

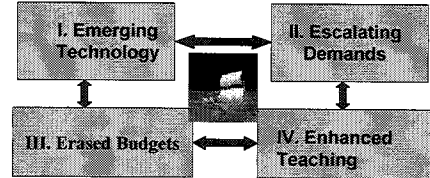
Technology

Emerging Educational and Challenges of Instructional Design



Dr. Curtis J. Bonk
Professor, Indiana University
President, SurveyShare, Inc.
<http://php.indiana.edu/~cjbbonk>
cjbbonk@indiana.edu

Four Storms are Approaching



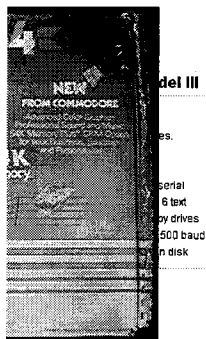
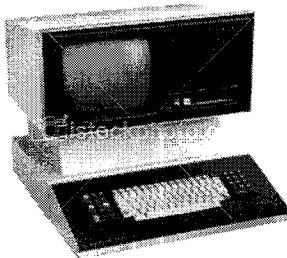
Some are scared of the storm!!!



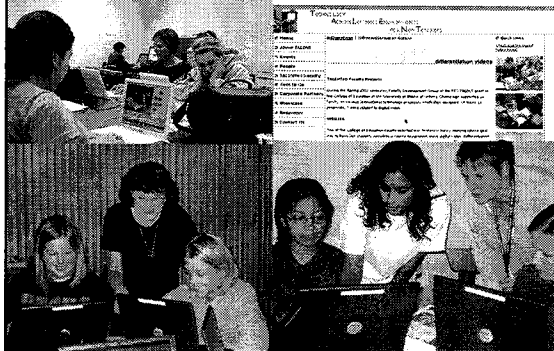
I'm a librarian



Technology in 1980



Preservice Teachers in Talent PT3 Project



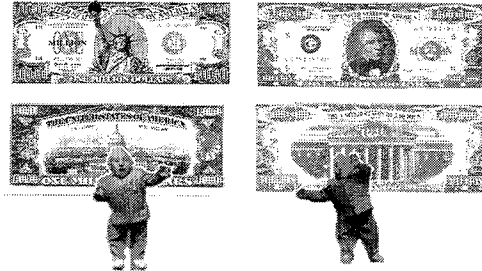
Teacher Professional Development in Technology Integration (the TICKIT Program)

(Bonk, Ehman, & Yamagata-Lynch, in press, AACE Journal)
<http://www.iub.edu/~tickit>



TICKIT: Teacher Institute for Curriculum Knowledge about Integration of Technology

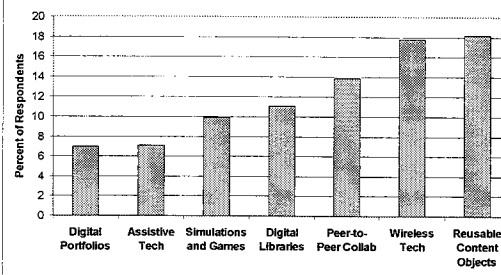
Ok, Million Dollar Question: Which technology will impact schools the most?



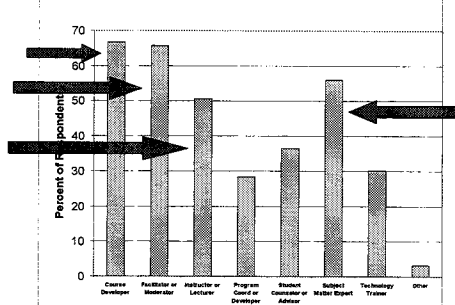
Storm 1. Emerging Learning Technologies

1. Assistive Technologies & Talking Computers
2. Blogs and Online Diaries
3. Digital Portfolios
4. Electronic Books
5. Online Communities and Learning Portals
6. Intelligent Agents
7. Online Exams and Homework
8. Online Games and Simulations (Massive Multiplayer Gaming)
9. Online Translation Tools & Language Lrng
10. Course Management Systems
11. Peer-to-Peer Collaboration
12. Reusable Content Objects
13. Videostreaming, IP Videoconferencing
14. Virtual Worlds/Reality
15. Wearable Computing
16. Wireless Tech: Tablet PCs, Handheld Devices

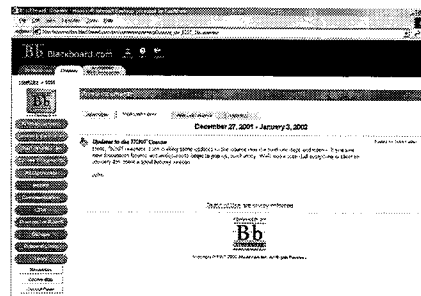
Technologies Expected to Most Impact the Delivery of Online Learning During the Next Five Years



Skills Needed to Teach Online in 2010



Trend #1. Course Management Systems



Trend #2: Wireless Technology



MOST (UN)WIRED SCHOOLS?
CNET and U.S. News and World Report got the top 50 universities' tech sites and asked them which computers they recommended to students and faculty.
[CLICK HERE TO VIEW](#)



Creating the Post-Work Enterprise

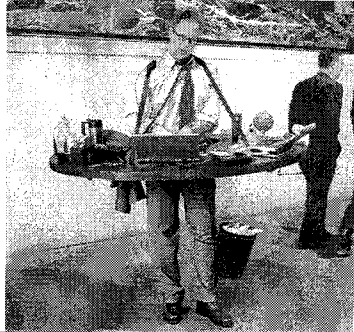


Handheld Computing





Trend #3: Mobile Technology



Headlines

- Seoul to Pyongyang
- KOSPI Cl...
- High
- Lawmaker
- Governme...
- 25% of I...
- Copyrights

Preparing for personal bus or



line lectures via business

device, which listen to MP3 me, view still

Trend #4: Reusable Content Objects

- "Learning Objects are small or large resources that can be used to provide a learning experience. These assets can be lessons, video clips, images, or even people. The Learning Objects can represent tiny "chunks" of knowledge, or they can be whole courses."

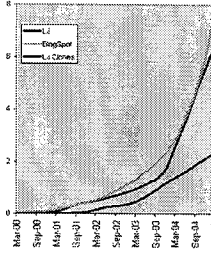
Claude Ostyn, Click2Learn

Trend #5: Blogging

Quarter	Blog Population
Q1 2000	29,500
Q2 2000	66,100
Q3 2000	115,000
Q4 2000	197,000
Q1 2001	352,000
Q2 2001	628,000
Q3 2001	951,000
Q4 2001	1,200,000
Q1 2002	1,570,000
Q2 2002	2,140,000
Q3 2002	2,570,000
Q4 2002	3,070,000
Q1 2003	3,730,000
Q2 2003	4,680,000
Q3 2003	5,780,000
Q4 2003	7,200,000
Q1 2004	9,520,000
Q2 2004	12,600,000
Q3 2004	16,200,000
Q4 2004	21,600,000
Q1 2005	31,600,000
Q2 2005	37,600,000
Q3 2005	45,200,000
Q4 2005	55,400,000

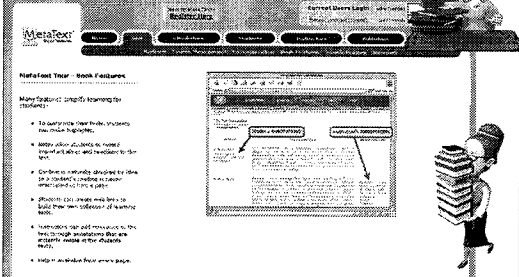
Hosted Blog Growth




Growth Rate

606%
126%
131%
105%

Trend #6: Electronic Books

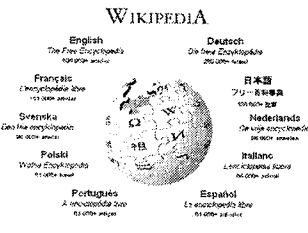






Trend #7: Wikis (Wikipedia; Jimmy Wales, Founder)

WIKIPEDIA

The Free Encyclopedia



Trend #8: Podcasting and Coursecasting (Adam Curry; www.dailysourcecode.com)

Trend #9: Virtual Worlds/Virtual Reality/MMOG

Games
The life and times of an online gamer

By Hankiss Iwano
The Associated Press
Updated 11:25 p.m. ET Dec. 15, 2004

CHICAGO — It's no thing at all in a galaxy not so far away on a planet...

Virtual gaming
Online games are one of the many ways the Web has changed the way young people socialize and entertain themselves.

Trend #10: Synchronous Conferencing

#11. Computer Grading (New York Times, May 19, 2004, Latent Semantic

A World Leader in Automated Essay Assessment and Text Analysis

April 2004: A paper by K.A.T. researchers presented to the April 6, 2004 issue of the Proceedings of the National Academy of Sciences (PNAS).

For details go to the National Science Foundation press release: [http://www.nsf.gov/newsroom/2004/04/04040101.html](#)

Knowledge Analysis Technologies' industry-leading automated essay assessment applications provide instant content-based feedback on student essays. Students don't have the opportunity to review their essays, improving their knowledge and performance. Knowledge Analysis Technologies also offers a number of other text analysis tools. Our technology, expertise, and professional staff combine to create differentiated solutions that drive results for our business partners. [Visit us on the web.](#)

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Trend #12: Collaborative Tools

Trend #13: Internet Phone Service (e.g., Skype)

#14. Free Online Journals and Resources (e.g., Public Library of Science)



Stanford Encyclopedia of Philosophy

The Encyclopedia Now Needs Your Support
Please Read How You Can Help Keep the Encyclopedia Free

Back by Edward N. Zalta

Table of Contents

Home Site: ISEA

Stanford University

Meta Site: Axioma

University of Sydney Library, Columbia Electronic Text and Image Service

Metacrawler, The Metacrawler

University of Aden, Institute for Logic, Language and Computation

Meta Site: Logic Explorer

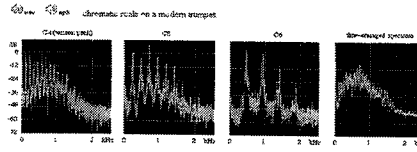
University of Leeds, School of Philosophy and Religion Studies



Basic Acoustics of Musical Instruments

Spectra of brass instruments.

When the player and instrument are playing a particular note, the air is vibrating at one particular frequency. But, especially if the vibration is large, as it is when playing loudly, it generates harmonics as the sound (see [What is a sound spectrum?](#)). These harmonics in the lip vibration set up, and are usually in turn reinforced by, standing waves, between the instrument's designed to produce standing waves with harmonic frequency ratios. Let's listen to a clarinet tone played on a modern 300 trumpet, and look at the spectra.



The three individual spectra are for the lowest note played (written C4 in sounding Bb3), and the notes one and two octaves higher. The fourth spectrum is the average over time for the whole note. Why do the spectra have their characteristic shape?

In all wind instruments, the higher frequency harmonics are relatively inefficient because they lose energy in several places—a jet of air strikes with the walls, so the energy is partly the shape at high frequencies. However, for brass instruments, the radiated power sustains a resonance with frequency over the low part of the range, as here. This means that the trumpet gets maximum radiation at a moderately high frequency (especially across several bands); the trombone has a different value as each lip reed instrument, and gets power at lower and higher. Further, the clarinet is in the middle range and the construction because it also tends to give the lip most efficiently near this frequency, rather than being in the peaks.

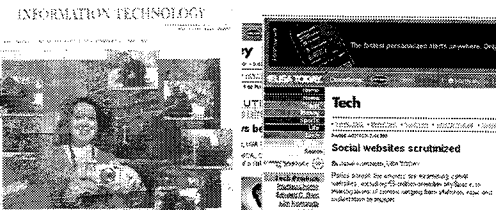
Trend #15. Open CourseWare



OOPS! Opensource Opencourseware Prototype System
The Foundation of Fantasy Culture and Arts

00412005
Faculty
Jan Huddy
Paul Berra
Jessica Dornish
Vicki Ma
su Koppelman
Ira O. Foutsakis
in Bays
Kil Koppman
Alexis Theria
Dwight
in Layton
Algeria
AT
Lud York

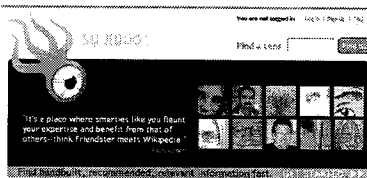
Trends # 16. Social Networking Web 2.0 (the read/write web)



Ready for Their Close-Ups

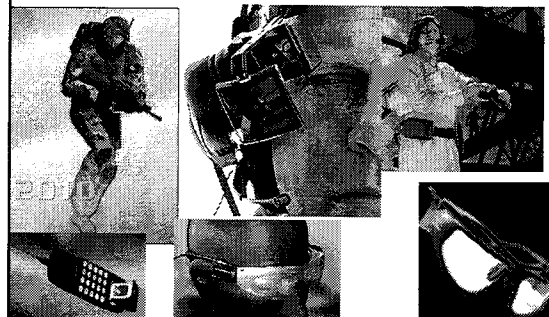
INFORMATION TECHNOLOGY
The digital personal web 2.0...
Tech
Social websites scrutinized
These sites have been accused of their...
The digital personal web 2.0...
Tech
Social websites scrutinized
These sites have been accused of their...
The digital personal web 2.0...
Tech
Social websites scrutinized
These sites have been accused of their...

Squidoo!!! (Sharing a lens...)




- 9 Things You Didn't Know
1. How to Use the Internet Effectively
 2. How to Use the Internet Effectively
 3. Guide to the Internet Effectively
 4. Guide to the Internet Effectively
 5. How to Use the Internet Effectively
 6. How to Use the Internet Effectively
 7. How to Use the Internet Effectively
 8. How to Use the Internet Effectively
 9. How to Use the Internet Effectively

17. Wearable Computing



Trend #18. Online Exams and Homework USA Today 11/25/03



Internet leaves schoolkids nowhere to hide

By Patricia Zimmerman, Chronicle Herald Staff Writer

WASHINGTON — Many educators no longer stress test of or students' answers when one looks at how 17-year-olds apply math and science. Thanks to the Internet, the Washington state superintendent says, they can't. He says using an online service provided by his school.

At 12:00 p.m., of parts of the classroom and home. Learning is no longer confined to the classroom. Now, students can learn from anywhere.


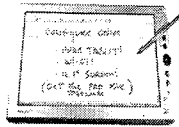


They're learning, all.

With just a few clicks of the mouse, she knows when her homework is due, the score on the previous day's quiz and whether he was on for any classes.


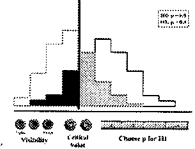

"There's no hiding," Sullivan says. "It's knowing the checking duty, and the how to be successful."

Across the country, trends such as Sullivan are rising to the forefront to track their kids' academic progress. Thousands of schools have created online systems that allow parents to monitor almost every aspect of their children's school day.

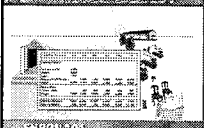
Trends #19. Tablet PCs Finally Taking Off (Wired News, Sept 28, 2003)

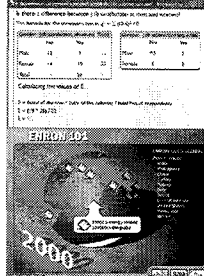
Trend #20. Educational Simulations, Scenarios, and Manipulations

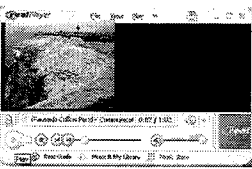


Trend # 21. Flash Visuals and Animations and Interactive News eCollege Wales, Univ. of Glamorgan



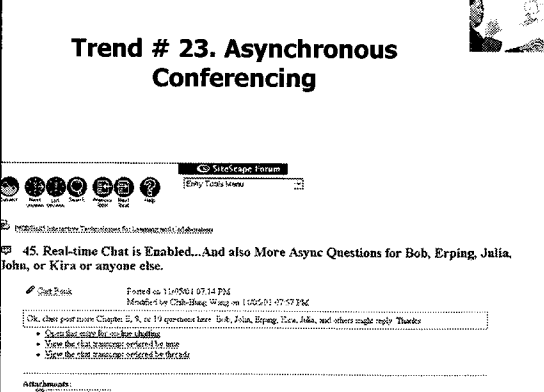
Year	2000	2001	2002	2003
Value	12	15	18	22
Year	2000	2001	2002	2003
Value	10	12	15	18



Trend # 22. Virtual Fieldtrips (Trinity College example)

Trend # 23. Asynchronous Conferencing



45. Real-time Chat is Enabled...And also More Async Questions for Bob, Erping, Julia, John, or Kira or anyone else.

Chat 2/26/03 Pinned on 11/05/01 07:14 PM
Modified by Chih-Sheng Wang on 11/05/01 07:17 PM

OK, check post from Charles S. R. re 19 questions here. Bob, John, Erping, Steve, Julia, and others might reply. Thanks

- Open the chat transcript for on-line viewing
- View the chat transcript: on-line to the page
- Save the chat transcript: on-line to the page

Trend #24. Web-based Surveys

(e.g., WebSurveyor, Zoomerang, SurveyShare, SurveyKey)

The image displays three different web-based survey platforms. On the left is SurveyShare.com, which features a form for creating surveys. In the middle is Surveyor, advertising 'Online Surveys without Limits' and showing a family photo. On the right is SurveyConsole, which has a more complex interface with various settings and options.

Trend #25. E-Portfolios

The image shows an e-portfolio for a user named John Doe. The navigation menu includes sections like Home, About Me, Career Objectives, Education, Honors and Awards, Online Survey, and Contact Information. The main content area is titled 'I'm Busy with Activities - Check them out!' and lists a project for 'High School Marching Band' with details about the band's activities and members.

Trend #26. Open Source Software Interoperability Standards, Nov. 24, 2003

The image is a screenshot of the Moodle website. The main heading is 'Moodle 1.2 Beta'. The text below discusses the release of Moodle 1.2, highlighting its features and improvements over previous versions. It mentions that Moodle is a free, open-source learning management system.

Trend #27. 3-D Visualization & Laboratory Software

The image shows two examples of 3-D visualization software. On the left is an anatomical model of a human torso, showing internal organs like the lungs and heart. On the right is a screenshot of a laboratory software interface, featuring a 3-D visualization of a molecular structure or a similar scientific model.

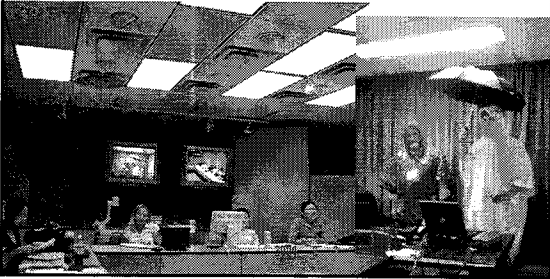
Trend #28. MindMapping Software

The image displays a mind mapping software interface. It shows a central node with several branches leading to other nodes, forming a hierarchical diagram. The interface includes a search bar and various navigation options.

Trend #29. Video Streamed Lectures

The image shows two examples of video streamed lectures. On the left is a screenshot of a lecture slide titled 'Important Ideas Leading up to the Discovery', with text about the relationship between the atmosphere and the discovery of the structure of DNA. On the right is a screenshot of a video player showing a lecture being presented by a person at a desk.

Trend #30. Videoconferencing Lectures



What about negative technologies?

[http://www.21stcentury.edu](#)
[http://www.21stcentury.edu](#)
[http://www.21stcentury.edu](#)

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No Study Required!
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Order yours today!
Just call the number below.
You'll thank me later...
+1-208-984-0021

Computer-Generated Conference Papers News Update: Campus Technology, April 19, 2005

- The trio submitted two of the randomly assembled papers to the World Multi-Conference on Systemics, Cybernetics and Informatics, scheduled to be held July 10-13 in Orlando, Fla. To their surprise, one of the papers—"Router: A Methodology for the Typical Unification of Access Points and Redundancy"—was accepted for presentation.
- The Router paper contains such verbiage as, "the model for our heuristic consists of four independent components: simulated annealing, active networks, flexible modalities, and the study of reinforcement learning," and, "We implemented our scatter/gather I/O server in Simula-67, augmented with opportunistically pipelined extensions."

Social Networking Problems

[http://www.21stcentury.edu](#)
[http://www.21stcentury.edu](#)

Tech
What you say online could haunt you
 By Christopher and John...
 Online student Michael...
 Caught in a...
 says...

...
 ...
 ...

Stop Badware.org!!!!

(Chronicle of Higher Ed, January 26, 2006)

stopBADware.org

Stop Badware.org



The "Badware" problem

While it's easy to blame...
 ...
 ...

Welcome to the world of Badware.

Welcome to the world of...
 ...
 ...

We can fight back!

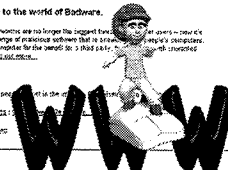
Badware stops...
 ...
 ...

What you can do!

...
 ...

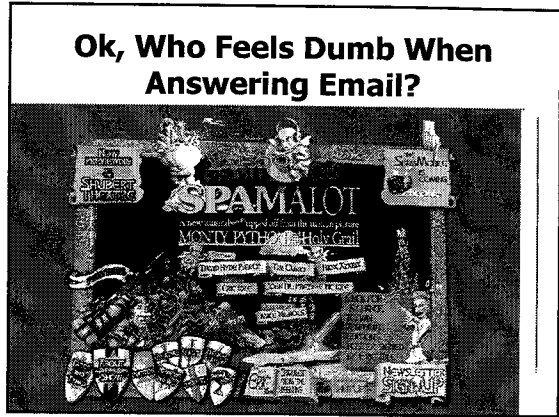
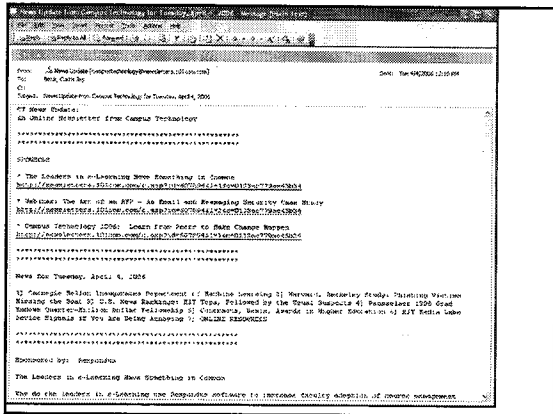
Conclusion: Stop Badware!

...
 ...



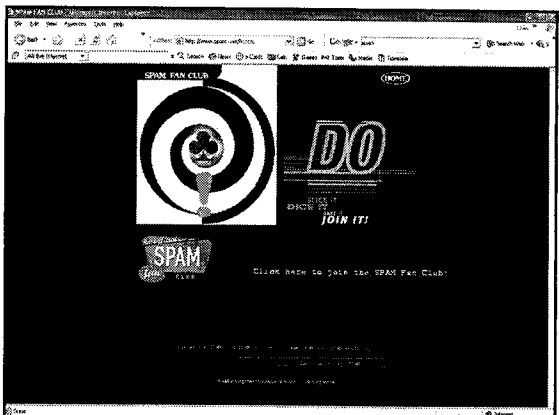
MIT Media Labs Device Signals if You Are Being Annoying (April 4, 2006)

MIT's Media Lab researchers are working on a computer-based prosthetic device that can let you know if you are boring people...In a recent test, the software was demonstrated to show whether a person was agreeing, disagreeing, concentrating, or showing disinterest, from only a few seconds of video footage. When someone you are talking to is acting bored or disinterested, the computer would vibrate, letting the camera-wearer know an emotional change is occurring in the other person.



Monty Python Spam Song

- Vikings: Spam spam spam spam. Lovely spam! Wonderful spam! Spam spa-a-a-a-am spam spa-a-a-a-a-am spam. Lovely spam! Lovely spam! Lovely spam! Lovely spam! Lovely spam! Spam spam spam spam!



What can we say about emerging technology then???

- It is everywhere!!!!!!!
- Resistance is futile!!!!!!!



THE CHRONICLE OF HIGHER EDUCATION
Chronicle Careers
 From the issue dated June 3, 2005

FIRST PERSON

I can already hear the moans of disapproval at the big faculty meeting. Someone shouts, "The Borg Collective has arrived! Resistance is futile. We will be assimilated!" A cluster of faculty members dressed in the trade costume and demand to make high-pitched keening noises. A hand-printed placard rises above the crowd: "Keep the Human in the Humanities."

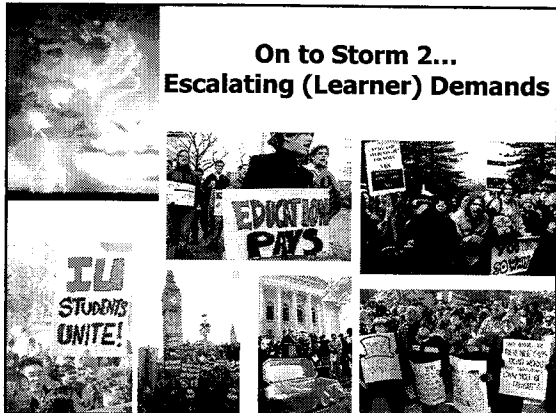
As a human, I am sympathetic. But, if SAGrader means that I'll never have to write "what is your thesis?" in the margin of another undergraduate paper, then sign me up for my cortical implant.

at a higher rate than the most hard-won theoretical knowledge.

My relationship with the Internet began about a decade ago, as a graduate student, when a career counselor told me I should have a personal Web page on which to advertise my "accomplishments and availability," like a mail-order bride. The academic job market was so bad, she could have persuaded me to learn to juggle chainsaws. My university did not provide computer training, so I took a one-week course at a community college.

Poll #2. Which technology will impact you the most this decade?

- a. Wireless
- b. Tablets
- c. Online homework and grading
- d. Reusable learning objects
- e. Massive multiplayer online gaming
- f. Videoconferencing



Prefer online to traditional!

EDUCATION with Student News

Students prefer online courses

Classes popular with on-campus students

APR — And it's the first time a few blocks from the campus of Wake Forest University in Winston-Salem, North Carolina, so commuting to class isn't the problem. But the student like lectures much, isn't a morning person, and wants the class the way to restore motorcycles.

Wake Forest has an online course the library of Wake Forest. Class never

Always online -- and always talking
 When three sleepwalkers attend an interview

Difficulty in disconnecting
 Technology makes it difficult to disconnect. A long commute, late job history, or long drive home are just some of the reasons why it's hard to get an...
 CITE: [unreadable]

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Generation Raised on the Internet Comes of Age, MSNBC, Dec., 13, 2004, Martha Irvine

- For 21-year-old William Herbert, the Internet has replaced newspapers and TV weather reports (he visits Weather.com every morning). He pays his bills online, registers for classes, books airline and train tickets, checks TV listings, buys movie tickets and gets travel directions.



Peak Consulting, an educational consulting group, estimates:

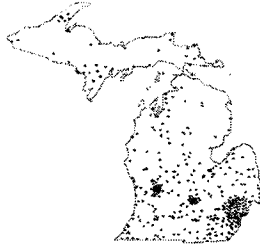
- 1 million American high school students are currently taking Internet courses in 2004-05
- 571,000 in 2003
- 378,000 in 2002

- More students log on to learn, Boston.com, Peter Schworm, September 16, 2004.



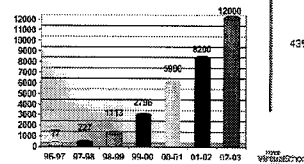
Report of the Michigan Dept of Ed on the Development and Growth of the Michigan Virtual High School (1999-2005); April 13, 2005

Figure 2 Map of Participating MVHS School Buildings (2002-04)

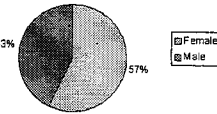


Julie E. Young, Executive Director, Florida Virtual School (2003)

Enrollment History



FLVS Students (2001-02)

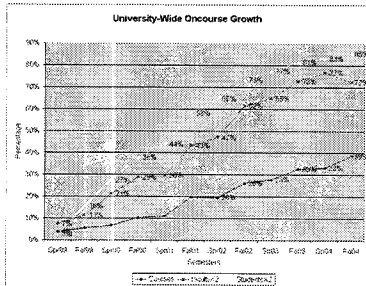


Indiana Univ (8 campuses): Spring 2005

Students: 89,413 loaded; 78,549 logged in (88%)

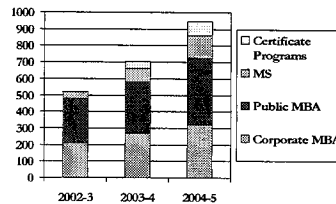
Faculty: 7,014 loaded; 5,441 logged in (78%)

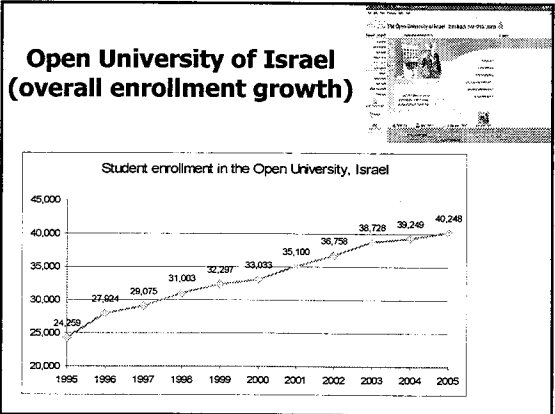
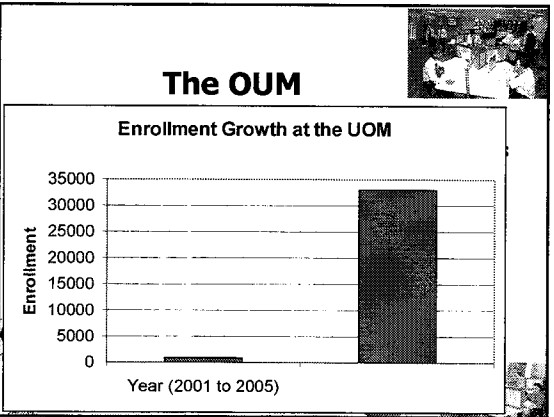
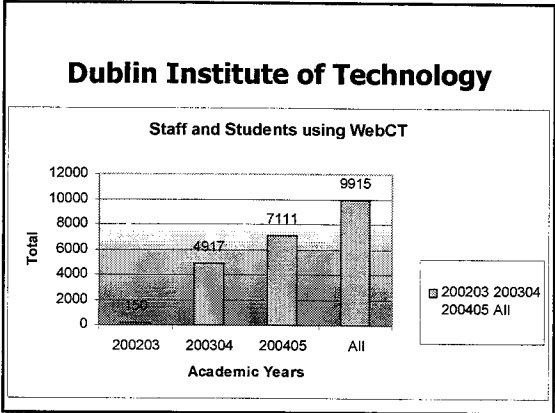
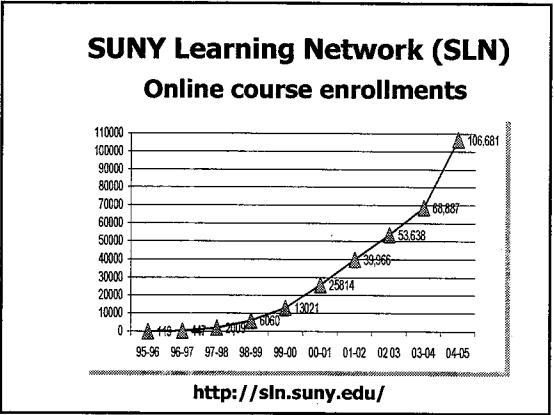
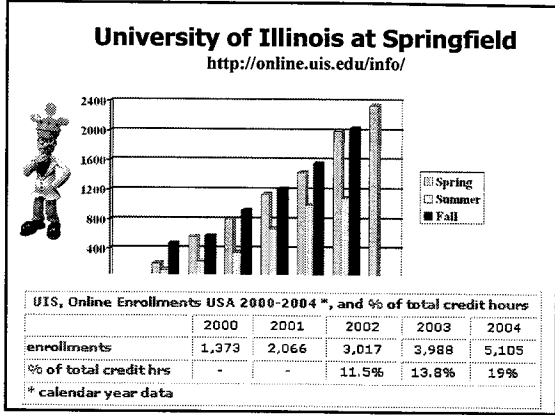
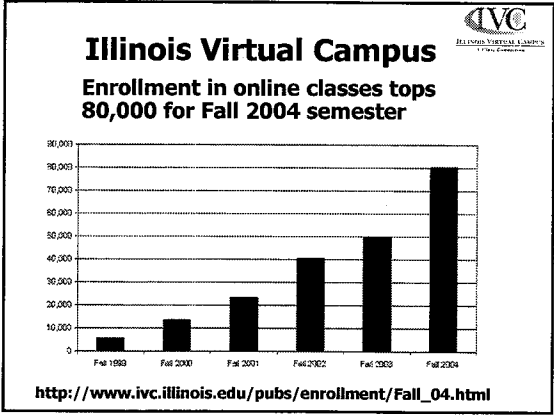
Courses: 22,419 loaded; 9,206 active (41%)



Kelley Direct Online Programs
Indiana University Kelley School of Business

Growth in Student Enrollments at KD

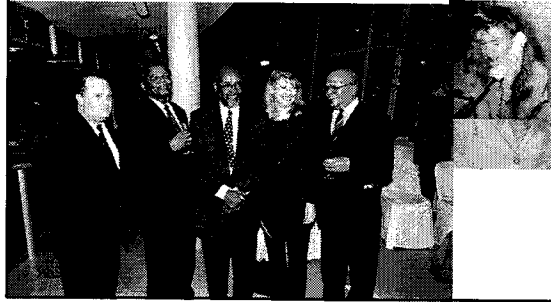




Open University of Israel (overall enrollment growth)

%	Studying in a course with website	Students	Year
1%	465	31,003	1998
19%	6,163	32,297	1999
61%	20,294	33,033	2000
73%	25,596	35,100	2001
85%	31,337	36,758	2002
96%	36,993	38,728	2003
99%	38,765	39,249	2004
99%	39,935	40,248	2005

University of Pretoria (Lazenby, 2004; Blended with WebCT)



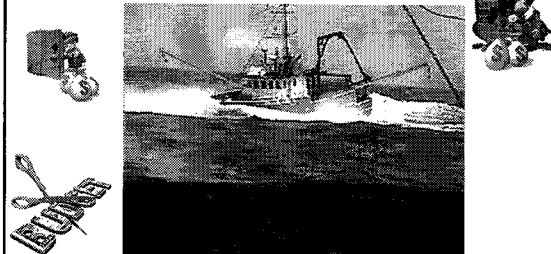
Even Shaq is taking courses online!

2005 NBA Playoffs

Shaq joins University of Phoenix grad

Associated Press
INOLEWOOD, Calif. -- Shaquille O'Neal returned to the Forum on Saturday, not for an NBA game, but to pick up his MBA.
The man who once called himself the Big Aristotle was the tallest and most famous of the 2,000 University of Phoenix graduates at the arena. But O'Neal said he was simply getting ready for the real world.
"It's just something to have on my resume [sic] when I go back into reality," he said.

We're in the Midst of Storm 3: Erased Budgets



In the Midst of Budget Cutbacks, there are Technology Giveaways

Motorola L520
College of Agriculture and Forestry at Iowa State
This school gave all students and interns a phone with Internet access coverage in the near future.

Gateway M275 Tablet PC, Winona State University, Mayville State University
The schools will provide the tablet computers to full-time students who do not have laptops from previous programs.

BlackBerry 7550 PDA, University of Maryland
The school has helped hand out the wireless devices to faculty and more than 500 full-time graduate students in the Smith School of Business.

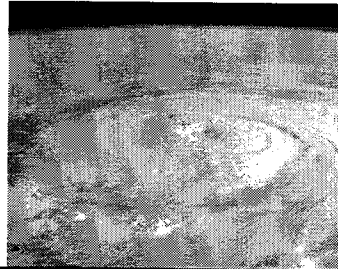
Coming with Multiple Machines

Multiple machines...
The school has...
The school has...
The school has...

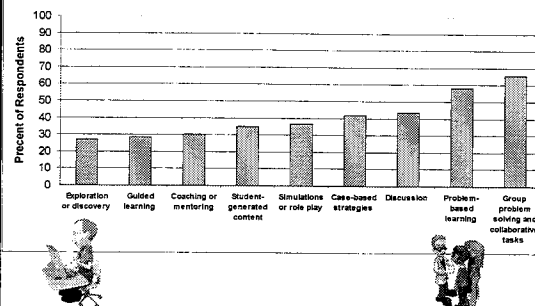
Poll #3. What technology would you want for free?

- a. Video iPod
- b. Cell phone with iPod
- c. Blackberry or Treo
- d. Laptop

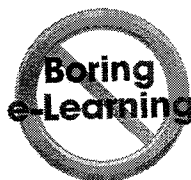
On to Storm 4: Enhanced Teaching (and Excellent Retention) (a swirling storm)



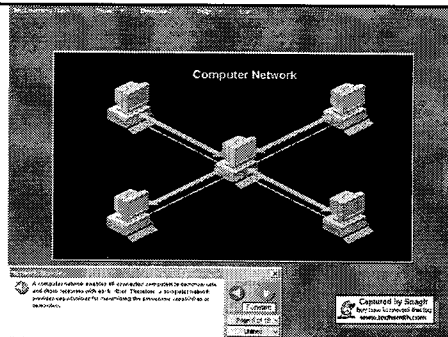
Instructional Approaches that Selected by Respondents as Among the Four Strategies Likely to Become More Widely Used



10 Online Pedagogical Examples that are not boring!



Experience. The difference.



Online PowerPoint?

**George Siemens
(Sept 30, 2002, eLearnspace.org)
Instructional Design in E-Learning**

"Unfortunately, the role of instructional design (ID) in elearning is often misunderstood - due to the perceived complexity of the process and to poor understanding of the pedagogical requirements of elearning. To a large degree, ID is the process whereby learning, not technology, is kept at the center of elearning development."

**George Siemens
(Sept 30, 2002, eLearnspace.org)
Instructional Design in E-Learning**

"In general, ID theory needs to move in the direction of flexibility and learner-empowerment if it is to allow ID to keep up with technological and institutional changes...."



Six Elements of Effective e-Learning Design

(Brown & Voltz, 2005, IRRODL)

1. Activity
 2. Scenario
 3. Feedback
 4. Delivery
 5. Context
 6. Impact
- cover issues across all disciplines involved in e-learning design, but particularly focus on learning as the driving motivation

The End...Remember



It's Over...

Final Poll. Ok, then, who wants more???

A. Yes
B. No
C. Not sure

Sorry...it is the end!!!

Your skeletal muscles' maximum burn rate is double that of your brain. Think about it.