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

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http://mypage.iu.edu/~cjbonk/

Audience Poll #1:
Has learning technology has ever transformed your life.

May 10, 2013
10 ed-tech tools of the 70s, 80s, and 90s
eSchool News, Meris Stansbury
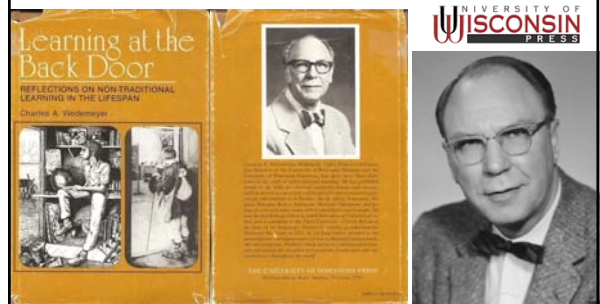http://www.eschoolnews.com/2013/05/10/10-ed-tech-tools-of-the-70s-80s-and-90s/print/

Looking to the Past…

Life as an accountant/CPA in a high tech company in the 1980s…

Took Correspondence & TV Courses
(thanks to Bob Clasen and Charles Wedemeyer, the University of Wisconsin)

Fast Forward 25+ Years…
"Anyone can now learn anything from anyone at any time."

February 20, 2013
Star Trek-like holodeck may be closer to reality than you think
Matt Hartley, Financial Post, Canada
http://business.financialpost.com/2013/02/20/star-trek-like-holodeck-may-be-closer-to-reality-than-you-think/?__lsa=054d-d58d

Star Trek-like holodeck may be closer to reality than you think

Knowledge Navigator (1987)
Apple Computer
http://www.youtube.com/watch?v=hb4AzF6wEoc

Learning is Changing
New Technologies =
New Delivery Methods…

I. Learning is More Personal
iPotty Aims To Entertain Toddlers During Toilet Training, Mashable, Kate Freeman
(January 10, 2013)
http://mashable.com/2013/01/10/ipotty/

II. Learning is More Video-Based
Adora Svitak, WFP Youth Representative - 2013
ECOSOC Youth Forum, March 27, 2013
"Shaping tomorrow's innovators: Leveraging science, technology, innovation and culture for today's youth", Statement by the World Food Programme Youth Representative, Ms. Adora Svitak at the 2013 ECOSOC Youth Forum.
http://webtv.un.org/meetings-events/economic-and-social-council/other-meetings/watch/adora-svitak-wfp-youth-representative-2013-ecosoc-youth-forum-shaping-tomorrows-innovators-leveraging-science-technology-innovation-and-culture-for-todays-youth/2257875055001

October 15, 2012
Reusable Khan
Lacking Teachers and Textbooks, India's Schools Turn to Khan Academy to Survive, NY Times, Anupama Chandrasekaran
http://india.blogs.nytimes.com/2012/10/15/lacking-teachers-and-textbooks-indias-schools-turn-to-khan-academy-to-survive/

Students at Sree Karpagavalli Vidhyalaya school in Chennai, Tamil Nadu, watching Khan Academy math videos.

SOPHIA launches free college readiness tools,
eSchool News, May 14, 2013
http://www.eschoolnews.com/2013/05/14/sophia-org-launches-free-college-readiness-tools/?ps=39929-001300000j08pF-0033000000qsTNf
http://www.sophia.org/preparing-for-college

Segment Video Anchors
(e.g., TubeChop of V-PORTAL: Video Primers in an Online Repository of e-Teaching and Learning; "Wikibooks Hooray for Us")
### http://www.tubechop.com/watch/378752

III. Learning is More Mobile
Brown, Keynote talk, "Learning in Hand With Mobile Technology," Wisconsin Distance Teaching and Learning Conference, August 10, 2012

	Beijing 2008	London 2012
Smartphones	139.3 million	657 million
Facebook	90 million	901 million
Twitter	<1 million	300 million
Tweets / day	1.1 million	140 million
Tablets	0	54.8 million
App store downloads	300+ million	25+ billion

Sources: Nielsen, eMarketer, Forrester, Apple

Judy Brown, Keynote talk, "Learning in Hand With Mobile Technology," Wisconsin Distance Teaching and Learning Conference, August 10, 2012

Mobile is the single most pervasive technology *ever* invented
Putting Global Mobile in Context
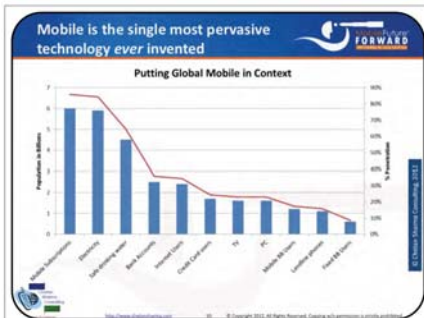
IV. Learning is More Open
(80-Year-Old WGU Texas Grad Keeps His Promise, November 30, 2012, Reeve Hamilton, Texas Tribune)

THE TEXAS TRIBUNE
An 80-Year-Old Graduate With an Online Marketing Degree Kept His Promise

RedHoop and Saylor.org
http://redhoop.org/udemy-introductory-financial-accounting-736-2.html

**V. Learning is More Massive
April 16, 2013 (NovoEd)**
New MOOC Provider Says It Fosters Peer Interaction
Chronicle of Higher Education, Jake New
http://novoed.com/

April 27, 2012
Introduction to Blackboard/CourseSites MOOC, With
Dr. Curt Bonk: "Instructional Ideas and Technology
Tools for Online Success" (4,039 now enrolled)
http://www.youtube.com/watch?v=rBNe8CUePTQ&feature=youtu.be

October 27, 2012
Travel for Office Hours
Chuck Severance , (U Michigan/Coursera) in Barcelona
http://www.youtube.com/watch?v=JzNHvmSv8TI

April and May 2013
Major Players in the MOOC Universe,
Chronicle of Higher Education, Jake New
http://chronicle.com/article/Major-Players-in-the-MOOC/138817/

May 14, 2013
Georgia Tech to Offer a MOOC-Like Online
Master's Degree, at Low Cost,
Chronicle of Higher Education, Jeffrey Young
http://chronicle.com/article/Major-Players-in-the-MOOC/138817/

May 20, 2013
Laptop U: Has the future of college moved online?, The New Yorker, Nathan Heller
http://www.newyorker.com/reporting/2013/05/20/130520fa_fact_heller?currentPage=all

THE NEW YORKER

LAPTOP U

Élite educators used to be obsessed with "faculty-to-student ratio"; now schools like Harvard aim to be broadcast networks.

VI. Learning is More Flipped
One Man, One Computer, 10 Million Students: How Khan Academy Is Reinventing Education,
Forbes, November 19, 2013, Michael Noer
http://www.forbes.com/sites/michaelnoer/2012/11/02/one-man-one-computer-10-million-students-how-khan-academy-is-reinventing-education/
The One World Schoolhouse (Twelve, Oct. 2, 2012)

VII. Learning is More Empowering
iPad gives voice to kids with autism
Supraja Seshadri, CNN, May 14, 2012

iPad gives voice to kids with autism

Sharia Siddiqui uses an iPad to help her communicate. Her father says it's "given her a sense of control she never had."

VIII. Learning is More Social
Facebook reaches one billion users, CNN Money, Aaron Smith, October 4, 2012

IX. Learning is More Collaborative
Collaboration and Discussion in Google Hangouts or with iPad, Jan. 28, 2013
(Carrie Gong from Beijing Normal University)
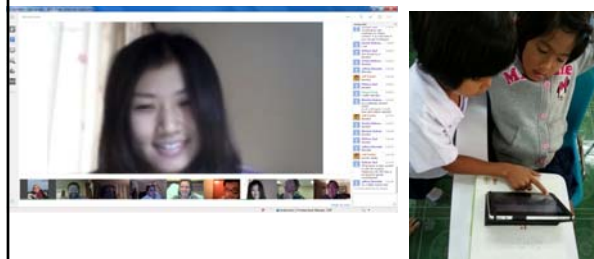
X. Learning is More Modifiable
Inside Look: Learning Spaces, Meeting classroom teaching and collaboration expectations, University Business, Feb. 22, 2013
http://www.universitybusiness.com/article/inside-look-learning-spaces

XI. Learning is More Comfortable
Design for Students, with Students, "Hub Central", the $42 million University of Adelaide learning hub opened in October 2011, May 8, 2012, Mike Roberts
http://designbuildsource.com.au/design-for-students-with-students
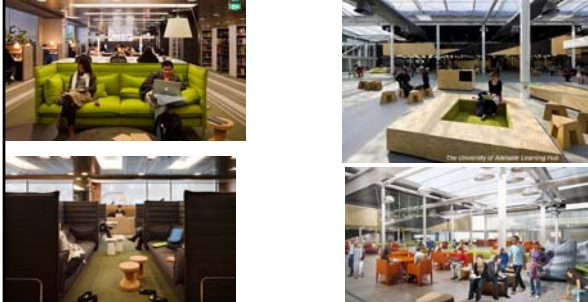
XII. Learning is More Ubiquitous
Flexible displays bend what's possible for computers, Jon Swartz, USA Today (May 4, 2012)


XIII. Learning is More Instantaneous
April 9, 2013
HER Computer fashions face social test: Can wearable computers fit in? Scott Martin, USA Today
http://www.usatoday.com/story/tech/2013/04/06/google-apple-iwatch-glass-jawbone-iphone-nike-microsoft-samsung/1979419/
(i.e., magnify moles or injuries, see vital signs, live stream surgeries, access previous PT sessions, access research and drug info, etc.)
http://www.fiercemobilehealthcare.com/story/google-glasses-could-have-strong-potential-healthcare-use/2013-03-18

XIV. Learning is More Global
(Book Review by Dr. Mimi Miyoung Lee: Ed Tech Magazine, May-June 2013)
(e.g., TakingItGlobal (TIG), RoundSquare, etc.)
RoundSquare (http://www.roundsquare.org/) and Taking it Global (http://www.tigweb.org/)
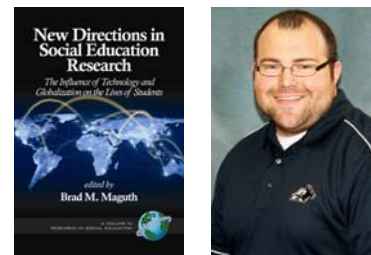
Learning is Changing the World
(Book Review: Ed Tech Mag, May-June 2013)
Walter Bender, Charles Kane, Jody Cornish, and Neal Donahue (2012). *Learning to Change the World: The Social Impact of One Laptop Per Child.* **NY: Palmgrave Macmillan.**
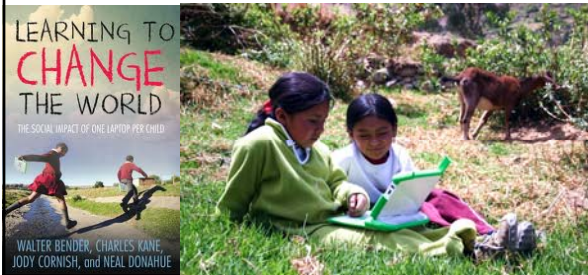
XV. Learning is More Web-Based
April 15, 2013
Google boss: Entire world will be online by 2020, Doug Gross, CNN
http://www.cnn.com/2013/04/15/tech/web/eric-schmidt-internet/index.html?hpt=hp_t3

May 5, 2012
Shaq earns doctorate degree
http://www.youtube.com/watch?v=Szj6uQnBdjo

Growth Online in Higher Education in the USA
http://sloanconsortium.org/publications/survey/going_distance_2011

Total and Online Enrollment in Degree-granting Postsecondary Institutions – Fall 2002 through Fall 2010

Bill Gates' classroom of the future

April 20, 2013
Two Cheers for Web U!
A. J. Jacobs, New York Times
http://www.nytimes.com/2013/04/21/opinion/sunday/grading-the-mooc-university.html?pagewanted=1&_r=3&emc=eta1&

Poll #2: Is this a revolution in education today?
A. Yes...
B. No...

My dog is content....

I am not Content!!!

May 24, 2010
Author Nicholas Carr, The Web Shatters Focus, Rewires Brains, Wired
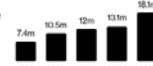http://www.wired.com/magazine/2010/05/ff_nicholas_carr/

September 27, 2012
The Crisis in Higher Education, Nicholas Carr, Technology Review
http://www.technologyreview.com/featured-story/429376/the-crisis-in-higher-education/

Undergraduate enrollment in the United States

1970	1980	1990	2000	2010
7.4m	10.5m	12m	13.1m	18.1m

Average cost of a year on campus **$27,435**

Percentage of people who say the value is fair or poor **57%**

Data from Institute of Education Sciences and Pew Research Center.

Who needs online and blended learning?
(Katrina, August 2005; Ike, Sept 2008; Irene, August 2011; Isaac, August 2012)
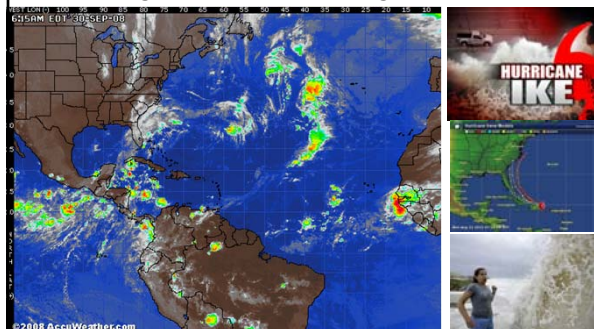
May 6, 2013
Faculty Backlash Grows Against Online Partnerships
Chronicle of Higher Education, Steve Kolowich
http://chronicle.com/article/Faculty-Backlash-Grows-Against/139049/
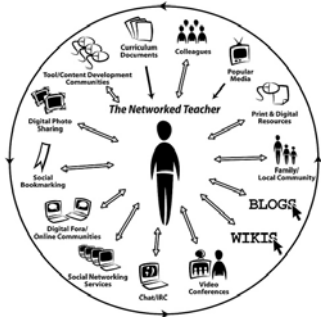
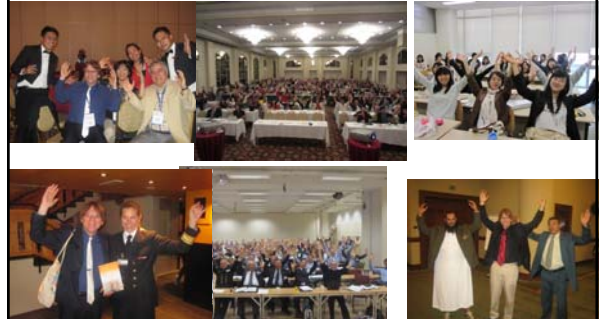Faculty Backlash Grows Against Online Partnerships

Michael Sandel, a Harvard professor, taught an online course that San Jose State U. asked its philosophy professors to use in place of their own instruction. They said no.

By Steve Kolowich

The Web of Learning

The World is Open…
It is very open!

I'm an Armchair Indiana Jones…

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

Web Searching in the World of e-Books
E-Learning and Blended Learning
= =
Availability of Open Source and Free Software
Leveraged Resources and OpenCourseWare
Learning Object Repositories and Portals
= =
Learner Participation in Open Info Communities
Electronic Collaboration and Interaction
Alternate Reality Learning (e.g., MMOG, Second Life)
Real-Time Mobility and Portability (e.g., iPhone)
Networks of Personalized Learning (Blogs, RSS)

CURTIS J. BONK
The World is Open

Audience Participation!

1. WE

2. ALL

3. LEARN!!!

What did Jean-Luc Picard say?

May 20, 2013
The New Greatest Generation: Why Millennials will Save Us All, Time, Joel Stein
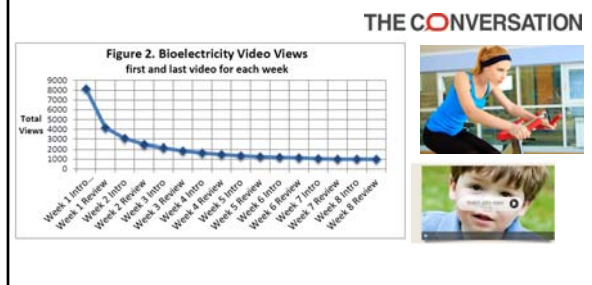http://www.time.com/time/magazine/article/0,9171,2143001,00.html

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February 5, 2013
Bioelectricity: A Quantitative Approach, Duke University's First MOOC
http://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/6216/Duke_Bioelectricity_MOOC_Fall2012.pdf

THE CONVERSATION

Figure 2. Bioelectricity Video Views
first and last video for each week

Sleepy U?

Ok, Million Dollar Question: What words come to mind when I say that I want to motivate learners?

Framework #2: TEC-VARIETY for Online Motivation and Retention

1. **T**one/Climate: Psych Safety, Comfort, Belonging
2. **E**ncouragement, Feedback: Responsive, Supports
3. **C**uriosity: Fun, Fantasy, Control
   …
4. **V**ariety: Novelty, Intrigue, Unknowns
5. **A**utonomy: Choice: Flexibility, Opportunities
6. **R**elevance: Meaningful, Authentic, Interesting
7. **I**nteractive: Collaborative, Team-Based, Community
8. **E**ngagement: Effort, Involvement, Excitement
9. **T**ension: Challenge, Dissonance, Controversy
10. **Y**ields Products: Goal Driven, Products, Success, Ownership

Examples of TEC-VARIETY

1. Tone/Climate: A. Share Visuals
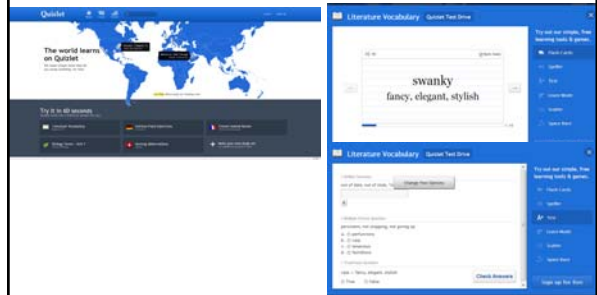(e.g., Panoramio,
http://www.panoramio.com/)
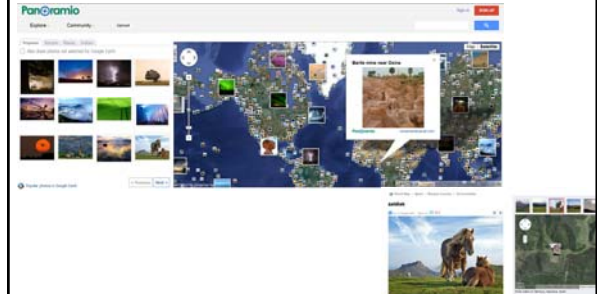
2. Encouragement, Feedback,
etc.: A. Voice Feedback
Vocaroo; http://vocaroo.com/
http://vocaroo.com/i/s1WRdjCx0rAA

2. Encouragement, Feedback, etc.:
B. Quizlet (online quiz tools)
http://quizlet.com/

3. Curiosity, Fun:
A. Something in the News
(e.g., Fauja Singh, 101, finishes last race, February 24, 2013)
http://espn.go.com/sports/endurance/story/_/id/8979487/fauja-singh-101-caps-career-10k-hong-kong

3. Curiosity, Fun:
B. History for Music Lovers
The French Revolution ("Bad Romance" by Lady Gaga)
Trojan War ("Tainted Love" by Soft Cell)
Charlemagne ("Call Me" by Blondie)
The Vikings ("Personal Jesus" by Depeche Mode)
The Crusades ("Eyes Without a Face" by Billy Idol)
Constantine ("Come On, Eileen" by Dexy's Midnight Runners)
http://www.youtube.com/user/historyteachers

4. **V**ariety, Novelty, **I**ntrigue, Unknowns:
A. Class Sync Collaboration and Discussion in Google Hangouts
(Spring, 2013)
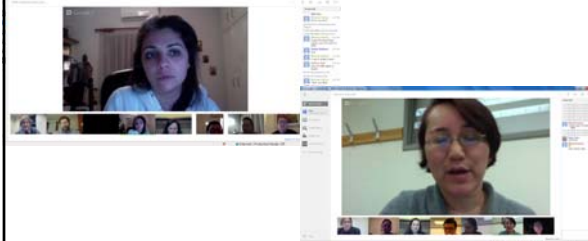
5. **A**utonomy, Choice:
A. Demonstrate, Explore, and Share Websites
Commonwealth of Learning, March 2013
http://www.col.org/news/Connections/2013Mar/Documents/Connections_March2013.pdf

ONLINE COURSE DEVELOPMENT FOR TEACHER EDUCATION IN JAMAICA

Workshop on OER use and re-use for teacher educators in Jamaica

Poll #2: (Tone, Encouragement, Curiosity, Variety, Autonomy)
Any light bulbs going off in your head so far…? If so, where?

A. Yes definitely

B. Maybe

C. No

6. **R**elevance, Meaningfulness:
A. Design Multimedia Glossaries
Ozgur Ozdemir, December 2012
http://r685glossary.shutterfly.com /
Umida Khikmatillaeva, Dec. 2011, P540
http://learningplanet.shutterfly.com/

7. **I**nteractive, Collaborative:
A. Collaboration and Discussion in Google Hangouts
(January 29 and February 25, 2013)
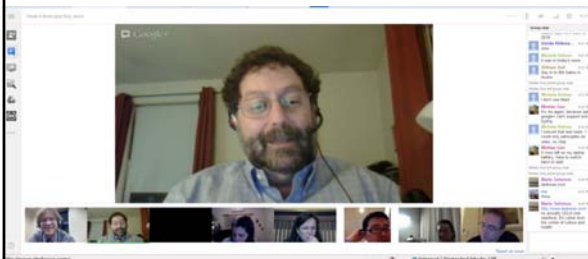
7. **I**nteractive, Collaborative:
B. Negotiate Meanings Online
(e.g., PiratePad: http://meetingwords.com/)

MeetingWords is a simple text editor for the web.
Your text is saved on the web, and more than one person can edit the same document at the same time.
Everybody's changes are instantly reflected on all screens. Work together on meeting notes, brainstorming sessions, homework, team programming and more!
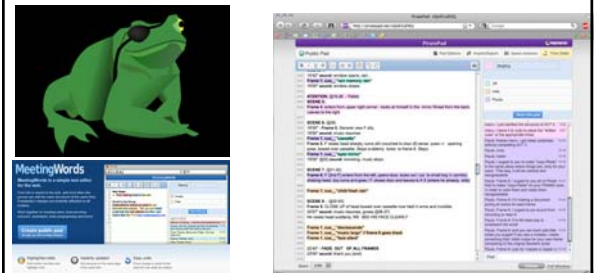
8. Engagement, Effort: A. Arab spring: an
interactive timeline of Middle East protests, The
Guardian, Garry Blight, and Sheila Pulham, July 12, 2011
http://www.guardian.co.uk/world/interactive/2011/mar/22/middle-east-protest-interactive-timeline

8. Engagement, Effort:
B. Life on Timeline
How Jimmy Wales' Wikipedia Harnessed the Web as a Force for
Good, Ted Greenwald, March 19, 2013, Wired Magazine
http://www.wired.com/wiredenterprise/2013/03/jimmy-wales-wikipedia/2/

8. Engagement, Effort:
**C. Timelines with Oral Histories, Slavery and
the Making of America Time and Place, PBS**
http://www.pbs.org/wnet/slavery/timeline/1857.html

9. Tension, Challenge, etc.:
A. Cage Match or Debate
MOOCs at SXSWedu (Curt Bonk & Chuck Severance)
http://chronicle.com/blogs/wiredcampus/at-south-by-southwest-education-event-tensions-divide-entrepreneurs-and-educators/42777
https://soundcloud.com/sxswedu/cage-match-the-massive-open

9. Tension, Challenge, etc.:
B. Final Four-Like Competitions
(i.e., Math March Madness, Greg Toppo, March 26, 2013, USA Today)
http://www.stargazette.com/article/20130326/NEWS02/303260008/Fibonacci-Final-Four-Math-March-Madness-coming

10. Yields Products, Goals:
A. Final Product Video Summaries
(on IQ Wall, April 22, 2013)
Piercarlo Abate
http://www.youtube.com/watch?v=-TURzHO0aU
http://www.youtube.com/watch?v=7O429IqxZaU&feature=youtu.be (Gangnam)

13

10. Yields Products, Goals:
B. I Done This, Milestone Planner,
and 43 Things

Commitments:
Stop and Share:
Which principle(s) of TEC-VARIETY will you use?

Tone/Climate
Encouragement, Feedback
Curiosity

Variety
Autonomy
Relevance
Interactive
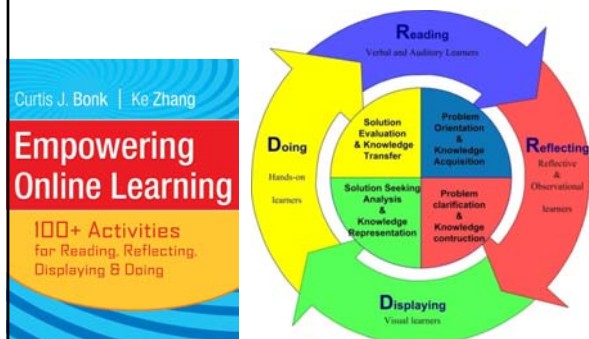**E**ngagement
Tension
Yields Products

Jean-Luc Picard said what?
That's right, Engage!

How can technology address
diverse learner needs?

Framework #1: The R2D2 Model

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

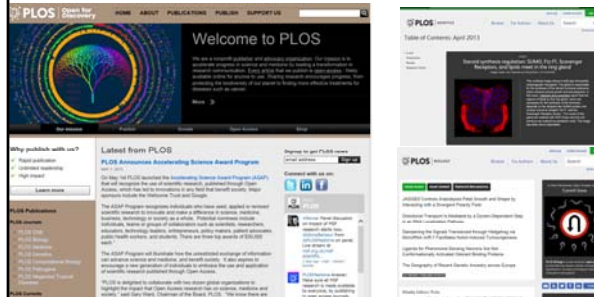- **Auditory and verbal learners prefer words, spoken or written explanations.**

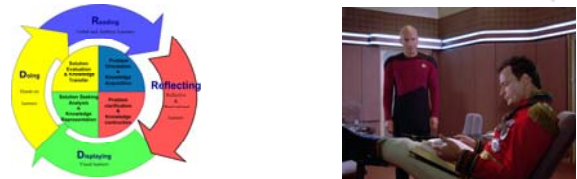## Read 1a. Interactive Stories
(e.g., Meograph
http://www.meograph.com/)

Read 1b. Reading from Open Access Journals (e.g., PLOS)
http://www.plos.org/
http://www.plosbiology.org/
http://www.plosgenetics.org/

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2. Reflective and Observational Learners

- **Reflective and observational learners prefer to reflect, observe, view, and watch learning; they make careful judgments and view things from different perspectives**

Reflect 2a.
### Reflect on Virtual Timelines
(Dipity, xtimeline, Simile, etc.)
http://www.usatoday.com/tech/news/story/2011-09-22/steve-jobs-dies/50672498/1
http://www.usatoday.com/news/destinations/story/2011-08-25/Martin-Luther-King-Jr-Memorial-in-Washington-A-closer-look/50136470/1?csp=34news
http://www.usatoday.com/story/life/movies/2013/04/10/harrison-ford-jackie-robinson/2001783/
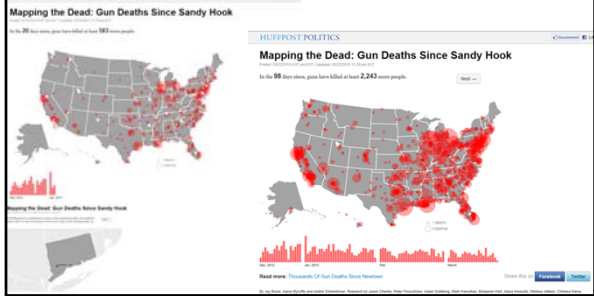

Reflect 2b. Big Issue Reflections
(Big Questions Online (BQO)), January 8, 2013
(e.g., Do We Have Souls?)
https://www.bigquestionsonline.com/content/do-we-have-souls
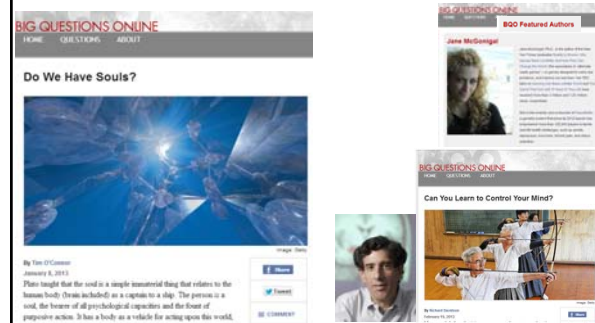
Reflect 2c. Reflections on Interactive Maps
Mapping the Dead: Gun Deaths Since Sandy Hook,
Huffington Post, March 22, 2013
http://data.huffingtonpost.com/2013/03/gun-deaths

3. Visual Learners

- **Visual learners prefer diagrams, flowcharts, timelines, pictures, films, and demonstrations.**

Display 3a. Interactive Map Timelines
(adults with college degrees by county, May 7, 2012)
http://todayscampus.com/article/Keith_Hampson_Interviews_Josh_Keller_on__Interactive_Graphics_for_Higher_Education
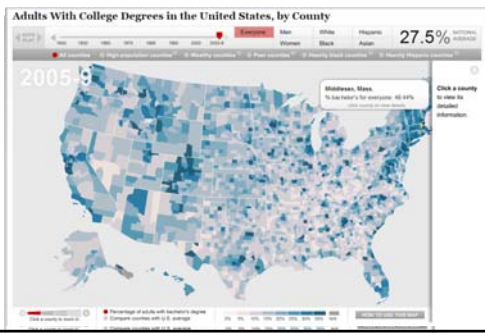
Display 3b. Virtualize Words Used
(e.g., Wordle, Tagzedo, Tagul, WordSift, Word It Out)
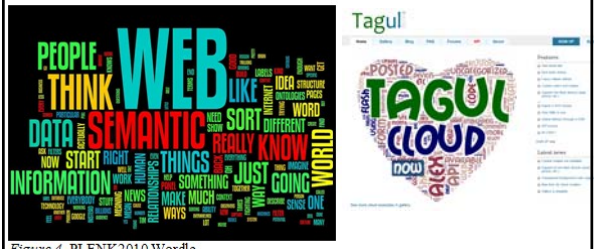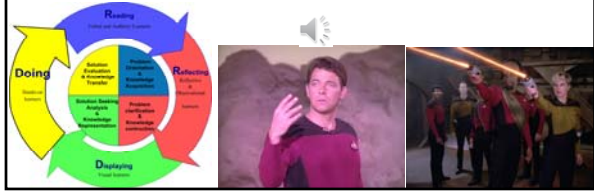http://shellyterrell.com/2010/02/14/12-word-cloud-resources-tips-tools/

Figure 4. PLENK2010 Wordle.

4. Tactile/Kinesthetic Learners

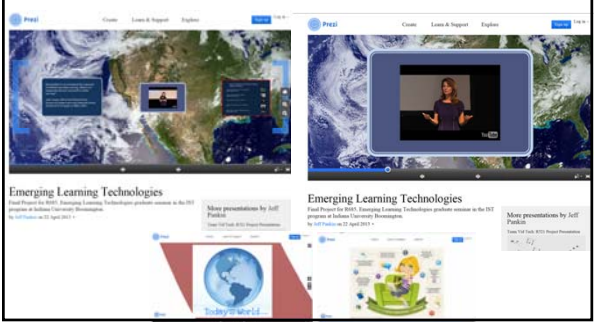- **Tactile/kinesthetic senses can be engaged in the learning process are role play, dramatization, cooperative games, simulations, creative movement and dance, multi-sensory activities, manipulatives and hands-on projects.**

Do 4a. Course Recap Prezi Presentations
Jeff Pankin, MIT, Prezi, Emerging Learning Technologies
http://prezi.com/1zbawrgirnzf/emerging-learning-technologies/?auth_key=4cc2f45a718fab699b35ea460c91a46d9e1bdac7
Jeffrey Barnette, Today's World
http://prezi.com/-ijzyothst-r/r685-final-project

Do 4b. Student Class Documentaries
Umida's R546 Documentary Project
http://www.youtube.com/watch?v=EMLTzqCV_5A

Do 4c. Book Trailers for Readers
http://www.booktrailersforreaders.com/How+to+make+a+book+trailer
http://www.booksurge.com/content/Video_Book_Trailer_Samples.htm
http://www.thebooklife.com/2012/01/upcoming-2012-ya-book-trailers.html
http://bookriot.com/category/book-trailer/
http://scottwesterfeld.com/blog/2009/09/leviathan-trailer/
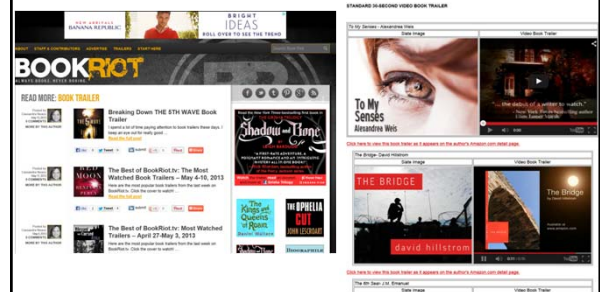
Poll #1: What phase of the R2D2 Method did you get the most ideas from?
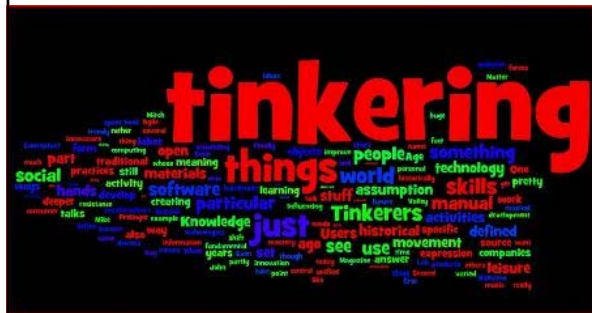
A. **Read (Auditory and Verbal Learners)**
B. **Reflect (Reflective Learners)**
C. **Display (Visual Learners)**
D. **Do (Tactile, Kinesthetic, Exploratory Learners)**

From Tinkering to Tottering to Totally Extreme Learning...

Tinkering

Tinker #1.
Using Online Encyclopedias
(e.g, the Encyclopedia of Earth:
http://www.eoearth.org/)
http://en.wikipedia.org/wiki/Encyclopedia_of_Earth

Tinker #2.
Educational Videos: TED-Ed
http://education.ted.com/

Tinkering #3.
Tracking the Life of a Scientist
(e.g., Brian J. Ford, independent scientist)
http://www.youtube.com/user/tellymonitor#p/a/u/1/LhGeApsKjasr
http://www.labnews.co.uk/news/prehistoric-revolution/
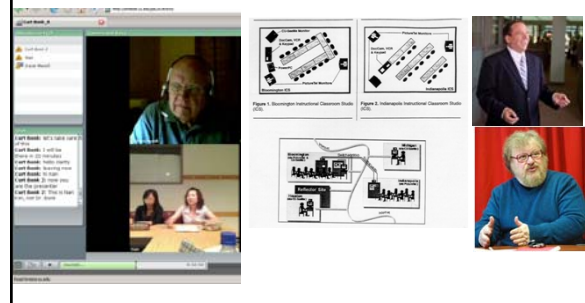http://www.youtube.com/embed/kjmNnRFHCzk?rel=0

Tottering

Totter #1. Combining Asynchronous and Synchronous Events (flipping classes)

Totter #2. Multiple Guest Experts
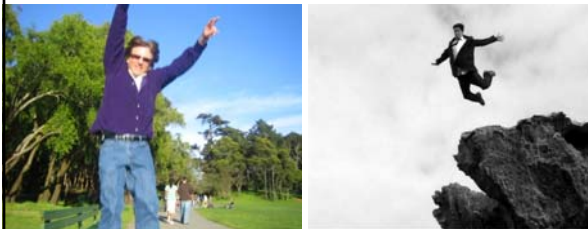Sara de Freitas and Jim Hensman, U of Coventry, UK
(https://connect.iu.edu/p2le1yx6z6x/)
Jay Cross, Berkeley (https://connect.iu.edu/p4bytsoronh/)

Totter #3. Uploading Mobile Books
(e.g., BookRix, http://www.bookrix.com/
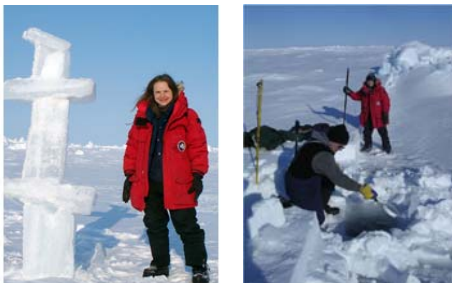

We are entering a jumping off point…

You Want Totally Extreme?
Apple's new 'spaceship' campus: What will the neighbors say?, Doug Gross, CNN, May 22, 2012
http://www.cnn.com/2012/05/22/tech/innovation/new-apple-campus/index.html?hpt=hp_bn11
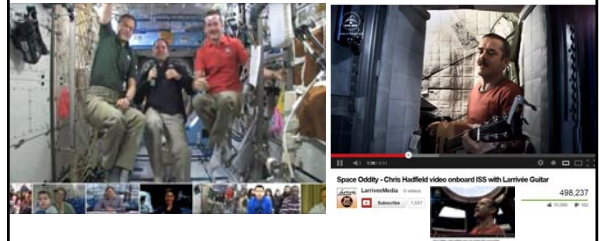

Totally Extreme #1.
iPod Learning from MIT OCW
(e.g., Wendy Ermold, University of Washington)

Totally Extreme #2.
February 22, 2013 and May 12, 2013
NASA's spacey Google+ Hangout shows off zero-G antics – and cats!
http://gajitz.com/nasas-spacey-google-hangout-shows-off-zero-g-antics-and-cats/nbp

Space Oddity - Chris Hadfield video onboard ISS with Larrivée Guitar
International Space Station Commander, Chris Hadfield, performs a revised version of David Bowies Space Oddity.
http://www.youtube.com/watch?v=c6c8BcBZ0tAl&feature=player_embedded

Totally Extreme #3.
MBAs from War Zones…!
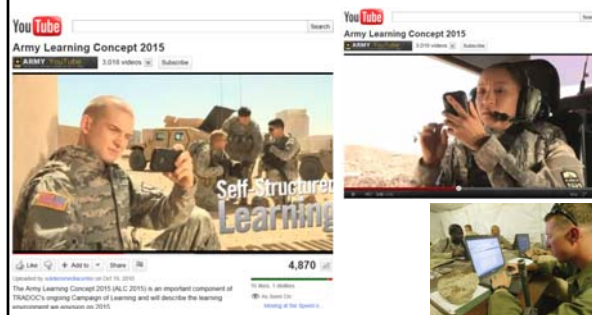
Totally Extreme #4. Blog Adventures
Tracing the fate of Algal Carbon Export in the Ross Sea, Antarctica
TRACERS: The NBP13-02 Cruise, February 12 to April 5, 2013
http://tracers-nbp1302.blogspot.com/p/the-project.html
From: Cassandra Brooks [cbrooks1@stanford.edu]
Sent: Thursday, January 31, 2013 12:09 AM
Subject: I'm heading out today to New Zealand, then flying to Antarctica where
we pick up our NSF icebreaker. We'll be at sea for about 54 days.

Totally Extreme #5.
Video Walls of Experts

Totally Extreme #6.
Interactive Globes
(e.g., NY Times Interactive Photo Globe)
http://www.nytimes.com/interactive/2010/05/03/blogs/a-moment-in-time.html?_r=0

Stop and Share:
Three Words from Today's Session!

Who is Content Now?
And Who is Stretched Now?
Website: www.Extreme-Learning.com
Slides at: TrainingShare.com
Book: http://worldisopen.com/
Dr. Curt Bonk – CJBonk@Indiana.edu