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

Curtis J. Bonk, Professor, Indiana University
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**New Technologies =
New Delivery Methods…**
CLO, September 2011

Learning Delivery

Yonsei University, Seoul, Korea
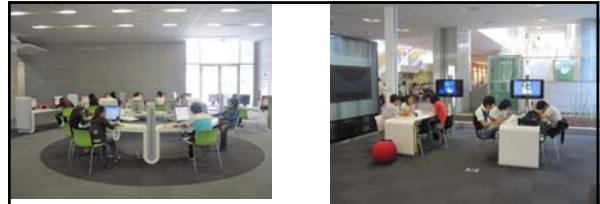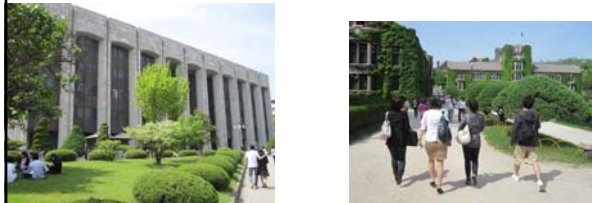
Yonsei University Library, Seoul, Korea

Active Learning Centers
Union Street Center "Collaborative Café"

**University of Minnesota
Student-Centered Active Learning
Environment with Upside-down Pedagogies**
http://scaleup.ncsu.edu/MinnVideo/MinnVideo.html

Audience Poll:
Raise your hands if learning technology has ever transformed your life.
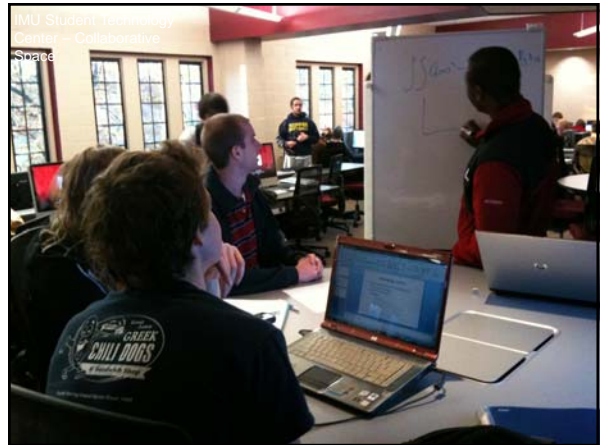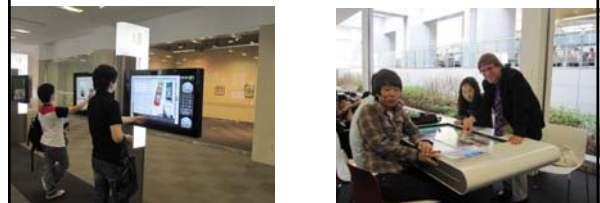
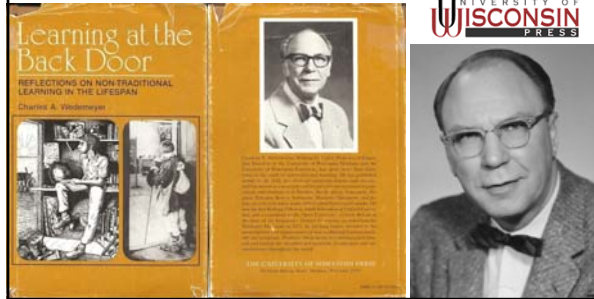**Change not possible as an accountant...**
(Life as a CPA, 1981-1986)

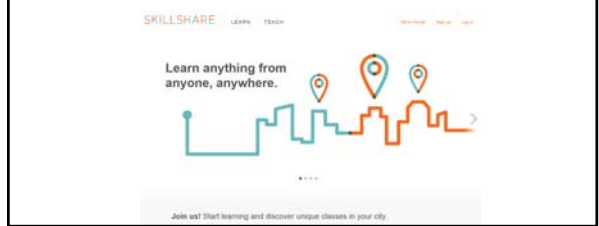Property of Museum of History & Industry, Seattle

Decided to Read, Read, Read...
(e.g., People like Albert Bandura, Howard Gardner, Roger Schank, Elliot Soloway, etc.)

AI magazine

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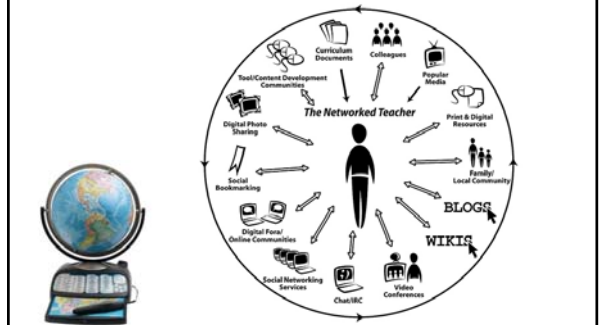(thanks to Bob Clasen and Charles Wedemeyer, the University of Wisconsin)

Learning at the Back Door
REFLECTIONS ON NON TRADITIONAL LEARNING IN THE LIFESPAN
Charles A. Wedemeyer

UNIVERSITY OF WISCONSIN PRESS

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

SKILLSHARE LEARN TEACH

Learn anything from anyone, anywhere.

Join us! Start learning and discover unique classes in your city.

**Now we have...
The Web of Learning**

The Web of Learning

The Networked Teacher

Curriculum Documents
Colleagues
Popular Media
Print & Digital Resources
Family/ Local Community
BLOGS
WIKIS
Video Conferences
Chat/IRC
Social Networking Services
Digital Face/ Online Communities
Social Bookmarking
Digital Photo Sharing
Tool/Content Development Communities
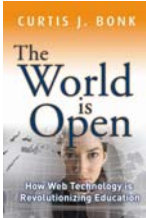
The Triple Convergence

The Flat World P's	The Open World P's
1. Processes Leveled	1. Piping/Infrastructure
2. Playing Field Equalized	2. Pages of Content
3. Participants	3. Participatory Culture

It is very open!
(e.g., Korea, Saudi Arabia, Norway, etc.)

The World Open at the University of Batangas
(February 21, 2012)

The World is Open at ICODeL 2012
February 22-24, 2012

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)

Audience Participation!

1. WE

2. ALL

3. LEARN!!!

Video Lectures

Home

Downloadable Resources

Khan Academy:
http://www.khanacademy.org

Salman Khan: Math master of Internet

Assessment

Home

TED: Technology, Entertainment and Design

Link TV: http://www.linktv.org

Social News

Home

Synchronous Forums

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

CurrentTV
Citizen Generated News

Jon Bowermaster :
http://www.jonbowermaster.com

Home

Blog

Videos

Earthducation: http://lt.umn.edu/earthducation

Field Update

Home

Polar Husky: http://www.polarhusky.com

Modules

Home

Forums

I am not Content!!!

Blazing internet speeds in South Korea
Washington Post, March 24, 2012,
http://www.washingtonpost.com/world/2012/03/24/gIQAx3NbYS_graphic.html

Average measured Internet speed, **by country**

RANK		MEGABITS PER SECOND	YEAR-OVER-YEAR CHANGE
1	South Korea	16.7	18.0%
2	Hong Kong	10.5	14.0
3	Japan	8.9	5.8
4	Latvia	8.9	47.0
5	Netherlands	8.5	34.0
6	Switzerland	7.5	40.0
7	Czech Republic	7.3	33.0
8	Ireland	7.0	57.0
9	Romania	6.6	-5.5
10	Denmark	6.3	25.0
13	United States	6.1	23.0
	Global	2.7	39.0

Note: Data collected in **third quarter of 2011**. Broadband is connections of 2 Mbps or greater.

Blazing internet speeds in South Korea
Washington Post, March 24, 2012,
http://www.washingtonpost.com/world/2012/03/24/gIQAx3NbYS_graphic.html

Average measured Internet speed, **by city**

RANK		CITY	MEGABITS PER SECOND
1	South Korea	Daegu	21.5
2	South Korea	Daejeon	20.1
3	South Korea	Anyang	18.2
4	South Korea	Kimchon	18.0
5	South Korea	Seoul	16.9
6	Japan	Shimotsuma	15.5
7	Japan	Kanagawa	14.5
8	South Korea	Suwon	14.4
9	Japan	Tokai	14.3
10	Japan	Urawa	14.1
13	United States	San Jose	13.0

In South Korean classrooms, digital textbook revolution meets some resistance, Washington Post, March 24, 2012,
http://www.washingtonpost.com/world/asia_pacific/in-south-korean-classrooms-digital-textbook-revolution-meets-some-resistance/2012/03/21/gIQAxiNGYS_story.html?wpisrc=emailtoafriend

In South Korean classrooms, digital textbook revolution meets some resistance

Ahn Young-joon/AP - Teacher Yeon Eun-jung, right, helps student Jeong Ho-seok study on a tablet PC during a lesson at Sosu Elementary School in Gwesan, South Korea in July. The country is now scaling back a plan to digitize classrooms by 2015.

February 2012
Seeds for Empowerment, Tanzania
Getting Juice for Technology (generator)
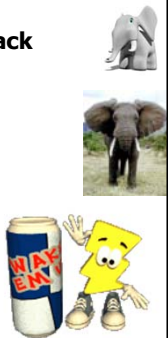
February 2012
Seeds for Empowerment, Tanzania
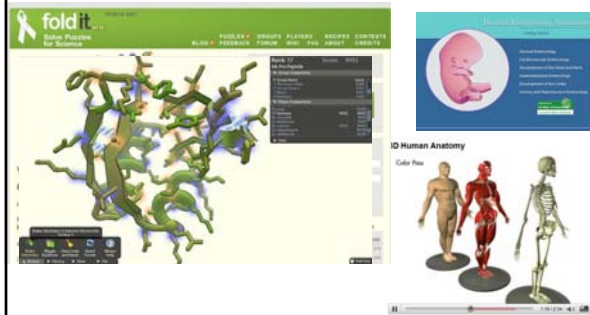**(Paul Kim turning it on!)**

Framework #2:
The TEC-VARIETY Model

Tone/Climate
Encouragement, Feedback
Curiosity

Variety
Autonomy
Relevance
Interactive
Engagement
Tension
Yields Products

Framework #3:
The R2D2 Method

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

Framework #4:
From Tinkering to Tottering to Totally Extreme Learning...

Tinkering

Tinker #1.
Cases and Video Scenario Learning
(Franklin University, cost and forensic accounting course)
http://video.franklin.edu/Franklin/acct/managerialAccounting/cost-behavior-player.html
http://video.franklin.edu/Franklin/acct/342/common/fraudScenario02.html

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

Tinker #3. Timeline Tools
(e.g., USA Today, August 26, 2011)
http://www.usatoday.com/news/destinations/story/2011-08-25/Martin-Luther-King-Jr-Memorial-in-Washington-A-closer-look/50136470/1?csp=34news
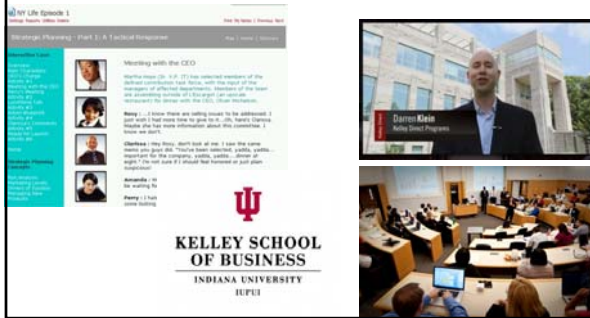
Tinker #4. Video Animations and Simulations

Tinker #5. Collaborative Groups
(Google Docs, Ning, Google Groups, MSN Groups, Yahoo Groups)

Tinker #6. Case Learning and Role Play (Kelley Direct, IU)

Tinker #7. Online Experiments (e.g., psychology)

Tinker #8. Reading from Open Access Journals; Listen to Open Access Podcasts

Tinkering #9.
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

Origins of Humans, Brian J. Ford, Microbiologist, Cambridge, UK
http://www.youtube.com/user/tellymonitor#p/a/u/1/LhGeApsKiasr
Origin of Humans: http://www.youtube.com/user/tellymonitor#p/u/2/sWWnVEdI8cU
Tellymonitor's Channel: http://www.youtube.com/user/tellymonitor
BBC programs omit living cells: http://www.youtube.com/watch?v=rdNpTh6Cx6Y
Secret Weapons: http://www.youtube.com/user/tellymonitor#p/u
Dinosaurs (Laboratory News, April 1, 2012): http://www.labnews.co.uk/news/prehistoric-revolution/

Tinker #10. 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.)

Tinker #10b. Online Art
Google Art Project,
NBC Nightly News, April 3, 2012
http://www.msnbc.msn.com/id/3032619/vp/46945508#46945508

Tinker #11.
Using Online Encyclopedias
(e.g, the Encyclopedia of Earth:
http://www.eoearth.org/)
http://en.wikipedia.org/wiki/Encyclopedia_of_Earth

Tinker #11.
Educational Videos: TED-Ed
http://education.ted.com/

Tottering

February 9, 2012
A first-hand look inside a flipped classroom,
eSchool News, Meris Stansbury
http://www.eschoolnews.com/2012/02/09/a-first-hand-look-inside-a-flipped-classroom/

Watch Lake Elmo Elementary's experience: Watch Lake Elmo Elementary's experience:

February 12, 2012:
Mooresville's Shining Example
(It's Not Just About the Laptops), ALAN SCHWARZ, NY
Times
http://www.nytimes.com/2012/02/13/education/mooresville-school-district-a-laptop-success-story.html?_r=1&pagewanted=all

Flipped Classrooms?
Chronicle of HE, February 19, 2012
http://chronicle.com/article/How-Flipping-the-Classroom/130857/?sid=pm&utm_source=pm&utm_medium=en

February 19, 2012
How 'Flipping' the Classroom Can Improve the
Traditional Lecture

February 21, 2012
Rethinking Learning with Salman Khan, Stanford Graduate
School of Business
http://www.youtube.com/watch?v=W-vj6BhQa5w
Khan Academy Founder Finds Simplicity Appeals in Online Education Experimentation
http://www.gsb.stanford.edu/news/headlines/sal-khan-academy.html
Let's use video to reinvent education, TED, March 2011
http://www.ted.com/talks/salman_khan_let_s_use_video_to_reinvent_education.html

Totter #1.
Wikibooks, Wiki-Glossaries, Wiki-Syllabi
(Ron Owston, York University, Toronto)

March 20, 2012
Georgetown Learning Initiatives
Wikipedia Public Policy Initiative
http://gli.georgetown.edu/#soliya

11

Totter #2.
Student Films and Documentaries
http://vimeo.com/33090590/ (Verily)
http://vimeo.com/33123125 (Anjali)
http://www.youtube.com/watch?v=IOZHvuZ3rbw&feature=youtu.be (Yue)

March 20, 2012
Georgetown Learning Initiatives
Social Justice Documentary
http://gli.georgetown.edu/#soliya

Totter #3. Bridges to World of
Expert and Practitioners
(e.g., Invite, Watch, or Listen to Online Conferences,
Expert interviews, blogs, chats, etc.)

Totter #4. Global Class
Videoconferencing and Remote Lands

March 20, 2012
Georgetown Learning Initiatives
Soliya Connect
http://gli.georgetown.edu/#soliya

Totter #5. Combining Asynchronous
and Synchronous Events

Totter #6. **Multi-Site Events**
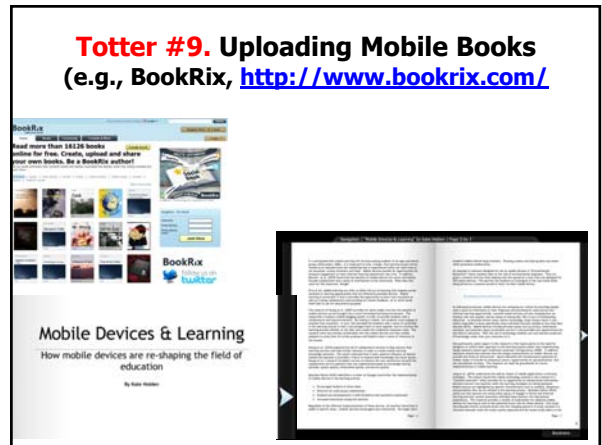(e.g., William and Mary, March 3, 2011)

Totter #7. Podcast Productions and Virtual Performances for students of pronunciation class
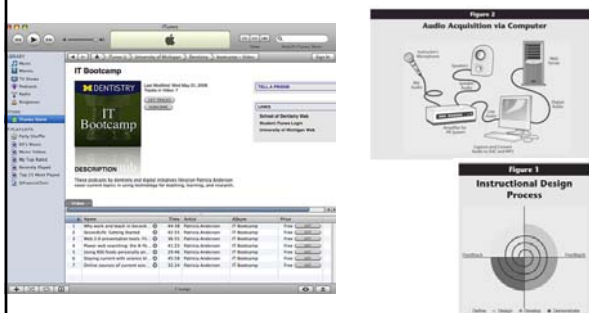(e.g., Tzu-Su Chen, Taiwan)
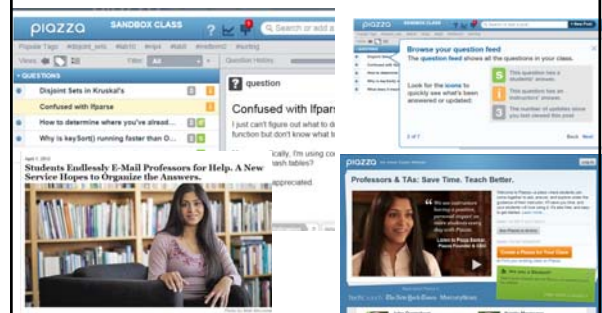

Totter #8. **Video Blogging**

Totter #9. Uploading Mobile Books
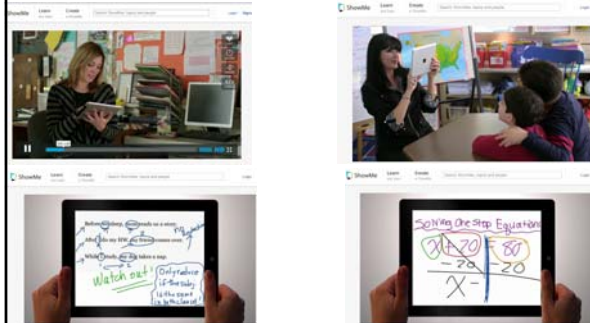(e.g., BookRix, http://www.bookrix.com/)

Totter #10. Podcasting Medical Lectures
(School of Dentistry, University of Michigan)

Totter #11. Online Instructor Q&A
April 1, 2012, Piazza: https://piazza.com/

Totter #12. Lessons on iPad
(e.g., ShowMe: http://www.showme.com/)

Totter #13. Student Collaborative Knowledge Building and Sharing
(e.g., Popplet: http://popplet.com/
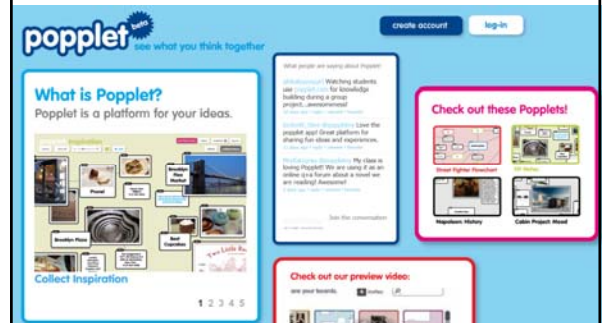
The Prophet of Tottering…
Michael Wesch, Kansas State
February 12, 2012

We are entering a jumping off point…

Totally Extreme Learning…

Extreme Learning Defined
(Bonk, 2011)

"Extreme learning can involve learning while on a boat at sea near the North Pole or when sailing around the world. It also occurs when tracking the blog and podcasts postings of those in similar adventures such as riding a bike or a car around the world or through the Americas. Extreme learning also includes more sedate and passive forms of learning including watching an online video in TED, LinkTV, CurrentTV, or YouTube."

Extreme Learning continued...
(Bonk, 2011)

"Through extreme learning Web resources, those stuck behind prison walls, injured and in a hospital bed, or unemployed and unable to pay for college tuition can learn to be more productive members of society. Others might be in transition from one career to another and find open educational resources and OpenCourseWare can arouse new interests and confidence" (see Iiyoshi & Kumar, 2008).
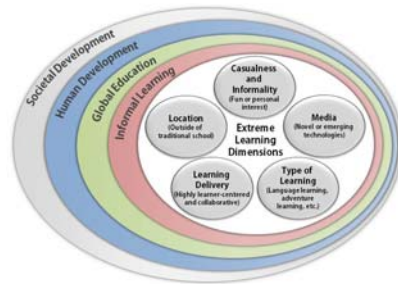
Extreme Learning

"Still others might be retired and offer their educational ideas and mentoring services to anyone interested in the topic. Others might be earning their MBA while in war zones in Iraq or Afghanistan."
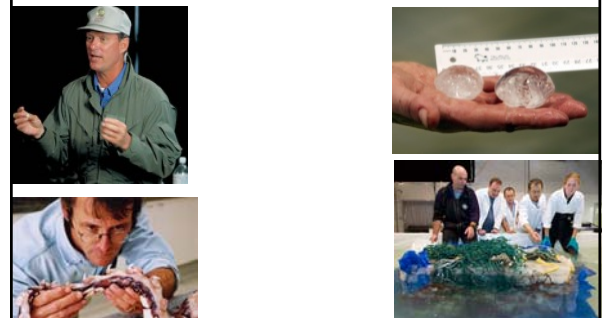
Visual Representation of the Dimensions and Impact of Extreme Learning

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.
Blogging Field Archeology Research
(e.g., Lily Henry Roberts, UCLA digging in Hope, BC,
Stó:lō First Nation people from 12,000 years ago)

Totally Extreme #4.
Google Earth Archeology Research
(e.g., 450 sites of interest in Afghanistan found by
David Thomas, La Trobe Univ., Melbourne, Australia)

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.
Virtual High School Learning by Boat
(e.g., Bridey Fennell and her family sailing and
learning in the Caribbean)

Totally Extreme #7.
Kids Learn Online, Teach Online
(e.g., the World's Youngest Teacher; Adora Svitak)

Totally Extreme #8. The Last Ocean Project, Ice Stories, and Shark Theater (24 foot inflatable screen (and outdoor ocean theater) to tiny island communities) http://www.lastocean.com/ and http://lastocean-project.org/; Cassandra Brooks

Totally Extreme #9.
iPod Learning from MIT OCW
(e.g., Wendy Ermold, University of Washington)

Totally Extreme #10. 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/cnnheroes.stokes/index.html?hpt=T2

Totally Extreme #11.
Learning from Localized OER and OCW
(e.g., Opensource Opencourseware Prototype System (OOPS), Lucifer Chu, Janitor of OOPS)

Totally Extreme #12. Open Teaching and Massive Open Online Courses (i.e., MOOC, David Wiley, George Siemens, Ray Schroeder)

Totally Extreme #13. International and Global Education and Competitions
(e.g., Global Game Jams, online role play, Global Videoconferencing)

Totally Extreme #14.
**Telepresence and Teleportec Systems**
(e.g., Cisco and HP)

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

Totally Extreme #16.
Online Language Learning
(e.g., 300,000 people per month listening to
ChinesePod, co-hosted by Jenny Zhu, John Pasden,
and Ken Carroll)
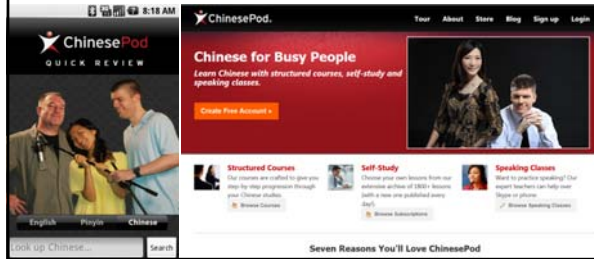
Totally Extreme #16.
**More Online Language Learning and
Conversations**
(e.g., PalTalk, iTalki, Palabea, Babbel)
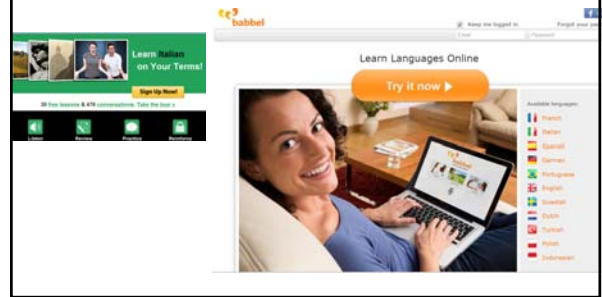
Totally Extreme #17.
Shared Online History Videos
(e.g., "History for Music Lovers" with over 50 songs including:
Trojan War "Tainted Love" by Soft Cell; Charlemagne "Call Me"
by Blondie, Cleopatra, Napoleon, Shakespeare, the Vikings)
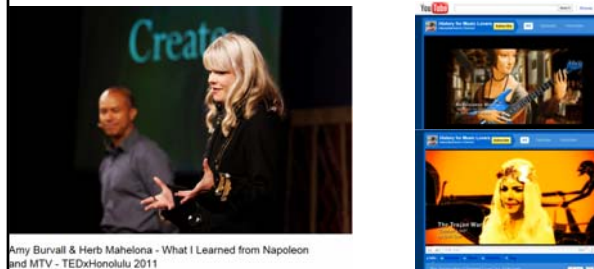
Totally Extreme #18.
MBAs from War Zones...!

Totally Extreme #19.

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 #20. Pocket School and Videoconferencing in Developing World
(Paul Kim, Stanford and Seeds for Empowerment in Rwanda, India, Mexico, Tanzania, etc.)

February 2012
SMILE: Stanford Mobile Inquiry-based Learning Environment

February 2012
Seeds for Empowerment, Tanzania
(Alex Bonk and the kids...)

March 20, 2012
SMILE: Stanford Mobile Inquiry-based Learning Environment

March 20, 2012
SMILE: Stanford Mobile Inquiry-based Learning Environment

Extreme Learning Stories
Mobile Storytelling and Pocket Schools
(e.g., Paul Kim, Stanford & Seeds for Empowerment)

Totally Extreme #21.
Students/Instructors Publish Own Books
(e.g., Apple's new electronic textbook initiative)

Totally Extreme #22.
Massive Open Online University
University 2.0 - Sebastian Thrun (Livestream)
http://new.livestream.com/accounts/50648/events/698/videos/112950/
http://www.youtube.com/watch?v=SkneoNrfadk

January 23, 2012
Udacity- Sebastian Thrun
http://www.udacity.com/

February 15, 2012
Guess what! You just got into MIT! Free ride! Kind of!
Marketplace Tech Report, John Moe,
http://www.marketplace.org/shows/marketplace-tech-report

February 16, 2012
Online Badges and Certifications from OER
University of Illinois at Springfield, Ray Schroeder
https://sites.google.com/site/opencontinuinged/

Extreme Learning Website
www.extreme-learning.com

Extreme Learning Areas

1. Adventure Learning and environmental education,
2. Virtual Education (formal as well as informal),
3. Social Change and Global Learning,
4. Language Learning,
5. Shared online video,
6. Learning portals.

Visual Representation of Extreme Learning

Human activity system for understanding the impact of Extreme Learning
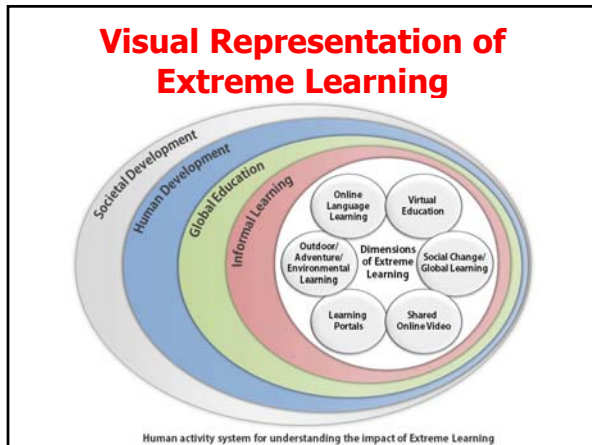
1. Virtual Education

Open High School of Utah, Khan Academy, Michigan Virtual School

2. Online Language Learning

ChinesePod, LiveMocha, Babbel

3. Portals of OER

OER Commons, Open College Textbooks, WorldBridges.net

4. Social Change and Global Education

SierraClub, Longitude, iCivics

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5. Shared Online Video

128

TED, CurrentTV, YouTube, Explo.TV, ClipChef, Big Think, etc.

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6. Adventure and Environmental Learning

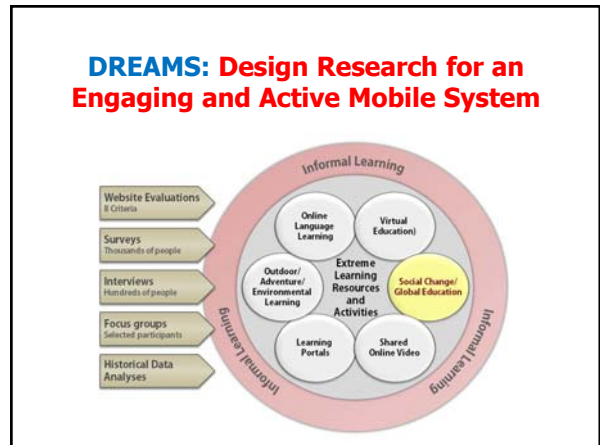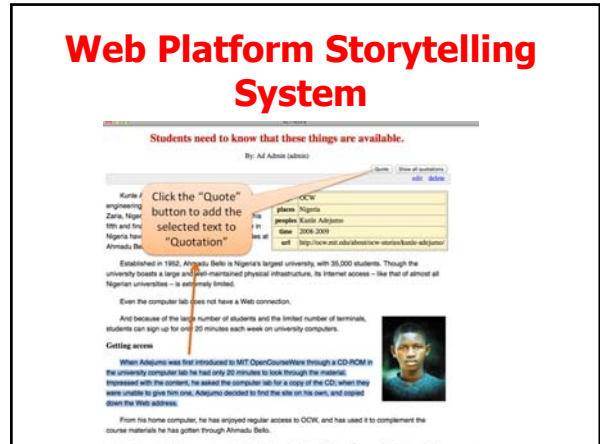**PenguinScience, Impossible2Possible, EARTHducation**

"Coolest" Extreme Learning Websites

| Categories	Coolest websites	
1. Online Language Learning	Live Mocha BBC Learning English	Englishpod Chinese Pod
2. Virtual Education	MIT OpenCourseWare (OCW) MIT OpenCourseWare (OCW) Highlights for High School Khan Academy Open University UK-OPenLearn Ed Tech talk	John Hopkins OpenCourseWare NASA for Educators Florida Virtual School Smithsonian
3. Social Change/Global Education	iCivics	
4. Adventure/Outdoor Learning	Earth education Jon Bowermaster	Nautilus Live Explore
5. Learning Portals	MERLOT	
6. Shared Online Videos	National Geographic Education Academic Earth Discovery News Video	Wonder How To Videos Explo.tv Link TV

Future: **E**xtreme **L**earning **F**eatured site (ELF Awards)

HOPES: Humanity's Open Platform for the Exchange of Stories

Sample HOPES Stories

Web Platform Storytelling System

HOPES Mobile Platform Storytelling Entrance

DREAMS: Design Research for an Engaging and Active Mobile System

Extreme Learning "Stretches the Edges" of Humanity

**What are your Extreme Learning
HOPES and DREAMS?**
Website: www.Extreme-Learning.com
Slides at: TrainingShare.com
Book: http://worldisopen.com/
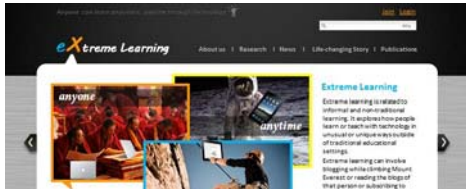
Info and Contact:

Dr. Curt Bonk – CJBonk@Indiana.edu
Write to me: curt@worldisopen.com
Website: www.extreme-learning.com