2008-09

SI 575 - Community Information Corps Seminar, Fall 2008

Atkins, Dan

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Open Educational Resources: Building Knowledge Communities Worldwide

Catherine M. Casserly
The William and Flora Hewlett Foundation
Community Information Seminar, University of Michigan
October 24, 2008

Photos from USAID web site
Today's Changing Technology And Social Norms Are Creating New Opportunities...

- **Online access** makes it easier than ever to reach people at home, at work and in remote locations
  - Fact: Internet users globally have grown ~300% since 2000

- **Increasing bandwidth** improves global capacity to access, create and personalize rich content
  - Fact: Global broadband penetration increased 20% in 2008

- **Globally networked communities** are becoming the norm for social and professional interactions
  - Fact: Half of adults globally have made friends online

- **New collaboration tools** for have been quickly adopted around the world
  - Fact: Wikipedia is the 9th most popular website in the world
Insufficient funding for education leads to negative outcomes for all

- Inadequate infrastructure
- Unfavorable teacher to student ratios
- Insufficient teacher compensation
- Poor teacher training
- Few opportunities for improving teaching practices

Did you know: 75 million children are out-of-school across the world
Open Education Resources Is An Emerging Global Movement That Capitalizes On These Trends

**OPEN EDUCATIONAL RESOURCES**

- Open, high quality digitized educational content, tools and communities
- Available anytime, anywhere for free
- Localizable and re-mixable
- Allows for collective improvement and feedback
OER Addresses The Opportunities And Challenges Of Today's World On Multiple Levels

**Economic**
- Scale benefits
- Collaboration incentives
- New business models

**Pedagogical**
- Participatory learning
- Tailored instruction
- Parallel teacher support & training

**Social**
"Freedom is the expansion of the ‘capabilities’ of people to lead the kind of lives they value—and have reason to value."
~Amartya Sen, Nobel laureate

**Opportunities**
- Online access
- Increasing bandwidth
- Globally networked communities
- New collaboration tools

**Challenges**
- Inadequate education infrastructure
- Unfavorable teacher – student ratios
- Poor teacher training
- Insufficient teacher comp.
## Defining Open Education Resources

<table>
<thead>
<tr>
<th>What OER Is...</th>
<th>...And What OER Is Not</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Open high quality digitized educational content, tools and communities</td>
<td>• A free sample of otherwise costly content</td>
</tr>
<tr>
<td>• Available anytime, anywhere for free</td>
<td>• Open content to a closed community</td>
</tr>
<tr>
<td>• Localizable and re-mixable</td>
<td></td>
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<tr>
<td>• Allows for collective improvement and feedback</td>
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</table>

"Everything that is really great and inspiring is created by the individual who can labor in freedom." ~Albert Einstein
However, OER Is Not Simply Black And White
Various Steps Along The Open Continuum

<table>
<thead>
<tr>
<th>CC license</th>
<th>Characteristics</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>All rights reserved</td>
<td>Some rights reserved; no derivatives or re-dist.</td>
<td>BC Campus, PBS Kids, Hippo Campus, YouTube</td>
</tr>
<tr>
<td>Members only</td>
<td>Some rights reserved</td>
<td>WGBH Teachers Domain</td>
</tr>
<tr>
<td>Some rights reserved</td>
<td>Derivatives, re-dist, non-comm. use</td>
<td>MIT OCW, OpenLearn</td>
</tr>
<tr>
<td>Some rights reserved</td>
<td>Derivatives, re-dist., comm. use</td>
<td>Wikipedia, Wikieducator</td>
</tr>
<tr>
<td>Some rights reserved</td>
<td>Public domain</td>
<td>(Some) Photos on Flickr, Project Gutenberg</td>
</tr>
</tbody>
</table>
A Huge Array Of OERs Exist Today
Across Different Populations Of Learners

- **K-12**
  - Teacher training
  - Video lectures
  - Lesson plans

- **Higher Education**
  - Courses
  - Courseware
  - Podcasts
  - Journals

- **Life-Long Learning**
  - Books
  - Images
  - Applications
  - Games
OERs Are Available Across The World

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<table>
<thead>
<tr>
<th>OER</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MITE</td>
<td>• Growing library of free, high-quality course content for students and faculty in high school and Advanced Placement courses</td>
</tr>
<tr>
<td>NROC HippoCampus</td>
<td></td>
</tr>
<tr>
<td>WikiEducator</td>
<td>• Planning education projects with free content</td>
</tr>
<tr>
<td></td>
<td>• Development of free content on for e-learning</td>
</tr>
<tr>
<td></td>
<td>• Networking on funding proposals developed as free content</td>
</tr>
<tr>
<td>TESSA</td>
<td>• Free teacher training resources to support school-based teacher education and training in sub-Saharan Africa</td>
</tr>
</tbody>
</table>
## More Higher Education Open Education Resources

<table>
<thead>
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<th>OER</th>
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<tbody>
<tr>
<td>MIT</td>
<td>• Free lecture notes, exams and videos from more than 1,800 Massachusetts Institute of Technology undergrad and graduate courses</td>
</tr>
<tr>
<td>Open University UK</td>
<td>• Online distance learning university with no qualification or prior experience required</td>
</tr>
<tr>
<td></td>
<td>• Open learning model where one learns at own pace</td>
</tr>
<tr>
<td></td>
<td>• ~150,000 undergrads; ~30,000 post grads</td>
</tr>
<tr>
<td>CORE</td>
<td>• Promotes closer interaction and open sharing of educational resources between Chinese and international universities</td>
</tr>
</tbody>
</table>

### Other OERs

- Open Universiteit Nederland
- OpenLearn
- Vietnam Open Courseware
# More Life-Long Learning Open Education Resources

<table>
<thead>
<tr>
<th>OER</th>
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</thead>
<tbody>
<tr>
<td><strong>Google Books</strong></td>
<td>• Free downloading of books without copyright protection, plus search function for all books, links to libraries for check-out, etc.</td>
</tr>
<tr>
<td><strong>Open Content Alliance</strong></td>
<td>• Consortium of cultural, technology, nonprofit, and governmental organizations from around the world building a permanent archive of digitized text and multimedia content</td>
</tr>
<tr>
<td><strong>Creative Commons</strong></td>
<td>• Collaborative project designing strategies and tools for faster, more efficient web-enabled scientific research</td>
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<tr>
<td><strong>Science Commons</strong></td>
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<tr>
<td><strong>Harvard University</strong></td>
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<tr>
<td><strong>Open2.net</strong></td>
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</table>
MIT Open Courseware

MIT is the first major university to publish academic content for free

- 2000 – MIT faculty vote to pilot Open Courseware in order to use the internet to advance knowledge around the world
- 2002 – 50 courses in three languages published
- 2004 – MIT partners with other institutions to form more OCWs and adopts Creative Commons licenses
- 2006 – The global Open Courseware Consortium meets for the first time

Tremendous global adoption since launch in 2002

~1.6 MM unique users/month

1,800 courses available
- 10 language translations, including:
  - Spanish
  - Portuguese
  - Chinese
  - French
  - German
  - Vietnamese
  - Ukrainian

User profile
- Self Learners (50%)
- Students (33%)
- Educators (17%)

Typical uses
- Personal knowledge (40%)
- Develop or plan a course of study (14%)

Source: MIT OCW
The TESSA mission: cheaply and effectively improve teaching in Africa

- Consortium creating OERs and course design guidance for teachers working in Sub-Saharan African countries
- All materials are modular in format. Focus on classroom practices in key areas:
  - Literacy
  - Numeracy
  - Science
  - Social Studies
  - The Arts
  - Life Skills
- All materials licensed by Creative Commons – can be revised and re-shared by anyone

18 national and international universities already participating

Source: TESSA
Creative Commons

Organization founded on the belief that current copyright law is outdated

• Non-profit started in 2001 by a collection of IP experts, scholars and media producers

• Released a set of copyright licenses in 2002 free for public use
  • Offer different variations of "some rights reserved" to protect rights of creators

• Developed metadata making license attribution information machine-readable

~130MM licenses granted to date

CC licenses (MM)

0 50 100 150

* * * * * *
MITE: addressing the quality gap in online learning

- Founded in 2003 to address the lack of high-quality high school and higher education content available on the internet
- MITE is a non-profit entity which acts as a facilitator between:
  - Academia
  - Business
  - Government
- Now operating at ~75% of breakeven, even though content is free for all individuals

A growing collection of successful initiatives

- More than 30 fully developed, modular online courses for college, AP and high school
- More than 50 member institutions, including:
  - state departments of education
  - LA Unified School District
  - UC-Berkeley
- Many publications on the new social and learning paradigms today's youth experience through digital media
Applying cognitive science to online learning

- Founded by cognitive scientists, experts in human computer interaction and seasoned Carnegie Mellon faculty
- All courses use a combination of these factors to facilitate learning
  - Cognitive tutors
  - Virtual laboratories
  - Group experiments
  - Simulations
- Effectiveness and usability studies are conducted and courses are optimized on a regular basis

Many ground-breaking courses developed

- Statistics
- Chemistry
- Empirical Research Methods
- Computational Discrete Mathematics
- Economics
- Logic
Open University Of The United Kingdom

Open enrollment, open content university for all people

- Pioneered online "supported open learning"
  - Students learn at own pace, working on assignments and preparing for exams
  - Support from individual tutors and service staff at regional centers

- Learning materials, including printed course materials, set books, audio cassettes, video cassettes, and software are open and free

- 86% of instruction received "Excellent" rating from QAAHE

- Currently ~150,000 undergrads; ~30,000 post grads

Online course usage data suggest mission is being met

2005-2006 Open Learn data

Usage
- 82% new to the OUUK
- Higher percentage of students with low socio-economic status

Course completion
- 60% complete opening course
- Higher percentage of black & minority students

Matriculation
- 44% register for OU programs
- Higher percentage of working adults seeking vocational training
Clarissa is a teen who uses online role play to socialize and improve her writing.

**Mini bio**
- High school student in a West Coast urban center
- Working class family

**How she uses OER**
- Plays "A Land Far Away," a free, online, user monitored role play game
- Plays with friends from school and meets new friends from around the world

**How she learns through the game**
- Participates in writing critiques with other players
- Collaborating on a script with another user in Spain
- Wrote 100 page screenplay based on the game for a school assignment

"It's something I can do to be creative and write and not have to be graded...You know how in school you're creative, but you're doing it for a grade so it doesn't really count?"

- Clarissa
## OER Faces Two Kinds Of Ongoing Challenges

<table>
<thead>
<tr>
<th>Technology and Development Challenges</th>
<th>Practical and Pedagogical Challenges</th>
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<tbody>
<tr>
<td>• Content quality assurance and management</td>
<td>• OER not a substitute for high quality teaching</td>
</tr>
<tr>
<td>• Sustainability of OER organizations and business models</td>
<td>• Open assessments not yet developed</td>
</tr>
<tr>
<td>• Design for new learning paradigms</td>
<td>• Measures for 21st Century skills not well developed</td>
</tr>
<tr>
<td>• Intellectual property and privacy issues</td>
<td></td>
</tr>
<tr>
<td>• Interoperability between different OERs</td>
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</table>
Many supporters with one common goal, but each has a unique OER investment strategy

- Google
- Scholastic
- Open Society Institute and Soros Foundations Network
- Shuttleworth Foundation
- Yahoo!
- Bill and Melinda Gates Foundation
- IBM
- The John D. and Catherine T. MacArthur Foundation
- The William and Flora Hewlett Foundation
Hewlett Foundation OER Strategy

OER Infrastructure
- Core Agencies
- Research
- Networks/Partnership
- Intellectual Property
- Sustainability
- Guidelines
- Metrics

Primary Goals
- Equalize Access to Knowledge
- Impact Teaching and Learning

Trajectory Changing Exemplars
- MIT & OCWs | Public Broadcasting | Health

Teaching & Learning Exemplars
- Open Textbooks
- Open Gaming
- Open Participatory Learning
- Teacher Training

Innovation R&D
The Hewlett Foundation Plays A Variety Of Roles To Achieve Its Strategic Objectives In OER

**Advocate** for general and specific OER causes around the world

**Convener** of global OER talent and resources through its grantee network, funding partnerships and industry relationships

**Thought Partner** for new and ongoing OER initiatives seeking to improve their impact in the space

**Funder** of OER initiatives that advance the foundation's OER strategic goals
Teaching & Learning Exemplars - Open Gaming

Embedded Content & Language Training

Peer-to-Peer Teaching

Immersive, Engaging Learning

Source:
http://www.hewlett.org/AboutUs/News/Foundation+Newsletter/Gaming+Comes+of+Age+as+a+Learning+Tool.htm
Foster pedagogical innovation and relevance

Core instructional content customizable for local use

Faster feedback loop for rapid improvement

More affordable for students at all levels

Biochemistry: http://web.virginia.edu/Heidi/home.htm
Bargaining and Markets: http://ww2.economics.utoronto.ca/osborne/bm/
Teaching & Learning Exemplars – Participatory Learning Environments

Enhance classroom learning with authentic, hands-on projects

Empower students as active participants, not just passive recipients

Expand future career horizons of students at an early age

Example: Gulf of Maine Research Institute Vital Signs program
Welcome to HEALTH OER

The HEALTH OER is a community space for the University of Michigan and its health sciences schools who are investigating publishing OER health education curriculum that could be used in a variety of settings around the globe. This will include releasing the entire pre-clinical curriculum for the M.D. degree at University of Michigan, including course materials, learning objectives, outcomes, competencies, and assessment standards. These materials will be made freely available to students, faculty, and self-learners around the world through a Creative Commons license. The goal is to make these materials useful in developing countries and to learn from their use and development outside the U.S.

Latest Resources

African Index Medicus
http://indexmedicus.afro.who.int/

AIM) was established by WHO in collaboration with AHILA to make available and promote the dissemination of African health and biomedical information. It includes journal literature as well as studies from international development agencies, nongov...

Source: http://www.oerafrica.org/
Lessons From The OER Movement

**Vision**
- Start with a **bold plan**
- Support the plan with an **iterative process** to operational-ize it quickly

**Ownership**
- Secure **institutional buy-in** up front
- Pursue public and private partnerships where able to
- **Demand driven**: Let targeted audiences drive design

**Design**
- **Involve all stakeholders** in planning and implementation
Now Is The Time For Action

Too many on the outside looking in...  ...Too much potential to ignore

Boy at window: CC BY mathew_ramsey (flickr) http://creativecommons.org/licenses/by/2.0/deed.en
3 children: Source: USAID web site
Academic building: CC BY-NC olegrauke (flickr) http://creativecommons.org/licenses/by-nc/2.0/deed.en
Student learning: CC BY aldrin_muya (flickr) http://creativecommons.org/licenses/by/2.0/deed.en
Library: CC BY-NC mollyali (flickr) http://creativecommons.org/licenses/by-nc/2.0/deed.en
Sources

Pg 1
• Internet world statistics http://www.internetworldstats.com/stats.htm
• Broadband statistics http://www.ispreview.co.uk/news/EkkEVVVpVFGxJjjYre.html
• Wikipedia data http://www.nielsen.com/media/toptens_internet.html

Pg. 2
• 75 MM out of school children http://www.ungei.org/infobycountry/247_1804.html