Ubiquitous Computing and Online Collaboration for Open Education

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Presentation Outline

Part 1: Ubiquitous Computing
Part 2: Open Education
Part 3: Online Collaboration

Text Color Code
Author’s views: reddish brown
Sources cited: purple, violet
Key technical terms: red
Navigation: light blue
Reflections on the conference theme

Open Education:
Towards a Ubiquitous Learning Environment

When we ask, “ubiquitous for whom?”, open education gives ubiquity a new meaning. Openness means wider access for students and new learning opportunities for people in developing and emerging countries. It is educators who will make this happen, collaborating internationally through the same technologies for education that empower students and informal learners.
The dictionary definition of ubiquitous is to be virtually everywhere, e.g., “Mobile phones are ubiquitous in most countries nowadays.” Today the common-sense meaning of ubiquitous computing is being able to access the Internet or computer networks from virtually anywhere at any time, through digital devices like mobile phones, wireless-ready laptops, iPads, etc. Ubiquitous computing also has a technical meaning that is still evolving (following slides). Ubiquitous computing can refer to the macro level, whereas at the micro level it manifests in many cases as embedded systems, software programs that control individual functions of everyday appliances (examples in later slides). The hardware includes sensors like infra-red or barcode readers in mobile phones. An example (illustrated in the next slide) is QR codes, which are part of the Internet of things, providing a physical world-Internet interface.
Ubiquitous computing includes devices that are usually operated offline, but are occasionally connected to the cloud or network through computers. This is needed for online content to go, like iPods, or for adding content to the cloud or network, e.g., by uploading digital video camera footage to YouTube, or recording a presentation for a podcast with a hand-held MP3 voice recorder.
Ubiquitous computing (ubicomp) is a post-desktop model of human-computer interaction in which information processing has been thoroughly integrated into everyday objects and activities ... More formally Ubiquitous computing is defined as “machines that fit the human environment instead of forcing humans to enter theirs.”

http://en.wikipedia.org/wiki/Ubiquitous_computing

The implied goal of ubiquitous computing is thus to serve people’s needs without their having even to notice. Cloud computing is a similar aspect of ubiquitous computing that simplifies people’s conscious tasks by storing and organizing information for users.

Another related concept is ubiquitous learning (U-Learning), applying the affordances of ubiquitous computing to education and informal or autonomous learning, any time and anywhere.
Ubiquitous computing > Embedded systems > types of embedded systems > examples in Japan

(Embedded systems are computer systems embedded in various products. In our department we develop embedded computing software for TVs, microwave ovens, digital cameras; mobile phones, PDAs, car navigation systems; office printers, copy machines, fax machines; and cars, vending machines, robots, satellites, and so forth.)
Ubiquitous computing > Embedded systems > examples in Japan > hospital wristbands

Along with electronic charts, we [Yamashiro Public Hospital near Kyoto] offer in-patients safe medical care through wristbands. To avoid mistakes in intravenous therapy, injections, and etc., with the wristbands we can confirm the patient’s name, sex, date of birth, blood type, and so forth.)

A barcode reader scans the barcode on the patient’s wrist, which links to the patient’s electronic chart in the hospital’s database, calling up the file to the laptop computer that the nurse wheels around. The barcode represents the URL or unique address of the patient’s file in the hospital’s Intranet. The national Kyoto Medical Center uses QR codes (earlier slides) instead of the above barcodes on their wristbands.
A **student info system** is a software application for education establishments to manage student data. Student information systems provide capabilities for entering student test and other assessment scores through an electronic grade book, building student schedules, tracking student attendance, and managing many other student-related data needs in a school, college or university.


Little information is available on (student) attendance management systems except for companies offering such systems in Japan and some universities in India. The author recommended such a system at his college before finding that such systems already existed. Students touch a sensor in the classroom with their ID cards, similar to a train pass. They and the teacher can check their attendance status online, making it ubiquitous. Such systems increasingly add features of student information systems *(defined above)*, and the providers use the analogy of electronic charts in hospitals *(電子カルテ)*.
Ubiquitous computing > location-based services > architecture including mobile phones with GPS


One example of location-based services that was in the paper was restaurant or store coupons, more than a year before Groupon started.
Ubiquitous computing > location-based services > example in Japan > public disaster information

Disaster Information

An earthquake occurred in your nearby area around 1:00 P.M., January 22nd, 2007.

- Earthquake Disaster Information
- Guide to Hospital
- Water Supply Guide
- Meal Supply Guide
- Lifeline Information

Guide to Hospital

The hospital in your area is the following:

- General Hospital
  Number of patients acceptable: 300
  TEL: 078-123-4567

(a) First notice

(b) Location of first aid agent

Figure 1.10 Emergency announcements with links in the case of an earthquake

Illustration of mobile phone screens, from Hirano et al. (2007)
Downes (2011) envisions a society where “knowledge and learning are public goods, freely created and shared, not hoarded or withheld in order to extract wealth or influence” (p. 3). He advocates “open source, open content, and open learning from the point of view of the person desiring access to these things, rather than from the point of view of the provider” (p. 6). Around 1995 “when the internet arrived it gave people a whole new set of capacities” (p. 37) or affordances, giving the user an active role in the content, and a potentially global audience (p. 38). But traditional media and traditional services view this new development, quite rightly, as a threat” (p. 38).

... right now the control, the mechanisms of the production of this new media, especially in the case of learning, is in the hands of the traditional content publishers. It’s the broadcast model. And the reason why we need to move to the conversation model is because: nobody can learn only by listening, nobody can teach only by talking. (Downes, 2011, p. 45)
e-Book Report on Open Education (2)

Regarding Open Educational Resources (OER), Downes (2011) writes: “For authors, open publication grants access to the widest possible audience. Studies show that their articles are cited more frequently ... For readers, open access grants access to an entire body of literature” (p. 63), which helps a new discipline develop. “And universities obtain increased visibility for their scholarship” (p. 63). Downes then cites Hylan (2005), as follows:

By Open Educational Resources (OER) initiatives, we understand:

1) Open courseware and content;
2) Open software tools (e.g. learning management systems);
3) Open material for e-learning capacity building of faculty staff;
4) Repositories of learning objects; and
5) Free educational courses. (p. 63)

Part 2, Section 2: Principles of Open Education (1)

Open education today involves utilizing the Internet and online education in the broadest sense, while upholding the value of openness and related convictions about the active role of an educator in society. A theory of open education could therefore be approached in terms of constitutive principles such as these:

- **ICT affordances** – leveraging information and communication technologies for learning, teaching, student empowerment, educator development, and networking; utilizing the open Web, mailing lists, learning management systems, social media and other Web 2.0 technologies that are affordable if not free, easy to use, with user needs and feedback influencing future services.

- **Open access** – open educational resources (previous slide), open access journals and other online publications, online conferences or online participation in f2f conferences, open enrollment or free educational opportunities.
Principles of Open Education (2)

- **Openness** – open-mindedness, inclusiveness, honesty, voluntarily sharing one’s wealth of knowledge and institutional resources, mentoring, and endeavoring to open the minds of administrators and teaching colleagues as well as of students.
- **Digital literacy education** – computer training, national and local e-learning initiatives, and efforts to overcome the digital divide, so that learners worldwide can have equal opportunities to make use of ICT affordances for their education.
- **Collaboration** – as openly as possible, cooperation between nations, educational institutions, or individual scholars, interdisciplinary research, and academic associations, including online or virtual organizations.
- **Disintermediation**
- **Multilingualism**
- **Intercultural reconciliation**
- **Universal humanism**
What “Open” means in Open Universities

On the author’s behalf, Dr. Ramesh Sharma asked Prof. Polu Satyanarayana, the last living founder of the Indira Gandhi National Open University (IGNOU), “what is 'open' in open universities?” This expands the principles of open education pedagogically:

The first chancellor of UKOU late Lord Crowther, after receiving Royal Charter in 1969 in his address said that the UKOU would be open, not only as to entry, but as to places, as to method and as to ideas. His address is often quoted by [Sir] John Daniel, whenever he lectures on ODL [open and distance learning].

[At IGNOU] the word open in open university reflects
- openness with regard to place and pace of study
- openness with regard to choice of courses
- openness with regard to completion of studies
- openness with regard to admission criteria

(personal correspondence, 19 February 2011)
Part 3: Global Online Collaboration

example of a virtual organization: the WAOE
Open Education ideals in WAOE’s founding Objectives

“(t) to maintain a global perspective as a world organization, supporting multilingualism and multiculturalism in online education, preserving human rights to diversity and mutual respect despite differences, and encouraging intercultural sensitivity and world reconciliation through intercultural communication among global citizens,
(u) to be as inclusive as possible in scope, serving the aspirations of all members and working for equitable access to online education and to membership, and,
(v) as world civilizations become digitized, to create an organization that can function entirely with digital technologies and thus provide worldwide access to its activities, research, and support.” [from WAOE’s Bylaws, 1998]
http://www.waoe.org/bylaw.htm
WAOE Milestones (1): from April 1998

- The Teaching in the Community Colleges (TCC) Online Conference keynote address and downloadable video proposed a year-round organization to turn online education into a professional discipline.
- Mailing list discussions continued after the conference, then a Constitutional Convention held in a BBS drafted WAOE formative documents and a system for online parliamentary procedures.
- Further meetings were held in a Web Board and using mailing lists hosted at American universities.
- Domain <waoe.org> acquired.
- Affiliated *Journal of Online Education* at New York University.
- WAOE recognized in educational technology sites, directories, and publications such as the *Chronicle of Higher Education*.
- WAOE registered as a non-profit public benefit organization (NPO) in the State of California with Articles of Incorporation and Bylaws.
WAOE Milestones (2): from 1999

- A Special Members’ Meeting ratified the NPO Bylaws and elected members of the Board of Directors from various countries
- Inaugural Members’ Meeting and Board of Directors’ Meeting, annual NPO requirements, were held, with the State of California interested in WAOE’s online voting
- Different mailing lists were developed for member discussions, organizational announcements, and officers’ discussions
- Besides the elected officers, appointed officers included the Cyber-Parliamentarian and a Coordinating Ring of officers from many countries
- Online newsletter WAOE Electronic Bulletin (WEB) started
- A World Cultural Festival was held online, then a summer festival in collaboration with Child Research Net, a Tokyo, Japan NPO
- A WAOE Online Educators’ Course utilized the Blackboard LMS
WAOE Milestones (3): from 2000

- The WAOE membership had been approaching a thousand participants from over 50 countries until a small membership fee was introduced, which regrettably discouraged the less privileged.

- After gathering initial membership fees, receiving donations, and transferring honoraria to WAOE from collaboration with Child Research Net, membership dues were abolished.

- WAOE online greeting card for the year 2000 in 20 languages.

- The Multilingual WAOE Project resulted in WAOE commissioned Websites, discussion groups, or membership information available in Spanish, French, Malay, Turkish, Italian, Portuguese, Hindi, German, Russian, Chinese, and Japanese.

- A policy for affiliating with other organizations was developed.

- 2000-2001: Online Educator Development Practicum with the MetaCollege LMS.

- WAOE collaborated with e-learning conferences in Malaysia, etc.
- A WAOE membership badge was made available online, but while only individuals can belong to WAOE, some groups have abused the badge or WAOE’s logo to falsely imply a sort of accreditation.
- An interactive world map of WAOE officers was offered along with other interesting items in java by Prof. Roberto Mueller in Brazil.
- 2002: Started donating WAOE server space, hosting the International Program for Africa and a Russian Initiative.
- WAOE co-sponsored Future of Universities event held in a MOO.
- 2003: WAOE donated $900 to an NGO in Estonia for Baltic region online education for minority Russian language users.
- WAOE blog “Intercultural Literacy” started.
- Main WAOE Website and mailing lists hosted at Portland State University by Chief Technology Officer Prof. Maggie McVay Lynch.

- Mentoring Project of WAOE expert volunteers to help educators develop plans for online education projects
- WAOE mentors in several countries added a blended element to a graduate course on Online Education at a national university in Japan with audioconferences, voice board, the WebCT LMS, etc.
- Four officers met face-to-face for the first time, giving a group presentation at a conference held at the University of Sussex, UK
- 2005: Spoken Libraries Project, whereby several WAOE members developed podcasting blogs
- 2006: WAOE moved Websites and e-mail accounts to a private ISP as the CTO retired, with mailing lists moved to Google Groups
- Resolution announced to clarify that WAOE is an academic organization for individuals, not accrediting groups using our logo
- WAOE members in six countries collaborated on two chapters in The International Handbook of Virtual Learning Environments

- **2007-present:** New Board of Directors: President Nick Bowskill (UK), Begum Ibrahim (Malaysia), Mike Holmwood (Canada), Eileen Dittmar (US), and Ramesh Sharma (India), with Steve McCarty (Japan) appointed President Emeritus, also serving as Webmaster
- **2008:** WAOE live 3D event with Capella University in Second Life
- **2010:** WAOE’s main site was redesigned
- **From 2010:** WAOE hosts a Moodle LMS site as a voluntary contribution to the distance education section of the national University of Guyana in South America
- **2010-2011:** Board meeting to consider changing from an NPO to an informal international NGO
- **2011:** WAOE contributed about $1,400 to a children’s hospital in Bangladesh
- **Some WAOE members able to meet f2f at the 5th International Malaysian Educational Technology Convention**
Those are some of the ways that WAOE has practiced global online collaboration and has worked for open education.

In summation, **ubiquitous computing** provides the *means* for ubiquitous learning (u-learning) or the fullest potential of open education *technologically*, **open education** provides the *ideals and goals pedagogically*, while a virtual organization like the WAOE provides a *vehicle* to bring educators together for global *online collaboration* in order *to achieve the goals of open education*. 
World Association for Online Education (WAOE) 
free membership & discussion list WAOE-Views: http://waoe.org

Thank you!

See the author’s online library: http://waoe.org/epublist.html