
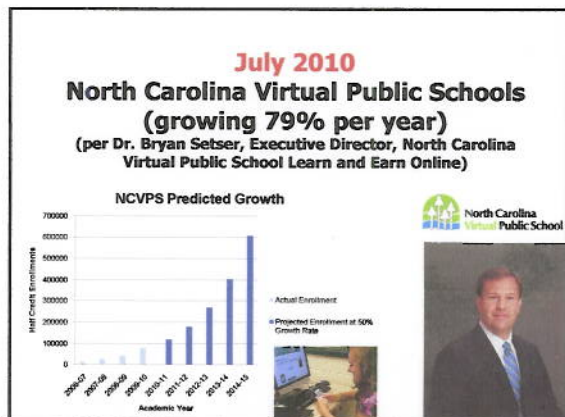
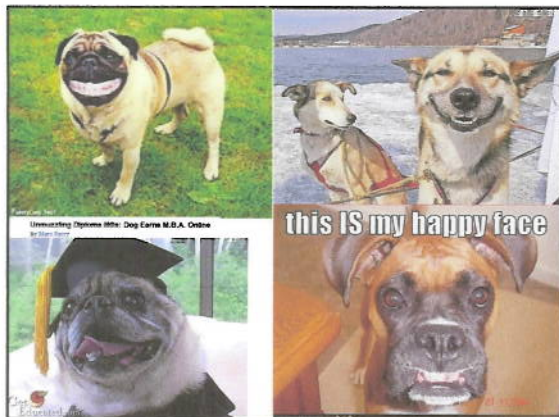
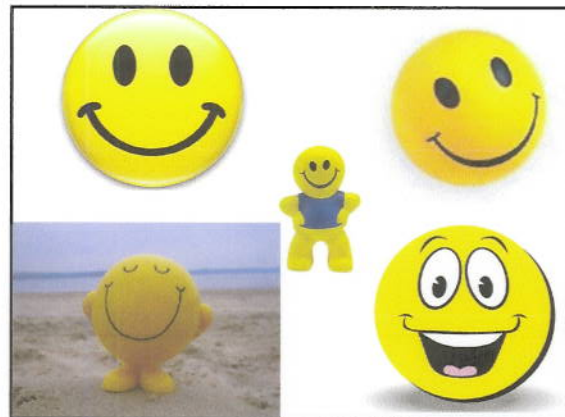


Stretching the Edges of Technology-Enhanced Teaching: From Tinkering to Tottering to Totally Extreme Learning

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

September 5, 2010 (David Wiley)
Open Source goes to High School (Utah)
<http://www.youtube.com/watch?v=sovve-j3xGk>

YouTube

Open Source goes to High School

Open High School of Utah
 meeting the needs of the 21st century learner



DAVID WILEY
 Founding Member, Open High School of Utah
 Associate Professor, Brigham Young University

September 2011
Meta-Analysis Update: Blended and Fully Online Still Best!

U.S. DEPARTMENT OF EDUCATION



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

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

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

Center for Technology in Learning

Revised September 2010


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



SOCIAL NETWORKING
Top social networking sites

Facebook.com	12.2 million
MySpace.com	64.2 million
Twitter.com	20.8 million
Diigo.com	17.4 million
Classmates.com sites	12.2 million
Behavior Pattern (partial list)	12.1 million
MyAccount sites	11.4 million
Windows Live Profile	10.3 million

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





FLVS Completion History
As of April 30, 2010

Year	Completion Count
1999-2000	14,000
2000-2001	12,741
2001-2002	24,140
2002-2003	34,679
2003-2004	34,730
2004-2005	54,047
2005-2006	114,055
2006-2007	134,775
2007-2008	211,676

Completion rate measured by full credit awards. Based on Florida Virtual School/Class #155 student completion during a 12-month period.

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


YOUTUBE
Khan Academy on the Gates Notes

FORTUNE
Innovation in Education
Bill Gates' favorite teacher

February 18, 2011 Ten great sites with free teacher resources eSchool News, Jenna Zwang, <http://www.eschoolnews.com/2011/02/18/ten-great-sources-of-free-teacher-resources.html>



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



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 27, 2011
Moodle (41+ million users in 211 countries, 54,000 sites, 4.4+ million courses)

The image shows a screenshot of the Moodle Learning Management System (LMS) interface. On the left, there's a course page with a large image of a cow and some text. On the right, there's a grid of user avatars. Below the grid, there's a line graph showing a sharp upward trend in activity or usage.

June 13, 2011
Massachusetts School Issues iPads to Every Student in Grade 6
<http://thejournal.com/articles/2011/06/13/massachusetts-school-issues-ipads-to-every-student-in-grade-6.aspx>

The image is a screenshot of an article from 'The Journal'. The main headline is 'Massachusetts School Issues iPads to Every Student in Grade 6'. Below the headline, there's a sub-headline and a short paragraph. To the right, there's a large image of a person using an iPad. The article text is partially visible on the left side.

June 15, 2011
EduComm Insider, 2(3) Announcement, \$7 Million Grants Awarded to Help Boost College Readiness, Audrey Waters, Gates Foundation, Next Generation Learning Challenges (NGLC) Grant Program

\$7 Million Grants Awarded to Help Boost College Readiness

June 14, 2011 12:01 PM EDT Audrey Waters

FILED UNDER: Research, Bill and Melinda Gates Foundation, Next Generation Learning Challenge

Do I Have A Right?

Today, the Next Generation Learning Challenge (NGLC), an education technology grant program funded by the Gates Foundation, announced the 18 winners of its latest round of award money aimed at the K-12 level.

Last fall, the Gates Foundation announced a multi-year support program that would award grants to support programs that boost preparedness and college readiness of students. The grants were aimed at developing innovative solutions that address some of the factors that cause students to drop out of college, the record of which, announced today, falls the other end of the spectrum, the far students' achievement for college.

The image shows a screenshot of an article from 'EduComm Insider'. The main headline is '\$7 Million Grants Awarded to Help Boost College Readiness'. Below the headline, there's a sub-headline and a short paragraph. To the right, there's a large image of a person using a laptop. The article text is partially visible on the left side.

July 7, 2011
Facebook says membership has grown to 750 million, USA Today, Jon Swartz
http://www.usatoday.com/tech/news/2011-07-06-facebook-skype-growth_n.htm

Unique visitors growing, too
 Despite a dip in U.S. users in early 2011, visitors to Facebook have steadily grown over the past year.

May 2011 157.2 million

June 2010 141.6 million

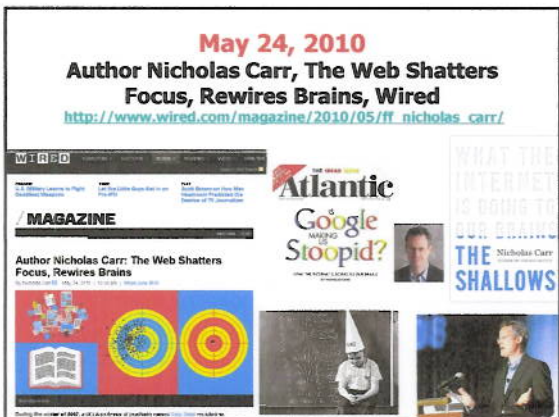
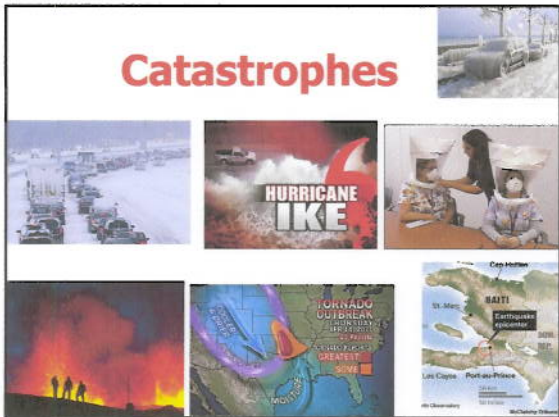
The image shows a bar chart titled 'Unique visitors growing, too'. The chart displays the number of unique visitors to Facebook from June 2010 to May 2011. The y-axis represents the number of unique visitors in millions, ranging from 0 to 155. The x-axis represents the months from June 2010 to May 2011. The bars show a steady increase in unique visitors over the period, with a notable dip in early 2011. The data points are: June 2010 (141.6 million) and May 2011 (157.2 million). To the right of the chart, there's a large image of the Facebook logo and a headline '750 million users befriend Facebook'.

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


The image shows a screenshot of the YouTube channel page for 'GETideas'. The main video player is visible, showing a man speaking. Below the player, there's a list of other videos in the channel. The channel name 'GETideas' is prominently displayed at the top.

August 2, 2011
Stanford U. Offers Free Online Course in Artificial Intelligence, By Jie Jenny Zou, Chronicle of Higher Ed, <http://www.ai-class.com/>

The image is a screenshot of an article from 'Wired Campus'. The main headline is 'Stanford U. Offers Free Online Course in Artificial Intelligence'. Below the headline, there's a sub-headline and a short paragraph. To the right, there's a large image of a person wearing a futuristic headset. The article text is partially visible on the left side.



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.

Question:
What is the Web?


- An entertainment system?
- A writing aid?
- A communications system?
- A means to handle commercial transaction?
- A social networking device?

=====


No, it is a learning tool!



Answer:
The Web of Learning

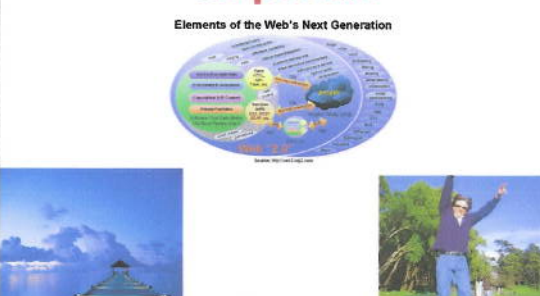


NING



We are entering a jumping off point...

Elements of the Web's Next Generation



Is the World Flat or Open ?






Framework #1: WE-ALL-LEARN: Ten Forces that Opened the Learning World

- **W**eb Searching in the World of e-Books (i.e., Darwin)
- **E**-Learning and Blended Learning
- **A**vailability of Open Source and Free Software (e.g., Moodle)
- **L**everaged Resources and OpenCourseWare (e.g., MIT)
- **L**earning Object Repositories and Portals (i.e., shared content)
- **L**earner Participation in Open Info Communities (YouTube)
- **E**lectronic Collaboration and Interaction (sync and async)
- **A**lternate Reality Learning (Online Massive Gaming, Simulations, and Virtual Worlds; e.g., Second Life)
- **R**ead-Time Mobility and Portability (e.g., iPhone)
- **N**etworks of Personalized Learning (Blogs, RSS)





Audience Participation!

- 1. WE**
- 2. ALL**
- 3. LEARN!!!**



Triple Learning Technology Convergence of "WE-ALL-LEARN"

1. **Pipes:** The availability of tools and infrastructure for learning.
2. **Pages:** The availability of free educational content and resources (OER—Open Educational Resources).
3. **Participatory Learning Culture:** A move towards a culture of open access to information, international collaboration, and global sharing.

What if our minds were on fire for learning?


A Circle of Knowledge: Building and Sharing

Create: Support for creating and sharing of individual knowledge

Use: Encourage the use of existing, official, and open source knowledge


Re-mix: Enable teachers to integrate and recombine their knowledge

Promote these organically & sustainably



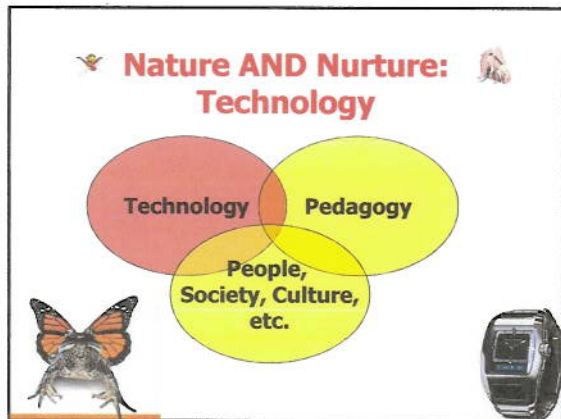
MINDS ON FIRE: OPEN EDUCATION, THE LONG TAIL, AND LEARNING 2.0. JOHN SEELY BROWN AND RICHARD ADLER, EDUCAUSE REVIEW, JANUARY-FEBRUARY, 2008.

Curriki, Connexions, OpenCourseWare (e.g., MIT OCW Highlights for High School)

Poll: Who finds it hard to keep track of all the technology-related changes today???





Ten Learning Technology Trends of the Past Year...

A collage of ten small images illustrating different educational technology trends, such as students using tablets, interactive whiteboards, and digital content.

September 15, 2010 Timeline of Technology for Teaching, NY Times

<http://www.nytimes.com/interactive/2010/09/19/magazine/classroom-technology.html?ref=magazine>

A horizontal timeline showing the evolution of educational technology from the early 1900s (mechanical calculators, overhead projectors) to the late 2000s (laptops, tablets, interactive whiteboards).

Technology of the 1980s

Two main computer models are featured: the Radio Shack TRS-80 Model III and the Commodore 64.

Radio Shack TRS-80 Model III	
Introduced:	July 1980
Price:	US \$899 base model US \$2495 w/ 32K, dual drives
CPU:	Z80 @ 2.8M, 2.0M MHz
RAM:	4K, 16K, 64K
Ports:	Cassette tape, expansion, serial
Display:	12-inch BW monitor, 64x16 text
Storage:	0, 1, or 2 Internal 179K floppy drives External cassette @500/11500 baud
OS:	BASIC in ROM, TRS-DOS on disk

The Commodore 64 is also shown with its distinctive keyboard and monitor.

#1. 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)

Two screenshots of online language learning platforms. The left one shows a lesson interface with a video of a woman speaking. The right one shows a video of a man speaking with a 'Speak out for Peace and Justice with Angelina Jolie' overlay.

#2. 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

A collage of images showing students using iPads and other tablet devices in a classroom setting, along with a teacher interacting with a tablet.

Math and Spelling games on iPads

eSchool News, May 27, 2011

Miss Spell's Class

Photo Screenshots

#3. 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.

#4. Video Conferencing/Webcaming

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

WATCHING VIDEO ONLINE

Google (YouTube) 94.3 million
 Hulu 72 million
 Yahoo 58 million
 Vevo 54 million
 Vevo+ 47 million
 Microsoft 46 million
 AOL 44 million
 Roku 24 million
 Fox Interactive (iSpace) 20 million
 CBS 19 million

Free music video site Vevo eyes iPad, other mobile possibilities

#5. 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"

#6. 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 Gahrn

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

#7. 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 champ-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
2,800 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!'

8. Mobile Apps (e.g., Tutors), April 7, 2011: Tutor.com Releases First Ed App that Connects Students to an Expert Tutor

Tutor.com To Go™ Releases the First Education App that Connects Students to an Expert Tutor

April 7, 2011. Tutor.com, the premier online learning and assessment site for higher education, today announced the availability of its first mobile application. The app, available for iPhone and Android, allows students to access Tutor.com's content and services on their mobile devices. The app is available for free download from the Apple App Store and Google Play.

The app is designed to be used on any mobile device that has an internet connection. It allows students to access Tutor.com's content and services on their mobile devices. The app is available for free download from the Apple App Store and Google Play.

#9. First Look at Google+ Hangouts, June 29, 2011

http://www.youtube.com/watch?v=KJ9JfFwTA&annotation_id=annotation_389852&feature=youtu.be

First Look at Google+ Hangouts

36,714 views

#10. Facebook introduces video calling, Eric Stoller, July 6, 2011, Inside Higher Ed

http://www.insidehighered.com/blogs/student_affairs_and_technology/facebook_introduces_video_calling

Facebook introduces video calling

July 6, 2011 9:46 am EDT

Poll: Is this a revolution?

Nature AND Nurture: Pedagogy

Nature (Technology)

Nurture (Pedagogy)

People, Society, Culture, etc.

Frame work #2: The R2D2 Model


Curis J. Bonk | Kai Zhang

Empowering Online Learning

100+ Activities for Reading, Reflecting, Displaying, Doing


The R2D2 Method

1. Read (Auditory and Verbal Learners)
2. Reflect (Reflective Learners)
3. Display (Visual Learners)
4. Do (Tactile, Kinesthetic, Exploratory Learners)

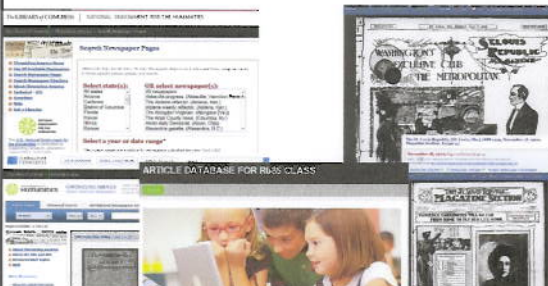


1. Auditory or Verbal Learners

- Auditory and verbal learners prefer words, spoken or written explanations.




Read 1. Online Article Portals and Databases (e.g., Chronicling America: Historic American Newspapers) (<http://chroniclingamerica.loc.gov/>)



Reflect 2. Scientist Blog Reflections (The LAST OCEAN Website and The Last Ocean Project; Cassandra Brooks)



Display 3. Concept Mapping Tools (VUE, Bubbl.us, Cmap, Freemind, Glify, Mindmeister, or Mindomo)



Do 4. Podcast Productions and Shows (give kids the power!)



We are not motivating students with the technologies that they love!



Ok, Million Dollar Question: How do you motivate online learners? What Words come to mind?



Framework #3: TEC-VARIETY Model for Online Motivation and Retention

1. **Tone/Climate:** Psych Safety, Comfort, Belonging
2. **Encouragement, Feedback:** Responsive, Supports
3. **Curiosity:** Fun, Fantasy, Control
- ...
4. **Variety:** Novelty, Intrigue, Unknowns
5. **Autonomy:** Choice: Flexibility, Opportunities
6. **Relevance:** Meaningful, Authentic, Interesting
7. **Interactive:** Collaborative, Team-Based, Community
8. **Engagement:** Effort, Involvement, Excitement
9. **Tension:** Challenge, Dissonance, Controversy
10. **Yields Products:** Goal Driven, Products, Success, Ownership

1. Tone/Climate: A. Video Course Intros from Instructors.

Yun Yun Chow, Open U Malaysia
 Making Art Lessons Come Alive with Web 2.0
<http://www.youtube.com/watch?v=BO9rqJD1GXo>



2. Encouragement, Feedback, etc.: A. Vocab Sushi (\$25 for 3 months)

<http://www.vocabssushi.com/>



3. Curiosity, Surprise, Unknown, Control: A. The Royal Channel (e.g., April 29, 2011: The Royal Wedding)



4. Variety, Novelty, Fun, Fantasy: A. History for Music Lovers: The French Revolution ("Bad Romance" by Lady Gaga)


<http://www.youtube.com/user/historyteachers?blend=6&ob=5&fp=12&LJLCOsgdA>



5. Autonomy, Choice, Control: A. Learning Match

<http://www.thelearningmatch.com/>

Example Video Lesson



Percent Mastery

After completing your mastery test a "Check for Understanding" tool allows you to assess your progress and receive immediate feedback.

Check for Understanding


1. Read the operations below and answer to the right.
Carla made 6 cakes to share 4 by 1/3.

Answer Details

Your name

1. Answer 0.50 or 1/2 for the left of 1/3

A
 B
 C



6. Relevance, Meaningfulness: A. Google Art Project (new Google project that allows visitors to explore museums around the world and view hundreds of artworks) <http://www.googleartproject.com/>

Art Project

Explore museums from around the world. Discover and view hundreds of artworks, photographs, maps, books, and more online. And it's all just a click away!

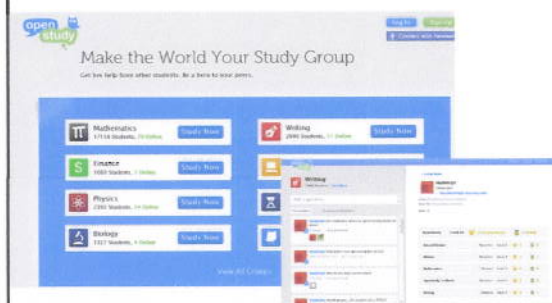
View Match



7. Interactive, Collaborative: A. Open Study; <http://openstudy.com/>

Make the World Your Study Group

Get help from other students. Be a hero to your peers.



8. Engagement, Effort: A. Time Tracker (e.g., Indy Race Tracker, May 29, 2011)

http://www.mdnbr.com/news/trackers/4669995965PCRI1D110112669042011_1 IndyRaceTracker

2011 INDY 500 RACE TRACKER

Lap: 200



9. Tension, Challenge: A. iCivics; <http://www.icivics.org/>

FUNDING FINANCIAL SERVICES REVENUES

FUNDS AVAILABLE

Health Reform: \$2.4 TRILLION

Transportation: \$200

Energy: \$20.0

Research: \$5.4 TRILLION

Public Safety: \$2.8 TRILLION



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

TEC-VARIETY Model for Online Motivation and Retention

Tone/Climate
Encouragement, Feedback
Curiosity

Variety
Autonomy
Relevance
Interactive
Engagement
Tension
Yields Products

Tinkering, Tottering, or Totally Extreme?

Tinkering

Tinker #1. Webcast Lectures (Tegrity, Echo360, Mediasite, etc.)

Tinker #2. Track Life of a Scientist or Famous People (e.g., Brian J Ford, independent scientist)

<http://www.youtube.com/user/tellymonitor#p/a/u/1/LhGeApsKjar>

Tinker #3. Online Experiments (e.g., psychology)

The image shows three screenshots related to online psychology experiments. The top left is a 'perception lab' interface with a 'BLUE' button. The top right is a 'PSYCHEXPERIMENTS' website with a 'Participate in Experiments' button. The bottom right is a 'Top Ten Online Psychology Experiments' article from Psych Central.

Tinker #4. Educational Simulations

The image displays a 3D human anatomy simulation. On the left is a classical building with columns. On the right, under the heading '3D Human Anatomy', are three anatomical models: 'Color Pins', a 3D human figure, and a skeleton.

Tinker #5. Online Self-Testing (e.g., self study in accounting, vocabulary, anatomy, chemistry, dissection, etc.)

The image shows two screenshots of online self-testing resources. The left one is 'CALM: Computer Assisted Learning Modules' with a red crescent moon graphic and text about 'Logic for College and Experimentation using CALM'. The right one is 'Upper Extremity Muscles' with an anatomical diagram of a hand and forearm.

Tinker #6. Anchored Instruction with Shared Online Video

The image is a collage of YouTube video thumbnails. It includes several TED Talks, such as 'Active Student: What adults can learn from kids' and 'Ideas Worth Spreading'. There are also other educational and general interest video thumbnails.

Tinker #7. Online Portals of Rich Data

United Nations Opens World Digital Library, Turning the Pages from the British Library, etc. (history, culture, literature, writing, art, etc.)

The image shows two screenshots of online portals. The left one is the United Nations World Digital Library, displaying a map and various digital resources. The right one is the British Library's online gallery, showing historical documents and artifacts.

Tottering

The image is an illustration of children playing on a tottering board on a playground. The board is a long wooden plank supported by a central pivot point. One child is on the high end, and another is on the low end. The background shows a playground with trees and a blue sky.

Totter #1. Bridges to World of Expert and Practitioners

(e.g., Watch or Listen to Online Conferences, Expert interviews, blogs, chats, etc.)

Totter #2. Global Class Videoconferencing

Totter #3. Video Blogging and Podcasting

Totter #4. Wikibooks, Wikipedia editing, wiki syllabi, wiki glossaries

Totally Extreme Learning

Totally Extreme #1. TED talk from Adora Svitak, age 13, World's Youngest Teacher

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

Totally Extreme #4. Armchair Archeology
 UCLA Summer Digs Program

Totally Extreme #5. Adventure Learning
 (e.g., GeoThentic, Earthducation, Polar Husky, GoNorth; Aaron Doering, Univ of Minnesota; cars and bikes--Dan Grec and Mark Beaumont)

Totally Extreme #6. 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/cnheroes.stokes/index.html?hpt=T2>

Totally Extreme #7. 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.)

Poll: Is your brain mush?

1. Yes.
2. No.
3. Not sure yet...

HELLO HELLO



It is both Nature AND Nurture as well as PEOPLE!!! Technology is just part of the Equation

Technology

Pedagogy

People, Society, Culture, etc.

Any Extreme Questions and Comments?

Slides at: TrainingShare.com

Papers: PublicationShare.com

Book: <http://worldisopen.com/>

Email: curt@worldisopen.com

The Future