous mobile, portable and wireless devices; and a look at a few recent large-scale applications of new e-technologies. A list of 2005 educational technology conferences follows, and BEEP ends with its usual Best Bets.

### Leading Edge Then, Leading Edge Now

(The numbers in parentheses link to the annual BEEPs that last examined the same technologies.)

- **["Brainwave Cap Controls Computer."](#)** In 2003 it was monkeys with implanted electrodes, in 2004 disabled people with electrodes in caps, who successfully manipulated computer cursors. A BBC News report, 12/8/04, on work by the N Y's Department of Health and SUNY system. [\(37\)](#)
- **Connecting to the Internet. ["Broadband Use Surpasses Dial-up in U.S."](#)** Article by Anick Jesdanun, Associated Press, 12/21/04, reporting that 53% of residential Web users now connect via broadband. [\(37\)](#) In addition, [research on potential Internet connectivity via overhead electric power lines](#) has begun at Penn State University, where engineers believe such lines can provide bit rates that far exceed DSL or cable over similar spans. [\(31\)](#)
- **["Schools, Colleges Flock to Internet 2."](#)** Article by Corey Murray in *eSchool News Online*, 1/18/05. According to a survey presented to the FCC on 10/6/04, [Internet 2](#), a regular on BEEP's annual lists of innovative technologies for the past three years, is now being used in more than 25,000 K-12 schools, libraries and museums, in addition to the more than 200 colleges and universities already connected. Transmission speed is 100 times that of the fastest T1 line. [\(37\)](#)
- **3-D Technology.** Increasing use of 3-D software that includes [NASA's virtual views of Mars](#), a [virtual model of University of Penn's campus](#) (with a potential impact on map use around the world), and [3-D online learning environments for security training](#) at the University of North Texas. Still unmatched is holoprojection; i.e., ultra-realistic, 3-D holographic images, product of the [3DH Corporation](#), which can now create floating, examinable images of internal body parts by combining data from patients' MRI's, CT scans, and other test results. [\(37\)](#)

### What's New in Mobile, Portable and Wireless Technologies

- **["New Protocol 'PTP/IP' for Image Data Transfer from a Digital Camera via Wireless LAN..."](#)** Press release by Nikon, 9/13/04, about a new technology that enables communication between a digital camera and a PC via wireless LAN. The company is collaborating with FotoNation and Microsoft on expanding this capability, planned to be included in Nikon's digital cameras this year.
- **["Portable Media Centers \(PMC\) Change Everything."](#)** Article by Bill Howard in *PC Magazine*, 9/1/04, about the new field of PMC's, which allow users to take digital media content from their PCs with them for playback anytime, anywhere. Supported multimedia content types include digital music and videos, digitally recorded television shows, and digital photos. See also ["TV to Go: TiVo Unveils Portable Service."](#) a similar article by May Wong, Associated Press, 1/3/05. New TiVo product allows subscribers to transfer shows recorded on their home digital video recorders to PC's or laptops to take along for viewing anywhere.

- [“Toshiba’s Mobile Phone Works All Windows PC Functions.”](#) Article by Yuri Kageyam in *Technology Review.com*, 1/18/05. New software allows mobile phones to work all the functions of Windows-running PC’s, including document editing, rebooting, and sending email.
- [“TV Coming to a Cell Phone Near You.”](#) Posting on ChannelOne.com, 1/7/05 about SmartVideo Technologies’ plans to deliver live and prerecorded TV programs to cell phones Windows Mobile operating system. For similar plans by Qualcomm and Texas Instruments, see [“The Selling of Cell Phone TV”](#) by Eric S. Brown in *MIT Technology Review*, 11/11/04.
- [“Wearable Computing for the Commons”](#) by Simson Garfinkel in *MIT Technology Review*, 12/1/04, examines devices like the “Twiddler” keyboard that attach to clothes, backpacks, etc., for ease of use and portability. See also the [“Bluetooth Headset Helmet for Bikers,”](#) article in *Mobile Digest*, 9/16/04, about a device being developed by Motorola that can be installed in helmets, (as well as hats and jackets) so users can make and receive cell phone calls hands free.

## **Innovative Applications of E-Technologies**

- [“Alert’ Devices Let Students Call for Help.”](#) From *eSchool News*, 1/18/05. University of North Carolina is combining wired and wireless devices to build a portable campus safety alert system.
- [“The Story of the Online Textbook.”](#) Article by Michelle Gamble-Risley in *Converge*, 11/04. E-book technology has become part of the educational mainstream, as K-12 school districts across the country join colleges/universities in large-scale adoption of online, rather than paper, texts.
- [“Streaming Allows Deaf to Learn Online.”](#) Article by Lisa Cornwell, Associated Press, 10/4/04, on high-speed streaming, now with transmissions smooth enough for sign language instruction.
- [“U-M Approves Living-Learning Hall for North Quad.”](#) Article by Maryanne George, *Detroit Free Press*, 1/27/05, on a University of Michigan under-one-roof complex planned to include dorms, e-communications departments, classrooms, auditoriums, videoconferencing space, etc.

## **Upcoming Major Educational Technology Conferences**

[International Technology Education Association Conference](#) - April - Kansas City, MO

[Emerging Technologies Conference at MIT](#) - April - Cambridge, MA

[InfoComm 2005](#) - June - Las Vegas, NV

[Distance Learning Administration Conference](#) - June - Jekyll Island, GA

[National Educational Computing Conference](#) - June - Philadelphia, PA

[Syllabus 2005](#) - July - Los Angeles, CA

[Merlot Annual Conference](#) - July - Nashville, TN

[Society for Applied Learning Interactive Technologies Conference](#) - August - Washington, DC

[Educause 2005](#) - October - Orlando, FL

[League for Innovation Conference on Information Technology](#) - October - Dallas, TX

[E-Learn 2005](#) - October - Vancouver, BC (Canada)

[Technology and Learning Conference](#) - October - Denver, CO

[Sloan-C International Conference on Asynchronous Learning Networks](#) - November - Orlando, FL

## **BEEP’s Best Bets**

### ***Instructional Resources***

- [Filamentality](#). Designed primarily for educators, a fill-in-the-blank guide that includes picking a topic, searching the Web, gathering good Internet links, and turning them into learning activities.
- [Learner’s Library](#). Website that allows instructors to develop “coursepacks” of copyrighted full-text reading materials from a database of more than 120 million book entries, 200,000+ full-text journal articles, and a set of value-added research aids. Flat rate is \$15 per coursepack.
- [LanguageTeach \(LT\) Development Tool](#). Software that enables materials developers without special technical knowledge to create and store educational Web-based interactive material.
- [Portaportal](#). Web-based bookmarking utility that allows free online storage of links to favorite sources, so that bookmarks/favorites are no longer limited to use on one machine.

### ***Student Support Services***

- [College Results Online](#). Interactive tool with overall graduation rates at four-year institutions.
- [New York Life Education Planner](#). Extensive Website offering information on selecting a career, applying to a school, and paying for a postsecondary education.

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