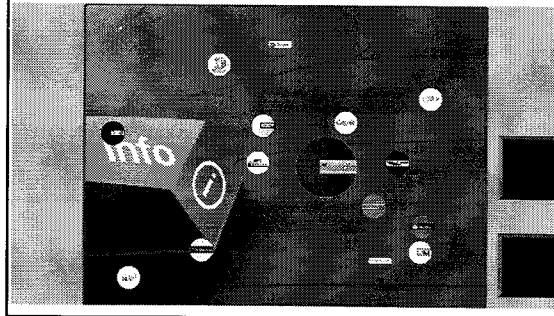## How the Learning World Became Flat: Ten Knowledge Sharing and Technology Trends Equalizing Access to Learning

Curtis J. Bonk, Professor, Indiana University
President, SurveyShare
cjbonk@indiana.edu
http://php.indiana.edu/~cjbonk

---

http://ella.slis.indiana.edu/~aenkim/icon ping.html

Phases of Technology in Education

1. Technology to enhance learning/knowledge
2. Technology to extend learning/knowledge
3. Technology to transform learning/knowledge
4. Technology to share learning/knowledge

Knowledge Sharing
(Fuji Xerox, p. 9)

"Knowledge sharing is the way (social) and means (technical) by which an individual, team, organization and/or community connects and communicates, to continually create, innovate, learn and act."

Poll #1: Should e-learning courses and material be shared?
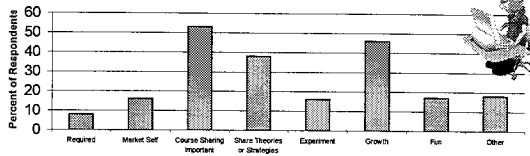
- Yes
- No
- Not sure

Most are Scared to Share!!!

Why Share?

Bonk, C. J. (2002, January). *Executive Summary of "Online teaching in an online world."* United States Distance Learning Association (USDLA). http://www.usdla.org/html/journal/JAN02_Issue/article02.html.

Figure 11. Reasons Why Respondents Posted to the WLH or MERLOT*

Do You Share?

1. Who has shared music in an iPod or MP3?
2. Who has used collab software? (Google Groups, Yahoo Groups, Sharepoint)
3. Who has used online phone services such as Skype or Google Talk?
4. Who has assigned teams online?
5. Who has embedded international exchanges or expert guests?
6. Who has used MERLOT, Connexions, or Jorum?

- Thomas Friedman, author of "The World if Flat":
- Tools for collaboration are changing the world
- http://mitworld.mit.edu/video/266/
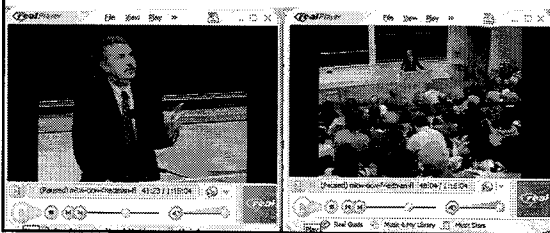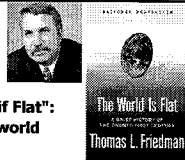
The Ten Forces that Flattened the World

1. 11/9/89: Berlin Wall came down
2. 8/9/95: Netscape went public
3. Work Flow Software (e.g., PayPal and eBay)
4. Open-Sourcing (Self organizing collaborative communities; Mosiac, Apache, Wikipedia, Linux, Mozilla/Firefox,)
5. Outsourcing (Y2K)
6. Offshoring (e.g., China, Mexico, Thailand)
7. Supply-Chaining (e.g., Walmart)
8. Insourcing (UPS fixing Toshiba laptops)
9. In-forming (e.g., Google, Yahoo!, MSN Web Search)
10. The Steroids: Digital, Mobile, Personal, and Virtual (e.g., wireless, file sharing, VoIP, video camera in phone)


## Effects of interactive multimedia in distance learning

Giti Javidi and Ehsan Sheybani, 2004, In Proceedings of the IASTED International Conference WEB-BASED EDUCATION

"The advancement in technology is shaping every aspect of our life, including education. One decade ago, the Internet was not critical to education. However, now, it has become an integral part of learning process. Internet technology is having a dramatic effect on colleges and universities, producing what may be the most challenging period in the history of higher education."

The Learning World has become Flat!

The Learning World is Flat
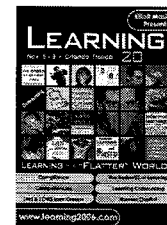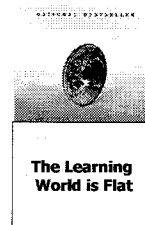
Telegraph: Flattening the world in 1860
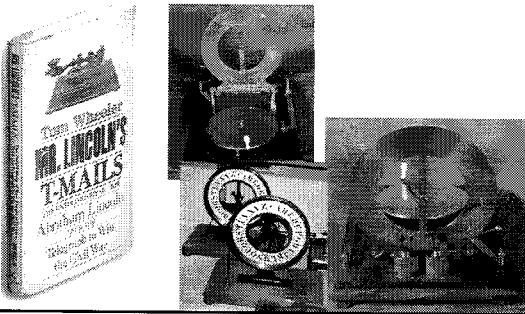
How Lincoln won the Civil War
Mr. Lincoln's T-Mails: The Untold Story of How Abraham Lincoln Used the Telegraph to Win the Civil War
by Tom Wheeler; Collins, 227 pages, $24.95.
By Russ Juskalian, Special for USA TODAY
Updated 11/26/2006 5:29 PM ET
http://www.usatoday.com/money/books/reviews/2006-11-26-lincoln-book_x.htm

- Wheeler argues that the use of the telegraph by Lincoln and his Union generals may have provided the advantage necessary to win the war.
- The telegraph was a killer app for its use along rail lines, enabling more efficient scheduling of trains— which, in turn, increased traffic, and profits.
- With this breakthrough, telegraph lines exploded across the Northern parts of the USA. The Southern states, afraid that industrialization would change their way of life dramatically, moved far more slowly in establishing both railroads and telegraph lines.

Eighth-grade students Tayler Bernholtz, left, Amy Lostroh and Kelsey Cardiff check out a weblog discussion related to the Civil War historical-fiction book 'Guerrilla Season' At South Valley Junior High School in Liberty, Mo. (Blogging now begins young USA Today, By Ashley Bleimes, USA TODAY, November 15, 2006, 12D). http://www.usatoday.com/life/2006-11-14-blogs-education_x.htm

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The Ten Forces that Flattened the Learning World

1. Tools for Searching/Finding Media and Information Resources
2. Availability of Quality Online and Blended Learning Environments
3. Free and Open Source Software for Learning
4. Open CourseWare
5. Online Learning Object Repositories and Portals
6. Virtual Collaboration Software
7. Online Massive Gaming, Simulations, and Virtual Worlds
8. Learning Mobility and Portability
9. Personalized Learning Tools
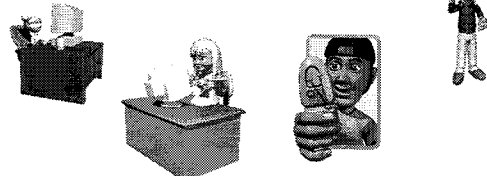10. Open Information Communities

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Three Larger Trends

- The availability of tools and infrastructure for learning.
- The availability of free educational content and resources (OER—Open Educational Resources).
- A move towards a culture of open access to information, international collaboration, and global sharing.
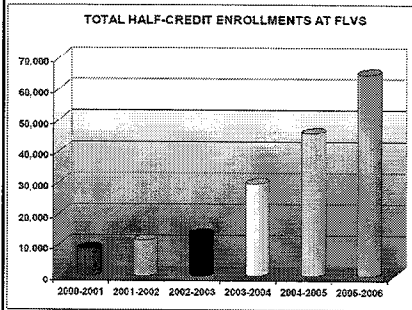

The Ten Forces that Flattened the World

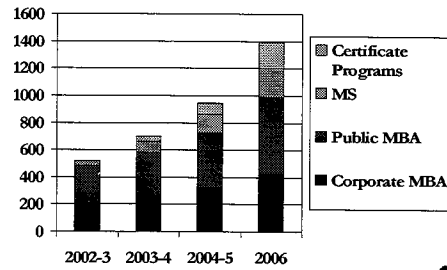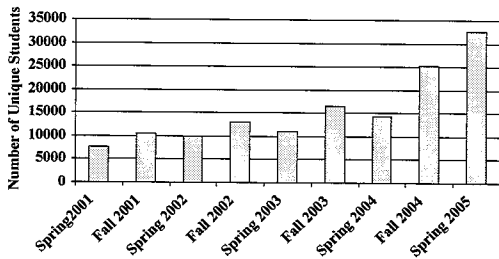1. Tools for Searching/Finding Media and Information Resources: (e.g., Google, Yahoo!)

**Google and Other Search Engines
(Sergey Brin, Co-Founder)**

Google Print Project

Google Print project inspires fans, fear

The complete plays of Shakespeare.
Now at your fingertips.

Google Video Project

Wikiasari - Wikipedia Founder Launching
a Google Rival

Welcome to Wikia Search

**The Ten Forces that
Flattened the World**

The Learning
World is Flat

2. **The Availability of Quality Online and
Blended Learning Environments**

USA Today, 1A, February 9, 2007

USA TODAY Snapshots

Growth of Online Learning in Secondary Schools

TOTAL HALF-CREDIT ENROLLMENTS AT FLVS

Growth in Student Enrollments

Legend:
- Certificate Programs
- MS
- Public MBA
- Corporate MBA

Enormous Learner Demand in Maryland
WebCT@Maryland
(March 2005)

SUNY Learning Network (SLN)
Online course enrollments

http://sln.suny.edu/
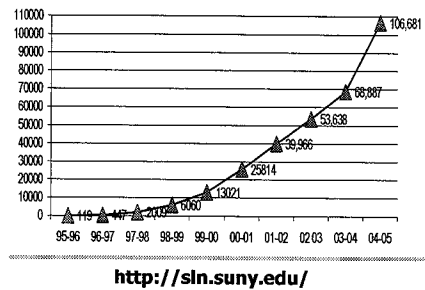
The OUM
(Abtar Kaur, 2005, Ed Media)

Enrollment Growth at the UOM

Year (2001 to 2005)
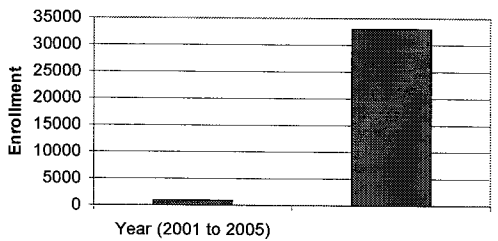
Chronicle of Higher Ed, January 5, 2007,
Employers Often Distrust Online Degrees.
By DAN CARNEVALE

5

By SAM DILLON, February 11, 2007
Troubles Grow for a University Built on Profits, NY Times

President William J. Pepicello says the university meets the needs of working students.

Robert Wancha, who is pursuing a bachelor's degree at the University of Phoenix, has criticized its standards.

The Ten Forces that Flattened the World

3. Free and Open Source Software for Learning

The Learning World is Flat

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1. eduCommons

Moodle sites
Total known sites
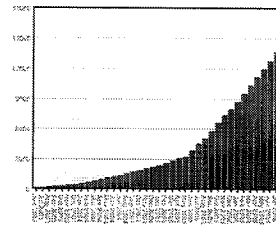
Moodle 1.5 sites: 10916 (of 14050)	
Courses:	465218
Users:	5039311
Teachers:	879515
Enrolments:	7578325
Forum Posts:	5489185
Resources:	2936706
Quiz questions:	3452107

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3. Sakai Project

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4. Learn from MIT

5. Open Source Planetarium!
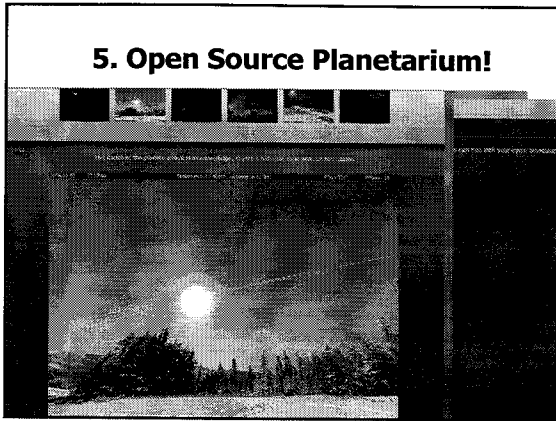
The Ten Forces that Flattened the World

4. **Open CourseWare (MIT OCW, Utah State, Japan, CORE, OOPS)**

Jan 4, 2007
How to go to M.I.T. for free
Online 'intellectual philanthropy' attracts students from every nation on earth.
By Gregory M. Lamb, *The Christian Science Monitor*

- By the end of this year, the contents of all 1,800 courses taught at one of the world's most prestigious universities will be available online to anyone in the world, anywhere in the world. Learners won't have to register for the classes, and everyone is accepted. The cost? It's all free of charge.
- The OpenCourseWare movement, begun at the Massachusetts Institute of Technology (MIT) in 2002 and now spread to some 120 other universities worldwide, aims to disperse knowledge far beyond the ivy-clad walls of elite campuses to anyone who has an Internet connection and a desire to learn.

Open Source Courseware

Open University of UK

Per David Wiley, Utah State University (October 2005)

"The first thing you should know is that there are many more schools than just MIT doing OCW now, including Johns Hopkins (ocw.jhsph.edu), Tufts (ocw.tufts.edu), Utah State University (ocw.usu.edu), and Foothill-DeAnza in California (sophia.fhda.edu).

Per David Wiley, Utah State University (October 2005)

"When you consider the schools participating in consortia in South America, China, Japan, France, Utah, and other regions, the number of universities involved with opencourseware in some manner reaches well into the hundreds. As of today there are currently 45 publicly accessible OCWs in the world in a number of languages."

Per David Wiley, Utah State University (October 2005)

"This is a message that should probably get out, also - not only is this movement worldwide and gaining momentum every day, it is also becoming a key part of international strategy to achieve equitable access to education for people everywhere."

Johns Hopkins OpenCourseWare Project

Tufts OpenCourseWare Project

University of Notre Dame

Japan OCW Alliance

Vietnam Fulbright Economics OCW

USU OpenCourseWare Project

John Dehlin
Utah State University

"If you think about the tangible, practical, human value some of these courses could have in the world, particularly the 3rd world....it can get quite exciting (to me at least)."

Shelley Henson, Center for Open and Sustainable Learning (COSL), Utah State University

CORE (China Open Resources for Education), OCW Mirror Site, China

The Biggest OCW Localization Volunteer Group in the World

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

OOPS' Operation

The main task of OOPS is translating and localizing the open course content. With minimum budget, resources, and only four full-time staff members at the Foundation, the procedure of the task are mostly completed by over 1,600 volunteers recruited from all over the world, which we consider as one of the most innovative and valuable part of OOPS. The volunteers contribute to the sharing of translating, editing, proofreading, administrative work, technical support, branding and etc. OOPS operation model is as follows:
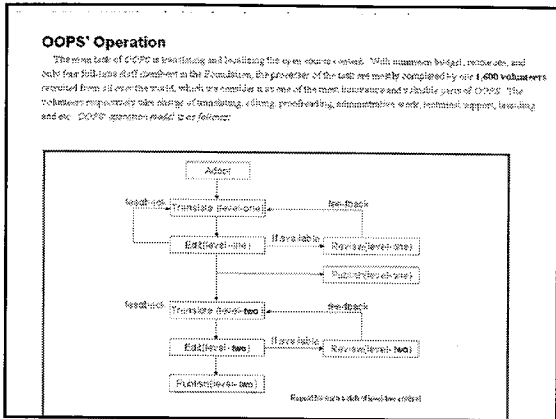
What's their Beliefs?
(Chu, Jan 1, 2007)

- **Collective Minds is better than a single genius translator.**
- **Perfect Translation doesn't exist.**
- **2,012 Volunteer translators**
  1,125 courses adopted
  639 courses near completion
  (level 1)
- **126 courses already finished**
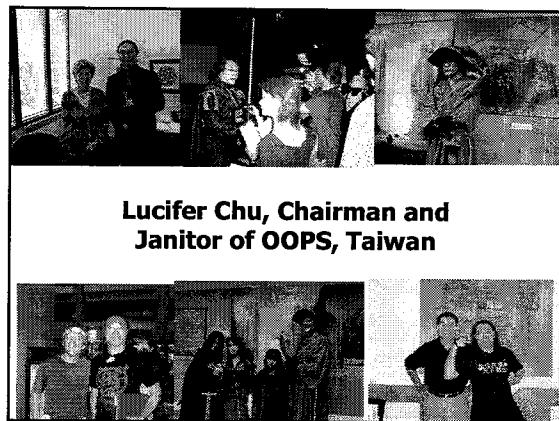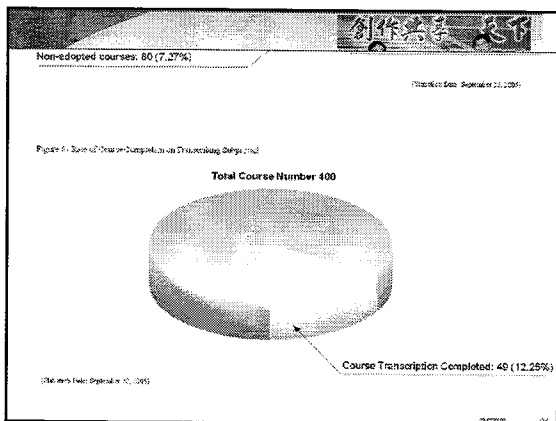
OOPS
Opensource Opencourseware Prototype System
開放式課程計劃

Non-adopted courses: 80 (7.27%)

Figure 6: Rate of Course Completion on Transcription Subprojects

Total Course Number 400

Course Transcription Completed: 49 (12.25%)

Lucifer Chu, Chairman and Janitor of OOPS, Taiwan

The Ten Forces that Flattened the World

The Learning World is Flat

5. **Online Learning Object Repositories and Portals (shared content)**

Free Government Resources!
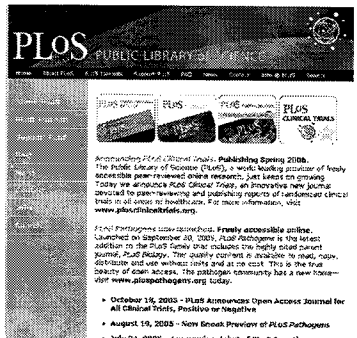
Utopia Univ of Texas
Diverse library and museum collections, research, and Scholarly materials; http://utopia.utexas.edu/texas/

- The University of Texas holds vast and diverse library and museum collections, research and scholarly materials, and many other knowledge assets. What if they could be leveraged among all the citizens of the state of Texas and beyond? This is the vision underlying UTOPIA, an expanding knowledge gateway to university resources, conceived in 2002 and launched in 2004, that continues to grow with the breadth and depth of UT's resources.

Public Library of Science

Museum of Online Museums
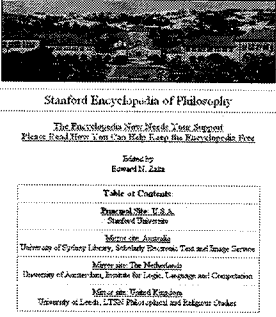
Stanford Encyclopedia of Philosophy
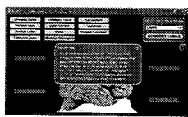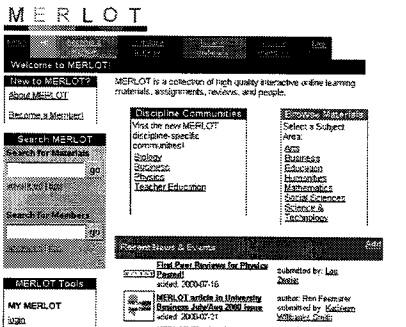
Trend 5, Part 2: Reusable Content Objects

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

Claude Ostyn, Click2Learn

A. MERLOT

MERLOT.org

MERLOT People Metrics
(Gerald Hanley, October, 2005)

MEMBERS	Birthyear 2001	Last Year 2004	This Year 2005
Students	706	3,652	5,010
Faculty	2,864	11,563	14,754
Staff	736	2,522	3,122
Administrators	-	280	746
Librarians	-	146	280
Other	421	1,867	2,341
TOTAL # of Members	4,727	20,030 453 per month	26,253 712 per month

MERLOT Collection Metrics
(Gerald Hanley, October, 2005)

Materials-Related Metrics	CSU 1999	Birthyear2001	Last Year 2004	This Year 2005
# of Materials (# deleted per year)	2,732*	5,421	9,806 (266)	12,274 (226)
"Persistence" of Materials	N/A	N/A	97.3%	98.2%
# of People who contributed materials	N/A	408* (7.5%)	1,423 (7.1%)	1,831 (7.0%)
Average # of materials added per contributor	N/A	9.3*	6.9	6.6

* = estimates

B. Connexions (Rice University)
http://cnx.rice.edu/

http://cnx.rice.edu:8080/stats
Sept 2005 had "14.4 million hits representing about 1 million page views by about 430,000 folks from 157 countries." growing at a rate of about 1 million hits per month.
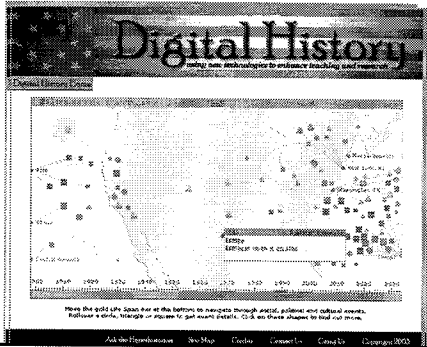

Connections Growth

>3500 modules (3-5 pages)
>180 courses (October 2006)
multiple languages
engineering, computer science, nanotech, physics, statistics, math, history, music, bio-diversity, botany, bio-info, IP, BRIT, UNESCO, UN, Sigma Xi, ...
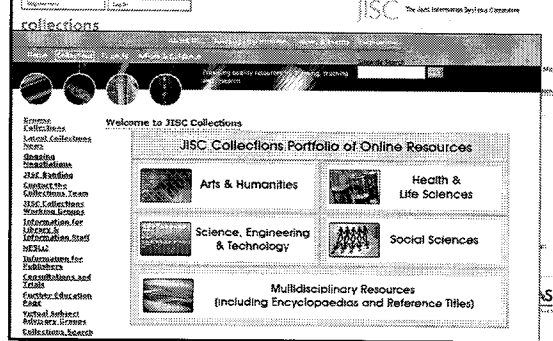from authors *worldwide*

Usage September 2006
17 million hits
1.2m page views
520k unique users
from 157 countries

C. Textbook Revolution



D. JORUM (from UK)

JORUM Overview

- "JORUM is a JISC -funded collaborative venture in UK Higher and Further Education to collect and share learning and teaching materials, allowing their reuse and repurposing, and standing as a national statement of the importance of creating interoperable, sustainable materials."

Jurom Workflow

Stages in workflow

Processes

Published after contribute stage
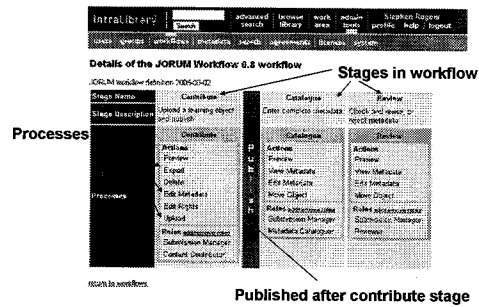
E. Global Education and Learning Community (GELC) Technology in the Developing World (Kirkpatrick, Dec 22, 2006, CNN Money)

- The Global Education and Learning Community (GELC) aims to bring the principles of open source to education. Scott McNealy, former CEO of Sun Microsystems, is working to create a free universal curriculum from Kindergarten to 12th grade in every major subject. Any educator/researcher can contribute and it will be in any language.

E. Global Education and Learning Community (GELC)
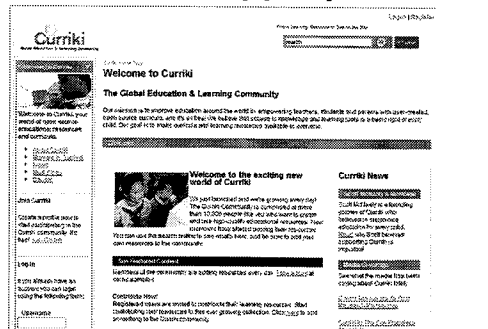
F. Google Free Stuff
Education 2.0: Web-based services and other open technology alternatives is changing the nature of school software.

- Hoping to lure teachers and students, thus capturing the attention of a whole new generation of users, Google--the world's largest internet company--this year launched an online portal for educators, complete with lesson plans and other resources designed to help educators use the company's free online tools (such as Google Docs and Spreadsheets, an open alternative to Microsoft's Word and Excel) in their classes. The site also contains resources for using Google Maps in education, and Google last month ran an online project encouraging students from around the globe to brainstorm ways to slow or stop global warming--using the company's software to collaborate.

F. Google School Resources

Google enrolls teachers in online software crusade

Dec 3, 2006, USA Today
Michael Liedtke, Associated Press
Google enrolls teachers to spread work online software crusade
Palo Alto High School journalism teacher Esther Wojcicki helps student Allison Wyndham at a computer during journalism class in Palo Alto, Calif. Wojcicki is helping Google bring its online suite of software applications to classrooms across the country

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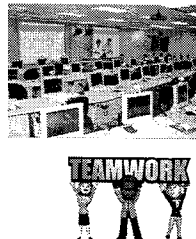## G. National Repository for Online Courses (NROC) Commons

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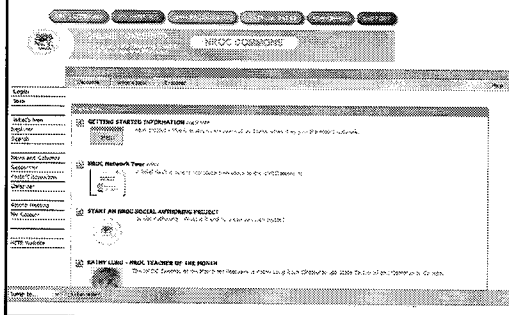
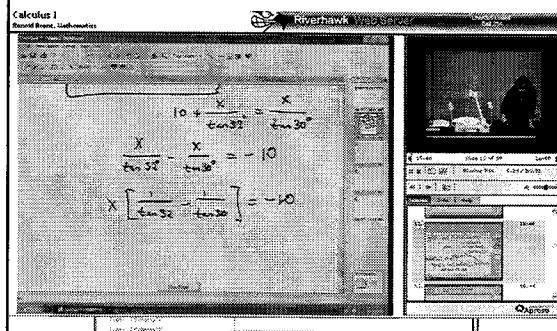## H. National Repository for Online Courses (NROC) Commons

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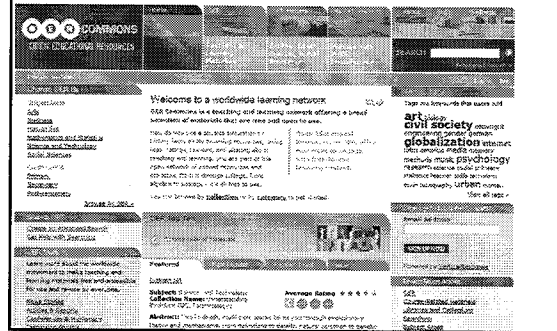
The Ten Forces that Flattened the World

6. Virtual Collaboration Software (async and sync)

The Learning World is Flat

Webcast Lectures (slides synched)

Online Groups...

Skype says it is used by 136 million people worldwide

The Ten Forces that Flattened the World

7. **Online Massive Gaming, Simulations, and Virtual Worlds**

The Learning World is Flat

Trend #3: Virtual Worlds/Virtual Reality/MMOG

By Daniel Terdiman, CNET News.com
October 18, 2006, 4:00 AM PDT
When Linden Lab CEO Philip Rosedale (right) spoke to CNET News.com reporter Daniel Terdiman at CNET's "Second Life" headquarters this week, the auditorium was filled with almost all the visitors it could handle.

The Ten Forces that Flattened the World

8. **Learning Mobility and Portability (low cost wireless devices)**

The Learning World is Flat

$100 Laptop

The project aims to build peer-to-peer communications

Negroponte says the new laptop is designed to be kid-friendly

Features

A revolution in a laptop
By Greg Norman

The CM1: Taking technology to the developing world
A revolution in a laptop
By Greg Norman
Sunday 13 August 2006, 18:49
Makka Time, 15:49 GMT

OLPC aims to turn the tide of urban poverty

Computers for Peace
By Grace Rubenstein
GLEF

Fold-up antennas let OX laptops link with others up to 1/3 of a mile away and share an Internet connection.

Screen swivels, closes, or lies flat for use as tablet, e-book, or game machine.

Using a Wi-Fi connection, groups of children can do activities together, such as share photos or compose and perform music.

Super high-definition, 7.5 in. diagonal screen is easily visible in daylight; designed for outdoor use.

Uses 2 watts of power (1/10th average laptop); manually rechargeable.

Rugged keyboard resists dust and dirt and will be configured for the local language.

Computers for Peace
By Grace Rubenstein
GLEF

- Drop a laptop computer into the hands of a child in a remote Chinese village, and Nicholas Negroponte predicts a cascade of results will unfold: The child will encounter new knowledge and ways to express herself through images, words, and sounds. She may help her parents find markets for their products in other cities via cheap satellite Internet -- or even develop a business plan herself. One family's growing prosperity will lift the village's fortunes and expand opportunities for their neighbors.

Wireless Technology

MOST (UN)WIRED SCHOOLS?

CNET and U.S. News and World Report got the top 50 universities' tech specs and asked them which computers they recommend to students and faculty.

CLICK HERE TO VIEW

DePauw University

Chronicle of Higher Education
February 9, 2007

The Ten Forces that Flattened the World

9. **Personalized Learning Tools (Blogs, Podcasts, MySpace, Flickr, RSS, etc.)**

Podcasting

...ts I have listened ...pposedly
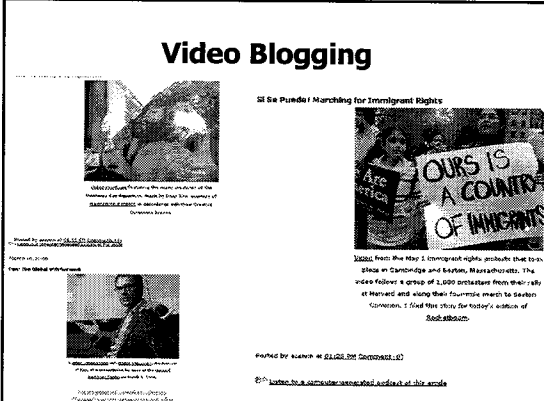
Technorati and Google Blog

Video Blogging

Online Photos, e.g., FLICKR

Social Networking Software

- Classmates: http://www.classmates.com/
- Facebook: http://www.facebook.com/
- Friendster: http://www.friendster.com/
- Friendzy: http://www.friendzy.com/
- MySpace: http://www.myspace.com/
- Orkut: https://www.orkut.com/
- Tribes: http://www.tribe.net/
- YouTube: http://www.youtube.com/

Social Networking Software (Web 2.0)

The Ten Forces that Flattened the World

10. Open Information Communities (e.g., Wikipedia, YouTube)

Sharing Encyclopedias
(Wikipedia; Jimmy Wales, Founder)

Sample Book (Learning Theories)
http://en.wikibooks.org/wiki/Main_Page

Sample Junior Book (Dinosaurs)
http://en.wikibooks.org/wiki/Main_Page

The Ten Forces that Flattened the World

Other Open Educational Resource Issues: Copyright, Consortia, Knowledge Brokers, Conferences, Journals.

Consortia, Networks, and Brokers of Knowledge (and Collections, David Wiley)

What can you do in a flat learning world?

- **Consider Copyright Options**
- **Publish in Open Source Journals**
- **Attend Open Source Conferences**

Creative Commons

Terry Anderson, Athabasca University (October 2005)

"Our Creative Commons licensed book **Theory and Practice of Online Learning** has been downloaded over 55,000 times (full text) and more by individual chapters. Parts have been translated into 6 languages and we are nearly sold out the 500 copies we printed at $50 a pop. So it is quite a success story."

- Anderson, Terry & Fathi Elloumi (Eds). (2004). Theory and practice of online learning. Canada: Athabasca University. http://cde.athabascau.ca/online_book/

Open Source Journal

Open Source and Open Educational Resources Conferences

Comparison of Sharing Sites:
MERLOT, Connexions, CAREO, OCW, CORE, OOPS
Grace Lin, Univ of Houston, 2005

- Goals: Link people, share knowledge, access resources, searchable database
- Funding: fully, partial, none
- Audience: higher education, students, teachers
- Content contributors: faculty, volunteers

Comparison of Sharing Sites:
MERLOT, Connexions, CAREO, OCW, CORE, OOPS
Grace Lin, Univ of Houston, 2005

- Role in knowledge sharing: producers, consumers
- Distinguishing features: creativity, structure, faculty community, rigorous review process
- (Different Affiliations, accomplishments, license, language(s), mission, etc.)

Sharing Questions (today)

- For what purpose will people share?
- Who will continue to maintain or update such sites?
- Will these "share" sites bridge the digital divide?
- How will copyright issues be addressed?
- What happens when one did not mean to share his or her course contents or ideas, or, at least, not as widely?

Sharing Questions (future)

- How will such learning objects of today be viewed in 100 or 200 years?
- What new technologies will emerge and be used for knowledge sharing?
- Will online sharing become expected of all faculty members around the planet?
- If so, how will that change the face of higher education?
- What collaborations are possible between corporate world and OOPS, OCW, MERLOT, etc.?

Poll #2: So who is still too scared to share???

Quote Continued...
A Final Quote:
It's a long, long road...
With many a winding turn.
That leads us to who knows where?...

It's a long, long road
From which there is no return
While we're on the way to there
Why not share

(The Hollies, 1969; He Ain't Heavy,
He's My Brother; B. Scott - B. Russell)

Computers for Peace; By Grace Rubenstein; GLEF, Interview with Nicholas Negroponte, MIT

- In an ideal world, what is your single greatest hope for this project?
- A three-step hope: World peace *through* the elimination of poverty *through* education *through* learning. Education is the goal; learning is the means. A lot of learning can happen without teaching. We're banking on that.

The Learning is Flat!
The End!!!