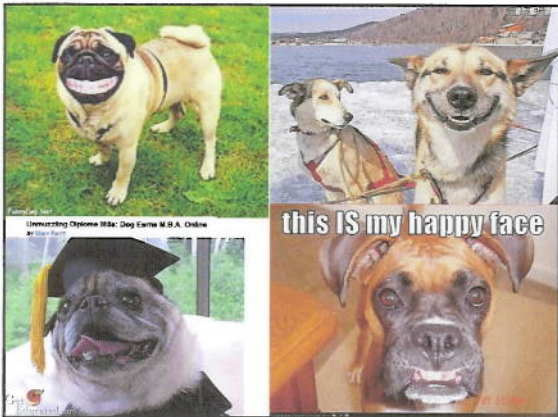
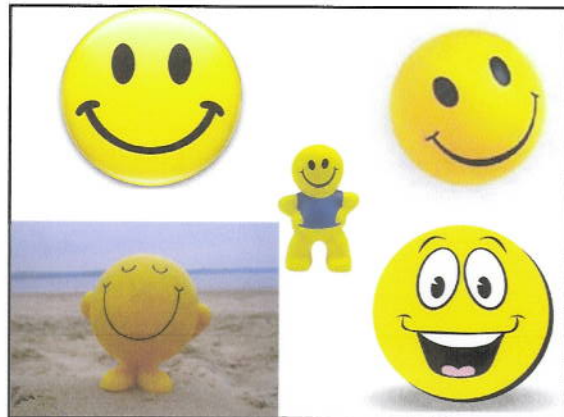



Stretching the Edges of Technology-Enhanced Teaching: From Tinkering to Tottering to Totally Extreme Learning

Curtis J. Bonk, Professor, Indiana University
cjbonk@indiana.edu
<http://mypage.iu.edu/~cjbonk/>

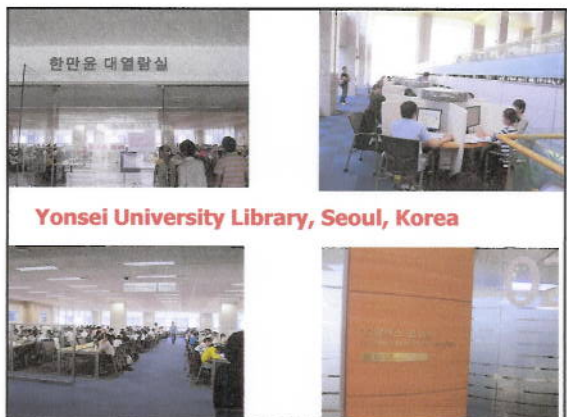




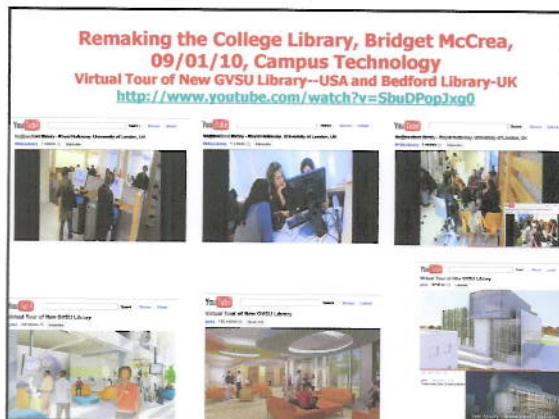
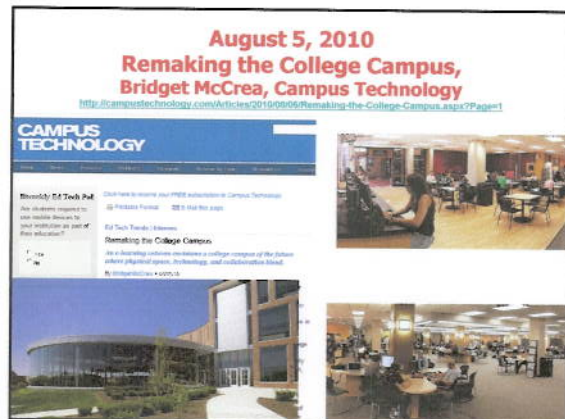
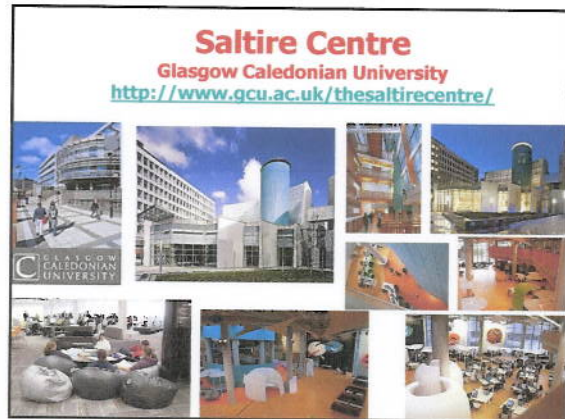
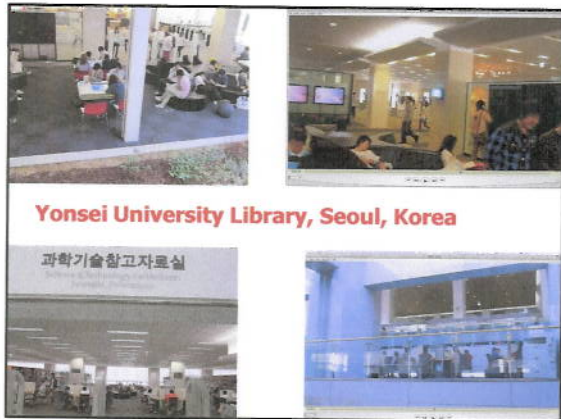
Yonsei University, Seoul, Korea



Yonsei University Library, Seoul, Korea



Yonsei University Library, Seoul, Korea

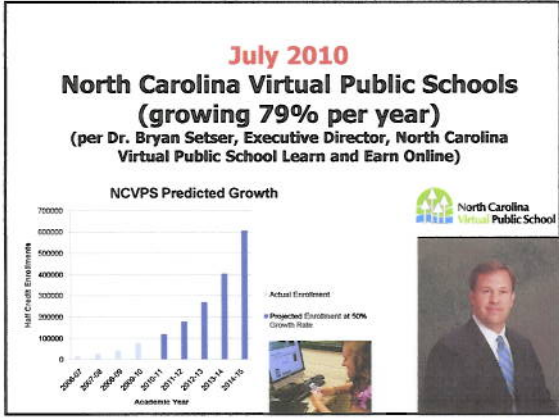




June 2010

Clay Shirky, NYU: How cognitive surplus will change the world, TED

http://www.ted.com/talks/clay_shirky_how_cognitive_surplus_will_change_the_world.html



September 2011

Meta-Analysis Update: Blended and Fully Online Still Best!

Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies

U.S. Department of Education
Office of Planning, Evaluation, and Policy Development
Policy and Program Studies Service

Prepared by
Barbara Means
Yulie Toyama
Robert Murphy
Marianne Bakia
Karla Jones

Center for Technology in Learning

Revised September 2010

"Video Primers in an Online Repository for e-Teaching and Learning" V-PORTAL, TravelinEdMan (27 free/open YouTube videos), October 2010
<http://www.youtube.com/user/TravelinEdMan>

December 15, 2010
Mark Zuckerberg, Time Magazine, Person of the Year

Social Networking Site	Users (in millions)
Facebook.com	92.2 million
MySpace.com	64.2 million
Twitter.com	20.8 million
Diigo.com	17.4 million
Classmates.com site	15.4 million
Bebo.com (partial list)	12.1 million
Ask.com site	11.4 million
Windows Live Profile	10.3 million

February 4, 2011
New Enrollment History Chart: Florida Virtual School (Julie Young, President & CEO)

Year	Completion History
2001-2002	28,000
2002-2003	12,700
2003-2004	31,100
2004-2005	36,070
2005-2006	54,130
2006-2007	84,541
2007-2008	114,931
2008-2009	154,170
2009-2010	214,976

February 16, 2011
How Bill Gates' Favorite Teacher Wants to Disrupt Education, Gregory Ferenstein, Fast Company

February 21-24, 2011
Graphic Facilitation, E-Learning and Distance Learning (ELI) Conference in Riyadh (Sir Tim Berners-Lee and Jimmy Wales)

iPad 2, March 2, 2011: Steve Jobs' surprise appearance a 'big deal', CNN Tec, Mark Milian, March 2, 2011
http://www.cnn.com/2011/TECH/gadgets/03/02/steve.jobs.apple2/index.html?hpt=hp_tech

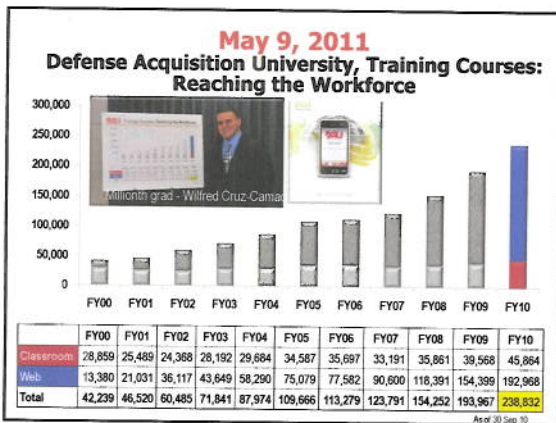
Whatever health concerns prompted Steve Jobs' leave didn't seem to affect his flair Wednesday as an Apple pitchman.

April 12, 2011
NCTM Conference Session, Free Online Degrees; iSMART: Integration of Science, Mathematics, and Reflective Teaching (iSMART), University of Houston

You see the big picture. You find the connections. Make it official - become iSMART.

Jen Chauvot and Mimi Lee, Univ of Houston

April 29, 2011
Shared Online Video (e.g., YouTube and the Royal Channel)



July 20, 2011
Smart phones driving lecture capture growth
 eCampus News, Dennis Carter

<http://www.ecampusnews.com/technologies/smart-phones-driving-lecture-capture-growth/>

July 22, 2011
GETideas Channel, Cisco (Education Thought Leader Series uploaded to YouTube)
<http://www.youtube.com/user/GETideas#q/u>

August 3, 2011
Inkling opens textbooks on the iPad
 USA Today, Jefferson Graham

<http://www.usatoday.com/story/technology/2011-08-02/inkling-ipad-e-textbooks/48100>

Some \$4.5 billion worth of textbooks were sold in 2010, according to the Association of American Publishers. Expects digital textbooks to represent 3% of sales in 2011, growing to 44% by 2017.

Inkling opens textbooks on the iPad
 USA TODAY Technology

August 11, 2011
Unleashing the Potential of Technology in Education, The Boston Consulting Group, Allison Bailey, Tyce Henry, Lane McBride, & J. Pucket
<http://www.bcg.com/documents/file82603.pdf>

Figure 3. U.S. Enrollment in Elementary Through Secondary Schools Using Computers (1990-2010)

Year	Percentage of U.S. Enrollment
1990	10
1991	12
1992	14
1993	16
1994	18
1995	20
1996	22
1997	24
1998	26
1999	28
2000	30
2001	32
2002	34
2003	36
2004	38
2005	40
2006	42
2007	44
2008	46
2009	48
2010	50

August 12, 2011
Moodle (45 million users in 209 countries, 54,000 sites, 4.6+ million courses)

April and August 24, 2011
Departments Stay Afloat with new Online Ventures (new Ed.D. in IST/Ed Tech)
 (e.g., <http://iuconnected.iu.edu/>)
<http://newsinfo.iu.edu/news/page/normal/19372.html>

August 25, 2011
Brain-training games are new exercise craze, USA Today, (e.g., Lumosity, MindSparke;
<http://www.lumosity.com/>)



But I am not Content!!!

Who Needs Blended and Online Learning?

Guess Who

Those in the Military!
 Going the Distance, Elizabeth Millard, University Business, March 2011

Going the Distance

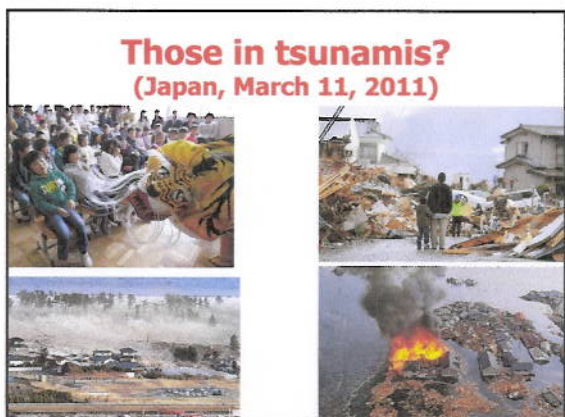
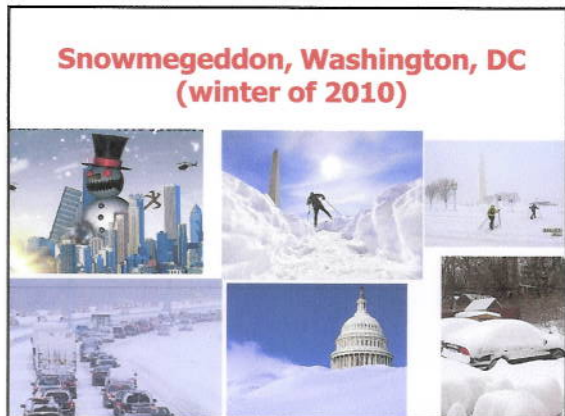
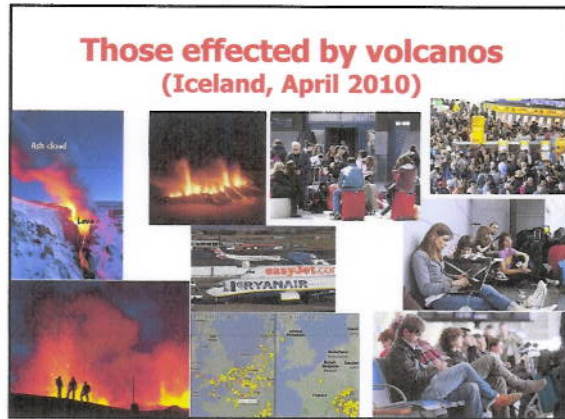
Athletes and Performers
 Going the Distance, Elizabeth Millard, University Business, March 2011

March 11, 2011
 Those Preparing for Exams and Needing Remediation, Bill Gates, Salmon Khan, NBC Special

<http://www.msnbc.msn.com/id/21134540/vp=42018991�>

Those in hurricanes!
 (Katrina, August 2005; Ike, Sept 2008; Irene, August 2011)

Those where there are diseases and outbreaks... (SARS, 2003; H1N1, 2009-2010)



Those in tornados...! (April 24, 2011)

Why should we be content?

September 15, 2010

Study: Online learning might be less effective for some, eSchool News, Dennis Carter

Classroom students scored 84.5 percent on the first exam in the economics course, and online students scored 83.3 percent.

May 24, 2010

Author Nicholas Carr, The Web Shatters Focus, Rewires Brains

http://www.wired.com/magazine/2010/05/ff_nicholas_carr/




September 15, 2010

Timeline of Technology for Teaching, NY Times

<http://www.nytimes.com/interactives/2010/09/15/magazine/classroom-technology.html?ref=magazine>

Technology of the 1980s



Radio Shack TRS-80 Model III

Introduced: July 1980

Price: US \$699 base model
US \$2495 w/ 32K dual drives

CPU: Z80, 2.0M, 2.03 MHz

RAM: 4K, 48K max

Ports: Cassette tape, expansion, serial

Display: 12-inch B&W monitor, 84 x 16 lcd


Storage: 0, 1, or 2 internal 170K floppy drives
External cassette @ 500 / 1500 baud

OS: BASIC in ROM, TRS-DOS on disk




Mark Weiser, Scientific American, 1991, The Computer for the 21st Century

<http://sandbox.xerox.com/want/papers/ubi-sciam-sep91.pdf>



COMPUTER SCIENTISTS suggest the conventional screen type grids are ruled by conventional computers that are not in this office at the Xerox Palo Alto Research Center. Photo: © The Computer for the 21st Century

Let's Reflect Back 10 Years...





Virtual Tactical Operations Center (VTOC)





Shovelware





You paid \$99.99 to play gimmicky parts of free online Bash games. How dumb are you?

Ten Years Later...




Fourteen Learning Technology Trends of the Past Year or Two...

Another Benefit of Robot Teachers: No 'Moral Problems'
by Jeff Young

Other Benefits of Robot Teachers: No 'Moral Problems'
by Young

1. Inexpensive Laptops and Netbooks

#2. Online Language Learning

January 27, 2010 and Feb 5, 2010: The Web Way to Learn a Language, NY Times, ERIC A. TAUB (e.g., EnglishCentral, iTalki, Palabea, Babbel)

#3. Tablet Computers Hit (iPad)

April 10, 2010: Seton Hill Univ, 2,100 students an iPad and freshmen a 13-inch MacBook laptop
Feb 1, 2011: An Android Tablet Made Just for School, David Zax, Fast Company

#4. Pocket Dictionaries and Digital Textbook Projects (Korea), July 6, 2011:

Husna Haq, In South Korea, all textbooks will be e-books by 2015, Speeding past the US, South Korea will be digitizing reading material in all public schools by 2015. Christian Science Monitor.

#5. Video Conferencing/Webcaming

December 20, 2010: Skype for iPhone adds two-way video calling, CNet Reviews

Service	Viewers (million)
Google (YouTube)	94.3 billion
Real	227 million
Yahoo	550 million
Vevo	535 million
Viacom	497 million
StreamIt	455 million
AOL	545 million
Brink	247 million
Fox Interactive (FoxSpace)	355 million
CBS	187 million

Free music video site Vevo eyes iPad, other mobile possibilities

Group Video Chat, February 28, 2011: SocialEyes delivers group video chat , USA Today, Jon Swartz, <http://www.socialeyes.com/>

SocialEyes delivers group video chat

By Jon Swartz, USA TODAY

SAN FRANCISCO — The brand behind digital-media pioneer iRobot's robotic vacuum cleaners is at it again — with a new, low-key video service on Facebook.


SocialEyes, which launched last fall, is bringing live video to search people at once to Facebook users and others so they can collaborate on work, chat about common interests or even make to play an instrument nearby.

"It's a way to connect to friends, in real time, in your social graph," says co-founder Rob Cramer of the San Francisco venture, which he stepped down as CEO of SocialEyes last year; he remains chairman of the firm.

"This is a richer way to connect," Cramer says.

Robert Williams, who has worked off and on with Cramer for about 20 years, is CEO of SocialEyes.

The 10-person start-up, based in San Francisco, has raised \$5 million.



First Look at Google+ Hangouts, June 29, 2011

http://www.youtube.com/watch?v=KLD3pFv7A&annotation_id=annotation_389852&feature=youtu.be

YouTube

First Look at Google+ Hangouts

3:34 video • 36,714 views



Facebook introduces video calling, Eric Stoller, July 6, 2011, Inside Higher Ed http://www.insidehighered.com/press-releases_and_technology/facebook-introduces-video-calling

Facebook introduces video calling

Facebook introduces video calling

Facebook introduces video calling

Facebook introduces video calling

Facebook introduces video calling



#6. Shared Online Video: TED, Academic Earth, TV Lesson, and Fora TV

TED

FORA TV

TV Lesson



#7. Social Networking Gaming December 24, 2010: CityVille 16.8 million daily users, FarmVille's 16.4 million. CityVille 61.7 million monthly users, FarmVille 56.8 million users. Mashable.

"CityVille" Is Now Bigger than "FarmVille"

FRONTIERVILLE

FARMVILLE

CITYVILLE

PLAY NOW




#8. E-Book Readers January 28, 2011: Amazon: Kindle Books Finally Eclipse Paperbacks, Doug Aamoth March 2, 2011: Why Amazon would be smart to give away the Kindle, March 4, 2011, CNN Tech, Amy Gahran

TECHLAND

Amazon: Kindle Books Finally Eclipse Paperbacks

Whether a surge in e-book sales can be sustained and what effect it could have on traditional bookstores remains to be seen.



Worldreader, August 22, 2011
What Makes Ed Tech Successful in the Developing World?, ReadWriteWeb, David Risher
http://www.readwriteweb.com/articles/what_makes_educational_technology_successful_in_the_world
<http://www.worldreader.org/>

#9. Artificially Intelligent Computers
February 18, 2011: Watson dominated at 'Jeopardy!' — but what else can it do? As IBM seeks new uses, man still has edge over machine, Dan Fergano, USA Today.

Computer vs. brain
 Feeling a little computer envy? Don't let IBM's Watson, the chimp-crushing computer on Jeopardy!, get you down. A comparison with your own human brain:

Watson	Human brain
1,190 pounds	3 pounds
4 years	6 million years
2,900 processors	1 billion neurons
200 trillion computations (per second)	100,000 trillion
15 trillion Memory (in bytes)	1 trillion

Computer ties human as they square off on 'Jeopardy!'

August 2, 2011
Stanford U. Offers Free Online Course in Artificial Intelligence, Jie Jenny Zou, Chronicle of Higher Education (over 135,000 sign up as of August 27)
<http://www.ai-class.com/>

#10. New Interfaces
February 18, 2011: Telekinesis 2.0, David Zax, Fast Company

#11. Mobile Apps, May 13, 2011:
USA Today, Mary Beth Marklein
http://www.usatoday.com/news/education/2011-05-13-iphone-apps-college-students_a.htm

Apps make college easier to access

August 18, 2011
HowStuffWorks, iPhone App, USA Today, Marc Saltzman

August 18, 2011
Eco Mania and Face the Waste (iPhone/oPod),
 Green games gain in popularity, USA Today, Mike Snider

The image shows two screenshots from mobile games. The top screenshot is from 'Face the Waste', featuring a character in a recycling bin and a 'RECYCLE' sign. The bottom screenshot is from 'Eco Mania', showing a character with glasses and a 'STATS' screen with various environmental metrics.

#12. Augmented Reality, May 17, 2011:
 USA Today, Edward Baig, May 17, 2011, Augmented reality has potential to reshape our lives.

The image contains four small screenshots showing augmented reality in use. One shows a person wearing AR glasses, another shows a person interacting with a virtual interface overlaid on a real-world scene, and others show similar AR experiences in different settings.

#13. Language Translation Tools, Aug 19, 2011
 (e.g., Bing Translator (a convenient way to translate between languages in Internet Explorer 8)
<http://www.microsofttranslator.com/default.aspx>)

The image is a screenshot of the Bing Translator website in an Internet Explorer browser window. The page title is 'Oppgitt over Kina' and it shows a translation interface with text in Norwegian and English.

#14. Online Portals and Open Educational Resources (OER) February 8, 2011
 Google Art Project, Chronicle of HE (new Google project that allows visitors to explore museums around the world and view hundreds of artworks) <http://www.googleartproject.com/>

The image shows a screenshot of the Google Art Project website. It features a grid of museum thumbnails, including the Metropolitan Museum of Art, the State Hermitage Museum, and the Vatican Museums, with a large image of a classical painting on the right.

July 10, 2011
The Virtual Zooarchaeology of the Arctic Project (VZAP) is a virtual, interactive, osteological reference collection for the study of northern vertebrates. VZAP is a dynamic natural history archive which allows students and researchers to examine the complete skeletal anatomies of multiple bird, mammal, and fish species in both 2D and 3D.
 (Anthropologist Puts an Idaho Museum's Many Bones Within Virtual Reach, Peter Monaghan, July 10, 2011, Chronicle of HE)
<http://vzap.iri.idaho.edu/ViewPage.aspx?id=230>

The image includes a screenshot of the VZAP website showing 3D models of skeletal remains and a photograph of a man standing next to a horse in a museum setting.

The Web of Learning

The diagram 'The Web of Learning' features a central figure surrounded by various educational and social media icons. At the bottom, logos for Google, PBWORKS, Blogger, and slideshare are displayed. The word 'NING' is written vertically on the right side.

We are entering a jumping off point...

Elements of the Web's Next Generation

Part 2: Stretching the Edges of Technology-Enhanced Teaching: From Tinkering to Tottering to Totally Extreme Learning

Tinkering

Tinker #1. Video Scenario Learning Accounting Interviews and Preparatory Course Review Modules (Franklin University, cost and forensic accounting course)

<http://video.franklin.edu/franklin/acct/managerial/accounting/cost-behavior-player.html>
<http://video.franklin.edu/franklin/acct/3452/common/traudiscenarios2.html>

Tinker #2. Webcast Lectures (Tegrity, Echo360, Mediasite, etc.)

Tinker #3. Timeline Tools (e.g., USA Today, August 26, 2011)

<http://www.usatoday.com/story/USAToday.com/2011/08/25/Photo-Luther-King-Memorial-in-Washington-A-closer-look/3312672?share=28888>

Martin Luther King Jr. Memorial in Washington: A closer look


Tinker #3. Timeline Tools

(e.g., Steve Jobs' career, CNN, August 24, 2011)
http://www.cnn.com/2011/TECH/innovation/08/24/steve.jobs.timeline/index.html?hpt=hp_top_bar7



The image shows three examples of a timeline tool. Each example displays a vertical timeline with various news articles and photos related to Steve Jobs' career. The tool includes a search bar and a list of events that can be added to the timeline.


Tinker #4. Video Animations and Simulations



This collage features several educational resources: a hand using a pipette, a 3D molecular model, a 3D human anatomy diagram, and a 3D human skeleton. The text '3D Human Anatomy' is visible next to the skeleton image.

Tinker #5. Collaborative Groups


(Google Docs, Ning, Google Groups, MSN Groups, Yahoo Groups)



The image displays screenshots of collaborative tools. On the left is a Google Docs interface with a document titled 'Create documents, spreadsheets and presentations online'. On the right is a Ning 'Education' group page. Below the screenshots are logos for Ning, a globe, and a network diagram.

Tinker #6. Case and Scenario Learning


(Kelley Direct, IU)



The image shows screenshots of a learning management system interface. It includes a video player, a list of users, and a discussion board. The Kelley School of Business logo for Indiana University is prominently displayed on the right side.


Tinker #7. Online Experiments

(e.g., psychology)



The image features screenshots of online psychology experiments. One screenshot shows a 'Perception Lab' with a video of a woman. Another screenshot shows the 'PSYCHEXPERIMENTS' website with a 'Participate in Experiments' button. A third screenshot shows a 'Top Ten Online Psychology Experiments' list by Sarah K. Miller from Psych Central.

Tottering



The image shows a group of children sitting on a seesaw on a playground. The seesaw is tilted, with one child on the ground and another in the air. The background is a simple blue sky and brown ground.

Totter #1. Bridges to World of Expert and Practitioners
(e.g., Watch or Listen to Online Conferences, Expert interviews, blogs, chats, etc.)



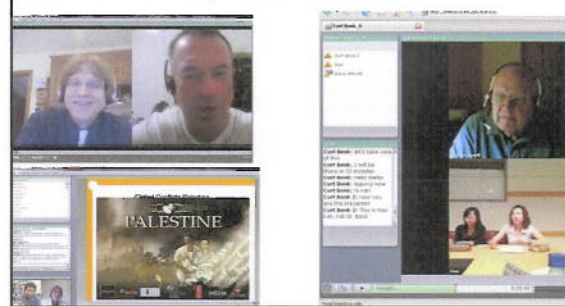
Totter #2. Class Synchronous Sessions and Archives (Breeze/Adobe Connect Pro, Elluminate, WebEx, Dim Dim)



Totter #3. Global Class Videoconferencing and Remote Lands
(e.g., The seminar was structured on a series of videoconferences and virtual classes on e-learning platform, organized by the Major of the Health and Veterinary Corps of Italian Army Lorenzo TIDU, Veterinary of the Task Force South of the Regional Command West, which is strongly involved in the specific field in favor of populations of the villages in the province of Farsh.)




Totter #4. Combining Asynchronous and Synchronous Events



Totter #5. Multi-Site Events
(e.g., William and Mary, March 3, 2011)



Totter #6. Online Language Learning and Conversations
(e.g., PalTalk, iTalki, Palabea, Babbel)



Totter #7. Wikibooks, Wikipedia editing, wiki syllabi, wiki glossaries
 (Ron Owston, York University, Toronto)

Web 2.0 and Emerging Learning Technologies
 From Wikibooks to Wikiversity and Wikispears

WIKIBOOKS

Totter #8. Student YouTube Products

<http://www.youtube.com/watch?v=xiw5IryPzsQ>
http://www.youtube.com/watch?v=x3FJyi4Pn_E
<http://www.youtube.com/watch?v=eD1awpaSuP0>
http://www.youtube.com/watch?v=BP7B0NKxyY&feature=player_profilepage

Totter #9. Podcast Productions and Virtual Performances for students of pronunciation class
 (e.g., Tzu-Su Chen, Taiwan)

podomatic
 PODCAST

tsuyi hseh's Podcast
 One 3 min

Hey Jude, don't make it bad
 Take a sad song and make it better

Podomatic

Totter #10. Video Blogging

Totter #11. Podcasting Medical Lectures
 (School of Dentistry, University of Michigan)

IT Bookcamp

Audio Acquisition via Computer

Instructional Design Process

Totter #12. Music Videos of Content
 History for Music Lovers, Washington Post
 The French Revolution ("Bad Romance" by Lady Gaga)
 Trojan Way ("Tainted Love" by Soft Cell)
 Charlemagne ("Call Me" by Blondie)
http://www.youtube.com/user/historyteachers?blend=6&ob=5&pf_rd%3D%2F112%2FJULC0sgdA

Totally Extreme Learning

Totally Extreme #1. Immediate Science

Ida (a transitional species) 47-Million-Year-Old Fossil the Missing Link? (May 20, 2009)

Totally Extreme #2. Live Science

(Nautilus Live allows people to watch expeditions live & listen to scientists in control rooms a discoveries made)

Totally Extreme #3. Armchair Archeology

UCLA Summer Digs Program

Totally Extreme #4. Adventure Learning

(e.g., GeoThentic, Earthducation, Polar Husky, GoNorth; Aaron Doering, Univ of Minnesota; cars and bikes--Dan Grec and Mark Beaumont)

Totally Extreme #5. Learning on the Sea.

(May 2010, Jessica Watson became the youngest person ever to sail solo, non-stop and unassisted around the world.)

Totally Extreme #6. The LAST OCEAN
Website and The Last Ocean Project
<http://www.lastocean.com/> and <http://lastocean-project.org/>; Cassandra Brooks

Totally Extreme #7. South African teens get virtual mentoring from all over the world, By Danielle Berger, CNN, January 14, 2011
<http://www.cnn.com/2011/LIVING/01/13/cnoheroes.stokes/index.html?hpt=T2>

Totally Extreme #8. Open Teaching and Massive Open Online Courses (i.e., MOOC, David Wiley, George Siemens, Ray Schroeder)

eduMOOC
 Online Learning Today...and Tomorrow

Totally Extreme #9. International and Global Education and Competitions
 (e.g., Global Game Jams, online role play, Global Videoconferencing)

Global Game Jam

Totally Extreme #10. Learn Anytime, Always On/Mobile. Will Technology Kill the Academic Calendar? Online, semesters give way to students who set their own schedules, Marc Parry, Chronicle of Higher Ed, October 10, 2010

Robert Johnson, who championed the open-format Learn Anytime program at a two-year college in Louisville, Ky. checks students' e-mail while waiting for a flight. "Everything I need to do today, I can do on my phone," says Robert Johnson...He often grades papers and communicates with students from a cafe near his home.

Totally Extreme #11. Pocket School and Videoconferencing in Developing World
 (Paul Kim, Stanford, Rwanda, August 2010, Kigali Institute of Education linking up with universities in India and Cameroon through Satellite Internet video conferencing system. They were discussing Java programming.)

Totally Extreme #12. Telepresence and Teleportec Systems (e.g., Cisco and HP)

Totally Extreme #13. Military Mobile Learning (See: the U.S. Army Learning Concept for 2015; 2011, January 15).
<http://www.youtube.com/watch?v=KD9NGAV3-3k> (4:26 minutes)

Totally Extreme #14. Virtual Choirs
 April 6, 2011: Eric Whitacre: A virtual choir 2,000 voices strong; <http://www.youtube.com/watch?v=6WhWDCw3Mng>

Totally Extreme #15. Virtual Worlds (e.g., Dr. Monica Rankin's class, UT Dallas, Cuban Revolution, April/May 2011)
<http://www.youtube.com/watch?v=ocQMf1kPo98>

Is this a revolution?

Any Extreme Questions and Comments?
 Slides at: TrainingShare.com
 Papers: PublicationShare.com
 Book: <http://worldisopen.com/>
 Email: curt@worldisopen.com