proceedings

Barcelona **OPEN ED** 2010

The Seventh Annual Open Education Conference

November 2-4 2010

Organized by:

UOC
Universitat Oberta de Catalunya
www.uoc.edu

www.ou.nl

BRIGHAM YOUNG UNIVERSITY
FOUNDED
BYU
1875
PROVO, UTAH

Proceedings

BARCELONA OPEN ED 2010

The Seventh Annual Open Education Conference

November 2-4 2010

Organized **by**:

Supported by:

The texts published in this book are – unless indicated otherwise – covered by the Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. They may be copied, distributed and broadcast provided that the author, and the institutions that publish them (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by/3.0/es/deed.en.

Edited by:

Universitat Oberta de Catalunya
http://www.uoc.edu/
Av. Tibidabo, 39-43
08035 Barcelona
Spain
Phone: (0034) 93 253 23 00

Presentation

Welcome to The Open Education Conference in Barcelona. This is an International forum to present and discuss innovations and research about Open Education and Open Educational Resources (OER) movement.

This year the main topic of the conference is **OER: Impact and Sustainability**. We are going to learn about Open Education projects around the world; how they are designed, implemented and sustained, what the different communities of learners need to allow OER projects to become a transforming engine for education, improving learning outcomes, and facilitating access to education to more and more people.

We strongly encourage your participation during the Conference and social events that we have organised.

The Open Education 2010 Executive Committee
Begoña Gros, Vice President for Innovation and Research, Universitat Oberta de Catalunya.
Fred Mulder, Rector, Open Universiteit Nederland
Richard Young, Dean, David O. McKay School of Education, Brigham Young University

Barcelona Open Ed 2010
The Seventh Annual Open Education Conference
November 2-4 2010
http://openedconference.org/2010/

Table of Contents

1. How to foster sharing of educational resources?
   John van der Baaren, Fred de Vries 7

2. Audio as medium for content distribution (providing access to knowledge)
   Nico Baird, Nick Esterhuizen, Karel J. de Beer 17

3. Collective Intelligence for OER Sustainability
   Simon Buckingham Shum, Anna De Liddo 25

4. Towards a Social Learning Space for Open Educational Resources
   Simon Buckingham Shum, Rebecca Ferguson 41

5. Open Educational Resources: Experiences of use in a Latin-American context
   José Vladimir Burgos Aguilar, Maria Soledad Ramirez Montoya 59

6. Student Journalism 2.0: Testing Models for Participatory Learning in the Digital Age
   Tom Caswell, Alex Kozak 71

7. OERopoly: A Game to Generate Collective Intelligence around OER
   Teresa Connolly, Elpida Makriyannis, Anna de Liddo, Tina Wilson 91

8. A Method and Tool to Support the Analysis and Enhance the Understanding of Peer-to-Peer Learning Experiences
   Anna De Liddo, Panagiota Alevizou 97

9. Bridging Formal/Informal Learning
   Yoshimi Fukuhara, Satoshi Yamawaki,Yasutaka Kageyama 111

10. Open to the users' needs: combining user-centered design, standards and open source software
    Muriel Garreta Domingo, Francesc Santanach Delisau 119

11. AgShare: Building Community and Content with Multiple Partners
Christine Geith, Neil Butcher, Karen Vignare, Nathan R. Yergler, Krishna Alluri 129

12. Use of open educational resources at the UOC
Roger Griset, José Manuel Rivera López 139

13. The relationships between technology and open education in the development of a resilient higher education
Richard Hall, Joss Winn 149

14. Faculty and Students Perspectives Towards Open Courseware, and Open Access Publishing: Some Comparisons Between European and North American Populations
Josep Hardin, Aristóteles Cañero 161

15. Conversation is the Key: A Short History of Smarthistory.org
Beth Harris, Dr. Steven Zucker 175

16. Business Models in OER, a Contingency Approach
Anne Helsdingen, Ben Janssen, Stefan Schuwer 185

17. Building Capacity in Developing Countries: OER for Food Safety
Gwyn Heyboer, Sunnie Kim, Leslie D. Bourquin, Deepa Thiagarajan 199

18. OpenSpires: Opening up Oxford like never before
Melissa Highton, Peter Robinson 209

19. Sustaining OER at the University of Cape Town: Free, but not cheap
Cheryl Hodgkinson-Wiliams, Shihaam Donnelly 215

20. TwHistory: Sharing History Using Twitter
Marion Jensen, Tom Caswell, Justin Ball, Joel Duffin, Rob Barton 227

21. Reaching the Heart of the University: Libraries and the Future of OER
Pieter Kleymeer, Molly Kleinman, Ted Hanss 235

22. Open online courses in Colombia: Report of an educational and technological experiment
Diego E. Leal Fonseca 245

23. Justifying Institutional Investment in OER Development: OERs as Marketing Vehicle
Theo Lynn, Laurent Muzellec, Neil Bruton 259

24. Open Learning Network: the evidence of OER impact
Patrick McAndrew, Karen Cropper 273

25. Open access press vs traditional university presses on Amazon
Rory McGreal, Edward Acqua 285

26. Approaches to OER Development
Rory McGreal 295

27. When the mummy is digital: preservation and dissemination
Julià Minguillón 305

28. Innovative Applications: Open Educational Resources and Mobile Resources Repository for the Instruction of Educational Researchers in Mexico
Fernando J. Mortera-Gutierrez 315

29. Open video tools to support the production of online collaborative audiovisual projects: How to promote collective creation in e-learning
Adriana Ornellas, Muriel Garreta Domingo, Antoni Marín, Francesc Santanach Delisau 325

30. Capturing and Organizing Prior Student Learning with the OCW Backpack
Brian Ouellette, Elena Gitin, Justin Prost, Peter Smith 337

31. An Ontology for Open Rubric Exchange on the Web
Brian Panulla, Megan Kohler 347

32. Educational innovation in large groups: Design of an experimental study implemented at the Polytechnic University of Madrid 361
Rodrigo Pardo , Teresa González Aja, Elena Merino Merino

33. Building a Manifesto for OER sustainability: UK experiences
Chris Pegler 371

34. OER in Portugal as agent of curriculum innovation and technological change Inducing practices of "new" teaching standards
Paulo Manuel de Matos Pereira 381

35. OER as a Model for Enhanced Teaching and Learning
Lisa Petrides, Cynthia Jimes, Clare Middleton-Detzner, Holly Howell 389

36. EduFeedr: following and supporting learners in open blog-based courses
Hans Põldoja 399

37. Open Educational Resources for Development of University Courses
Griff Richards, Stewart Marshall 409

38. Barriers and Motivators for Using Open Educational Resources in Schools
Thomas Richter, Ulf Daniel Ehlers 417

39. What do academic libraries have to do with Open Educational Resources?
Theme: Long term sustainability of open education projects first steps to start up
R. John Robertson 429

40. The FaceUOC Project: An Open Social Learning experience by the Open University of Catalonia
Ana Mª Rodera, Gemma Aguado, Eva Patricia Gil, Julià Minguillón 435

41. The role of mentoring in facilitating the process of repurposing OER
Andreia Inamorato dos Santos, Alexandra Okada 455

42. Production of OER, a Quest for Efficiency
Robert Schuwer, Tina Wilson, Willem van Valkenburg, Andy Lane 471

43. Structuring OER Using Learning Trajectories
Robert Schuwer, Fred de Vries 485

44. Foundation Funded OER vs. Tax Payer Funded OER - A Tale of Two Mandates
Paul Stacey 495

45. Beyond the first steps: Sustaining Health OER Initiatives in Ghana
Nadia Tagoe, Peter Donkor, Richard Adanu, Ohene Opare-Sem, N. Cary Engleberg, Aaron Lawson 511

46. Free Technology Academy: a Joint Venture of Free Software and OER
Wouter Tebbens, David Megías, David Jacovkis, Lex Bijlsma 523

47. The Value of Imperfection:the Wabi-Sabi Principle in Aesthetics and Learning
Jutta Treviranus 537

48. MultiCampus Open Educational Resources: the case of OER-HE
Frederik Truyen, Cornelis Adrianus (Kees-Jan) van Dorp, Ben Janssen, Jose Rivera, Roger Griset 547

49. Opening Education Beyond the Property Relation: From Commons to Communism
The University of Utopia 559

50. Determinants of the educational use of digital learning materials: The mediating role of self-efficacy, perceived norm and attitude
Frederik Van Acker, Hans van Buuren, Karel Kreijns, Marjan Vermeulen 469

51. Big and Little OER
Martin Weller 483

52. Proposing a 'Consent Commons' in open education. Balancing the desire for openness with the rights of people to refuse or withdraw from participation
Jane Williams, Suzanne Hardy, Dr Megan Quentin-Baxter 493

53. Search and Discovery: OER's Open Loop
Nathan R. Yergler 503

54. Examining the sustainability issues in UKOER projects: Developing a sustainable OER ecosystem in HE
Li Yuan, R. John Robertson, Lorna M. Campbell, Chris Pegler 513

How to foster sharing of educational resources?

John van der Baaren,* Fred de Vries*
* Open Universiteit, The Netherlands

Abstract
The future of OER is highly dependent on the future of education in general. A future that will be determined by major changes in society that demand more people with a higher education and life long learning. Each vision for the long term future needs to take the qualitative and quantitative demands into account. Backcasting from a vision we arrive at useful steps to take, some of which we managed to start up in the form of pilots as part of the European research project Share.TEC.

Keywords
Open Educational Resources, sustainability, backcasting, share.TEC

Recommended citation:
Baaren, John van der; Vried, Fred de (2010). How to foster sharing of educational resources? In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4881>

The past ten years we have seen a large amount of Open Educational Resource (OER) initiatives which were welcomed enthusiastically by the field of education, the general public and funding bodies. The large amount of OER stimulated additional work on metadata and search tools that could browse through all these repositories helping the user to find the right resource. But now subsidy streams move to newer topics en vogue today and we will have to make the next step and realise implementation strategies and business models that give OER a place in education.

For some time it was hoped that practitioners would pick up OER and implementation would be semi-automatic. Initial studies (Duncan, 2009; Vuorikari, 2009) however indicate the amount of (re)use of OER is disappointing. In general it can be stated that most resources that are made available as OER are never reused in another educational context. Especially cross-border reuse is rare and limited largely to resources in the English language (Vuorikari, 2009). Also only few studies indicate substantial learning effects from learners directly using OER provided, CMU's Open Learning Initiative being one of the notable exceptions (Lovett, 2008).

Many explanations for the lack of impact of OER are possible and can be found in recent OER literature. We want to mention only one which is often ignored: Quality. Although the Hewlett foundation, as one the primary sponsors of OER projects emphasizes that high quality educational materials will be made available and the aim of most OER projects will have been to realise just that, it is clear that most OER is not of top quality. Just take two of the most successful projects: MITOpencourseware and OpenLearn. Most courses provided by MIT in MITOpencourseware are not suitable for self-study and are not a first choice for students to learn about the topic. As far as re-use by other educational institutes is concerned most MIT courses are also a bad starting point: old fashioned lecture based instruction which anno 2010 can only be used by top experts in the field with superb presentation skills. The Open University with OpenLearn focussed more on providing self-study courses. Unfortunately it looks like most effort was spend on developing beautiful tools and not on developing high quality courses (Donald Clark, 2008).

Recent research (e.g. Vuorikari, 2009) recognises the lack of impact of OER and suggests solutions to get OER accepted more widely. We distinguish three approaches:

The first approach we call: "make it better and bigger" .Examples are improving search engines, automatic metadata abstraction, combining repositories to form national or even world wide referatories, etc.. There is nothing wrong with his approach, which is widely used by colleagues specialised in ICT and education, as long as there is clear proof that by doing the work an important obstacle is removed or a critical scale size reached.

The second approach can be coined as "Add some goodies". Especially graphical and web2.0 tools are popular. Graphical browsers, communication and collaboration facilities, Google maps, rating, mind maps, etc. are added often on the basis of only a vaguely defined hope it will help the learner.

Popular with researchers looking for business or sustainability plans for OER is the third approach: "Generalise from successful cases". MITOpencourseware and OpenLearn are used frequently as successful cases. Because the success of these projects is more of a marketing than educational nature one might be tempted to suggest OER should focus at PR and marketing (Friesen, 2009).

Our point is that these approaches often will lead us to suboptimal solutions because a too narrow view on the educational domain is taken. We suggest that R&D work in the OER domain should be driven by a vision of what sustainable education in general could look like. A comparison

with the vision of a sustainable society will clarify this point. A sustainable society has the use of renewable energy sources as a logical consequence and from there the employment of wind turbines. But this of course does not imply that we need to strive towards a sustainable employment of wind turbines. On the contrary it is very likely that technical innovation will make their use out of date in the not to distant future. In the same way OER might be a useful instrument in attaining sustainable education, but sustainable OER is not a goal in itself.

This brings us to the next question: what is sustainable education?[1] Is the current educational system not sustainable? What are the threats and what is our vision of a sustainable educational system? Of course in the context of this paper we can only hint at possible answers to these broad questions. Two elements are key to defining this problem: limited resources and required change. For required change the implications of the knowledge society are most pervasive. A need for more people with a Higher Education degree is a consequence. But also learning materials tend to be outdated faster and faster. Also job requirements change more quickly forcing people to become life long learners. What makes the current educational system not sustainable is that the current infrastructure cannot cope with these demands on the basis of current budgets. But budgets for education on average cover between 5 and 10% of the total national budgets and it is unlikely they will increase significantly if at all.

For arguments sake we could state that a sustainable educational system should have double the productivity of the current one. Is this feasible? When we take a look at productivity in other fields that moved from old-fashioned craftsmanship to more modern production methods the answer is affirmative. From cars to iPods the next model is better and cheaper to produce. Also looking at the value for money offered by Universities indicates that major productivity gains must be possible. Take for example a law student in the Netherlands. Student and government together pay the university 7500 euro per year. The education of a first year law student at a specific university consists of two group sessions of two hours led by an year 3 student and one two hour lecture per week. A year has 40 weeks. Six times per year the university rents a gymnasium where the 300 students take an examination. Could you do better given 2.250.000 euro? Of course this example does not prove anything. Maybe legitimate overheads are enormous. Maybe a university that mainly depends on the number of graduates they produce will invest less in first year students showing high drop-out rates. The key point here is that a long term vision departing from the demands of the modern knowledge society will entail a very different educational system.

Our vision of how sustainable education in 20-30 years from now is limited to a number of key characteristics of the educational system:

- total costs in terms of percentage of gross national income will remain about the same;
- productivity will need to increase with at least 100%;
- quality assurance of educational programmes will move from a national to an international level;
- modules of an educational programme can be provided by different (commercial and non-commercial) providers;
- educational services (teaching, assessment, learning material development, coaching, quality control, research) from different sources are combined to create optimal educational products;
- international and commercial competition will force educational institutions to innovate continuously and provide the best value for money;

in short: education will be much more open (Wiley, 2009)

But how does this help us today with decisions about research and business strategies for OER? For this we use an approach called backcasting which we borrow from the field of Environmental sciences (Dreborg, 1996). Backcasting works backwards from a particular desirable future to the present to find the best measures to be taken to bring us closer to the desired state. Backcasting can best be used when:

the problem is complex (e.g. multidisciplinary, involving several sectors of society); the solution requires a major change (just analysing the current state will not help); dominant trends are part of the problem (e.g. knowledge society requires more education); the problem is created by factors external to the system;
a significant amount of time (e.g. five or more years) are available to solve the problem.

When deciding what research to conduct we now evaluate how the work contributes in bringing us closer to the desired state. This prevents a focus on what is perceived as problematic today. When having multiple options to choose from heuristics can be used like: prefer more generic solution above special purpose ones and pick low hanging fruit first.

It is in the context of the European research project "Share.TEC" (www.share-tec.eu) that we are trying to apply this approach. The Share.TEC project aims at developing an infrastructure for sharing educational resources in the domain of teacher education. The first version of Share.TEC can be accessed at http://sharetec.it.fmi.uni-sofia.bg/. Using common meta-data schemes Share.TEC searches a federation of repositories contain material related to teacher education. Searching, especially cross-border, is enhanced using ontologies. Apart from standard metadata more informal user data is collects using web2.0. techniques, like rating by users. Figure 1 gives an impression of the version of the system of September 2010 using some screenshots.

One year in the project (June 2009) it turned out to be difficult to draw up a sustainability plan for the Share.TEC system after the completion of the project Summer 2011. In 2010 a second attempt was made but again without very specific results. We decided to create a number of cross-border pilots where our end-users (teacher educators) worked on a specific educational innovation of their choice. The Share.TEC service will be available for these pilots but it's use not obligatory.

Backcasting from the more generic solution of sustainable (higher) education we can formulate a number of potentially useful steps that could be tried in the context of our project. For example:

make an international collection of learning materials in a specific area within the domain of teacher education, form a group of experts that analyse and annotate these resources;
provide good examples of ways of using a specific type of resource (e.g. online scientific journals) and promote their use;
sharing resources in terms of complete courses, including shared course development, sharing quality control and research and sharing teaching resources;
defining a common online component for different courses given by different organisations in different countries (Morgan & Carey, 2009);
sharing design templates as an efficient way of sharing the expertise (Dimitriadis, 2009).

A two day workshop was organised (28-29 July 2010 in Bologna, Italy) for teacher educators from several European countries. They formulated eight specific pilots based on specific needs

existing within their teacher education institute. Eight pilot projects were set up during the workshop:

Myschoolsnetwork. As its primary target the pilot addresses training for secondary school teachers. Specifically, it concerns preparation and reflection about experience gained in praxis (Dutch student teachers engage in practice from Year 1 to Year 4 of their training) and through praxis in virtual environments.

The online scientific journal. The basic idea is to gather information about available online journal in domains relevant for TE and collect / describe ways of using these resources for learning. Teaching academic writing skills is one obvious application, but there are others.

Erasmus follow up. Erasmus is a student exchange programme funded by the European Communities. The programme is aimed at improving mobility and knowledge transfer between higher education institutes in Europe. The aim of this pilot is to find ways to reify the experience gaines in such a way that is disseminated widely.

Creating, Sharing and Re-using Resources in Foreign Language Teaching on Primary Schools. This pilot wants to find a way to create and share resources that can be used as broadly as possible.

Learning disabilities & teaching. Teaching learners with learning disabilities often requires specialized learning materials. These materials are often developed by experienced teachers based on many years of experience. Sharing and re-using is possible but requires access to the know-how of their developers.

Design of learning and organizing distance courses in ICT and learning. This pilot focus is on the design for learning for teachers and teacher students.

Managing innovation project in education. This pilot start from an existing on-line course on learning project management skills needed to lead innovation projects in education. An completely open course in English and/or a course with a shared online element used by multiple higher education institutes is the aim of this pilot.

Social software and Teacher Education. Finally the last pilot aims at developing a online "handbook" for teacher educators who want to use social software either for their own learning or in their teaching.

The pilots will give us feedback on when and how the Share.TEC system can be used in very different situations. But at the same time useful steps are made towards open and sustainable higher education and our vision further refined.

Conclusion

It is too early for specific conclusion about the pilots that have been started. But it was surprisingly easy to find teacher educators interested in setting up and working on pilots that fit our "agenda".

Based on the vision of sustainable education we listed steps that could be taken to arrive at this desired state. These steps also have implications for an OER agenda:

- making education cheaper has OER related goals:
    - share development costs;

    - promoting reuse of high quality resources (ideally there will be one or a small number of very high quality courses available for any topic);
    - in the form of students, materials and teachers,
    - organisation perspective not individual teacher
- making education more effective is a rather new goal for OER. Work could include:
    - supporting educational research with standards for student data to be collected
    - provide models and tools for continuous improvement of courses. The model used in the OpenLearningInitiative (Fig. 2) might be a good starting point here.

Figures

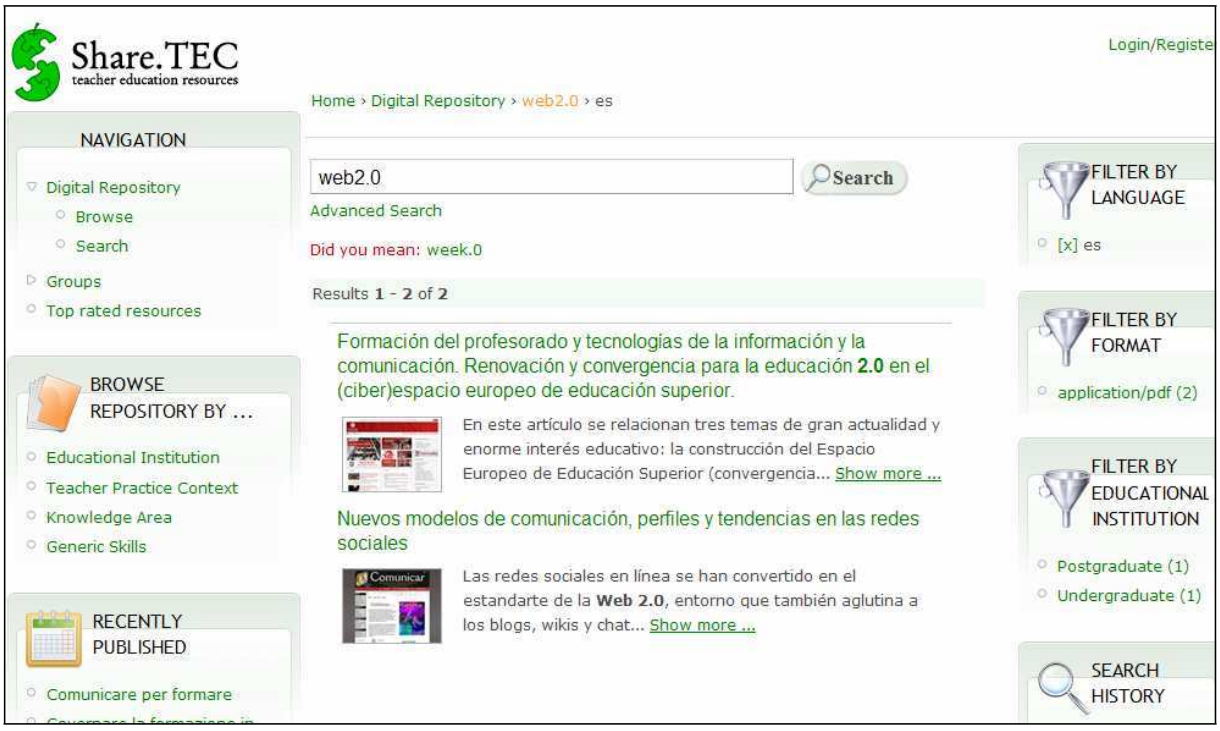

Figure 1 Screenprints from the Share.TEC portal

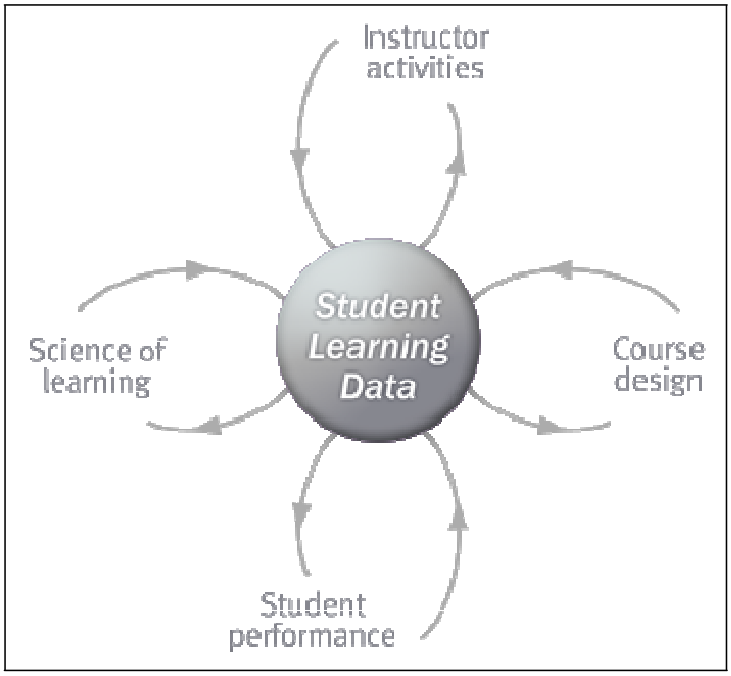

Figure 2. An OER model build around student data as used by Carnegy Mellon's Openlearning initiative (http://oli.web.cmu.edu/openlearning/initiative)

Notes

1. Sustainable Education should not be confused with sustainability initiatives like "Greening the Campus" which merely copy generic sustainability principles to the world of education.

Bibliographic references

Dimitriadis, Yannis; McAndrew, Patrick; Conole, Grainne and Makriyannis, Elpida (2009). New design approaches to repurposing open educational resources for collaborative learning using mediating artefacts. *Ascilite 2009: Same places, different spaces*. 6-9 Dec 2009, Auckland, New Zealand.

Dreborg, Karl H. (1996). Essence of Backcasting. *Futures*, Vol. 28, No. 9, 813-828.

Duncan, S.M., (2009), *Patterns of learning object reuse in the Connexions repository*. (Dissertation) Utah State University. Retrieved from http://www.archive.org/details/PatternsOfLearningObjectReuseInTheConnexionsRepository.

Donald Clark, (2008, February 7). *OpenLearn – another document dump*. Retrieved from: http://donaldclarkplanb.blogspot.com/2008/02/openlearn-another-document-dump.html

Friesen, Norm (2009). Open Educational Resources: New Possibilities for Change and Sustainability. *International Review of Research in Open and Distance Learning*, Vol. 10, No. 5.

Lovett, M., Meyer, O., and Thille, C. (2008). The Open Learning Initiative: Measuring the Effectiveness of the OLI Statistics Course in Accelerating Student Learning. *Journal of Interactive Media in Education*. Retrieved from: http://jime.open.ac.uk/2008/14/

Morgan, Tannis & Carey, Stephen (2009). From Open Content to Open Course Models: Increasing Access and Enabling Global Paricipation in Higher Education. *International Review of Reasearch in Open and Distance Learning*. Vol. 10. No. 5.

Vuorikari, R., & Koper, R. (2009). Evidence of cross-boundary use and reuse of digital educational resources. *International Journal of Emerging Technologies in Learning*, 4(4), 51-56. Retrieved from: http://online-journals.org/i-jet/article/view/1028

Wiley, D. & J. Hilton III, (2009). Openness, Dynamic Specialization, and the Disaggregated Future of Higher Education. *International Review of Research in Open and Distance Learning*, Vol.10, nr.5

About the authors

John van der Baaren

Open Universiteit, The Netherlands

John van der Baaren has a background in educational psychology (University of Amsterdam, 1983) and was involved with research on ICT and education since. In 2004 he joined the Open Universiteit Nederland. He is a teacher for the master programme Educational Science and as a researcher member of the Learning Media group of the Centre for Learning Sciences and Technologies.

Open Universiteit
P.O. Box 2960,
6401 DL Heerlen
The Netherlands
John.vanderBaaren@ou.nl

Fred de Vries

Open Universiteit, The Netherlands

Fred de Vries is assistant professor with the Centre for Learning Sciences and Technologies of the Open Universiteit Nederland (OUNL). He is project leader for the OUNL contribution to the Share.TEC project on open educational resources in the domain of teacher education.

Open Universiteit
P.O. Box 2960,6401 DL Heerlen
The Netherlands
Fred.devries@ou.nl

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Audio as medium for content distribution (providing access to knowledge)

Nico Baird,* Nick Esterhuizen, Karel J. de Beer*****

* Instructional Designer (Multimedia); Centre for eLearning and Educational Technology

** Director: Communication Sciences, Faculty of Humanities; Central University of Technology

*** Director Academic Support & Research; Central University of Technology

Abstract

Reaching and educating the masses to the benefit of all of mankind is the ultimate goal and through the use of this technology facility/tool many can be reached in their own language, in their own community, in their own time and at their own pace.

Making this content available to those who will benefit from the information, is vital. These people who want to consume the content are not necessarily that interested in the qualification, they need the information. Making the content available in an auditory format may also help those who may not be as literate as others.

The uses of audio/ recorded lessons have a number of uses and should not just be seen as a medium for content distribution to distant communities. Recording lectures makes it possible for a lecturer to present lectures to a vast number of students, while just presenting the lecture once.

Keywords

audio, content distribution, open content, community

Recommended citation:

Baird, Nico; Esterhuizen, Nick; De Beer, Karel J. (2010). Audio as medium for content distribution (providing access to knowledge). In *Open Ed 2010 Proceedings* . Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4882>

Reaching and educating the masses to the benefit of all of mankind is the ultimate goal and through the use of this technology many can be reached in their own language, in their own community, in their own time and at their own pace.

One of the main problems as I see it in Open Education resources, is the ability to distribute the subject content easily and at a low cost. When we look at the way children are taught from a very young age, you will find that these lessons are usually conveyed in an auditory form in stories being told by their parents.

We are therefore quite used to and susceptible to information being conveyed in auditory form. One of the easiest ways of capturing lectures would be to use a recorder and then making the recorded lecture available in a variety of ways. These may include online distribution as mp3 files, or writing these files to a disc to distribute to areas where no access to the Internet is available. In some remote areas these recorded lectures can be distributed to clinics or libraries where learners can come together and work.

Making this content available to those who will benefit from the information, is vital. Making the content available in an auditory format may also help those who may not be as literate as others. Having the ability to consume content, should not be determined by how well you can use a pen or a computer.

The uses of audio/ recorded lessons have a number of uses and should not just be seen as a medium for content distribution to distant communities. Recording lectures makes it possible for a lecturer to present lectures to a vast number of students while just presenting the lecture once. These lectures are then converted to audio files that can be accessed in various formats and listened to on various devices.

This extension of the lecture can reduce cost and makes these resources more sustainable in the long term.

But let us firstly mention some of the advantages and possibilities of using audio files and why we should make more use of this technology.

The past several years have seen little change in education and the methods used to educate. One of the most natural and acceptable methods of education – audio conveyance – has been with us always, and although we tend to take it for granted and forget about it all too easily, all that is set to change. Throughout history children have been taught by means of stories told by their parents, and for many centuries this was the primary method of transferring knowledge and information. As time progressed, we started spending less and less time listening to these stories, although to this day storytelling is used as an educational tool.

People have always been educated by means of information received in an audio format. It is natural for us to absorb information through an auditory medium, and since such information transfer takes place on a personal level, we often tend to form a personal relationship with radio presenters. They become like family members who visit when one turns on the radio.

The value of audio recordings in education has been known for years, yet for some reason it has not been utilised as we have become more computer literate.

With the expansion of and wider accessibility to the internet, students are exposed to a vast amount of information on a daily basis. This has been the case for a number of years now, and students have adapted to be more computer literate or “tech savvy” than we tend to think. Lecturers are often still trapped in the notion that the classroom is the only place where students gain access to knowledge. The whole “sage on stage” mentality has unfortunately not yet disappeared. Through

the use of audio recordings, lectures can be made available to students, prior to the classroom phase of the learning experience. The student can listen to the lecture before the class and is therefore prepared for class. The class now transforms into a student-centred discussion session and the lecturer into a guide or facilitator helping the students work through all the knowledge that has been gained and, in some cases, not quite understood as yet. The work is discussed and if at the end of the lecture the student has not yet made the new knowledge his/her own, the lecture can always be re-listened or reviewed again after class. In other words, the "sage on stage" becomes a "guide on the side".

Because audio devices or audio players have become part of our daily lives, whether in the form of mp3 players, iPods, or in many cases cellphones with these features built in, we are moving towards a mobile learning (m-learning) setup. In the m-learning world students can access education anywhere. It is pure learning on the go or learning on demand. Whenever a student has time to gain knowledge, the source is always at hand – be it at the gym while busy with a workout, or while lounging by the pool. Students can now study and acquire knowledge on their terms and may therefore tend to devote more time to their studies.

In the period leading up to tests and examinations, lecturers are often overwhelmed by students who, for one reason or another, are still experiencing problems with certain parts of their courses. This is extremely time-consuming and often the result is that the lecturer has to explain the same work to several students, one student at a time. One solution is to divide the class into groups of about eight or ten students and to ask each of these groups to compile a list of questions they would like the lecturer to answer or explain. One person from each group then presents these questions to the lecturer and, through a process of elimination; students can start answering one another's questions, thereby stimulating truly effective group discussion. The students will probably discuss most of the problems and solve them in the group. After this discussion the nominated student makes an appointment with the lecturer and asks all the questions as formulated by the group. This conversation is recorded and at the end of the session placed online for all members of the class to listen to. As with all other recorded lectures, this file would also be downloaded to the students' computers automatically. Each student would receive all the sessions from all the participating groups, and it is quite possible that problems not discussed in group context, would also be effectively addressed.

After a year or two of preparing a audio-enhanced education model, all lectures could be provided to the students at the beginning of the year. As it is such a convenient medium and students enjoy the empowerment they gain by taking control of their studies, it is quite possible that students will be motivated to prepare for lectures weeks before the scheduled class session. Students will therefore have more time to think about the work and also to make the new knowledge that was gained, their own.

In almost all study fields, one will find that every year there are quite a number of conferences taking place around the world. Conferences are valuable resources, as papers relevant to the study field are presented, and usually there are many new resources and information to be gained by attending such events. Unfortunately students and lecturers do not have enough time – and definitely not enough money – to attend all these conferences. Again this problem is solved by audio. Many conferences have already begun recording the papers presented there, thus giving listeners and exposure to all the knowledge and experience conveyed by the presenters. Some

conferences make these resources available within a week of the conference, but quite often the presentation is available within hours of the time the paper was delivered.

Inviting guest speakers to institutions has become a very costly exercise. It cannot be denied that the advantages of having such a speaker or subject specialist visit the institution and share his/her knowledge, far outweighs the cost, but what if such a subject specialist could be interviewed telephonically and the discussion distributed to everybody automatically? Not only that, but any conference attendee could use an mp3 recorder to record a conversation with the subject specialist on any relevant topic and subsequently distribute it to students or any other interested parties. It may not be easy to gain access to such subject specialists, but anybody who manages to do so, will now have the ability to share the knowledge effectively with everybody in the field. Imagine a class where the students decide on questions that should be asked of the subject specialist, and the lecturer then has an interview with this individual telephonically, or maybe even over a cup of coffee! This discussion / interview can then be distributed to all the students, and valuable knowledge can be shared. Again, this has the purpose of stimulating group discussion in that the group has to work together to decide on the questions to be asked.

One can only imagine the value of such technology, if it had been available in years past when Einstein was still alive, for instance. The value of recordings of his responses to students' questions would be immense.

Often students are so busy taking notes of what the lecturer is saying in class, that they may as well read through the work and make notes from the book. However, if the lecture is available before class, the students can make notes at their own pace and in their own time and then concentrate on the content and the information shared by the lecturer in class, rather than trying to keep up with note-taking. The same is true if the lecture is made available after class, when note-taking can serve as a form of revision.

As the end of the year approaches, it is time for students to start reviewing their work and begin studying for examinations. Going through notes written in haste, is not always the most effective way of reviewing course content, but if all the lectures from the whole year is accessible, the student actually has the option of "attending" each and every class again. This not only renews the knowledge gained in class, but if there are still areas that the student finds unclear, he/she now has the option of reviewing the lecture a number of times, or even discussing the problem with the lecturer.

These are just a few applications and advantages of using audio as a delivery and support mechanism for educators and students.

Because the recording of lectures can be done once and distributed internationally to thousands of students, the possibility of changing the lives of millions are easy to see.

The advantages are clear, but giving communities access to current information is still seen as a challenge.

Audio has huge advantages due to its incredible flexibility and portability. Most of the developed world, and also the developing world, is connected through the Internet, but some of the communities who need these educational resources can either not afford to get connected, or live in areas where they are not yet able to gain access to the Internet.

Even though it is easy and quite affordable to distribute audio online, the benefit lies in the large number of other formats in which audio can be distributed. The use of CD's, DVD's, Memory

Cards, MP3 Players are also widely used for the distribution of audio content. It should there for not be thought that audio content can only be distributed through the Internet.

A large number of files can be distributed by various means to community centres, libraries or clinics where these files can be copied and distributed. If the members of the community do not have access to the necessary technology to listen to these recordings, these centres could be equipped with a single player which can be used by members of the community to gain access to this knowledge. These recorded lectures can be played over and over until the necessary skills and information has been transferred.

The whole group dynamics of a group at a community centre or any other gathering place, could also help in the learning experience. We should realize that in these communities it is not only about the gaining of a qualification but it is all about the gaining of the information and a new skill. The new knowledge which is brought into these communities, quickly impacts on the way these communities function and in the long term may cause a vast upliftment of the members of such a community.

Communities that are spread over vast distances could also make use of radio services to convey knowledge. Specific life skills can be taught through the use of timeslots on radio stations. The whole concept of a "Learning Hour" could be used to give members of a community access to specific skills and knowledge.

Audio is a personal medium, we consume it easily and we express ourselves in auditory form. It is natural for us to explain a concept to someone using our voices to convey our thoughts. You do not even need to be able to read, to gain new knowledge and you do not need to write, to be able to share knowledge.

The applications of audio to uplift communities and to share knowledge is only limited by our imagination and creativity.

Reaching and educating the masses to the benefit of all of mankind is the ultimate goal and through the use of this technological facility/tool many can be reached in their own language, in their own community, in their own time and at their own pace.

About the authors

Nico Baird

Instructional Designer (Multimedia); Centre for eLearning and Educational Technology

Nico Baird is the Instructional Designer (multimedia) at the Central University of Technology, Free State. His main areas of interest are the integration an utilisation of the web as educational platform, investigating new innovations in Learning and Teaching. Through the innovative work and his dedication to learning and especially learning in a changing world he was selected as one of South Africa's first Apple Distinguished Educators in 2007.

Centre for eLearning and Educational Technology
Free State
Private Bag x20539
Bloemfontein 9300
South Africa
nbaird@cut.ac.za

Nick Esterhuizen

Director: Communication Sciences, Faculty of Humanities; Central University of Technology

Nick Esterhuizen is the Director: Communication Sciences, Faculty of Humanities at the Central University of Technology, Free State. He is a keen researcher in the field of structural and socio-linguistics

Faculty of Humanities
Central University of Technology
Free State
Private Bag X20539,
Bloemfontein 9300
South Africa
nic@cut.ac.za

Karel J. de Beer

Director Academic Support & Research; Central University of Technology

Karel J. De Beer is the Director: Academic Support and Research at the Central University of Technology, Free State (CUT). He manages Open and Distance E-Learning (ODEL) offering types in the Northern Cape. He researches possibilities for Open Education Resources (OER) for the CUT in the Northern Cape and published several articles on ODEL and OER.

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/ Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

Collective Intelligence for OER Sustainability

Simon Buckingham Shum,* Anna De Liddo**
* Senior Lecturer in Knowledge Media, Knowledge Media Institute, UK Open University.
** Research Associate, Knowledge Media Institute, UK Open University.

Abstract
To thrive, the Open Educational Resource (OER) movement, or a given initiative, must make sense of a complex, changing environment. Since "sustainability" is a desirable systemic capacity that our community should display, we consider a number of principles that sharpen the concept: *resilience, sensemaking and complexity*. We outline how these motivate the concept of *collective intelligence* (CI), we give examples of what *OER-CI* might look like, and we describe the emerging *Cohere* CI platform we are developing in response to these requirements.

Keywords
sustainability, resilience, complex systems, collective intelligence

Tweet
OER Collective Intelligence: rationale, principles, examples and tools

---

Recommended citation:
Buckingham, S.; De Liddo, A. (2010). Collective Intelligence for OER Sustainability. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].
< http://hdl.handle.net/10609/5085>

Introduction

The "sustainability challenge" for the OER movement quite naturally provokes debate around business models to cover the financial costs of OER operations. In this paper we approach sustainability from another angle (which may also lead to insights around business models, but this is not our immediate focus). The OER movement can be reasonably thought of as a community of inquiry, of innovation, of advocacy. If "the movement" can thought of as an ecosystem, or a set of connected ecosystems, which must adapt to potential threats in the changing environment or die, then we can ask what capacities a sustainable ecosystem displays, and unpack the implications from there.

In this paper we outline a number of concepts that we find to be helpful when thinking about sustainability in relation to a community such as the OER movement. We then outline how they help to motivate the concept of "Collective Intelligence" (CI), and moreover, how they drive requirements for a socio-technical CI infrastructure that could support the OER community's need to make sense of a complex, changing environment. We give examples of the heterogeneous nature that we expect "OER-CI" to take in order to reflect the diversity of stakeholders, and then describe a prototype tool called *Cohere* which seeks to reflect these requirements.

Sustainability and Resilience

An internet search on *resilience* demonstrates the interest it is attracting in mainstream as well as academic science, with international institutes now devoted to the concept. A "system", be it a learner, a team, a movement, a network (e.g. social; digital; conceptual), or a city/nation/planet, is considered to be not only sustainable, but resilient, if it has the capability to recover from stresses and shocks, and to adapt its evolution appropriately. Walker, *et al.* (2004) define resilience as "the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks". *Resilience thinking* is an emerging approach which generalizes resilience principles from ecology to socio/political and technological systems (e.g. Cascio, 2008; Folke, 2006; Saveri, 2009; Walker, 2008). In an OER context, it is noteworthy that it has also established itself in the learning sciences, as a disposition reflecting perseverance when stretched during learning beyond one's intellectual and emotional 'comfort zone' (Carr & Claxton, 2002; Deakin Crick, *et al.* 2004) or when confronted by personal and social stressors, often due to poor socio-economic conditions (Roberts, 2009).

A key requirement in any complex adaptive system is a degree of self-awareness, through appropriate feedback loops. "Feedback" may be only low-level data signals when we are thinking about biological organisms or digital networks with no human in the loop. However, in a system concerned with higher order cognition such as a community of inquiry or an innovation network, we move from simple positive/negative feedback loops, to epistemic constructs such as ideas, questions, predictions, dilemmas and evidence, and emotional constructs such as surprise, reputation, hope and fear. In other words, feedback/self-awareness implies the *capacity to reflect*,

learn and act effectively, both individually and collectively — a working definition of Collective Intelligence (CI). This motivates, therefore, the proposal that good CI infrastructure (people+processes+technologies) is worth designing to advance the OER movement's resilience. Some design principles for resilient systems are shown in Table 1, with possible translations into principles for an OER CI infrastructure.

If we elaborate the issue of feedback loops, for example, the OER design lifecycle typically ceases after "publication". Comparatively few OERs are evaluated, and our current infrastructures have weak capacity to track and learn from what happens next. We do not close the design loop through to evaluation and evolution to better design processes and OERs. One objective is to facilitate feedback loops in order to pool evidence and aid discussion about its significance.

Organizational Complexity and Sensemaking

Two additional fields inform our thinking about CI. First, *complexity science* is being applied specifically to organizational strategy and sensemaking. In a world where we are striving to make sense of overwhelming change and information overload, the OER movement could benefit from the insights that this work is developing. Secondly, *sensemaking* has emerged as a definable research field over the last 30 years, dating back to Doug Engelbart's visionary 1960s work on the need for tools to "augment human intellect" in tackling "complex, urgent problems", and Horst Rittel's formative work in the 1970s on "wicked problems" (see Buckingham Shum, 2003, for a review). As noted in the call for a recent journal issue devoted to the subject (Pirolli & Russell, 2008), influential work has also "emerged quasi-independently in the fields of human-computer interaction (Russell, *et al.*, 1993), organizational science (Weick, 1995), and cognitive science (Klein, *et al.*, 2006)."

The work of Snowden and colleagues (e.g. Kurtz & Snowden, 2003; Snowden & Boone, 2007) is one approach to bringing together sensemaking and strategic thinking, distinguishing *known*, *knowable*, *complex* and *chaotic* problem spaces (Figure 1).

It may be instructive to reflect on which space we experience ourselves to be in, as OER researchers, practitioners, managers or advocates. Snowden et al. warn of the risks of confusing which space one is dealing with, since in their view, they have very different sustainability and resilience strategies. For instance, although there are OER success stories, are we ready to announce Best Practices yet, or do we run the risk of premature codification, freezing something that worked in one context for local reasons? How confident are we to predict successful outcomes of OER initiatives? It may well be that we are ourselves a complex adaptive system — in Snowden et al's view the default for non-trivial human activity systems.

Browning and Boudès (2005) provide a helpful review of the similarities and differences between Snowden's and Wieck's work on sensemaking, with particular emphasis on the centrality that narrative/storytelling play in their proposals for how we manage complexity. Table 2 (left column) draws on the key features they and Hegel, *et al.* (2010) identify, while the right column suggests ways in which sensemaking infrastructure might be shaped in order to tackle some of the breakdowns in individual and personal sensemaking that are known to occur in complex domains.

What do we mean by *OER*-CI?

We have introduced above some concepts with broad application to sensemaking and CI in any complex, knowledge-based system, but what form might this take specifically in the realm of OER? OER practitioners and researchers come from many intellectual traditions. What "counts" as legitimate evidence in order to make claims varies accordingly. Thus, we envisage pooling an evidence base that makes clear which of the following "evidence layers" underpin a particular OER or concept (Table 3).

The mere presence of evidence layers can provide an approximate cue to the level of validation a resource has received, but is not, of course, a guarantee of its suitability for a given context (content may be culture-specific; conclusions may be controversial; methodology flawed).

A community of inquiry is interested in claims and supporting evidence, but also in counter-claims and differing interpretations of the same evidence. While many projects are engaged in building collective intelligence, few know how to deal well with contested knowledge other than by enabling comments, threaded fora, blogs and wikis. While the low levels of structure in such tools creates very low entry thresholds for new users who want to post a comment, they provide correspondingly weak support for anyone who wants to know the current state of the evidence base or debate. This motivates the platform we are developing, as described next.

Cohere: a prototype OER-CI platform

Elsewhere, we have detailed some of the core functionality in *Cohere,* the experimental CI platform we are developing in the OLnet Project (http://cohere.open.ac.uk). The design rationales presented there addressed the concerns of other communities (computational argumentation: Buckingham Shum, 2008; collective intelligence: De Liddo & Buckingham Shum 2010). In the remainder of this paper, we illustrate some of Cohere's affordances with respect to the rationale introduced above, as a working prototype of a social-semantic platform tuned for inquiry, reflection and discourse.[1]
Cohere is based on three kinds of activity, which we use to organize this overview:

1. making thinking visible
2. connecting ideas in meaningful ways
3. providing services to analyze, visualize and track ideas

Making thinking visible

In Cohere, users may annotate an OER or any other web resource directly through their browser by highlighting and adding annotations, which (if public) are immediately visible to anyone viewing that page who has installed Cohere's sidebar (currently a Mozilla Firefox extension[2]). As with other web annotation tools (e.g. Diigo; Sidewiki), one can treat annotations simply as informal margin

notes or clippings, but in Cohere these can also become 'first class' entities that represent important "ideas" (such as a major *question* on which a project is working) around which a whole network of ideas can grow. Customizable icons signal what kinds of contribution analysts want to make with an annotation, such as a *prediction* or *data* (Figure 2).

Figure 3 shows a PhD student and a Researcher annotating an OER on Rice University's Connexions, as part of a collaborative inquiry on climate change during the COP15 conference. Any of the annotated ideas (e.g. "*We cannot know the physical and ecological damage due to climate change"*) can have attached to it as backing evidence any number of 'clips' (text fragments) lifted from any number of websites. OERs are therefore linked not only by simple tags, but by more complex epistemic relationships.

Connecting ideas in meaningful ways

Cohere provides a way to connect these nodes with meaningful relationships. The default set (Figure 4) can be edited by users to create a connection language that suits their interests.

As these are added, the Firefox sidebar displays connections between any ideas annotated on the website (Figure 5), now enabling navigation of OERs (or any website) by following paths/networks of meaningful relationships (recall that attached to each node there may be clips lifted from many sources).

Analyzing, visualizing and tracking ideas

The larger web of connections (which may go many steps from a focal idea) can also be viewed graphically, e.g. in a self-organizing visualization (a Java applet, Figure 6).

This example shows the results of analysing the online discussion on open OER issues at the Hewlett Foundation Grantees meeting (March 2009, Monterey: http://cloudworks.ac.uk/cloud/view/980). Cohere was used to analyse the online discussion with a specific annotation schema which showed that issues were organized around five topics, shown in Figure 6: *Share-ability, Effectiveness, Participation, Sustainability and Scalability*.

As the web of user-generated annotations and connections grows, there is the need for tools to track patterns of specific interest, going beyond simply viewing the whole map. Users can engage in exploratory study by performing customized network searches, reducing the complexity of the graph to sets of connections of interest. In a large, multi-user context, users will want to monitor specific ideas, documents, people or topics without having to manually check. Agents can be set to monitor structured search results on sub-networks (that is to say specific semantic connections, to specific network depth on a focal idea). Figure 7 shows a "report" from an agent.

Finally, we are considering how we can crowdsource input to the evidence base from different OER communities, projects and websites. One approach is through the release of widgets (e.g. Google Gadgets) which the OER community can embed in diverse platforms. A user interface storyboard is at http://cloudworks.ac.uk/cloud/view/3239.

Conclusions

We have argued that the broad topic of "sustainability" in the context of a given OER project, or the whole community, can be usefully sharpened through the conceptual lenses of *resilience* (ability to withstand and learn from shocks to the system), *complexity and sensemaking* (making sense, in and of, a complex adaptive system is difficult). These motivate the concept of a Collective Intelligence infrastructure (people+processes+technologies) to help the OER community sense and interpret changes in its environment, dialogue and debate strategy and courses of action, pool evidence, and reflect on successes and failures. It should be tuned to help address sensemaking breakdowns, and support the gradual layering of diverse forms of evidence around OERs, and epistemic constructs such as predictions, questions, problems and empirical findings.

A large scale analysis of >100 OER initiatives is currently in preparation by the OLnet Project, and will be published using Cohere. We invite the community to pool its collective intelligence to review and extend this seed next year.

Acknowledgements

We gratefully acknowledge the William and Flora Hewlett Foundation for funding the joint Open University/Carnegie Mellon University OLnet Project, without whom this work could not have been conducted. Our thanks also to Michelle Bachler, who leads Cohere's software development.

Figures and Tables

Resilience principle	Possible principle for OER CI infrastructure
Diversity	Diversity of participants and viewpoints: design for as wide a constituency as possible; do not lock participants into any worldview; support diversity, disagreement and quality debate
Modularity	Support loosely coupled applications/services and linked data, enabling interoperability and mashups with diverse end-user tools relevant to OER (e.g. Google Maps; GapMinder data visualization; YouTube movies; Wikis; Blogs).
Practical experimentation with feedback loops	Improve awareness of the existence, and success/failure of OER resources or ideas
Trust/social capital	Make use of appropriate measures of social capital, authority and reputation within the community

Table 1 - Principles from "resilience thinking" (Walker, 2008) and their possible implications for OER collective intelligence infrastructure

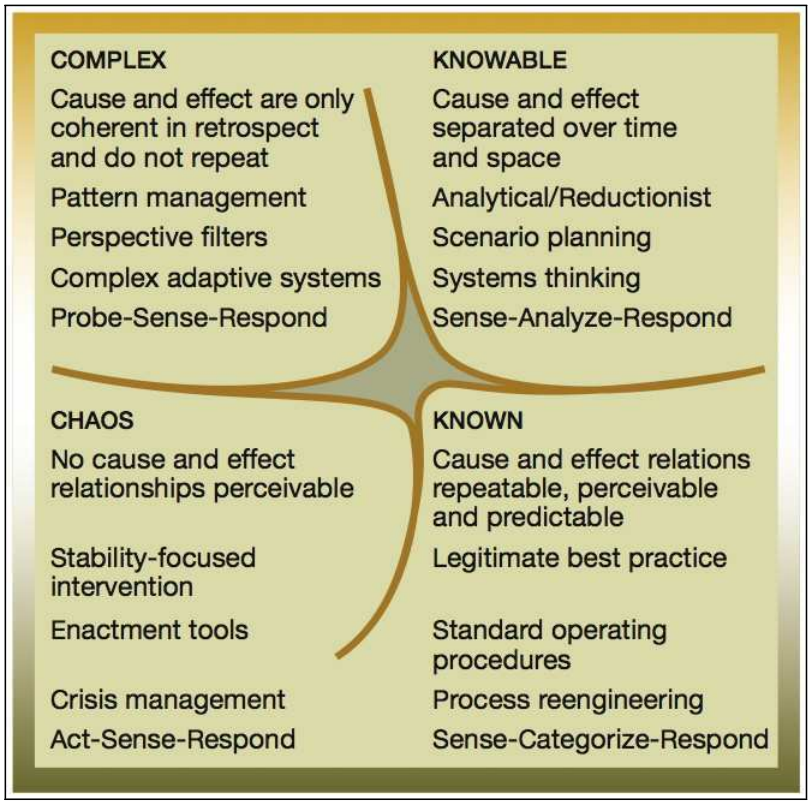

Figure 1 - The Cynefin sensemaking framework (Kurtz & Snowden, 2003)

Sensemaking Phenomenon in Complex Domains	**Sensemaking Infrastructure Opportunity**
Dangers of entrained thinking from experts who fail to recognise a novel phenomenon	Pay particular attention to exceptions Open up to diverse perspectives
Complex systems only seem to make sense retrospectively: narrative is an appropriately complex form of knowledge sharing and reflection for such domains	Stories and coherent pathways are important Reflection and overlaying of interpretation(s) is critical
Patterns are emergent	In addition to top-down, anticipated patterns, generate views bottom-up from the data to expose unexpected phenomena
Many small signals can build over time into a significant force/change	Enable individuals to highlight important events and meaningful connections, which are then aggregated
Much of the relevant knowledge in complex emergent systems is tacit, shared through discourse, not formal codifications (Hegel, et al. 2010)	Scaffold the formation of significant inter-personal, learning relationships, through which understanding can be negotiated flexibly

Table 2 - Sensemaking phenomena in complex domains, and the potential roles that sensemaking infrastructure can play

Technical Reports on Design Principles: Such principles may be of value to those making an OER selection decision (e.g. *the following pedagogical philosophy and disciplinary principles informed the OER design, here is the rationale behind the use of the particular multimedia presentation mode*.)

Contexts of Use: A description of the curricular locations where a particular OER might fit and the characteristics of the student population that would typically use the OER (e.g. *this introductory course in symbolic logic is a requirement for computer science majors. Students who take the course are usually sophomores and over half of them are philosophy majors.)*

Anecdote: Stories perhaps using text/images/video from the field that can help build understanding, even though they may lack hard evidence or conclusions (e.g. *we've just completed the first trial of this OER and it has not met our hopes — but we have some clues as to why, which we're chasing up.*)

Comparative Review: Analytical comparisons of OER materials aimed to identify strengths and weaknesses in terms of learning resources, technical requirements, and content coverage and treatment (e.g. *we have classified these OER in terms of their technical requirements and how these match to assistive and mobile technologies.*)

Portraits: Illustrations of OER in use similar to what Lawrence-Lightfoot calls portraitures, that is, qualitative accounts of "the complexity, dynamics, and subtlety of human experience and organizational life" (e.g. *we followed, videotaped, and questioned a user over a specific chunk of time and across multiple settings and present here some unintended side effects of simple design, sequencing, and formatting decisions.*)

Case study – anecdotal with informal evidence: Partial descriptions and data that would benefit from further analysis and discussion (e.g. *we have the following screencasts and interview MP3s that we're happy to share because we need help to analyze them.*)

Case study – structured research methodology and data analysis: Reports about a particular situation supported by analysis that draws conclusions (e.g. *this article/website tracks a cohort of trainee teachers for 3 months, as they sought to apply OER, video analysis using Grounded Theory leads us to propose three key factors that influence their success.*)

Controlled experiment: Supported comparative studies with qualitative and/or quantitative data (e.g. *48 undergraduate chemistry students grouped by ability and cognitive style used the ChemTutor OER to complete Module X, statistical analysis combined with think-aloud protocols supports the hypothesis, based on Learning Theory Y, that higher ability students would benefit most.*)

Learning Analysis Studies: Provide a detailed picture of the experience that students are likely to go through, and constitute a resource for iterative design improvement (e.g. *we examined the data log files and can articulate how students benefit from the different components and instructional devices that make up this OER such as explanatory text, built-in videos, animated illustrations, self-assessment, learning by doing applets, and virtual labs.*)

Table 3 - Heterogeneous layers of OER Collective Intelligence

Figure 2 - Default ways to classify an annotation in Cohere

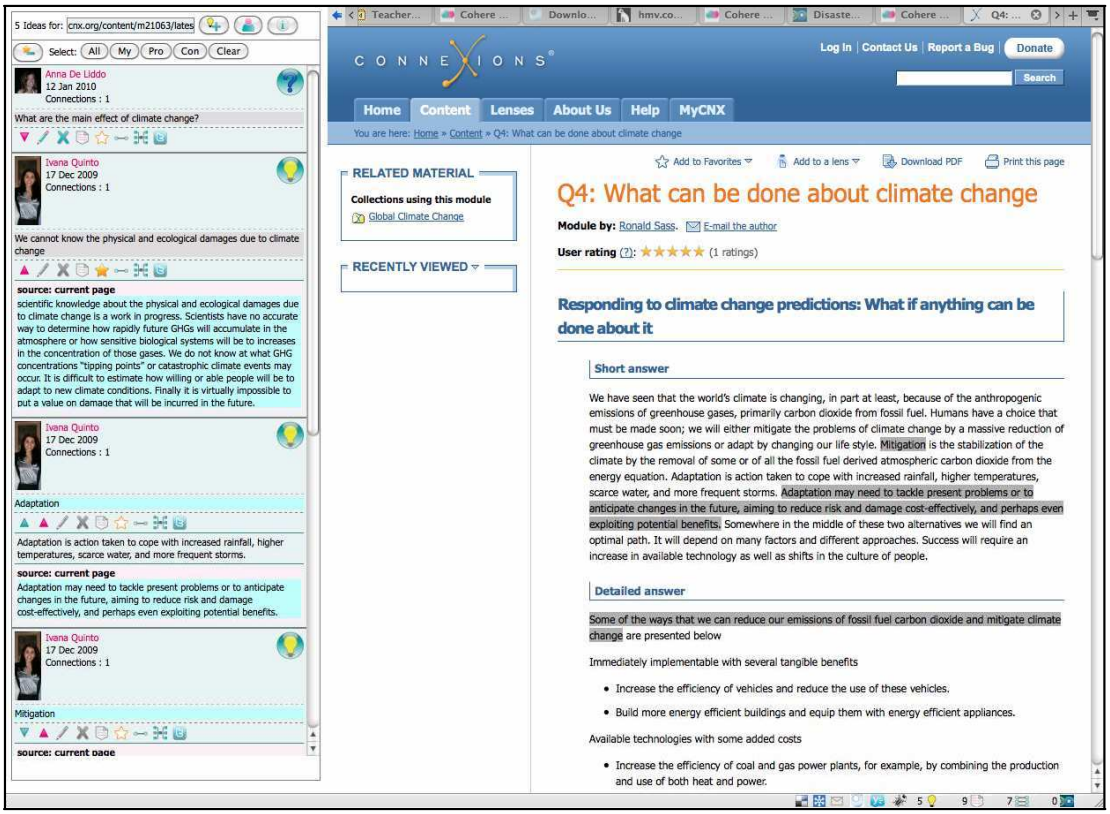

Figure 3 - Collaborative Web annotation of an OER in Cohere

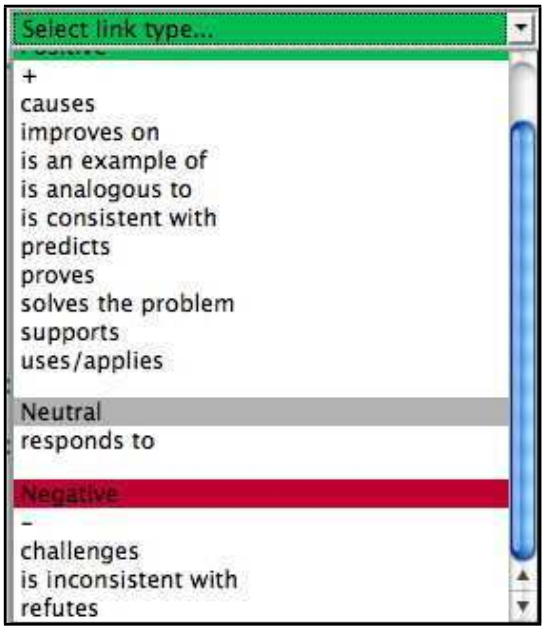

Figure 4 - Default, customizable links for connecting ideas

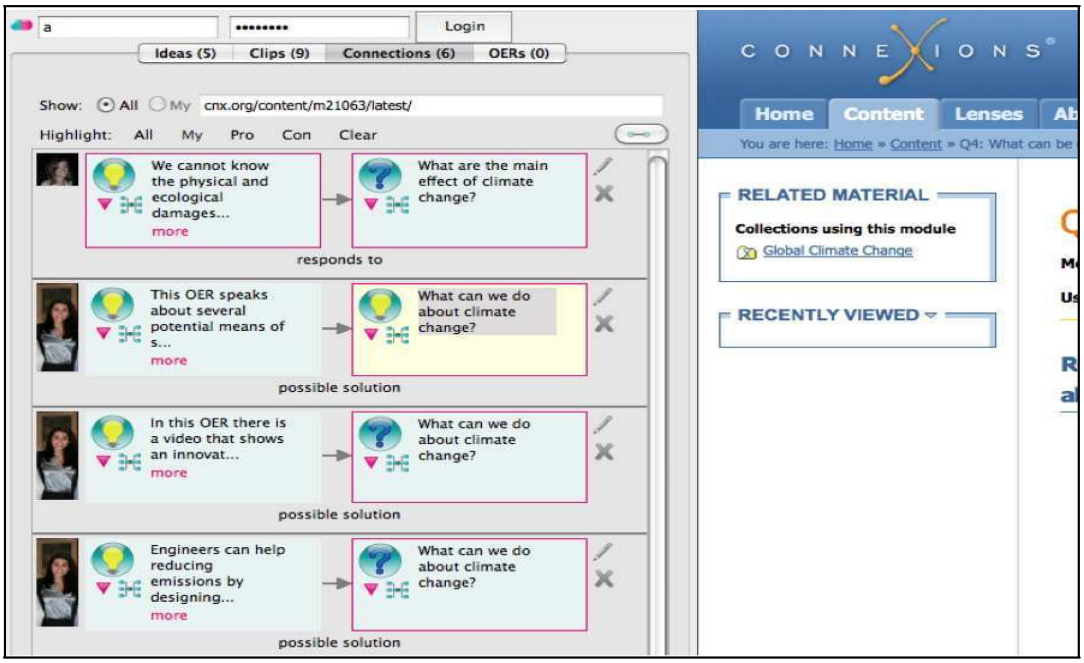

Figure 5 - Connected ideas annotated onto an OER

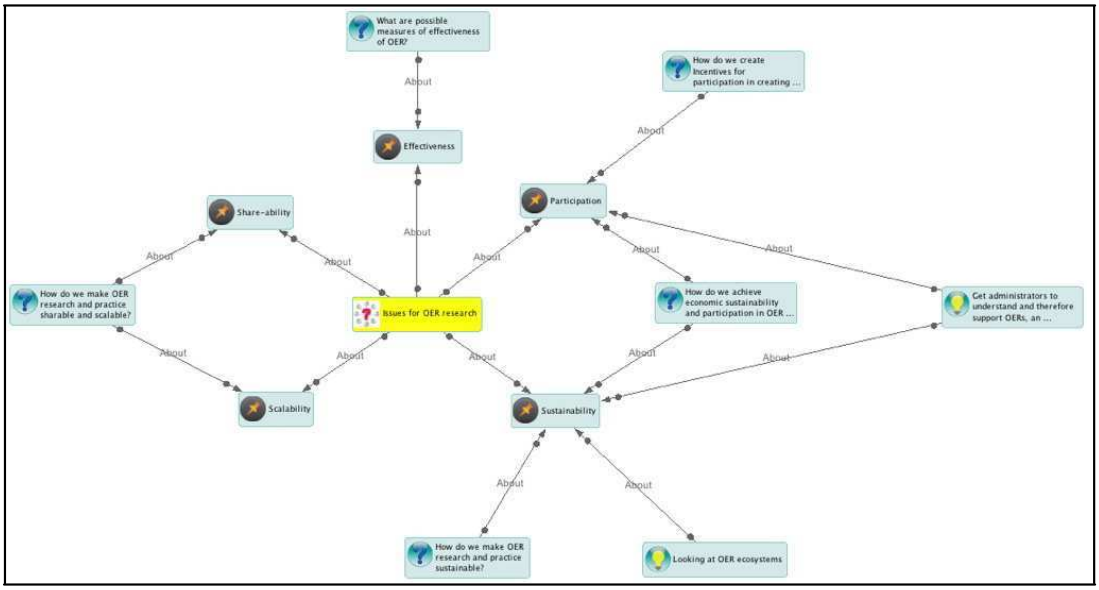

Figure 6 - Issues for the OER research field clustered around emerging themes

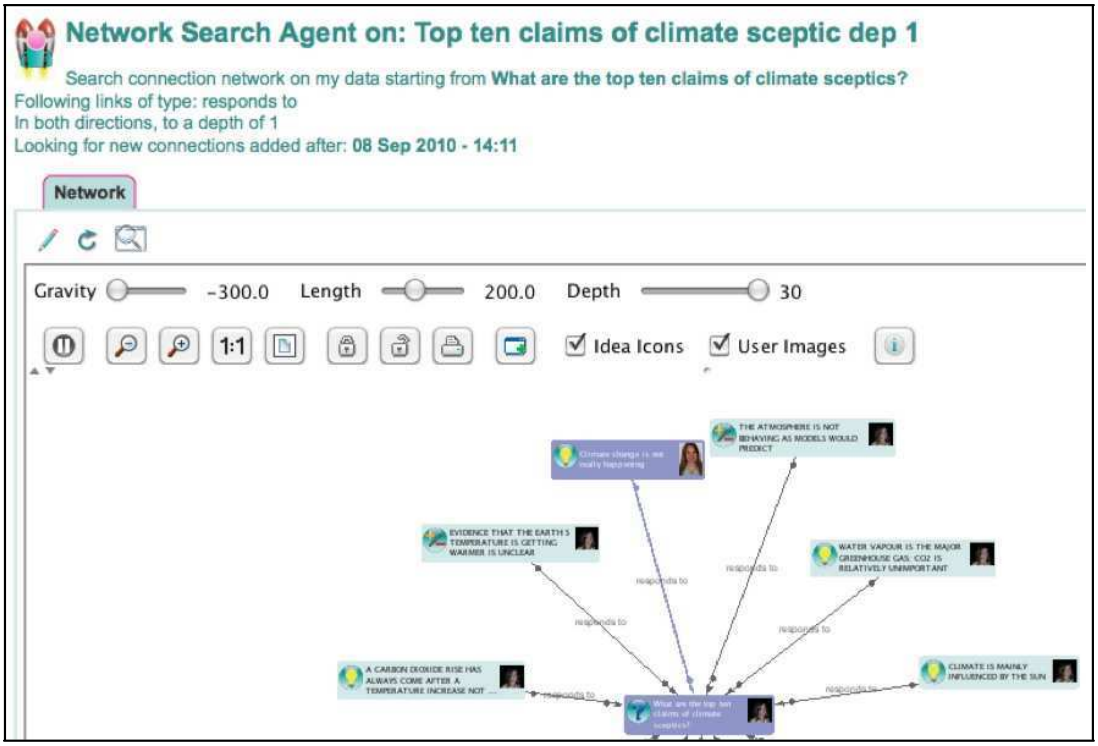

Figure 7 - An agent set to watch the network for connection types of interest, highlights nodes to signal new connections since the last check

Notes

1. See the OLnet Project workshop on *Online Deliberation: Emerging Technologies* for examples of other structured deliberation tools: http://olnet.org/odet2010
2. Cohere's Mozilla Jetpack extension was one of the winning finalists in the Jetpack for Learning Design Challenge sponsored by Mozilla Foundation/MacArthur Foundation: https://wiki.mozilla.org/Education/Projects/JetpackForLearning/Profiles.

Bibliographic references

Browning, L. and Boudès, T. (2005). The use of narrative to understand and respond to complexity: A comparative analysis of the Cynefin and Weickian models. *Emergence, Complexity & Organization*, 7, (3-4), pp. 35-42.

Buckingham Shum, S. (2003). The roots of computer supported argument visualization. In *Visualizing Argumentation*, (Eds.) P. Kirschner, S. Buckingham Shum & C. Carr, pp. 3-24. Springer: London.

Buckingham Shum, S. (2008). Cohere: Towards Web 2.0 Argumentation. *2nd Int. Conf. Computational Models of Argument*, 28-30 May, Toulouse. http://oro.open.ac.uk/10421.

Carr, M. & Claxton, G. (2002). Tracking the development of learning dispositions. *Assessment in Education*, 9, 9-37.

Cascio, J. (2009). Resilience in the Face of Crisis: Why the Future Will Be Flexible. *Fast Company,* April 2, 2009. http://www.fastcompany.com/blog/jamais-cascio/open-future/resilience.

Deakin Crick, R., Broadfoot, P. and Claxton, G. (2004). Developing an Effective Lifelong Learning Inventory: The ELLI Project. Assessment in Education, 11, (3), pp. 247–272.

De Liddo, A. & Buckingham Shum, S. (2010). Cohere: A prototype for contested collective intelligence. *CSCW 2010 Workshop: Collective Intelligence In Organizations.* February 6-10, Savannah, GA. http://oro.open.ac.uk/19554.

Folke, C., (2006). Resilience: the emergence of a perspective for social–ecological systems analyses. *Global Environmental Change*, 16 (3), pp. 253–267.

Hagel III, J., Seely Brown, J. & Davison, L. (2010). *The Power of Pull: How Small Moves, Smartly Made, Can Set Big Things in Motion*. Basic Books.

Klein, G., Moon, B. and Hoffman, R.F. (2006). Making sense of sensemaking 2: A macrocognitive model. *IEEE Intelligent Systems*, 21(5), 88-92.

Kurtz, C. & *Snowden,* D. (2003). The New Dynamics of Strategy: Sense-making in a Complex-Complicated World, *IBM Systems Journal*, 42, (3), pp. 462-83.

Russell, D.M., Stefik, M.J., Pirolli, P., & Card, S.K. (1993). The cost structure of sensemaking. *Proc. InterCHI '93,* (pp. 269-276). Amsterdam: ACM Press: NY.

Pirolli, P. and Russell, D. (2008). Call for Submissions to Special Issue on Sensemaking, *Human-Computer Interaction*. http://www.tandf.co.uk/journals/cfp/hhcicfp_sp1.pdf.

Roberts, Y. (2009). *Grit: The skills for success and how they are grown.* The Young Foundation. http://www.youngfoundation.org/publications/books/grit-the-skills-success-and-how-they-are-grown-june-2009.

Saveri, A. (2009). *Resilience: Enabling New Patterns, New Agency*. Blog post, April 24, 2009: http://andreasaveri.com/?p=50.

Snowden, D.J. & Boone, M.E. (2007). Leader's Framework for Decision Making. *Harvard Business Review*, Nov 01, 2007.

Walker, B. H. (2008) Resilience Thinking. Special Issue, *People & Place*: 1, (2): http://peopleandplace.net/featured_voices/2008/11/24/resilience_thinking.

Walker, B., C. S. Holling, S. R. Carpenter, and A. Kinzig. 2004. Resilience, adaptability and transformability in social–ecological systems. *Ecology and Society*, 9, (2): 5. http://www.ecologyandsociety.org/vol9/iss2/art5.

Weick, K. (1995). *Sensemaking in Organizations*. Thousand Oaks, CA: Sage.

About the authors

Simon Buckingham Shum

Senior Lecturer in Knowledge Media, Knowledge Media Institute, UK Open University.

Simon Buckingham Shum is a Senior Lecturer in Knowledge Media at the UK Open University's Knowledge Media Institute, where he leads the Hypermedia Discourse Group. He brings a human-centered computing perspective to the challenge of building collective intelligence and the sensemaking capacity that 21st-century citizenship requires, from childhood onwards. His research is reflected in the books *Visualizing Argumentation* and *Knowledge Cartography.* http://people.kmi.open.ac.uk/sbs.

OLnet: Open Learning Network Project
Knowledge Media Institute
The Open University
Milton Keynes, MK7 6AA
United Kingdom
S.Buckingham.Shum@open.ac.uk

Anna De Liddo

Research Associate, Knowledge Media Institute, UK Open University.

Anna De Liddo is a Research Associate at the UK Open University's Knowledge Media Institute, where she works on the Open Learning Network project (olnet.org), focusing on the design and development of a Collective Intelligence infrastructure to enhance collaborative learning in Open Education. She gained her PhD at Polytechnic of Bari, investigating ICT for Participatory Planning and Deliberation, after which she held a postdoctoral position at the Open University evaluating human-centred computing tools to tackle Climate Change. http://people.kmi.open.ac.uk/anna.

OLnet: Open Learning Network Project
Knowledge Media Institute
The Open University
Milton Keynes, MK7 6AA
United Kingdom
A.DeLiddo@open.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/ Universitat
Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

Towards a Social Learning Space for Open Educational Resources

Simon Buckingham Shum,* Rebecca Ferguson**
* Senior Lecturer in Knowledge Media, Knowledge Media Institute, UK Open University.
** Research Fellow, Institute of Educational Technology, UK Open University.

Abstract
We identify a number of meanings of *"Open"*, as part of the motivating rationale for a social media space tuned for learning, called *SocialLearn*. We discuss why online social learning seems to be emerging so strongly at this point, explore features of social learning, and identify some of the dimensions that we believe characterize the social learning design space, before describing the emerging design concept and implementation.

Tweet
Open University's SocialLearn project: rationale and features

Recommended citation:
Buckingham, S.; Ferguson, R. (2010). Towards a Social Learning Space for Open Educational Resources. In Open ED 2010 Proceedings. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/5086 >

Introduction

We are in a period of transition, as we realise how deeply the Enlightenment, industrial era has shaped our worldviews, and specifically, our educational practices. For many, this is the opportunity for new policies, pedagogies and practices to emerge which more aptly reflect what we now understand about how we learn, what we should learn, and who may access learning. The Open Educational Resource (OER) movement is a significant part of the reshaping of the landscape, challenging taken-for-granted assumptions as part of the *"Open"* movement. Four disruptive dimensions of *Open* as a paradigm shift are summarized in Figure 1: *Open Intellectual Property, Open Economics, Open Communities* and *Open Data Standards.*

The OER movement has made significant progress in raising awareness around new kinds of licensing models (*Open IP*), aided by developments such as *Creative Commons*, and to the extent that OER is financially free, OER engages with *Open Economics* (it is early days yet in evolving long term business models). OER connects with *Open Communities* and *Open Data Standards* in varying degrees, depending on technical platforms and the degree of learner/educator engagement that a given initiative catalyses.

The Open University's *OpenLearn* OER programme integrates OU course material, iTunesU, BBC, and all other free/open media offerings (www.open.ac.uk/openlearn), and we continue to document its impact (Lane; Lane & McAndrew, In Press). Within Figure 1's framework, the full text of OpenLearn course units connects strongly with *OpenIP* (Creative Commons BY-NC-SA licence), and with *Open Standards* (publishing in a wide range of XML formats including Moodle, IMS-CC+CP, SCORM), with growing *Open Communities* activity amongst educators and learners. *Open Economics* is addressed primarily through funding from the university and initial Hewlett Foundation grant. While iTunesU has proprietary aspects, all media and metadata are co-published in *Open Standard* formats.[1]

Complementing this institutional, multi-channel publishing operation, the *SocialLearn* project has been investigating the more radical possibilities that *Open* presents. As Weller (2009) observed in discussing traditional learning management systems in the context of the Web 2.0 mindshift, "the online learning environment can be seen as a metaphor for how universities respond to the requirements and challenges of the digital age".

In this paper we put to one side the intruiging revenue-generation possibilities of *Open Economics* (e.g. Andersen, 2009). Assuming, therefore, that we are in a position to encourage *free* interaction and media sharing by learners, our focus is particularly on the *Open Communities* phenomenon, such as social networking platforms (e.g. Facebook and LinkedIn), and social media sharing (e.g. YouTube, Flickr, Slideshare). The common denominator here is of course the word *Social* — but the other key word is *Learn.*

We will touch on four areas:

- Why online social learning now?
- What do we mean by social learning?
- What distinguishes a social media space tuned for learning?
- The emerging design concept

Why online social learning now?

We briefly consider three answers, referring readers to the many other commentaries that have been written on "Learning 2.0" for other perspectives.

Technology

One part of the answer to this question is clearly technology-driven: only now do we have the right ingredients in our infrastructure to provide almost ubiquitous internet access in wealthy countries, mobile access in many more, user interfaces that have evolved through intensive use, digital literacy from an early age, standards enabling interoperability and commerce across diverse platforms, and scaleable computing architectures capable of servicing billions of real time users, and mining that data. However, unless we accept that technology simplistically determines our lives, we need to look elsewhere to balance this account.

Shifts in social values

Technology is always appropriated to serve the needs and values that people have (or are persuaded they have). Beyond what we can observe for ourselves informally, there is a significant body of research that the period in which we find ourselves is transitional towards a set of values mirrored closely by the affordances of social media. In 1997, the World Values Survey covered 43 societies, representing 70% of the world's population. Inglehart (1997) has argued that the shift to "postmaterialism" [a finding from earlier surveys] was confirmed and he offered a new framework he called "postmodernization." He suggested that modernization had helped society move from poverty to economic security, and that the success of this had then led to a shift in 'what people want out of life.' In postmodernity, as he used the term, people valued autonomy and diversity over authority, hierarchy, and conformity. According to Inglehart, 'postmodern values bring declining confidence in religious, political, and even scientific authority; they also bring a growing mass desire for participation and self-expression.'

We find these results interesting, on the one hand recognising this shift in wealthy nations, but also surprised to see this shift even in regions surveyed where poverty is still clearly a daily reality.

Innovation for emergent problems requires social knowledge

The conditions for online social learning draw also from the pressing need for effective innovation strategy. In a succinct synthesis of the literature, Hegel, *et al.* (2010) have argued that social

learning is really the only way that we can cope in today's fast changing world. As summarized in the argument map below, they invoke the concept of "pull" as an umbrella term to signal some fundamental shifts in the way in which we catalyse learning and innovation, highlighting *quality of interpersonal relationships, tacit knowing, discourse* and *personal passion* as key ingredients.

Reframing educational insitutions

The contours of the new educational landscape are uncertain, but we need maps to give us a sense of trajectory, even if these are regularly scrapped amidst the turbulence (business regularly fails to predict the future or cope with change: Hegel, *et al.* 2010, and Christensen, 1997). Heppell (2007), amongst many, paints a picture of the future shape of universities. The transition from the industrial era university is summarised in Figure 3. Naturally, these shifts do not start suddenly at higher education, but are impacting educational institutions of all sorts.

Features of social learning

> *Why has someone sawn down half of the beautiful cedar tree outside my office window? I can't find this out from a book, and I don't know anyone with the precise knowledge that I am looking for. It is as I engage in conversations with different people that my understanding of what I see outside my window increases, and I learn more about the tree's history, health, ecosystem and future possibilities.*
>
> *It is not just the social construction of understanding that is important here, since this is a part of most human interactions. My intention to learn is part of what makes this social learning, as are interactions with others. This is not a one-sided engagement with books or online content — it involves social relationships. As such, it has lots of 'affective' aspects: people must be motivated to engage with me and I must have the confidence to ask questions in the first place, as well as some way of assessing the expertise of the people I'm talking to. (from the SocialLearn blog)*

Our conception of learning is succinctly summarized by Seely Brown & Adler (2008), being… "based on the premise that our understanding of content is socially constructed through conversations about that content and through grounded interactions, especially with others, around problems or actions". Many others have of course argued for similar conceptions, unpacking this broad concept in great detail in the constructivist educational literature, and *computer-supported collaborative learning* (CSCL) research.

Social learning may, however, add an important dimension to CSCL, with particular interest in the non-academic context in which it takes place (including the home, social network, and workplace), the use of free, ready-to-hand online tools, with no neatly packaged curriculum or

signed-up peer cohort, no way to test one's understanding, no pre-scheduled activity, and so forth (NB: Blackmore's (2010) edited readings remind us how far back everyday, non-digital social learning goes in learning theory, and provide us with foundations for extension into the digital realm).

While OER greatly improves the quality of material available online to learners, the consequence is also that they find themselves adrift in an ocean of information, struggling to solve ill-structured problems, with little clear idea of how to solve them, or how to recognise when they have solved them. Arguably, it is precisely here that social learning infrastructure has a key role to play, helping the learner connect with others who can provide emotional and conceptual support for locating and engaging with resources, just as with our opening tree story. As we highlight in Figure 2, this then forces us to ask whether our educational and training regimes are fit for purpose in equipping our children, students and workforce with the dispositions and skills needed under conditions of growing uncertainty (a challenge explored in detail by many others, e.g. the collection edited by Deakin Crick, 2009).

In the early days of the SocialLearn project, Weller (2008) identified six broad principles of SocialLearn, connecting it with the underpinnings and origins of The Open University (and in part anticipating Hegel, *et al*'s priorities): *Openness, Flexibility, Disruptive, Perpetual beta, Democracy* and *Pedagogy*. Following a series of SocialLearn workshops, Conole (2008) proposed some learning principles, contrasting OpenLearn and SocialLearn, and articulating how these could be linked to characteristics of social learning: *thinking & reflection, conversation & interaction, experience & interactivity and evidence & demonstration*:

- Supports a range of pedagogies and styles
- Formalises the informal; informalises the formal
- Is built on relationships between people
- Harnesses the internet
- Aggregates learning events, resources and opportunities
- Provides structures and scaffolds for the learning process
- Uses metaphors and simple approaches to impart pedagogy
- Encourages a range of participation
- Provides evidence via range of informal and formal assessment mechanisms
- Provides lifelong support across different learning goals
- Provides access to expertise
- Supports collaborative elements

- Helps surface incidental learning
- Wraps learning around an individual's interests
- Enables learner control and learner responsibility
- Allows users to build reputation within the system
- Encourages legitimate peripheral participation
- Encourages learning through observation
- Supports different subject areas and styles
- Encourages mentorship

Distilling from this array of perspectives, we have derived a simple working definition focused on three dynamics, which serve to guide us in designing for meaningful interpersonal and conceptual connection:

Online social learning can take place when people are able to:

- *clarify their intention — learning rather than browsing*
- *ground their learning — by defining their question/problem, and experimenting*
- *engage in learning conversations — increasing their understanding*

Tuning social spaces for learning

A significant feature of the Web 2.0 paradigm is the degree of personalisation that end-users now expect. This manifests in the user interface as a means for filtering the complexity of the internet to show just those resources being tracked, but also as the model for engaging with loosely coupled services tuned to one's interests. Figure 4 indicates how this manifests from a learner's perspective. However, a *me-centred universe* has self-evident limitations as a paradigm for holistic development: learning often disorients and reorients one's personal universe. *User*-centred is not the same as *Learner*-centred: *what I want* is not necessarily *what I need,* because my grasp of the material, and of myself as a learner, is incomplete. The centrality of good relationships becomes clear when we remind ourselves that a university's job is to teach people to *think,* and that *deeper learning* requires leaving a place of cognitive and emotional safety where assumptions are merely reinforced (see the extensive research on learning dispositions that characterize this readiness, e.g. Claxton, 1999; Perkins, *et al.* 1993). This implies *challenge* to stretch learners out of their comfort zones,

underlining the importance of affirmation and encouragement that give a learner the security to step out.

What design implications might this have? Certainly, it must be easy to find and interact with people, building a sense of connection that can foster trust and affirmation (an early prototype was not strong enough in this regard, renewing our concern with getting this right!). But what other shifts are needed to go into deeper social learning?

A design space seeks to identify key questions, which reflect criterial dimensions for comparing features of a given class of artifact. Figure 5 sketches some dimensions of a social learning design space, signaling potential directions that a *learning* focus might lead when designing spaces that do not seek to provide *only* a fun place to hang out with friends, important though this is for social learning. A fuller analysis would set out the different options and tradeoffs (e.g. MacLean, *et al.* 1991), with design criteria driven by the extent to which social learning and deeper learning are fostered.

The emerging design concept

A demonstrator website at http://sociallearn.org illustrates how we are seeking to translate the above concerns into a design. A "dashboard" provides modular applications known generically as "widgets" (currently we use Google Gadgets in a Shindig container[2]), which the user can cluster into meaningful, activity-centric sets of tools. Gadgets provide a convenient way to open up functionality to many applications, enable tool embedding in heterogeneous platforms, and place the learner in control of their environment. We are experimenting with making the gadgets portable, that is, 'carried' around with the learner in a virtual backpack, which they can access while on any website via a toolbar. Being embeddable gadgets, a partner site can enable its pages to host them (Figure 6).

The gadget dashboard is linked with social networking tools supporting the standard set of social network functions such as user profile creation, personalised views of peer activity, "following", "friending", status updates, messaging, media sharing, tagging and group formation. (at the time of writing, not shown on the demonstrator site).

No company or university can provide all the applications that current or future learners may want or need: the point is to harness the design innovation and creativity out there. In addition to the use of gadgets, via its API SocialLearn will be interoperable with social web learning applications, prime candidates being tools to ask and respond to *questions*, weave *learning pathways* through resources, or *annotate* the web with *meaningful concepts and connections* (cf. Cohere, below).

We are experimenting with services that exploit the fact that offering to *coach/mentor* on a given topic is a pedagogically significant act. Detecting debates through agreement and disagreement is another opportunity to scaffold conversation (not the kind of intervention one would expect in a purely leisure social space). We consider below other services that we anticipate in the next generation of social learning environments.

Social learning analytics

Learning analytics is, we believe, one of the core R&D disciplines to underpin the next generation of learning platforms (see the forthcoming *Learning Analytics & Knowledge* conference). We envisage a 'virtual rack' of recommendation engines tuned to different patterns of learner activity (Figure 7).

Commerce/Navigation/Social/Reputation

Each of these is fast becoming a 'commodity' service in the online social networking, recommender and commerce websites that we use increasingly each day. This is not, of course, to say that these are easy to implement well, and each has active academic and business R&D efforts associated with them. From a distinctively social learning perspective, we might expect to 'tune' such engines based on one or more underlying models of what makes for effective social learning, but we do not know of good examples demonstrating exactly what differences that might make to the recommendations offered.

Content recommendation engines

Focusing on the *Content* engine, SocialLearn has active strands exploring the possibilities for more intelligent content recommendations. One strand is investigating the potential of linked data/semantic web research, while another strand focuses on multimedia information retrieval which enables content recommendation based on images and video.[3]

Connection recommendation engines

The ubiquitous tag clouds generated from folksonomies on social websites provide a useful gestalt view, but pedagogically, they often equate to a learner being aware of a cloud of concepts with no grasp of their "shape or structure". Buckingham Shum & De Liddo (2010) describe the *Cohere* web application that seeks to scaffold this kind of "knowledge cartography" (Okada, *et al.* 2008). The result is a user-generated web of meaningfully connected annotations which can be visualized, filtered and searched for patterns in ways that are impossible at present (e.g. "*Find me all the websites/articles that disagree with this"*). The ability to make reflective, meaningful connections between ideas moves us beyond tag clouds, providing the material from which knowledge maps can be generated, either from a user's personal web, or to show a group or the world's connections. Structured argument mapping and online deliberation tools show, more clearly than a conventional chat, blog or discussion forum, how different positions in a debate relate to each other.[4]

Learning to learn recommendation engines

Many have argued that learning for the 21st Century requires greater attention to learning dispositions and skills that have always been important, but which are now at a premium in a fast-changing world, in which almost all knowledge claims are contestable (Perkins, *et al.* 1993; Deakin Crick, *et al.* 2008). Our interest in such "learning to learn" research is that it provides insights into the processes that strong and weak learners go through, often independent of any particular disciplinary topic of study. In principle, this could enable the formalization of patterns for analytic services capable of tracking a wide range of learning contexts, but this is a nascent field.

Conclusion

Many have argued that social learning is a key part of the tectonic shifts we are seeing in the educational landscape, of which OER is already a key feature. We have outlined the rationale and emerging design concepts behind *SocialLearn*, a prototype social learning space intended to scaffold the formation of social relationships and discourse between learners, without which learning from OER will be far less effective. We have discussed some of the dimensions that we believe characterize the social learning design space. Following a pilot involving >1000 users in Oct. 2009, the next iteration of SocialLearn is currently undergoing internal testing. Future research will report progress on pilot deployments, develop learning analytics, and evaluating the extent to which we manage to support the three core social learning dynamics identified above.

Acknowledgements

SocialLearn is a cross-university project involving too many researchers, developers and strategic planners to mention by name, but we gratefully acknowledge their contributions. While we take responsibility for all ideas and errors in this paper, see references to Gráinne Conole & Martin Weller (OU Institute for Educational Technology). Our thanks also to Hardin Tibbs (Synthesys Consulting) for background research on social values, and Figures 3-4.

Figures

Figure 1 - Four disruptive dimensions of "*Open*"

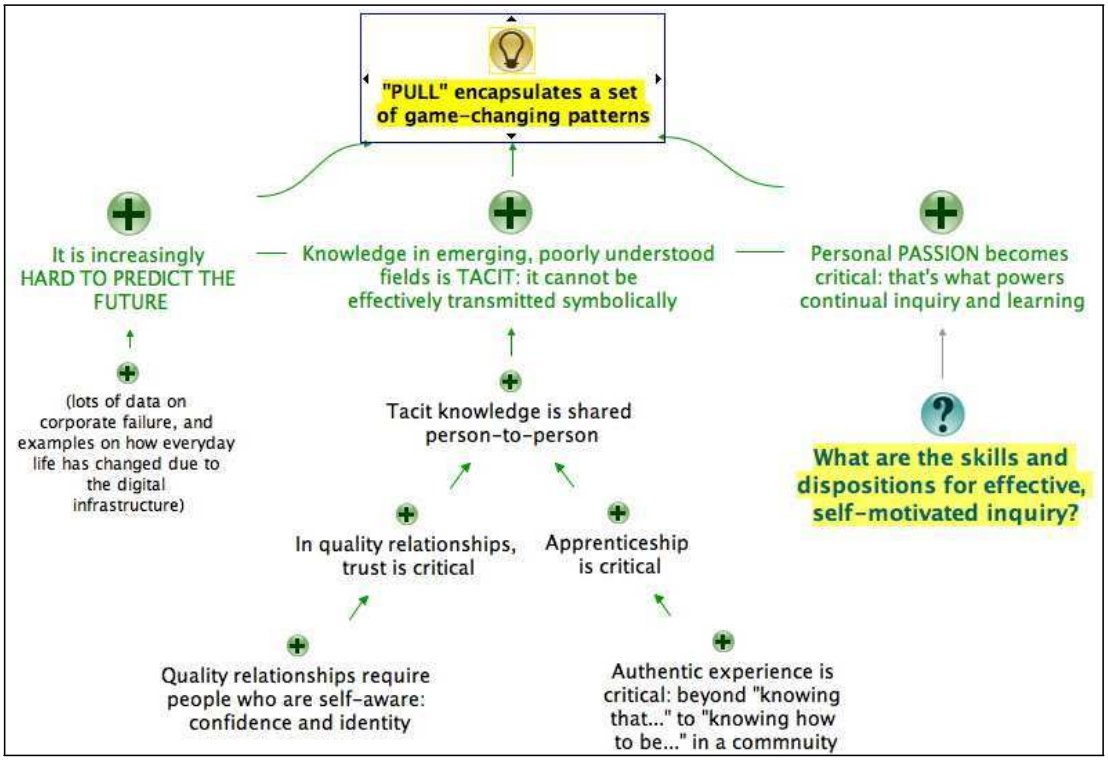

Figure 2 - Argument map summarising some of Hegel, *et al.*'s (2010) "the power of pull"

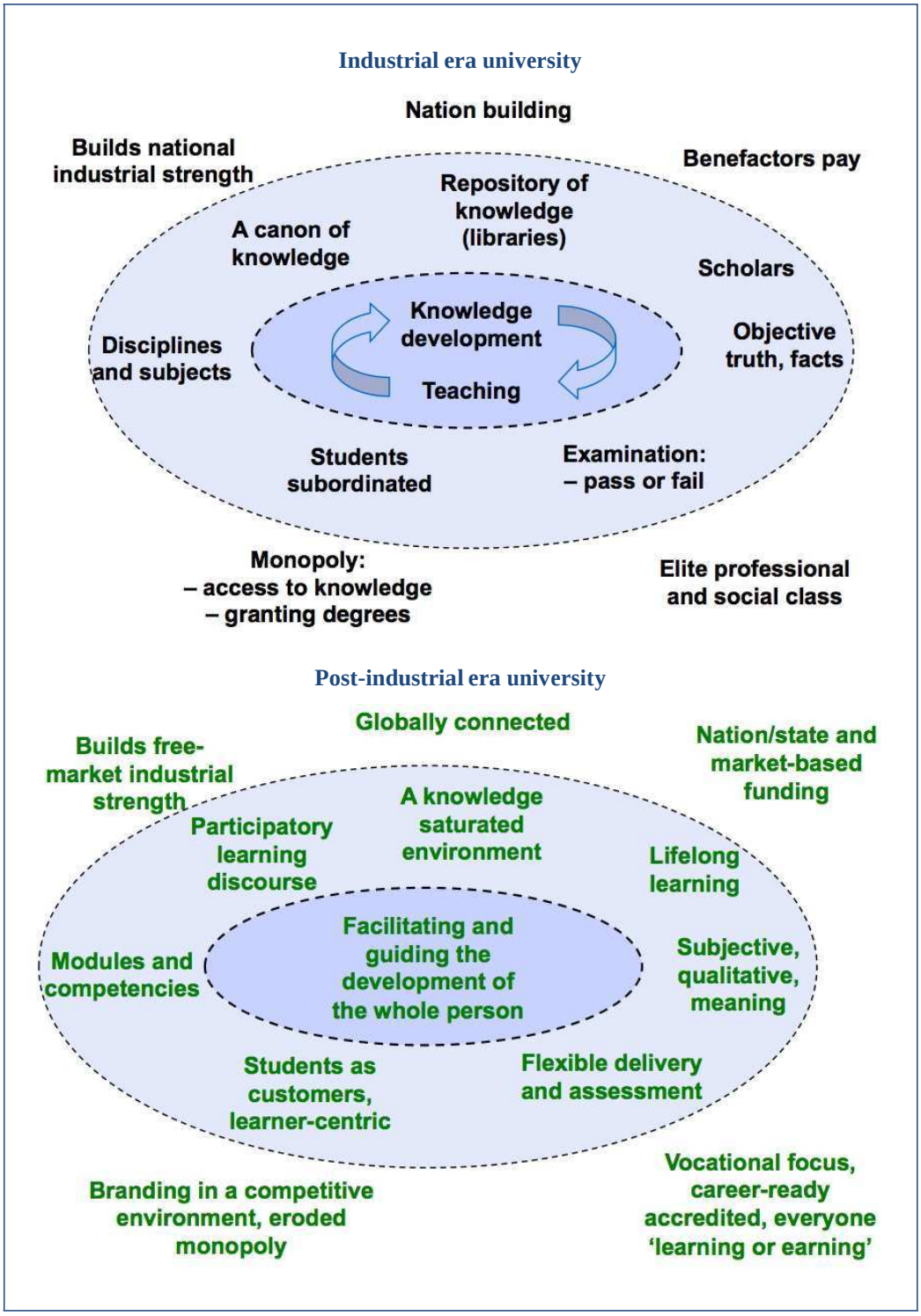

Figure 3 - Characterising industrial and post-industrial era universities

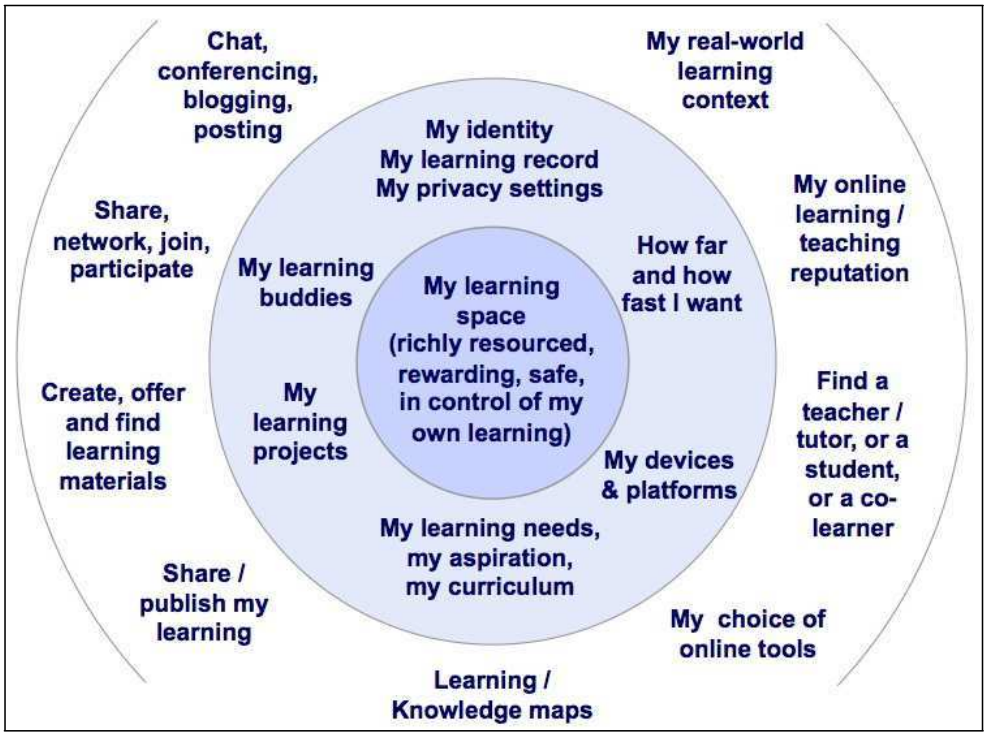

Figure 4 - Personalised learning space onto resources and people

Figure 5 - Some dimensions of a social learning design space

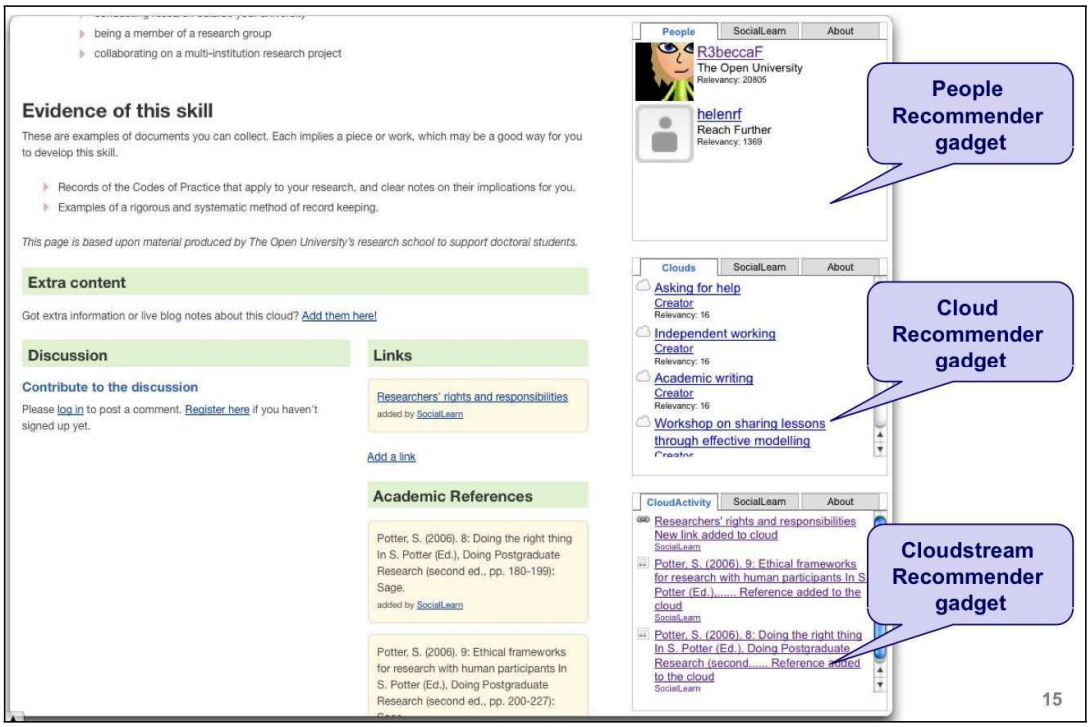

Figure 6: The Open University's *Cloudworks* collaboration space, with embedded SocialLearn gadgets recommending *people*, *clouds* (pages) and *cloudstreams* (web feeds).

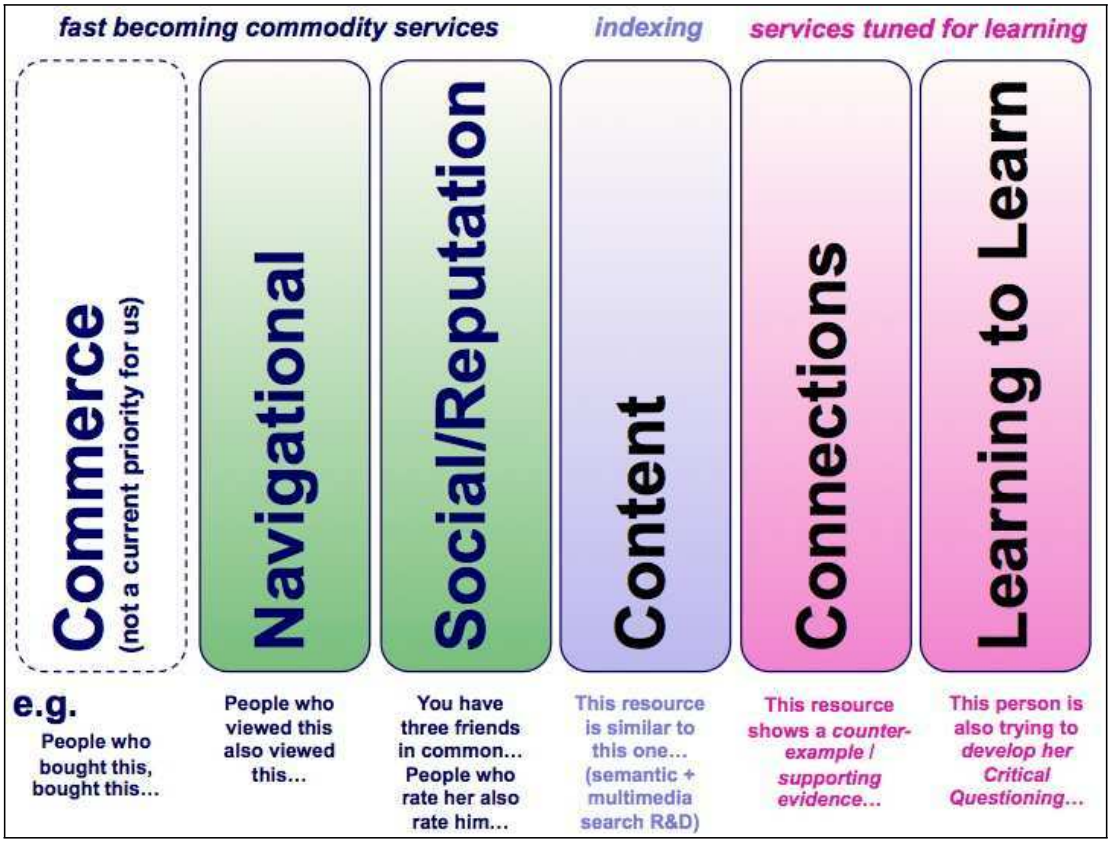

Figure 7 - Envisioning the future of learning analytics and recommendation engines

Notes

1. E.g. http://podcast.open.ac.uk and http://www.youtube.com/user/TheOpenUniversity.
2. Google Gadgets: http://www.google.com/webmasters/gadgets.
   Apache Shindig: http://shindig.apache.org.
3. *LUCERO Project: Linking University Content for Education and Research Online,* Knowledge Media Institute/Library/Faculty of Arts, Open University, UK: http://lucero-project.info.
   Semantic Web and Knowledge Services Research, Knowledge Media Institute, Open University, UK: http://kmi.open.ac.uk/theme/semantic-web-and-knowledge-services.
   Multimedia and Information Systems Research, Knowledge Media Institute, Open University, UK: http://kmi.open.ac.uk/theme/multimedia-and-information-systems.
4. For structured argument mapping/deliberation tools see: www.olnet.org/odet2010.

Bibliographic references

Andersen, C. (2009). *Free: The Future of a Radical Price.* Hyperion.

Blackmore, C. (2010). (Ed.) *Social Learning Systems and Communities of Practice*. Springer: London.

Buckingham Shum & De Liddo (2010). Collective Intelligence for OER Sustainability. *OpenEd'10: The Seventh Annual Open Education Conference*, Barcelona, Nov. 2-4, 2010: http://openedconference.org/2010.

Christensen, C.M. (1997). *The innovator's dilemma : when new technologies cause great firms to fail*. Harvard Business Press.

Claxton, G. (1999). **Wise Up: Learning to Live the Learning Life**. (Bloomsbury 1999, Network Continuum 2000).

Conole, G. (2008). New Schemas for Mapping Pedagogies and Technologies. *Ariadne*, Issue 56, July 2008. http://www.ariadne.ac.uk/issue56/conole.

Deakin Crick, R. (2009). (Ed.) Pedagogical challenges for personalisation: Integrating the personal with the public through context-driven enquiry. *Curriculum Journal, Special Issue*, 20 (3), pp. 185-306.

Hagel, J., Seely Brown, J. and Davison, L. (2010). *The Power of Pull*. Basic Books: NY.

Heppell, S. (2007). *RSA Edward Boyle Memorial Lecture*: www.teachers.tv/videos/4957.

Inglehart, R. (1997). *Modernization and Postmodernization. Cultural, Economic, and Political Change in 43 Societies.* Princeton University Press: NJ.

Lane, A. (In Press). How far may open educational resources add flexibility to higher education practices? Lessons from The Open University, In (Eds.) Burge, E., Gibson, C., and Gibson, T., *Open and distance education: can higher education flex that far, and fast?* Athabasca University Press.

Lane, A. and McAndrew, P. (In Press). Are OER systematic or systemic change agents? *British Journal of Educational Technology*.

MacLean, A., Young, R., Bellotti, V. & Moran, T. (1991). Questions, Options, and Criteria: Elements of Design Space Analysis. *Human-Computer Interaction*, 6, (3&4). [Special Issue on Design Rationale: John M. Carroll and Thomas P. Moran (Eds.)], pp. 201-250.

Okada, A., Buckingham Shum, S. and Sherborne, T. (Eds.) (2008). Knowledge Cartography: Software Tools and Mapping Techniques. Springer: London.

Perkins, D. Jay, E. and Tishman, S. (1993). Beyond abilities: a dispositional theory of thinking. *Merrill-Palmer Quarterly*, 39, (1), pp. 1-21.

Seely Brown, J. and Adler, R.P. (2008). Minds on Fire: Open Education, the Long Tail, and Learning 2.0, EDUCAUSE Review, 43, (1), pp. 16–32. http://bit.ly/Qggee.

Weller, M. (2008). *The SocialLearn project.* Blog post: http://bit.ly/1dVwQ6.

About the authors

Simon Buckingham Shum

Senior Lecturer in Knowledge Media, Knowledge Media Institute, UK Open University.

Simon Buckingham Shum is a Senior Lecturer in Knowledge Media at the UK Open University's Knowledge Media Institute, where he leads the Hypermedia Discourse Group. He brings a human-centered computing perspective to the challenge of building collective intelligence and the sensemaking capacity that 21st-century citizenship requires, from childhood onwards. His research is reflected in the books *Visualizing Argumentation* and *Knowledge Cartography.* http://people.kmi.open.ac.uk/sbs.

SocialLearn Project The
Open University Milton
Keynes, MK7 6AA United
Kingdom
S.Buckingham.Shum@open.ac.uk
www.open.ac.uk/sociallearn

Rebecca Ferguson

Research Fellow, Institute of Educational Technology, UK Open University.

Rebecca Ferguson is a Research Fellow, Institute of Educational Technology, studying and developing the use of social learning at the UK Open University. Her overarching research interest is in how people learn together online, making use of different tools and literacies. This has included investigation of learning in online conferences, in virtual worlds, through blogs and through the use of other social media. http://kmi.open.ac.uk/people/member/rebecca-ferguson.

SocialLearn Project The
Open University Milton
Keynes, MK7 6AA United
Kingdom
R.M.Ferguson@open.ac.uk
www.open.ac.uk/sociallearn

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Open Educational Resources: Experiences of use in a Latin-American context

José Vladimir Burgos Aguilar (MTI, M.Sc),* Maria Soledad Ramirez Montoya, Ph.D **

* Educational Innovation Liaison Officer, Innov@TE, Center for Innovation in Technology and Education; part time Professor Graduate School of Education (EGE), Tecnológico de Monterrey (ITESM).

** Full time Professor, Graduate School of Education (EGE); Principal of the Research Group of Investigation of Innovation in Technology and education, Tecnológico de Monterrey (ITESM).

Abstract

This paper presents practical experiences using Open educational Resources (OER) for basic and elementary education (K12), educational research and research training on two inter-institutional projects with the collaboration of thirteen higher education institutions and with the support of the Corporación de Universidades para el Desarrollo del Internet (CUDI) and by the Consejo Nacional de Ciencia y Tecnología (CONACYT) of Mexico and hosted by the Tecnológico de Monterrey. The first initiative is titled "Knowledge Hub for K-12 Education" with the main goal of enrich a catalog of Open Educational Resources for basic and elementary education (K-12) for Mexico and Spanish speaking countries in Latin-America. The main goal of the second initiative is to build a collection of Open Educational Resources for Mobile Learning to address the issue of educational research and research training.

Keywords

Experiences of use, educational resources, learning experiences, institutional challenges, digital repositories

---

Recommended citation:

Burgos, J. V.; Ramirez, M. S. (2010). Open Educational Resources: Experiences of use in a Latin-American context. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.

[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/5062>

Introduction

Tecnológico de Monterrey (ITESM) is a private, non-profit academic institution with 65 years of experience. It is composed of 33 campuses across Mexico that offer high-school programs, undergraduate and graduate degrees, continuing education, as well as social programs. Through technology-based distance programs, ITESM is a pioneer in distance education with more of 20 years of experience through its Virtual University, reaching 29 countries; at present time, the Virtual University offers totally online undergraduate, postgraduate, continuing education, and social programs

ITESM has worked in the past two years in several projects on the reuse of royalty free course materials from Carnegie Mellon University (OLI, 2010), Yale University (OYC, 2010), and the Massachusetts Institute of Technology (MIT-OCW, 2010), with the objective of identifying key critical factors to develop a model to effectively transfer OER. Capitalizing theses experiences, Tecnológico de Monterrey proposed the creation of an important educational initiative, named "***Knowledge Hub***" (Burgos, 2008) at the World Economic Forum (WEF) in Davos, Switzerland, in January 2008 during a Global Universities Leaders Forum session (Galán, 2008).

Knowledge Hub was later named as TEMOA (Temoa, 2010) that represents the words "to seek, investigate, inquire" in the Náhuatl[1] language as a free use catalog that supports a multilingual search engine to allow the user to discover selected Open Educational Resources (OER) using enriched metadata by an academic community and enhanced by librarians, using Web 2.0 such faceted search and social networking tools. The portal website of TEMOA provides public access through the Internet for educators, students and self-learners of all educational levels, from graduate education to K-12 basic education. It was created to assist educators in the challenging task of introducing innovations in the classroom to improve the teaching-learning process, and by consequence, student retention, motivation and attention. TEMOA is a Mexican distance education initiative of the Tecnológico de Monterrey (ITESM) to the world, conceived by the faculty's needs to find instructional materials for teaching and learning with the certainty that the resources found, respects the intellectual property and legal rights from their original authors.

The movement of Open Educational Resources (OER) is one of the most important trends that are helping education through the Internet worldwide, and it's a term that is being adopted every day in many educational institutions. "At the heart of the movement toward Open Educational Resources is the simple and powerful idea that the world's knowledge is a public good and that technology in general and the World Wide Web in particular provides an extraordinary opportunity for everyone to share, use, and reuse knowledge. OER are the parts of that knowledge that comprise the fundamental components of educational content and tools for teaching, learning, and research," (Atkins, Brown, and Hammond, 2007, p. 6).

Research Experiences

Aware of the advances in technology worldwide and the hundreds of thousands of new resources that are published each day on the Internet in an exponential basis, the way we see the world has changed, this also has a significant impact on education, both in the way of learning as in the way of teaching. It is a reality that information is available in massive and exponential way, mainly through digital media on the Internet. The vast majority of the times information is accessed freely without any filter, raising questions about its authenticity, validity, and reliability (ACRL, 2010).

Different studies recognize that knowledge has become a driving force of production, economic development and social growth of the countries (Okunoye & Karsten, 2002; Malhotra, 2003; OECD, 2003; UNIDO, 2003), leading us to recognize that in a globalized environment, information resources and knowledge flow freely without regard to geographic boundaries or limitations due to several critical factors that support the development and welfare in countries, such is the case of technological innovation, economic resources, skills, machinery and other production inputs that move in cycles and dynamic continuous value creation by integrating global learning networks and knowledge. Information technologies have the great potential to facilitate dissemination of knowledge from universities, educational institutions, organizations and governments, as well as to support the design of innovative educational strategies to improve and transform learning environments and to potentiate education.

The first experience research using Open Educational Resources (OER) in this paper is titled "**Knowledge Hub for K-12 Education Project**" an initiative aimed to enrich the classification and indexation catalog of OER for basic and elementary education level, this through TEMOA, for the Latin American academics; with the labor and dedication of teachers and researchers in basic education, to support process improvement and distance education, professional development of teaching, contribute in reducing educational gap, and to foster more equal access to educational resources.

The project was funded during one year in 2009 by the *Corporación de Universidades para el Desarrollo de Internet* (CUDI) and by the *Consejo Nacional de Ciencia y Tecnología* (CONACYT) of Mexico and hosted by *the Tecnológico de Monterrey*, in Mexico. Six higher education institutions were involved: Tecnológico de Monterrey (5 faculty researchers; 5 research assistants), Universidad Regiomontana (2 faculty researchers), Comité Regional Norte de la Comisión Mexicana de Cooperación con la UNESCO, AC (3 researchers), Universidad de Montemorelos (4 faculty researchers), Instituto de Investigación, Innovación y Estudios de Posgrado para Educación, IIIEPE (3 researchers) and Escuela Normal Miguel F. Martínez (5 teachers).

The group of 11 faculty researchers, 5 teachers, 6 researchers and 5 research assistants agreed to work virtually and locally with traditional face-to-face meetings using several communication mechanisms:

A webpage (Blog) to centralize efforts of communication and documentation process (http://khubk12.blogspot.com)
Web discussion forums to debate, argue and agree about several topics (http://khub12.umenlinea.com)
Electronic mail (email)

Videoconference (Internet 2)
Chat and web-conference
Face-to-face local meetings

Also, the group agreed to have several training sessions through videoconference and recorded sessions through DVDs and power point slides. The training's sessions have had the objective to develop new skills and abilities about the use of web technology and information literacy. Also, the training sessions addressed the awareness about Open Educational Resources (OER) and the clarification about the use of resources and materials for teaching and learning purposes in the classroom.

The methodology that was followed was collaborative, where six institutions of higher education worked with twelve basic education institutions; this is two basic/elementary schools for each higher education institution in Mexico (in the State of Nuevo Leon). Was a joint project in a year basis, that allowed us enrich our understanding and knowledge of educational technology through a search tool to support access to Open Educational Resources (OER) available on the Web (Internet network), taking advantage of the academics and researchers support in Mexico and Latin America. There were two main activities that guided the development of the project: (1) first, the linkage of basic education teachers and researchers with the enrichment of a catalog of open educational resources through an academic search portal, (2) compilation of findings project implementation, studies and dissemination of knowledge through journals and papers in specialized conferences, with a view to strengthening the consolidation of research groups involved and the future creation of international networks in which new projects are conceived in educational research in the field of OER and Open Access.

During the project several strategies were followed to accomplish its goals, such as:

a) The group of researchers decided to integrate several working groups to reach the best potential of valuable source of knowledge generation and learning through the creation of a Community of Practice (CoP) on OER.
b) Six projects were developed within the main project; each one for each participant institution, the main goal was disseminate the knowledge on Open Educational Resources, for collaboration purposes and for the implementation of technology at the basic education level (K-12).
c) Every three weeks were project group meetings using videoconferencing as a media for communication purposes.
d) For the delivery of the training workshop for K-12 teachers was used Internet 2 tools.
e) A website was developed for documenting and sharing of ideas among researchers participants: http://khub12.umenlinea.com/
f) One Blog for K-12 teachers was developed: http://khubk12.blogspot.com/

Some of the results are:

A) Between January and April 2009:

Design of one diagnosis instrument to identify the competence on digital literacy for the participants in the project.
Design of the training workshop on how to identify, evaluate and classify Open Educational Resources (all six participant institutions collaborated on the design and teaching delivery).
Creation and production of one workshop and course materials, such as: digital resources, formats, handbooks, handouts, and video tape recording.
Design of the strategy of call of K-12 teacher's participants and its selection. 150 teachers in 20 schools accepted to collaborate and participate in the activities of the project.
Defining criteria for identification and evaluation of the website sources of OER.
Develop of six research projects within the main project, using different methodological approaches.

B) Between May and November 2009:

Design of four workshops to train K-12 teachers on how to select, document, use and adopt OER within class sessions.
Production of course materials, such as: digital resources, formats, handouts, and video tape recording.
On October 2009 there were 150 K-12 teachers participating within the project.
Total of OER documented for basic education at the end of the project = 291.
Total of OER used and adopted by K-12 teachers = 101.
End of the six projects within the main project, using different methodological approaches.
Four articles published in Journals.

The second research initiative is titled "**Mobile Open Educational Resources for the training of educational researchers**" aimed to generate a collection of open educational resources (OER) for mobile learning, on the topic of educational research and research training to be available in a portal (web site) for free use, reuse and distribution with educational purposes.

The training of educational researchers is a subject that is of interest to be addressed from various perspectives. The project was funded for the year 2010 by the *Corporación de Universidades para el Desarrollo del Internet* (CUDI) and by the *Consejo Nacional de Ciencia y Tecnología* (CONACYT) of Mexico and hosted by *the Tecnológico de Monterrey,* in Mexico. Seven higher education institutions were call to participate: Tecnológico de Monterrey (4 faculty researchers and 3 research assistants), Universidad de Montemorelos (2 faculty researchers and 3 research assistants), Instituto Tecnológico de Sonora (4 faculty researchers and 1 research assistant), Universidad de Guadalajara (2 faculty researchers), Universidad Autónoma de Yucatán (3 faculty researchers), Universidad Autónoma de Guadalajara (6 faculty researchers), Universidad Autónoma Metropolitana (1 faculty researcher).

The group of 22 faculty researchers, and 7 research assistants agreed to work virtually and locally with traditional face-to-face meetings using several communication mechanisms:

A webpage (site) to centralize efforts of communication and documentation process (http://sites.google.com/site/oer4share)
Web discussion forums to debate, argue and agree about several topics (http://foros.um.edu.mx/rea)
Electronic mail (email)
Videoconference (Internet 2)
Chat and web-conference
Face-to-face local meetings

The project is developed through three stages or phases: planning, implementation and evaluation, in a twelve months basis. The expected results for the month of December 2010 are a collection of at least 30 OER for mobile access, seven sub-projects published in journals and conferences, as well as the training of undergraduate and postgraduate research assistants and a workshop to produce digital content according the criteria of OER.

The benefits and impacts that contribute to the field of research, innovation and knowledge transfer on the preliminary results on this initiative are:

A. The planning and selection of subject fields for the production of open educational resources, such as follows:
- Methodological aspects of educational research
- Tools for collecting data for further processing
- Skills for access and use of information (information literacy)
- ICT Oriented data collection and dissemination of knowledge

B. The design of a course-workshop for the development of technological skills in digital production environment for project participants (faculty researchers and research assistants).

A content repository of open educational resources (OER) and mobile learning resources on educational research and research training which will be available in a website, where these resources will be open, free and licensed for use, reuse and distribution in Mexico: http://catedra.ruv.itesm.mx/.

Conclusions and lessons learned

As a group, we decided to integrate several working teams to reach the best potential of valuable source of knowledge generation and learning through the creation of a Community of Practice (CoP) for each research project. A CoP is defined as a "group of people who share a common

interest, a set problems or simply have a passion to share a particular subject and want to deepen their knowledge and experience through various processes of interaction" (Wenger; McDermott; Snyder, 2002).

Considering that a Community of Practice vanishes the several hierarchical levels in a pre-established institutional structure (Saint-Onge & Wallace, 2003; Saint-Onge, 2004), the group of researchers decided to took advantage of this benefit, which helped in the reduction of time in the planning process and the sharing of experiences in solving special subjects. The dynamics group allowed sharing ideas and the consideration of different perspectives with colleagues or peers, helping them to have better decision making. In fact, there was a greater participation and less fear of making mistakes knowing that they had the confidence to have a support group from several institutions.

We learned that to foster effective project learning in the group of participants through several institutions, it's necessary to encourage collaboration and exchange of meanings and experiences.

In the first project titled "Knowledge Hub for K-12 Education Project", the group identified access barriers for the use of Open Educational Resources (OER) in Mexico by teachers in K-12 schools:

The need for a better technological infrastructure (lack of internet access, projectors and computers to display and use the educational resources),
Legal issues (access of the resources in terms of licensing),
Relevance about the content of the materials available on the Internet (resources mainly from other countries making difficult to adopt them in the local context),
Lack of resources in Spanish (language issues),
Digital literacy gap in K-12 schools and lack of awareness in the institutional level (lack of information in managerial levels).

In the second project titled "Mobile Open Educational Resources for the training of educational researchers", the group as experienced several institutional challenges:

The digital production training of faculty researchers and assistant researchers for a mobile learning environment (included the process of acquiring multimedia computers, digital players and software applications for the production of video resources).
Legal issues (the awareness of the legal terms and the process of licensing the academic work); the group preferred the use of Creative Commons (CC) licenses.
The decision of use international standards of metadata such as Dublin Core (DCMI) to describe and classify the resources produced in the institutional repository.
The planning, production and publishing processes according the OER criteria in a digital content repository (included the lifecycle process of the workflow, the definition of user roles, as well as the governing business rules of the institutional repository).
The decision to use open platforms for storing and publishing the educational resources, such as DSpace (www.dspace.org) and Joomla (www.joomla.org).

The OER's are a great support for academic activities and research as they allow the sharing of content of specialists from various cultural backgrounds in a global context, supporting in this

matter, the internationalization process in the knowledge society. In Latin America to have this kind of resources is of great help to support the training and research processes.

The academic work between institutions enables the creation of networks that enhance efforts to achieve far-reaching objectives, as shown in the results that have been presented in this paper where the eleven participating higher education institutions have been investigating the process of discovering open educational resources available on the Internet, and explore its incorporation in new learning environments enriched by technology. In both projects that have been presented, is explored the use and impact of the OER in basic education schools and the training of educational researchers.

Finally, this paper is an invitation to join efforts in establishing monitoring mechanisms and recognition that supports the educational practice to share experiences on the use of OER through the scientific and intellectual evidence.

Figures

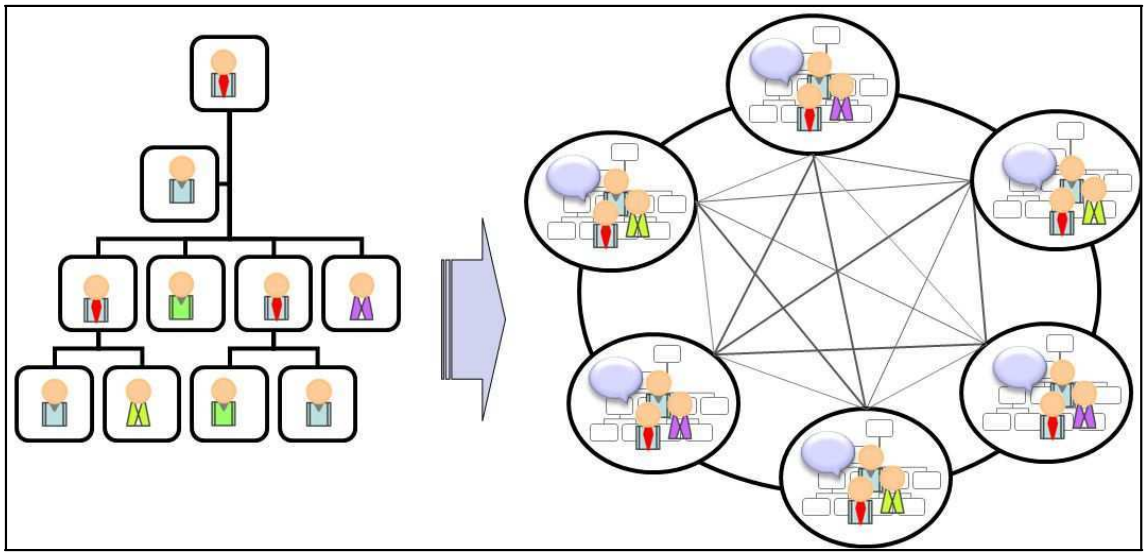

Figure 1 - Fostering equality of ideas and knowledge sharing

Notes

1. The Náhuatl is a lingua franca that served as communicative language bridge between peoples that made up the various Mesoamerican cultures; see more at Karttunen (1992).

Bibliographic references

ACRL (2010). Information literacy competency standards for higher education. Association of College & Research Libraries (ACRL) a Division of the American Library Association. Retrieved July 17, 2010 from http://www.ala.org/ala/mgrps/divs/acrl/standards/infolit.cfm

Atkins, D., Brown, J. S. & Hammond, A. L. (2007). *A review of the open educational resources (OER) movement: Achievements, challenges, and new opportunities*. San Francisco, CA: The Willian and Flora Hewlett Foundation.

Burgos, J. V. (2008). *Knowledge Hub Open Educational Resources (OER) index: experiences of Tecnológico de Monterrey*. In OER stories, UNESCO OER Community Open Educational Resources. Retrieved October 21, 2008 from http://oerwiki.iiep-unesco.org/index.php?title=OER_stories/Knowledge_Hub

Galán, V. (2008). El Tec diseña un 'Google' academic. *CNN Expansión.com*. Retrieved October 10, 2008 from http://www.cnnexpansion.com/tecnologia/2008/04/16/tec-de-monterrey-elabora-buscador

Karttunen, F. (1992). *An analytical dictionary of Náhuatl.* EEUU: University of Oklahoma Press.

Malhotra, Y. (2003). Measuring national knowledge assets: Conceptual framework and analytical review. United Nations Department of Economic and Social Affairs Division for Public Administration and Development Management. Retrived September, 4, 2003 from http://sominfo.syr.edu/facstaff/yogesh/

MIT-OCW (2010). MIT OpenCourseWare. Massachusetts Institute of Technology. Retrieved July 17, 2010 from http://ocw.mit.edu

OECD (2003). Measuring knowledge management in the business sector: First steps. Centre for Educational Research and Innovation. Retrieved September 4, 2003 from http://www.oecd.org/

Okunoye, A. & Karsten, H. (2002). Where the global needs the local: Variation in enablers in the Knowledge Management Process. *Journal of Global Information Technology Management, 5* (3). ABI/INFORM Global

OLI (2010). Open learning initiative: Open and free courses. Carnegie Mellon University. Retrieved July 17, 2010 from http://oli.web.cmu.edu/openlearning

OYC (2010). Open Yale courses. Yale University. Retrieved July 17, 2010 from http://oyc.yale.edu

Saint-Onge, H., Wallace, D. (2003). Leveraging communities of practice for strategic advantage. Boston, EEUU: Butterworth-Heinemann.

Saint-Onge, H. (2004). Communities of practice: in the context of knowledge and learning. Congreso internacional de desarrollo organizacional y capital humano, EEUU: SaintOnge Alliance.

Temoa (2010). Temoa: Open educational resources portal. Retrieved May 6, 2010 from http://www.temoa.info

UNIDO (2003). Competing through innovation and learning: Industrial development report series (IDR 2002/2003). United Nations for Industrial Development Organizations. Retrieved May 23, 2010 from http://www.unido.org/doc/24397

Wenger, E., McDermott, R., Snyder, W. (2002). *Cultivating communities of practice: A Guide to managing knowledge*. EEUU: Harvard Business School Press.

About the authors

José Vladimir Burgos Aguilar, MTI, M.Sc

Educational Innovation Liaison Officer, Innov@TE, Center for Innovation in Technology and Education; part time Professor Graduate School of Education (EGE), Tecnológico de Monterrey (ITESM).

He studied Computer Science at the Technological Institute of Culiacan and has a Master in Information Technology Management and Master of Science Information and Knowledge Management by the Tecnológico de Monterrey. He currently serves as Coordinator of Educational Innovation at the Center for Innovation in Technology and Education of Monterrey Tech, is part of the faculty at the distance education programs and participates as associate researcher to the Research Chair of Innovation in Technology and Education in the Tecnológico de Monterrey. Leads the OpenCourseWare project of Tecnológico de Monterrey, and leads the program of temoa.info a catalog of Open Educational Resources.

ITESM, Edificio CEDES, Sótano 1
Av. Eugenio Garza Sada No. 2501 Sur
Col. Tecnológico, Monterrey
Nuevo León 64849
vburgos@itesm.mx

Maria Soledad Ramirez Montoya, Ph.D

Full time Professor, Graduate School of Education (EGE); Principal of the Research Group of Investigation of Innovation in Technology and education, Tecnológico de Monterrey (ITESM).

She made studies in Elementary Education and Bachelor of Science in Education in the Technological Institute of Sonora in Mexico. Concluded graduated studies in Educational Technology and Doctorate in Education and Educational Psychology: Curriculum and Instruction at the University of Salamanca (Spain). She is currently professor at the Graduate School of Education and director of the Research Chair of Innovation in Technology and Education. She is a member of the National System of Researchers in Mexico and participates in the Network of Graduate Studies in Education at the Mexican Council for Educational Research (COMIE), the Research Network of Educational Research (REDIIE) and is President of Applications and Allocation Committee Funds at the University Corporation for Development of Internet (CUDI) in Mexico.

ITESM, Edificio CEDES, Sótano 1
Av. Eugenio Garza Sada No. 2501 Sur
Col. Tecnológico, Monterrey
Nuevo León 64849
solramirez@itesm.mx

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/
Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

Student Journalism 2.0: Testing Models for Participatory Learning in the Digital Age

Tom Caswell,* Alex Kozak**
* PhD Student (Utah State University)
** Program Assistant, Creative Commons

Abstract

Many educators and educational institutions have yet to integrate web-based practices into their classrooms and curricula. As a result, it can be difficult to prototype and evaluate approaches to transforming classrooms from static endpoints to dynamic, content-creating nodes in the online information ecosystem. But many scholastic journalism programs have already embraced the capabilities of the Internet for virtual collaboration, dissemination, and reader participation. Because of this, scholastic journalism can act as a test-bed for integrating web-based sharing and collaboration practices into classrooms. Student Journalism 2.0 was a research project to integrate open copyright licenses into two scholastic journalism programs, to document outcomes, and to identify recommendations and remaining challenges for similar integrations. Video and audio recordings of two participating high school journalism programs informed the research. In describing the steps of our integration process, we note some important legal, technical, and social challenges. Legal worries such as uncertainty over copyright ownership could lead districts and administrators to disallow open licensing of student work. Publication platforms among journalism classrooms are far from standardized, making any integration of new technologies and practices difficult to achieve at scale. And teachers and students face challenges re-conceptualizing the role their class work can play online.

Keywords

scholastic journalism, open licensing, open education

Recommended citation:
Caswell, Tom; Kozak, Alex (2010). Student Journalism 2.0: Testing Models for Participatory Learning in the Digital Age In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/5161>

Project Rationale

While the possibilities presented by a global Internet are well known and often championed, it can sometimes appear as if those areas that could benefit most from that innovation have been changed the least. Education is an area in desperate need of innovation, but so far the Internet has had relatively little impact (Bissell, 2007).

A confluence of factors has isolated education from the transformative power of information sharing and communication online. In primary and secondary education, students and teachers face significant obstacles to integrating web-based collaboration into the classroom (Ertmer, 1999). Teachers often have little time to familiarize themselves with the technical requirements of information sharing. A proliferation of content repositories, publishing methods, and copyright restrictions can make finding, using, and sharing educational content an overwhelming task (Rothery & Bell, 2006). Even if teachers do have the time, familiarity, facilities, and resources to integrate these new practices, school policies can also stand in the way of these educational innovations by restricting what and how educational content travels into and out of the classroom (Geser, 2007).

Students face an additional set of challenges. While today's generation of students appear to possess a high degree of technical sophistication, legal and social barriers limit students' ability to become active participants in their education, and instead confine students to passively receiving information. Fear or confusion around student privacy (Swartz, 1999), content decency, and copyright infringement liability (Hylén, 2007), while not individually intractable, can summarily result in a de facto policy of limited access and availability of web-based tools and resources. These policies may also instill and reinforce a belief among students that online sharing happens at home, not in the classroom.

But while there are significant challenges to achieving a fully connected classroom, there are also great opportunities. Through the Internet, educators and students are able to tap into a vast digital commons (Lynch, 2003). Teachers can guide students to content on almost any topic, including content too recent to be found in a printed textbook.

The introduction of the Internet into classrooms also brings with it a chance to re-imagine the role that class work plays in a student's education. Student assignments, such as essays, worksheets, and presentations, are no longer limited by physical barriers to development and sharing and can be easily transmitted to anyone, anywhere. Collaborative educational communities could become a norm as more and more content travels outside of the classroom and onto the web. With these new capabilities, classrooms no longer need to be end-points in the information ecosystem, and can now become nodes in a growing network of educational content modification and sharing (Geser, 2007).

A growing global community of educational content creators, combined with an increased awareness of the legal conditions for openness and interoperability has resulted in a vast digital commons of educational content. These Open Educational Resources (OERs) are free for the world to use, customize, and share, without the need to ask permission. Students and teachers will have the legal right and encouragement to download, modify, and re-distribute these educational resources (Downes, 2006). Allowing classrooms to contribute back to this global commons of educational

resources will continue to enrich and extend the reach of high-quality educational resources, and open up new opportunities for students to engage with scholastic topics through the creation and curation of educational materials (Nolan & Costanza, 2006).

If one acknowledges that online information sharing has the potential to improve education, several questions arise. The most pressing question is, given all of the challenges mentioned above, how can we embrace these new practices and actually integrate them into the classroom? How can we begin to not just make online information sharing acceptable, but part of what it means to be a learner in the 21st century?

Our research focused on these questions, as today's students and teachers are beginning to appreciate and embrace the boundless nature of communication online and the possibilities presented by digital transmission of student work. The goals of the Student Journalism 2.0 (SJ 2.0) project were 1) to introduce new concepts and practices relating to open licensing into the scholastic journalism workflow and then evaluate the impact it had on student behavior and beliefs; 2) to evaluate the conceptions and beliefs that students have about the value of their work and how that relates to sharing practices and norms in the classroom; and 3) to report the challenges and outcomes from our methods for the benefit of future initiatives seeking to integrate openness and open practices into similar educational programs.

We partnered with two California Bay Area schools, Palo Alto High in Palo Alto and Monta Vista High in Cupertino, and presented their journalism students with the option to use Creative Commons licenses to openly license their journalistic works as a part of their publication workflow. In addition to interacting directly with students through in-class visits and online communication, much of the project was dedicated to supporting teachers and advisers as they adjusted to ideas and procedures in their publication process that frequently challenged older practices and conceptions of student work.

Methodology

The research aims of the Student Journalism 2.0 project were primarily pragmatic, focused on gathering useful information about our experiences so we could share it with other groups interested in similar efforts. The project was motivated by questions like “Can we have a meaningful dialogue with students and teachers about new content sharing practices enabled by the Internet, and if so, are they willing to embrace them as a part of their everyday activities?” Our approach towards integrating Creative Commons into two classrooms required adjustments along the way. We documented all of this with the hope of providing a roadmap for others who might follow.

Research Design

During the Student Journalism 2.0 project we employed a design-based research approach to study the introduction of open web sharing practices at our two partner high schools. Design-based research is a methodological framework developed by Ann Brown (1992) and Allan Collins (1992)

in which interventions are designed and implemented in natural settings to test the ecological validity of a dominant theory or framework. In our case we set out to explore the potential impact of Web 2.0 information sharing and open licensing within the scholastic journalism setting.

An important factor in our choice of research design was the ability to adjust our approach as needed to meet unforeseen challenges and to better support the teachers and students participating in the SJ 2.0 project. This methodology gave us the flexibility to systemically adjust different areas of our intervention as needed while working in a naturalistic context (Barab & Squire, 2004).

Over the course of the Student Journalism 2.0 project, several adjustments were necessary as unanticipated challenges arose. Our methodology allowed us to adjust our intervention as we went along, and we were able to address challenges as they arose without compromising the study.

Our findings are presented as a narrative roadmap, primarily for the benefit of those who seek to learn from the challenges we faced. While we recognize this is a departure from the more traditional presentation of results, we feel that blending our observations with a thoughtful discussion of the challenges we faced provides the best possible narrative for future classroom implementations of open licensing and Web 2.0 information sharing.

Data Collection Methods

This pilot study aimed to examine the interactions between students, teachers, facilitators, and the topics introduced in the Student Journalism 2.0 project through focused interviews and conversational meetings. Rather than attempt to design a research method that would allow rigorous statistical evidence of behavior modification, and due to restrictions on such methods through the Institutional Review Board, we chose to integrate ourselves fully with the participating classes and fully embrace a dual role of investigator and participant. As in other design-based research programs, the Student Journalism 2.0 "practitioners and researchers work together to produce meaningful change in contexts of practice" (Design-Based Research Collaborative, 2003).

Data collection consisted of audio and video recordings of student reflection interviews, as well as audio recordings from teacher meetings with project facilitators. A Flip digital video camera and a digital audio recorder were used in the data collection. Student interviews were conducted near the start of the second semester after a full semester of in-class exposure to Creative Commons and related concepts. We examined the student reflections for elements that were either representative or unusual with regards to our perception of student beliefs. We also identified student misconceptions or negative impressions that were captured during the course of the data collection to look for opportunities for improvement in our approach. Teacher support meetings were recorded to better understand teacher questions, concerns, and how teachers responded to the possibilities presented by CC licenses. With these different data sets we are able to describe student and teacher perspectives on the successes and challenges of the SJ 2.0 project and the integration of the licenses.

Student Interview Methodology

We employed a semi-structured expert interview approach. The interviews follow structured questions guiding the conversation while providing enough space for subjective perceptions of the experts and for the discussion of all relevant topics (Flick, 2006). A certain level of comparability between the interviews is guaranteed, since the same questions are posed to all interviewees.

At the beginning of the second semester, 13 students from Palo Alto and Monta Vista high schools were interviewed about their experience with the Student Journalism 2.0 project and asked a series of reflection questions. Student interviews lasted anywhere between 5 and 15 minutes and were digitally recorded with the permission of interviewees using a Flip digital video camera. Students were selected at random during regular classroom activities from a list of students who had submitted the necessary paperwork. These responses are cited in the roadmap section as part of our discussion. Sample interview questions and student responses are also provided in the appendix.

Teacher Meetings with SJ 2.0 Project Facilitators

Student Journalism 2.0 facilitators from Creative Commons met at one to two month intervals with participating teachers at Palo Alto High School and Monta Vista High School during the first semester of the project. These meetings were not the sole contact facilitators had with teachers involved in the project, but were a method to "check-in" and see if there were any common issues and concerns among the teachers and to discuss them as a group. Audio recordings were made with the teachers' permission using a digital audio recorder. Teacher-facilitator meetings were where many of the legal and technical challenges to integrating Creative Commons licenses were discussed, which were mentioned in the Project History, and thanks to the tremendous experience and excitement of the involved teachers, were a venue for exploring recommendations to make to teachers or other initiatives attempting similar integrations.

A Roadmap for Integrating Open Practices into an Educational Setting

The Student Journalism 2.0 is one example of how Creative Commons licensing and open, web-based sharing could be integrated into a classroom, and we describe the steps we took below. We approach the descriptive goal of our study with a qualitative research perspective in an effort to share the opportunities and challenges we faced during the project. Audio and video recordings of student interviews and teacher-facilitator meetings provide the basis for the narrative and discussion of the Student Journalism 2.0 project. We offer our experiences in the form of a roadmap for others pursuing similar projects to consider. The most important challenges to overcome are described in each section, with the intent that one could undertake a similar project and know in advance what issues might come up in that effort.

1. Identify potential programs and schools

It was no accident that the first major Creative Commons licensing integration effort in primary education occurred in scholastic journalism classrooms rather than an English class, for example, or even media class such as Video Production or Photography. Even before web-based publication became commonplace, journalism students were researching, writing, editing, and publishing stories with the goal of sharing knowledge and opinions. Student publications are sometimes as old as the parent institutions themselves, and for local communities have been a source for news and commentary for centuries. Just as the journalism industry faced new challenges with the coming of the digital age, so too did scholastic journalism. Rather than missing out on the journalistic opportunities of a 21st century information economy, many scholastic journalism programs have evolved and begun to introduce digital publication and web-based journalistic practices into the classroom.

In the process of integrating web-based publication, scholastic journalism programs are breaking new ground for how to go about providing a student with general education. Never before has web-based collaboration and publication been so fully integrated into everyday class work. For this reason, scholastic journalism can serve as a test-bed for how participatory learning, digital media, open educational resources, and web-based education can together create a truly innovative educational experience for students; namely, the experience of being involved in the use and creation of open content. Those scholastic journalism programs that have fully embraced the capabilities of the Internet will be an invaluable resource in the effort to understand the full impact of these kinds of classroom innovations.

There are several reasons why it has been easier to integrate web-based practices into scholastic journalism than "core" scholastic disciplines. First, because it is an elective course, journalism isn't constrained by many of the state standards requirements that are mandated with core subjects such as English (California State Standards for Media Literacy, 2003). As a result, journalism teachers have more flexibility in terms of class procedures, syllabi, testing, learning outcomes, etc. While much of what goes on in a high school journalism class supports English media literacy standards, there is no fixed journalism curriculum that must be followed. This additional flexibility allows journalism and other teachers of elective subjects to innovate and try new approaches to teaching journalism that would be more difficult to implement in a core subject.

Second, because nearly all of mainstream journalism has embraced web-based publication, and frequently serves as a model for scholastic journalism and young journalists, students learning about journalism have become familiar with many of the innovative practices developing in the industry. It is easier to introduce new web-based practices to teachers and students who are already used to working online as a regular part of their classroom activities. Students from schools participating in our research project used, among other software, Google Docs, Gmail, the Adobe Creative Suite, Twitter, Facebook, and both closed and open-source Content Management Systems. We found high levels of familiarity with web-based content creation, collaboration, and sharing. In addition to existing familiarity, journalism programs have found it easier to justify facilities and resources required for in-class Internet use given that the entire journalism industry has moved towards publishing online.

Lastly, given the extra-curricular nature of many journalism programs, teachers often become advisers out of personal interest or experience rather than by assignment, biasing journalism

programs towards teachers with dedication to the journalistic enterprise and the methods therein. Scholastic journalism teachers and advisers have formed strong communities through national and local chapters of the Journalism Educations Association. Journalism teachers are therefore more willing to experiment with new processes and practices that might enable students to better achieve their goals and increase the educational value of the program. The existence of a professional network and a sense of shared purpose with a set of geographically disparate teachers has enabled widespread sharing of best practices, informal training and technical support, and the highlighting of exceptional student and teacher achievement, all of which create a sense of possibility and isolate teachers from the current sense of pedagogical stagnation in traditional disciplines.

Scholastic journalism programs share many characteristics with the kind of fully participatory, open learning environment enabled by the Internet. First, just as with new pedagogies around classroom collaboration in open education, work produced by students is primarily meant to be shared. That is, the working assumption in a journalism class is that students will somehow share their work, which is built into the very structure of the assignment or activity. Students write work with the knowledge that it could or will be published. Even before students begin the publication process, they often share the work with peer-based editor groups rather than solely with teachers or advisers. And if accepted for publication by their peers, work is often published in print, online, or both with the intention that people outside of the classroom read it.

Both participatory educational practices and scholastic journalism involve collaborating with peers on a shared narrative or experience through content or a medium that can engender a sense of shared purpose and ownership over classroom subject matter. Participatory learning with digital media and open educational practices can enable students to connect with a global community of peers and learners in the consumption of and contribution to a common pool of educational resources. A core belief to advocates of participatory and open education is that contributing back to the global pool of educational resources will create this sense of ownership of the subject matter, in contrast to current norms where students are passive recipients of educational content with no stake or responsibility for the quality of the content.

In scholastic journalism, students tend to forge their own educational paths and have a high degree of control over the work produced in class. Not only do they often define the stories they want to write according to personal or community interests, but they are also able to collaboratively define overarching journalistic goals for their publications. Students discuss themes, reader engagement strategy, current issues and events, and similar topics that require a high level of collaboration, debate, reasoned argument, and critical thinking. As the creators of the content and structure of their publications, students become the stakeholders in the success or failure of their journalism, however they define those goals.

Even within scholastic journalism, however, there are limitations. Different journalism programs around the country enact different policies and organizational structures that can expand or limit student input and control. There is a strong editorial element in many scholastic journalism programs which tend to filter what student work is available for public consumption. Student editors often hold this editorial control, although teachers, advisers, and school administrators exercise control at varying levels. In many scholastic journalism programs, digital development and publication is either not central or not integrated at all within the journalism curriculum. While these programs might fully embrace the spirit of collaboration and sharing, often external barriers have kept them from migrating those practices to the Internet.

Although many scholastic journalism students have encountered difficulties migrating their publications to the web, it has been even *more* difficult to integrate digital media and open educational content within K-12 education generally. Therefore, scholastic journalism presents an opportunity to test some of the potential challenges and solutions to these practices.

2. Clear legal and institutional challenges.

From the beginning of the project, Student Journalism 2.0 faced fundamental legal questions about the possibility of bringing open licensing into a classroom context. Conversations at the first meetings with the participating teachers were narrowly focused on the legal and institutional barriers to students licensing their work with Creative Commons licenses. Specifically, teachers were concerned about whether school districts or school administrators would acknowledge that students own the copyright to the work they create in a journalism class, insofar as owning the copyright to their work would be a prerequisite for the legal validity of students using the suite of CC licenses.

The non-legal intuition shared among members in the Student Journalism 2.0 working group was that the students did hold the copyright to their work, but that there was sufficient room for disagreement, which might allow some schools or school districts to challenge the legitimacy of that intuition. The risk that district or school administrators and policies would claim that students did not have the right to apply open licenses to their class work was compounded by past precedent in an open source software licensing context within the Palo Alto School District which indicated, in the interpretation of a participating teacher, that the school district assumed at least some ownership stake in student work.

To mitigate these concerns with our project partners, and to examine ways of resolving these worries at scale, we sought guidance from the Student Press Law Center, a leading advocate for student free press rights, and the Berkman Center at Harvard University and the Berkman Center's Citizen Media Law Project. Following conversations with those organizations we were able to build a working consensus internally that we would not encounter district claims of copyright ownership in the pilot project. However, participating teachers and we remain skeptical that there is currently a scalable answer to this unresolved question around the legal foundations of open licensing in K-12 education. It is probable that some significant proportion of school districts, when asked if students own the copyright to their class work, will default to a position of district ownership. Some districts may have policies regarding this question, but many may not, and as our participating teachers put it, "No" is the easiest answer for school districts to give. In creating a large-scale program to integrate Creative Commons licenses into schools, or indeed any program involving content collaboration, this ambiguity is a potential barrier to achieving harmony with school administration.

Before students can be encouraged to make decisions about how to license their creative works, one assumes that they *have* the rights to their work. Because there isn't a clear answer as to whether students, in all circumstances, fully control the copyright to work created in class, and because even if there were a clear answer school districts might have enacted policies which contradict the law, it is important to get a clear expression of school or district policy on student ownership of class work early on in the integration effort. The course we chose was to reach out to external organizations for advice should district policy present a legal barrier to students using CC licenses, but there is a lack

of legal consensus around the copyright status of student work. While for our research project there was no legal challenge to our assumption that students owned the copyright to their class work and could therefore license them under Creative Commons licenses, the answer to the legal question is ambiguous enough such that some school districts might challenge that assumption. Having research or position statements for teachers and advocates to use in combating these potential legal challenges would help increase the number of student publications using CC licenses.

3. Integrate Creative Commons licenses into classroom practices

There were a number of technical challenges to implementing CC licensing into the publication platforms of scholastic journalism programs. In the absence of a standard publication platform or statement of best practices, journalism programs are using anything from WordPress blogs to a custom content management system (CMS) to publish student work online. While this is to be expected with such a wide variety of needs and available options, it presents a problem for the integration of a standardized procedure or tool into the discipline.

Our participating schools had two very different publication platforms. At El Estoque, the online student publication at Monta Vista High, students use the open source CMS Joomla! as their publication platform. Stories are often developed collaboratively online either within Joomla or in a third-party service such as Google Documents, and are then published to the web. To integrate Creative Commons licensing into El Estoque, students were able to install an open source extension to Joomla! that enables a choice of Creative Commons licenses in the publication workflow. Specifically, the extension translates certain strings of text inserted into the content editing window, where students upload or write their stories, into a Creative Commons license marker. The student is requires to look-up or remember a specific string for each license (e.g. "{{cc by-sa-nc}}") and type or paste it at the end of the work.

While the existence of a drop-in plugin for the existing publication workflow at El Estoque made integrating CC licensing simple and quick, this specific implementation has drawbacks. Students were required to memorize or reference the strings for their desired license if they wanted to use Creative Commons licenses, and it is likely that as a result some students who intended to license their work either forgot or avoided the process. Additionally, the absence of a module integrating the CC-maintained license chooser code, students were not piped through a vetted or standardized license selection process. These processes tend to ask short questions in human-readable form (e.g. "Prohibit Commercial Use?") allowing the licensor to select license conditions with check boxes based on simple questions. Without this functionality it is more difficult for students to know exactly which CC license to choose based on their interests, decreasing the likelihood that they will go through the licensing process.

At The Paly Voice, Palo Alto High's web-based publication which in addition to publishing original content acts as an outlet for all of the campus' print publications, students faced a different set of challenges in integrating CC licenses. Their publishing platform was a custom content management system programmed by previous students and maintained by a very small group of programming-literate students from year to year. Because it isn't based on a commonly used open source platform, there are no "drop in" solutions to easily integrate Creative Commons licenses.

Thus, integrating the licenses, and indeed integrating any new functionality, required original programming. This gave the program more flexibility in the actual implementation of the licenses, but required expertise that is unlikely to be available to other programs.

An additional difficulty to integrating Creative Commons fully into a custom CMS, or into any CMS in which a Creative Commons extension or module hasn't been created or is not well supported, is correctly implementing the technical side of CC license metadata. Creative Commons' CC REL specification provides a standard vocabulary and format for all license metadata which could lead to a scalable method for re-use tracking, among other uses (Ableson 2008). Both methods we saw for integrating CC licenses into student publications in our research project were not able to implement license metadata. Rather, CC licenses existed within the online document with no structured data.

One of the biggest wishes students and teachers had, and one of the most exciting possibilities for using CC license, was tracking CC-licensed work as it was redistributed and remixed around the web. In theory, both content publishers and content re-users enable tracking redistribution and derivative works through adherence to the CC REL specification. In reality, lack of proper source material metadata markup by content re-users and lack of software to aggregate and display this metadata in a way that's easy for students to use makes tracking based on CC REL metadata more of a future possibility than a current reality. And as described above, neither school was able to implement the CC REL metadata specification. While available software and norms around re-use metadata markup don't currently support student-friendly tracking of CC licensed work, custom search engines such as Google CSO or Yahoo! BOSS or CMS-based pingback or trackback features could be one way to help students find re-use cases of their work on the web.

We take our participating schools' experience integrating CC licenses indicative of the challenges many classrooms will face in trying to add new functionality to publication platforms that aren't well supported or easily extend-able. When choosing a publishing platform, be aware of the level of community support for extensions, modules, and add-ons, whether the platform requires a software license or adherence to a free or open source software license, and how difficult it will be to maintain the software in the future. If you know you'd like to implement Creative Commons licenses, ensure that you're working with a platform that minimizes the barriers to that implementation through existing CC integration or by having well-supported add-ons and extensions.

There are no best practices in choice of platforms for student publication. Teachers and advisers are often unsure which publication platform to use when moving to a web-based student publication. This uncertainty can be mitigated by communication with other teachers on mailing lists or at journalism educator conferences, but there is no consensus on which publication platforms are the easiest for students to implement, modify, and work with. If new practices like content licensing are to be integrated into scholastic journalism at scale, data about what platforms are being used will be important, as will a set of recommendations for platforms that are most amenable to modification or extension within a classroom setting.

While some programs might struggle with platform-specific issues, in other programs there are still barriers to getting the Internet into classrooms. While Internet filtering was not an issue we encountered at our participating schools, our participating teachers indicated that it is a significant challenge for many journalism programs around the country. Many schools and districts enact "allow lists" of websites students can visit through the school network, which is usually a small

sliver of the overall web. Adding sites to this list can be a battle, even for sites full of educational content. In these schools teachers and students have to fight for why sites should be allowed, rather than for sites to not be blocked. Adding web-based collaborative tools and publication platforms, let alone the suite of CC licenses and repositories of CC-licensed content, would be a significant challenge for many journalism classrooms.

4. Teach Creative Commons licenses

Teaching Creative Commons licenses in our participating schools took the form of introductory presentations and informal conversations, combined with handouts of Creative Commons-created literature.[1] Teachers engaged students in separate lessons about Creative Commons licenses and copyright, which were not supervised as a part of this project. The presentations began as a discussion about copyright and the Internet, and the role that Creative Commons plays in removing legal barriers to sharing and collaboration online. The suite of six CC licenses were introduced by way of discussing the four license conditions (Attribution, Share-Alike, No Derivatives, and Non-Commercial).[2]

In our student interviews, we gauged students' overall understanding and use of Creative Commons licenses by first asking them to simply describe Creative Commons.. Then they were asked how had they used Creative Commons licenses in their publication process, which licenses they chose, and if they could explain their choices. The intent was to learn to what extent students understood Creative Commons licenses and how they had used them, if at all. We were particularly interested in whether students had connected with any larger perspective of open licensing on the web, the practices enabled by the licenses, and whether they saw collaborative tools as enablers to any new journalistic practices that allow students to tap into a wider information ecosystem. We were interested in examining whether students saw any potential in becoming content contributors as well as re-users of others' openly licensed creative works.

Almost all of the students interviewed were able to justify their CC license terms, even if it was at a basic level. One student explained that he had started out using a more restrictive license, but then changed to an attribution-only license to make it easier for others to re-use his work. Another student explained that she uses a "no-derivatives" license because "I want to share but don't want someone making a small change and then taking credit for it."

All of the interviewed students were able to formulate an explanation Creative Commons is their own words. While students focused on different aspects of the licenses, or different possibilities presented by the licenses, no student gave an explanation that could be described as wholly incorrect. One student said Creative Commons is "a way to let the public know how you would like to share your work." Another typical answer from a different student was that Creative Commons is a "license that enables your work to be used in other ways. It's a way for our work to be spread everywhere." Other students described Creative Commons as a "sharing engine," a "free copyright," and "an organization that's promoting the use of not copyrights but things like that so people can use articles and images and things." These answers were typical of the responses given during the student interviews. Common to many of the definitions was the idea that Creative Commons is a way to communicate what others can and cannot do with a particular creative work, making it easier

for others to share and re-use it. Some students also included the notion that Creative Commons reduces legal barriers.

There are still frequent misunderstandings that ought to be eliminated. For example, some students don't understand the difference between technical openness and legal openness. That is, if the technology allows a photo to be copied, some students assume it is legal to do so. It will be important for students to understand the difference between being technically shareable and legally shareable, as well as many of the nuances behind distinguishing fair use from copyright infringement.

Despite the prevalence of open licensing online, there are no comprehensive resources focused on teaching Creative Commons to high-school students and teachers. Creating a full suite of instructional materials (including handouts, presentation materials, lesson plans, learning outcomes and evaluation materials) for high-school students and teachers about Creative Commons licenses was beyond the scope of this research project but would be extremely helpful, if not required, for any implementation of Creative Commons licenses in an educational setting without the presence of facilitators.

5. Discuss domain-specific implications of Creative Commons licensing

In our research, we found that a powerful way to get students interested in Creative Commons licensing is to discuss how digital media and the law interact within their specific domains. In a scholastic journalism context, this meant having conversations about how the Internet changes journalism, and what new issues and opportunities arise in a journalism landscape that's predominately online.

Students had varying opinions about the advantages and disadvantages of online and print publications, but there was a general consensus that there has been a shift towards online publishing in the "real world." Students and teachers saw the fact that a large portion of student journalism work was either written or published digitally as preparing students for future work outside the classroom.

We asked students questions aimed at revealing their' perceptions of the advantages or disadvantages of print and online publications. The questions were designed to identify students' publication preferences, allowing them to comment on the value of traditional print journalism as well as the shift towards online journalism, and were an opportunity for students to share their perspectives on the future of journalism. But the questions were primarily a way for us to examine whether students had connected with the notion that digital media enables new ways of engaging with educational content, one of the primary assumptions of advocates for digital media in learning.

Many students working on the print publications identified benefits to that medium for journalism. One said print publications were good for schools and other local audiences. Another student said print had more authenticity, while still another commented that print was easier on the eyes and more enjoyable for longer periods of reading.

Students interviewed clearly understood the value of online publication as a way to disseminate their articles beyond their own school community. Some advantages of online publication cited by

students included greater reach, more immediacy, and the ability to include video and other rich media.

6. Encourage students to use and remix CC licensed work

During the year, we discovered that most students could readily connect with the idea that Creative Commons licensed content was free for them to use without worrying about potential legal consequences, so long as they followed the easy-to-understand terms of the license. We encouraged students to use and remix Creative Commons licensed images and other media from popular sources of CC material such as Flickr, Archive.org, and Wikimedia Commons. The idea that their publication could draw from a vast digital commons without asking permission opened the door to a conversation about many of the issues we had hoped to bring up, such as copyright and digital materials, the value of student work, and methods to contribute back to the digital commons

7. Encourage students to license their own work under CC

Overall it is clear that students understood the basic concepts of Creative Commons licenses from both a legal and social perspective. While there were varying degrees of comfort and familiarity with legal concepts like copyright and licensing, and technical concepts such as metadata and re-use tracking, the idea that the Internet opens up new possibilities for collaboration and sharing was very familiar to them. And insofar as students had beliefs about the moral and ethical foundations of copyright, or at least a familiarity with the moral debate around use and re-use of digital work, and a familiarity with the available terms in the suite of Creative Commons licenses, it is fair to say that students were fully equipped to make competent choices when licensing their own work and re-using the CC licensed work of others.

But while students can connect with the idea of using CC licensed work and with the legal implications of licensing their own work under CC, they don't fully understand the value in licensing their work under Creative Commons. That is, they don't tend to see their own work as an inherently valuable contribution to a digital commons and therefore find it difficult to conceive that people might want to use their work but avoid doing so because of legal barriers. Connected to this is an apparent belief that their work doesn't have usefulness or potential impact outside of their limited community or intended audience.

While mechanisms were put in place to allow students to select Creative Commons licenses, students made their own licensing decisions as they published their content (i.e. whether or not to use CC licenses at all). The absence of site-wide licenses allowed students to maintain control over which license to use. Interestingly, all 13 students interviewed had chosen to use CC licenses at least at some point in the school year, and informal data collected from the publication platforms indicated a high level of CC license use. At one point in the project there were over two hundred stories licensed with Creative Commons licenses.

It was critical to allow students to explore the licensing options to engage them with the broader implications of open licensing, and to encourage re-conceptualizations of value of their work. We

don’t recommend applying site-wide licenses to student content because it doesn’t allow the students to make their own decisions about how their content will fit into a larger context.

Students' hesitancy to attach significant value to their journalistic works beyond their immediate context, coupled with the availability of the whole suite of CC licenses, leads to interesting license choices. Based on collected data and informal conversations, it became apparent that many of the students who did not think that their work was a valuable contribution to the digital commons wanted to use the least restrictive CC license, the Creative Commons Attribution 3.0 license. And students who did think that their work was valuable or potentially useful in some other context were interested in adding more restrictions to the licenses. While this data wasn't collected rigorously, these informal findings are broadly supported by discoveries in another remix community composed of minors where researchers found that re-mixers of original work were more likely to experience plagiarism complaints than re-mixers of remixed work (Hill, Monroy-Hernández, & Olson, 2010).

8. Seek new ways to utilize project infrastructure

Having resolved the legal and technical issues to implementing CC for our pilot project partners, and having developed a project infrastructure for potentially resolving these challenges at scale, attention for the second half of the project was focused on more substantive implications of CC in a high-school journalism context. Rather than limiting the scope of the project to teaching students how to use CC licenses in their own work, we were interested in getting them to embrace the kinds of practices that the licenses can enable.

The overarching research aim for the second phase of the Student Journalism 2.0 project was to examine what is possible with the Phase 1 project infrastructure in place. What new models of story development and reporting are the students and teachers excited about? What were the barriers (if any) to putting these new ideas into practice? How could one reduce those barriers in a scaled-up implementation of Creative Commons licenses in a classroom?

In our regular meetings with teachers, several interesting ideas for using CC licenses for collaborative projects came up. Teachers discussed the possibility of using existing tools and websites to construct a photo repository in which publication alumni could contribute photos from campus protests and events in the wake of California state budget cuts and funding decreases. These photos would have been CC licensed so that students at the participating schools could legally re-publish them without the need to ask permission.

Teachers discussed the possibility of creating a student journalism wiki in which students created guides, documentation, and statements of best practices for publishing student journalism online. These collaborative documents would have been open and shareable through the application of Creative Commons licenses. But teachers feared student participation would be low, and were skeptical that there was a need for that kind of resource.

Common to all of the ideas teachers came up with to experiment with a CC infrastructure was the need for some technical platform or technical work to take place that enabled the realization of that idea. Even in schools that have students willing and capable to program or deploy and maintain technical platforms, such as Palo Alto High, it seemed too large and complex a task to set up any web-based platform for using or sharing student work in new ways beyond the current implementation within the existing platforms.

As it turned out, integrating Creative Commons into the two publication platforms, teaching the students and teachers about CC licensing and copyright, and tying it all together in the context of journalism and scholastic journalism took up the majority of our integration effort and there was little time left in the school year to experiment further with the project infrastructure. Indeed, much of the initial work teaching and discussing the licenses and the implications of the licenses with students extended well into the second semester.

Summative Impressions

It is clear that integrating open practices into classrooms, even those classrooms best equipped for that change, requires overcoming significant challenges. In our Student Journalism 2.0 project there were doubts from the very beginning about the legal validity of students applying Creative Commons licenses to their work. But while these challenges are real, they are not intractable, as we have demonstrated.

The Student Journalism 2.0 project was focused on integrating new practices. Consequentially, there was little capacity to implement ideal evaluative metrics and statistical evidence for how students and teachers reacted. Nevertheless, we were able to synthesize our informal conversations and interactions with students and teachers into a description of our specific implementation with general lessons for other implementations. We have shown how one could, in practice, execute a project to introduce the foundations of those practices, and what many of the potential issues will be for similar projects. We hope that our experiences can serve as a guide or model for similar efforts to integrate open, participatory practices into learning environments.

Figures

	Why do you think the Paly Voice story about Creative Commons got so many hits? Why was it so popular?	**Have you used Creative Commons? Why did you choose the license you chose?**	**In your own words, what do you think Creative Commons is?**
Student 1	It was something new. Not a lot of schools have partnered w/ CC before. Mr Kandell's award also attracted attention.	Did multimedia videos for Spirit Week, licensed under CC-NC (Didn't know why I chose that particular license, but I did read all the licenses)	It's a way to let people know what they can and can't do with your work.
Student 4	It got shopped around. They encourage us to do that.	On all our stories since it came out. Don't remember why I chose CC-BY-NC.	CC is an engine that allows you to use and share things. It allows things to be used w/o worry of the repercussions. Encourages knowledge to be shared and spread.
Student 5	Because you guys put it on your website.	Used CC-BY-NC on the first one, but then switched to CC-BY.	CC makes it a lot easier to share; it's very clear and easy to use by anyone.
Student 6	We wrote something We've been using it in the Campanile, so people were interested in it because they had seen it.	Chose CC-BY-ND because I want to share but don't want someone making a small change & then taking credit for it	A way you can decide what your work is used for, It's like a copyright, and you can decide how others use your work.
Student 8	It's exciting because we get to use it (CC) at the high school level.	I applied it the first article I wrote, but it got reversed somehow. I used all the terms, but don't really remember. I wouldn't mind sharing	CC is an organization that's promoting the use of not copyrights but things like that so people can use articles and images and things.
Student 9	It's cool that people will be able to look at our stories other than Paly and our parents.	CC-BY, because I didn't want any one to use my articles without giving me credit.	It's different sort of copyrights, so you can use picture and articles and things.

Figure 1 Summaries of Sample Student Interview Responses

Notes

1. To download the CC handout used in the project, see http://wiki.creativecommons.org/images/6/62/Creativecommons-informational-flyer_eng.pdf.
2. For a complete explanation of the Creative Commons licenses, see http://creativecommons.org/about/licenses/.

Bibliographic references

Abelson, H., Adida, B., Linksvayer, M., & Yergler, N. (2008). ccREL: The Creative Commons Rights Expression Language. Retrieved from http://www.w3.org/Submission/ccREL/

Barab, S., & K. Squire. (2004). Design-based research: Putting a stake in the ground. *Journal of the Learning Sciences*, 13(1), 1–14.

Bissell, A., & Boyle, J. (2007). Towards a global learning commons: ccLearn. *Educational Technology Magazine*, 47(6), 5–9.

Brown, A. L. (1992). Design Experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *Journal of the Learning Sciences*, *2*(2), 141-178.

California State Standards for Media Literacy. (2003). Retrieved from http://www.frankwbaker.com/california.htm

Collins, A. (1992). Toward a design science of education. In E. Scanlon & T. O'Shea (Eds.), *New directions in educational technology*, 15-22. Berlin: Springer.

Design-Based Research Collective. (2003). Design-based research: An emerging paradigm for educational inquiry. *Educational Researcher*, *32*(1), 5-8.

Downes, S. (2006). Models for Sustainable Open Educational Resources. Retrieved from http://www.oecd.org/document/32/0,2340,en_2649_33723_36224352_1_1_1_1,00.html

Ertmer, P. (1999). Addressing first- and second-order barriers to change: Strategies for technology integration. *Educational Technology Research and Development*, *47*(4), 47-61.

Ferreira, G., & Heap, N. (2006) From Print to Web: Issues in re-purposing for an Open Resources Repository. Proceedings of the 2006 EADTU Conference. Retrieved from: http://kn.open.ac.uk/public/document.cfm?docid=8979

Flick, U. (2006). Expert interviews. In U. Flick (Ed.), An Introduction to Qualitative Research (3. ed. ed., pp. 165-169). London: Sage Publications.

Geser, G. (Ed.). (2007). Open Educational Practices and Resources, OLCOS Roadmap 2012. *Salzburg Research Edumedia Research Group*. Retrieved from: http://www.olcos.org/cms/upload/docs/olcos_roadmap.pdf

Hylén, J. (2007). Giving Knowledge for Free: The Emergence of Open Educational Resources. OECD/CERI. Retrieved from: http://www.oecd.org/dataoecd/35/7/38654317.pdf

Hill, B. M., Monroy-Hernández, A., & Olson, K. R. (2010). Responses to Remixing on a Social Media Sharing Website. Proceedings of the Fourth International AAAI Conference on Weblogs and Social Media, 74-81.

Lynch, C. A. (2003). Institutional repositories: essential infrastructure for scholarship in the digital age. Available at: http://www.arl.org/newsltr/226/ir.html.

Nolan, C. W., & Costanza, J. (2006). Promoting and Archiving Student Work through an Institutional Repository: Trinity University, LASR, and the Digital Commons. *Serials Review*, *32*(2), 92-98. doi:doi: DOI: 10.1016/j.serrev.2006.03.009

Rothery, A. & Bell, V. (2006). E-sharing: developing use of e-repositories and e-libraries for learning and teaching. Retrieved from: http://eprints.worc.ac.uk/48/

Swartz, J. K. (1999). Beyond the Schoolhouse Gates: Do Students Shed Their Constitutional Rights When Communicating to a Cyber-Audience? *Drake Law Review*, *48*(1), 587.

About the authors

Tom Caswell

PhD Student, Utah State University.

Tom Caswell is co-founder of TwHistory.org and a doctoral student at Utah State University in the Department of Instructional Technology and Learning Sciences. Tom is Open Education Project Manager at the Washington State Board for Community and Technical Colleges (SBCTC).

1349 Davis Ave.
Logan, UT 84321
USA
caswell.tom@gmail.com

Alex Kozak

Program Assistant, Creative Commons

Alex Kozak is a graduate of U.C. Berkeley where he studied philosophy and information policy and co-founded Students for Free Culture at Berkeley. In addition to his work at CC, Alex helps develop wikis, attempts to make art, and reads a lot. He hopes to eventually see scientific, educational, and artistic communities fully embrace online collaborative practices

Creative Commons
171 2nd Street, Suite 300
San Francisco
CA 94105
United States of America

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

OERopoly: A Game to Generate Collective Intelligence around OER

Teresa Connolly,* Elpida Makriyannis,* Anna de Liddo,* Tina Wilson*

*The Open University, UK

Recommended citation:
Connolly, Teresa; Makriyannis, Elpida, De Liddo, Anna et al. (2010). OERopoly: A Game to Generate Collective Intelligence around OER. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4968>

Collective Intelligence (CI) [1][2][3][4] is a phenomenon that emerges at the crossroads of three worlds: Open Educational Resources (OER), Web 2.0 technologies and Online Learning Communities. Building CI for the OER movement means capturing the richness of information, experiences, knowledge and resources, that the movement is constantly generating, in a way that they can be shared and reused for the benefit of the movement itself. The organisation of CI starts from collecting the knowledge and experiences of OER's practitioners and scholars in new creative forms, and then situating this knowledge in a collective 'pot' from where it can be leveraged with new 'intelligent' meanings and toward new 'intelligent' goals. This workshop is an attempt to do so by engaging participants in a CI experience, in which they will contribute to, and at the same time take something from, the existing CI around OER, Web 2.0 technologies and Online Learning Communities.

CI is one strand of the Open Learning Network (OLnet) project (funded by the William and Flora Hewlett Foundation) that started in March 2009. OLnet's main objective is to help researchers and practitioners in the field of Open Education to contribute to the evidence of OER effectiveness and to investigate this evidence collaboratively. In order to do so, OLnet follows several strategies

and techniques: such as developing and facilitating the use of new technologies to develop CI [5,6], supporting a fellowship programme, performing desk research, driving expert interviews, conducting controlled experiments and facilitating face-to-face as well as virtual workshops. Undertaking a host of facilitative workshops is, in fact, a major technique adopted in OLnet to uncover what has been achieved with OER. This OERopoly workshop is a first step towards understanding what CI may mean for the OER movement and what the constitutive elements of the environment may be in which CI manifests itself. Thus this workshop explores the relationships (both synergies and tensions) between these three worlds.

The aim of this workshop is to discover some of these relationships through the use of mediating artefacts [7] in a collaborative environment. Participants will play a board game called OERopoly where 'gaming' provides participants with a concrete, enjoyable, experience of "Collective Intelligence" in action. Throughout the workshop different types of mediating artefacts are used to assist users in making informed decisions and choices around game-playing and, therefore, mediates their subsequent gaming activities.

Mediating artefacts are broadly defined "to include instruments, signs, languages, and machines" (Nardi, 1995). In our context mediating artefacts include technology and community playing cards, OER project cards, pawns, dice, instruction documents, the participants, the facilitators, and the workshop format. The collaborative activity will be guided by work undertaken with Patterns.[5]

During the game (which has already been piloted and refined elsewhere), participants will be engaged in performing the following activities:

1. Creating ideas: Acting and Playing (60 minutes)

This task will involve playing the OERopoly game to explore the relationships between OER, Web 2.0 technologies and Online Learning Communities. Game rules will be explained then participants throw the dice and start playing. The game will follow similar mechanical rules to Monopoly (which has influenced the design of OERopoly); but with the following underlying metaphors:

Money = Information and Knowledge of OER

"**Streets**", **Utilities** and **Stations** = OER Projects, OER research hot topics, and Web 2.0 Technologies

During the game participants will be asked to answer questions on OER projects, communities and technologies and to post the answers on a diagrammatic representation showing where the three worlds (OER, Web 2.0 technologies and online learning communities) converge and differ.

It is expected that the game part of the workshop will last for approximately one hour.

2. Feedback: Reflections (20 minutes)

In the final phase of the workshop participants are requested to complete a short survey giving feedback using the following questions:

1. *What did you like about playing OERopoly?*
2. *What didn't really work for you?*
3. *Did playing the game allow you to acquire any new knowledge and insights related to open educational content, OER communities or tools and technologies used in OER projects?*
4. *While playing OERopoly, which elements helped you progress within the game? (i.e. other people's answers, the debate within the group, the information cards? etc)*

5. *In your opinion, what is the emerging relationship between open educational content, OER communities or tools and technologies used in OER projects?*
6. *What do you think is meant by Collective Intelligence?*

As an outcome of these two activities data will have been gathered in the following formats; video; audio and surveys, that will then be used to reflect on existing and potential relationships between Web 2.0 technologies, OER and online learning communities.

During the workshop participants will also have an opportunity to gain an insight into how OER projects differ; be able to see a variety of OER best practices as well as learn further details and sample what it is like to be involved in different aspects of OER developments, such as:

Projects
Research communities
International agencies
Translation organisations
Emerging institutions
Community sites

By playing OERopoly and interacting in the collaborative environment, participants will also have the opportunity to share what they know about a variety of OER activities across the world.

.

Notes

1. Atlee, T., Y. Benkler, et al. (2008). Collective Intelligence: Creating a Prosperous World at Peace. Oakton, Virginia, Earth Intelligence Network
2. Buckingham Shum, S. (2008).'Cohere: Towards Web 2.0 Argumentation'. Proceeding of the 2008 conference on Computational Models of Argument: Proceedings of COMMA 2008. ACM, pp 97-108
3. Levy, P. (1997) Collective Intelligence: Mankind's Emerging World in Cyberspace. Translated from the French under the title: L'intelligence Collective: Pour une anthropologie dy cyberspace (1995) by R. Bonomo. New York, NY: Plenum.
4. New Media Consortium (2008). Four to Five Years: Collective Intelligence. 2008 Horizon Report, in collaboration between The New Media Consortium and the EDUCAUSE Learning Initiative: An EDUCAUSE Program. Available at: http://wp.nmc.org/horizon2008/ last retrieved Oct. 2009.
5. De Liddo, A. (2010). From Open Content to Open Thinking. In G. Siemens & C. Fulford (Eds.), Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2010 (pp. 2-11). Chesapeake, VA: AACE.
6. De Liddo, A. (2010). From Open Content to Open Thinking. In Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2010 (pp. 3178-3183). Chesapeake, VA: AACE.

7. Conole, G., McAndrew, P. & Dimitriadis, Y., 2010. The role of CSCL pedagogical patterns as mediating artefacts for repurposing Open Educational Resources'. In F. Pozzi and D. Persico (Eds), Techniques for Fostering Collaboration in Online Learning Communities: Theoretical and Practical

About the authors

Teresa Connolly
Project Officer, Knowledge Media Institute, The Open University UK

Milton Keynes MK7
6AA, UK
t.connolly@open.ac.uk

Elpida Makriyannis
Institute of Educational Technology, The Open University UK

Milton Keynes
MK7 6AA, UK
E.Makriyannis@open.ac.uk

Anna de Liddo
Knowledge Media Institute, The Open University UK

Milton Keynes
MK7 6AA, UK
a.deliddo@open.ac.uk

Tina Wilson
Institute of Educational Technology, The Open University UK

Milton Keynes MK7 6AA,
UK
Martina.Wilson@open.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

A Method and Tool to Support the Analysis and Enhance the Understanding of Peer-to-Peer Learning Experiences

Anna De Liddo,* Panagiota Alevizou**

*Research Associate, Knowledge Media Institute, Open University (UK), **Post-doctoral researcher at the Open University's Institute of Educational Technology

Abstract

In this paper we look at how a web-based social software can be used to make qualitative data analysis of online peer-to-peer learning experiences. Specifically, we propose to use Cohere, a web-based social sense-making tool, to observe, track, annotate and visualize discussion group activities in online courses. We define a specific methodology for data observation and structuring, and present results of the analysis of peer interactions conducted in discussion forum in a real case study of a P2PU course. Finally we discuss how network visualization and analysis can be used to gather a better understanding of the peer-to-peer learning experience. To do so, we provide preliminary insights on the social, dialogical and conceptual connections that have been generated within one online discussion group.

Keywords

qualitative data analysis, computer assisted qualitative data analysis, web annotation tools, virtual ethnography, peer learning, users observation

---

Recommended citation:

De Liddo, Anna; Alevizou, Panagiota (2010). A Method and Tool to Support the Analysis and Enhance the Understanding of Peer-to-Peer Learning Experiences. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy]. <http://hdl.handle.net/10609/4941>

Introduction

Open Education and the diffusion of the Web have broken the traditional barriers of 'where' education happens. Learning nowadays occurs outside of existing institutions, using free educational resources (OER) and blending between dispersed networks of peers. The diffusion of web-based social software has an impact on the ways in which people learn and important questions pertain on the practicalities and ethics of online research (Jones, 1999; Markham and Baym, 2009). How do we capture observations relating to learning experiences which unfold in a virtual space and are mediated by specific technologies?

In this paper we propose Cohere, a web-based social software, which can be used to record and visualize qualitative data and analysis of online learning experiences. We discuss the rationale behind the need of new, appropriate tools for virtual ethnography (Hine, 2000; Murthy, 2008) and online users observation and we present a proof of concept by showing Cohere in use.

Cohere is being developed, within the OLnet project (www.olnet.org), as the socio- technical infrastructure to develop Collective Intelligence in Open Education. It has been described as a Web tool to: i. collaboratively annotate web resources; ii. create meaningful semantic connections between annotations and iii. make sense of complex issues by exploring, filtering, debating and better understanding other people's thoughts (De Liddo 2010).

In this paper we propose a different use of Cohere: as research tool for assisting the qualitative analysis of online learning experiences. In section one we discuss the benefits for using Computer Assisted Qualitative Data Analysis (CAQDA) tools for virtual ethnography and online observations. in Section two we describe Cohere and how it support the main QDA functions of coding and memoing. We continue section three with a description of initial results of a case study in which we explored how peer-to-peer learning takes place in an online course. Although we do not seek to generalize from observations, insights from visualization of data analysis are used here as a 'proof of concept' of the ways in which Cohere can be used for CAQDA in virtual learning environments. Finally in section five we discuss lessons learned and future work.

CSQDA tools for virtual ethnography and online observations

'Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretative, material practices that makes the world visible […]'

Denzin and Lincoln
(2000:3)

Qualitative Data Analysis (QDA) methodologies like thematic analysis, grounded theory, linguistic analysis and so on are used to explore multivariable social phenomena. More specifically:

> where it is difficult to quantitatively measure variables, or when quantitative data collection can not offer in depth insights
>
> when the aims are to provide an in-depth and interpreted understanding of participants' behaviours and learning about their social and material circumstances and motivations, experiences and perspectives
>
> when analysis can be open to emerging concepts and ideas and which may produce detailed description and classification, indentify patterns of association, or develop typologies and explanations (Snape and Spencer, 2003: 5)

QDA requires a dedicated and time-consuming effort from the analyst to be put on cyclic reflections and revisions toward the development of a deep understanding of the observed matter. In fact, there is a great deal of interpretation on behalf of the analyst, in order to observe and collect data.

Ethnographic studies and behavioural experimentations are also examples of research activities that usually require QDA. When looking at the Web and observing users behaviours in virtual environments QDA is usually based on users generated content interpretation. User-generated contents generally consist of blog posts, forum comments, or more articulated contents such as documents, images, presentations etc. The granularity and nature of content generally depend on the objective of the observation and can vary within a wide spectrum from computer logs to multimedia documents.

While in the literature CAQDA is more and more diffused to support QDA. Few tools have been designed and used to analyze data that are merely Web data (i.e. text, images, graphs and pictures published online).

CAQDA proprietary tools such as ATLAS.ti, NVivo, Transana, etc require that the raw data are analyzed offline and in an a specific file format, before the analyst can start his study. Certain issues arise when data comes from a public web page or database, ranging from ethical (permissions and privacy), legal (copyright regimes) and practical (e.g. it is usually difficult or

time-consuming to “clean” data coming from a web page and convert it to the appropriate format).

More importantly, when data are saved to be analyzed they are disconnect from the virtual context (Web pages) from which they have been extracted. This generates two level issues:

The analyst looses potentially useful hints that may help him to make sense of the content they analyze (i.e. page formatting, images and metadata visible just when the data is accessed online)

If new data are added to the data source Webpage they are not visible to the analyst. Therefore the results of the analysis are time-constrained and may become quickly obsolete.

These considerations highlight that the most diffused CAQDA tools have evident limitations in dealing with Web data. Based on this rationale in the following section we present Cohere a Web tool for QDA of online data. We describe Cohere main features and discuss how it supports virtual users observations by exploiting a Web annotation Paradigm.

Cohere: Web annotations and Tagging for QDA of online data

Cohere provides two of the main features for QDA: ***Coding*** and ***Memoing***.

Coding and Memoing activities of qualitative Web data can be assimilated to the common users activities that in the Social Web ‘language’ are defined as tagging and annotation. By providing collaborative tagging and web annotations Cohere enables qualitative data analysis in a web environment.

Coding as Tagging and Memoing as Web Annotation

In QDA coding is recognized as the capability to label bits of qualitative data, by assigning them named concepts (Strauss & Corbin, 1998). Qualitative data in our case, can be both a Webpage’s text and images.

In order to code text of a Webpage, users can use the Cohere’s sidebar (Fig. 1). When the sidebar is open users can simply select the text or image they want to code and click on the icon ‘add annotation’ . This will open a dialogue box through, which they can both Code and Take Memo on the analyzed data.

Codes can be added by associating tags, while memos are added in the Summary and Description box (Fig. 1).

The analyst can also decide if she wants to make her memos public, private or share them with a specific group of people. This function makes possible collaborative and synchronous observations in virtual environments.

Depending on the specific qualitative research method that is being used, the analyst may prefer to code and take memo at the same time, or split them in two separate activities of simple coding and memoing.

Coding and Connecting Memos

Memoing is an important activity in any qualitative research method. In grounded theory, in example, it is an activity which continues in parallel with data collection, note-taking and coding and it refers to a note that the analyst make to himself to remember a specific idea which occurred to him while coding. This idea usually concerns some hypothesis on how codes can be organized and what are the categories they fall into. More often memos are used to take note of connections between categories.

Cohere have a specific way to support the activity of making connections between categories and memos. Connections between memos enable the analyst to create specific pointers between observations and notes, which help them retrieve and reflect on them later on. Moreover Cohere enables the analyst to make connections between memos and code them. Codes associated to connections between memos, express the semantic of the connection, that is a further way to cluster the memos, by specifying their relationship. For instance we could code that a series of notes relates to material that 'is part of' a specific category; this notes 'make the same point as' this other note; other notes 'contradicts' each other etc. Specific verbs, or adverbs, are the codes that express the meaning of the connection between memos. The analyst can make connections between memos through the connections builder (Fig.2).

The capability to make connections between memos and categories offers a further sophistication to the coding features offered by Cohere.

Use Case: Observing Virtual Users in a Peer-to-Peer You University (P2PU) Course

An introduction to P2PU

Launched in September 2009 with the mission to put a 'social and pedagogical wrapper' around public domain content as well as open access and educational materials, Peer-to-Peer University (http://www.p2pu.org) has evolved into a public space that demonstrates the fostering of collaboration among activists within the open education movement, volunteer tutors and motivated learners in the design and facilitation of short courses.

Courses are developed collaboratively using a public wiki space and Google documents, as well as asynchronous and synchronous communication through private community subscription forums and online channels. Mediated implementation of 'courses', which run for six-study weeks, is through the use of Free Open Source software tools. Courses contain a syllabus and

study materials and a schedule for peer-interactions and assignments involving both synchronous and asynchronous peer participation, personal study and reflection and group-work. A number of topics and disciplines are covered within the offered courses, that range from practical and interest-based global issues, to more specific courses on online communities, web development, and pedagogy of open education. The 'Copyright for Educators' course during its second cycle (March-May 2010, http://www.p2pu.org/copyright-educators-cycle-2-mar-2010) is the object of analysis for this paper.

In the following we present 'a proof of concept' approach of the ways in which Cohere can be used to observe users' behaviors within the course.

The object of analysis are the discussion forums, where course students collaborate in order to complete group assignments or discuss given tasks. In particular we analyzed students' posts in the "Pink Group" (http://p2pu.org/node/729/document/2692).

Since the aim of this paper is to offer a proof of concept in of collaborative sense-making tools for capturing and visualizing the relationship between collaborative and peer learning, we focus coding on the following two interrelated dimensions, based on Burge's (1994) peer bahaviour models:

a) participation: how do participants give alternative perspectives attending to the experience of others: how do they share resources and reflections?

b) Affective feedback: do participants use each others' names, complimenting each other and offer supportive, remedial or critical interchanges?

Annotation procedure and information structuring

Firstly we applied coding and memoing. We tagged clips of forum discussion's text by keeping in mind the general question: What is relevant here for the phenomena I want to observe? We tried to identify, name, categorize and describe the phenomena found in the text.

We looked at each post, highlighted clips of text, and tag them with codes, which quickly started grouping in three main categories:

People

content

Rhetorical moves

Around these main categories we built the second phase of: 1) memoing and 2) making connections between memos. As previously said this means taking memo of hypothesis or premises on the observed phenomenon and creating semantic connections between memos. The semantic of the connection is the code or label, which express the meaning of the connections, that is to say the reason why the two memos are related. We identified two main memos connection codes:

Posts

Addressed to

In fact these two links type enabled us to connect the three main categories: people, data and rhetorical move, as detailed in figure 3. Figure 3 also shows the emerging codes (sub categories) for each core category.

Sorting: Network analysis and visualization

Another key activity in QDA is *sorting*. The ways in which data and observations are sorted affect the ways of reflecting on the analysis and interpreting the observed phenomena. In fact, data layout and visualization usually help the analyst to recognize the emerging structure of the phenomenon or thesis that is being studied.

Cohere has a network approach to data sorting and visualization. Data, codes, and memos can either be listed (ordered by creation time or code type) or represented in a graph like structure. Images associated to codes in Figure 3 represent the icons used to visually recognize codes while exploring memos and data in Cohere's graph like structure.Below we present 3 examples of how by coupling network visualization and code searching, Cohere provides novel ways visualize results of qualitative data analysis.

Example 1

Cohere supports focal network searches, therefore it enables the analyst to focus on one piece of data or observation and search the database by focusing on that element. Figure 4 for example, shows the representation of the activities of the Pink group as they have been observed and coded in the use case. By looking at the image we can recognize that 4 participants have been addressing the group attention on different aspect of the learning experience. Some of them, for instance, by asking questions to the entire group (see question icons in Figure 4). By looking at node icons the analyst can make sense of the different rhetorical moves each participants have done and compare performances of the different participants. It is evident from the image that two of the participants (up right and up left of the image) have been more active then others.

Example 2

A part focal data analysis, Cohere also supports analysis on the full database of all memos. If we search all memos which have been connected with the code "post", accorting with the coding structure (see fig.3), we expect to obtain the network showing the people, and the data or rethorical moves that they have shared in the discussion forum . Results in Fig.5 show that there are 6 cluster, that is to say 6 particiapnts in the discussion forum and it is equally evident who are the most active and what activities they have carried out. This visualization offers a useful way in for data exploration and reflection. It is easy for the analyst to familiarize with the data and make visual and conceptual complarison between the emerging codes and their relationships.

Example 3.

Finally network search can be coupled with code search in order to spot more specific relationship between data. By searching for the code "complain", for example, and by focusing

on posts addressed to the all group we can see what participants have declared to be uncomfortable with the technology or unhappy with the course organization, and what participants have posted more complains (Fig. 6).

Conclusion

In this paper we have proposed a method and tool to support QDA in virtual environment. Moreover we have presented a proof of concept in which we show Cohere in use to observe students interactions in P2PU course.

Results of application shows that Cohere is particularly promising when making collaborative QDA, since it enable a virtual working space in which several analysts can share data and codes, and build on each other work. Moreover Cohere provides sophisticated coding features such as connections between memos and coding of those connections so that they can easily retrieved and searched. Finally we proposed a new network paradigm for data sorting and representation. This feature is particularly useful when it comes to codes analysis and phenomenon interpretation since the analyst can use visual cues to make sense of data and spot hidden connections.

Even thought this particular P2PU case study is still in progress we can describe some lesson learned on the course we analyzed, in particular on course pedagogical design. Although there is no cohesive design across the courses, the most popular activities that seek to facilitate the mediation of what we would call a 'learning space' follow a similar pattern for engaging peer and collaborative learning: 'read-think-reflect-share-peer comment'. Observations within the site (and metapages, including discussions with facilitators) suggest that 'Copyright for Educators' has implicit pedagogical designs that evolve during the 6 weeks that the course runs.

Active representation of the learning space draws on the learning design of the course, but also includes the process of learning as it is occurring within the particular learning space. Representing this can help visualizing structures of intended learning, and the 'learning in use', and guide or inform the design process for future outlets within this particular open course, or other OER. We discuss these in a related paper at this conference, whereby the relation to peer interaction and distributed mentoring is further explored. The figure below exemplifies pedagogical design implicitly evolving within this particular learning space. as a process. The intended outcomes and audience are explicitly stated in the course outline, and the pool of learning materials is structured in such a way to promote an inscribed pedagogy that addresses three core dimensions (see bottom left corner – part of tutors' role in relation to defining learning outcomes):

i. Informative: help indentifying copyright issues around education
ii. Practical: work with different IP jurisdictions and the legal practicalities for open education design
iii. Social and deliberative: exchange ideas about open education beyond and within the context of copyright

The network of interactions mediated through the interface tools facilitated by the site (see roles, tasks and activities in the map), produces a set of novel resources that if visualized

appropriately, it presents structures of intended learning, and the 'learning in use'. These can guide or inform the design process for future outlets within this particular open course, or other OER(s).

Figures

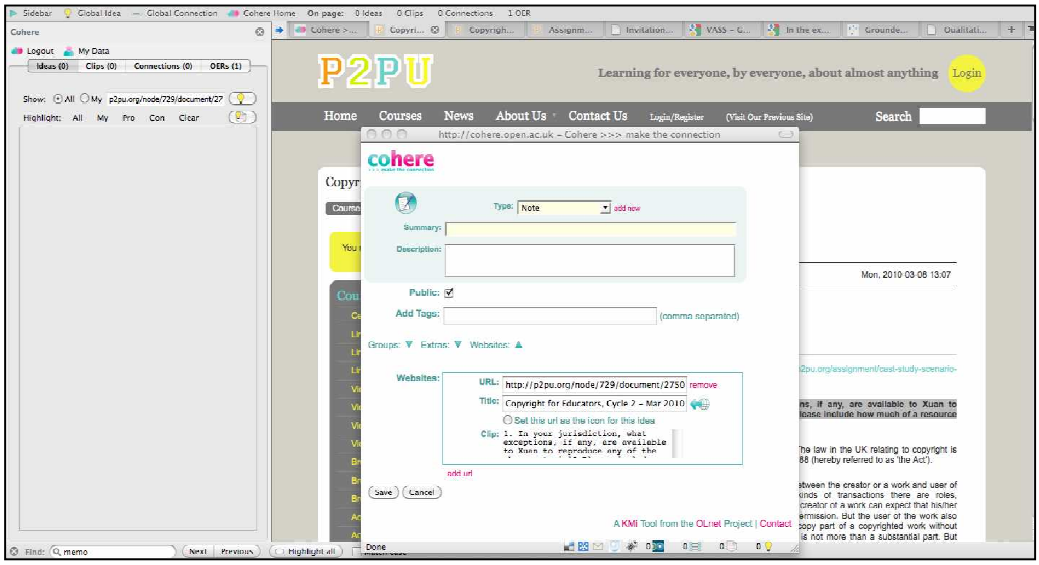

Figure 1: Coding and Memoing through the Cohere's sidebar

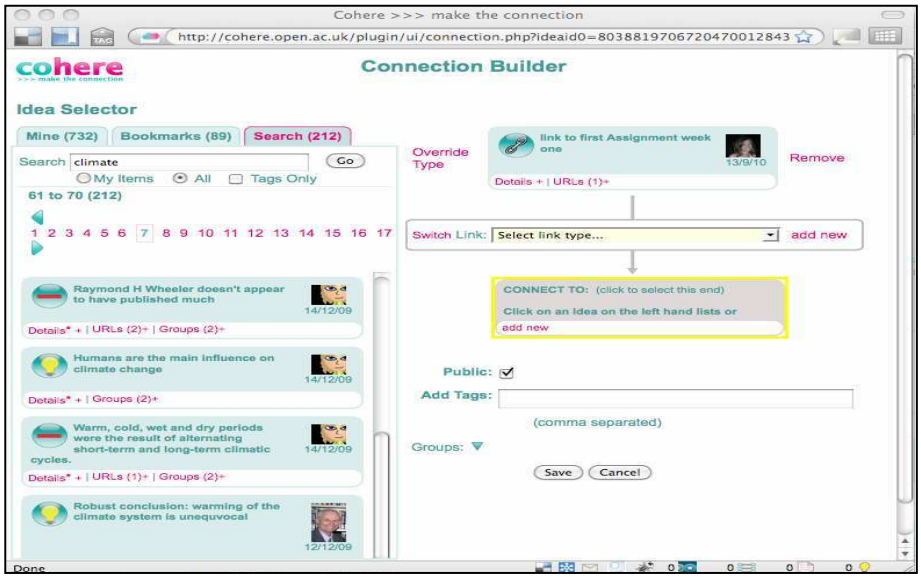

Fig.2: Connection builder window: Memos can be selected between your own, bookmarked or can be searched by keyword/code

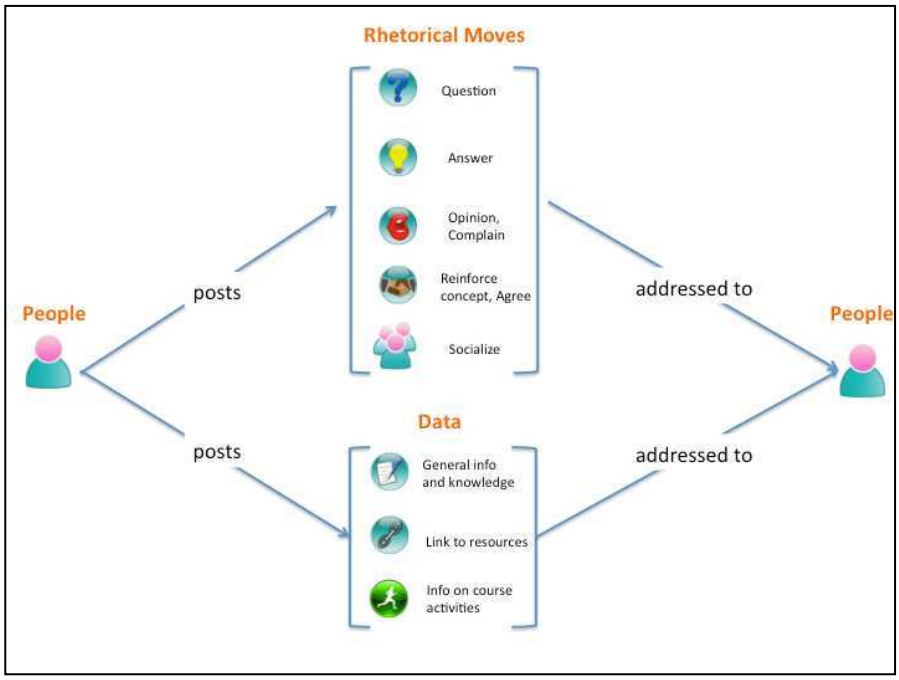

Fig. 3: Structure representing main categories, sub categories, and relationship between them

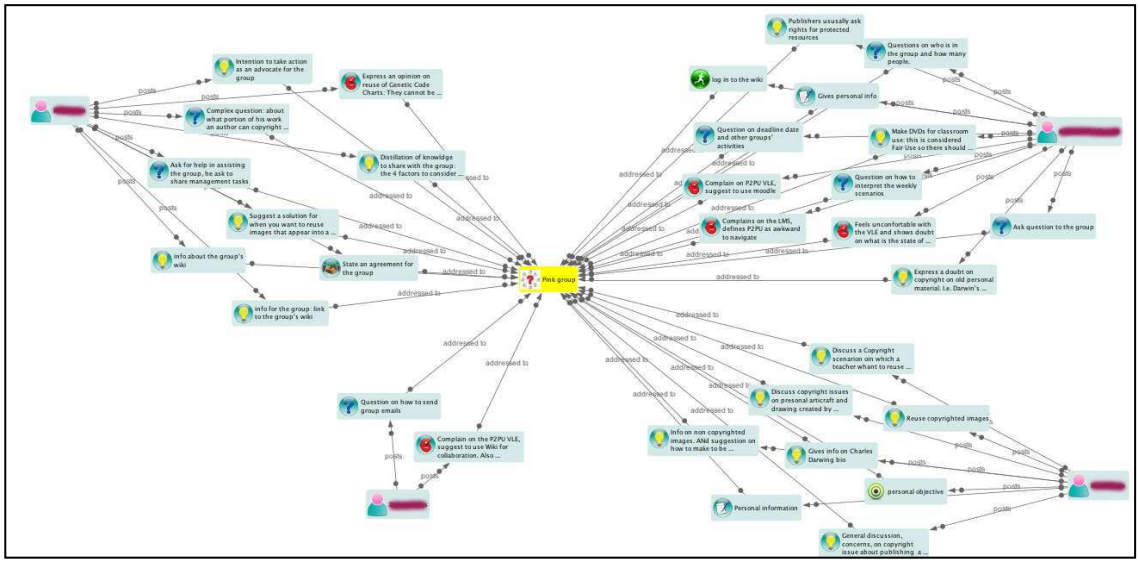

Figure 4: Network of memos showing what people contributed to the pink group and the nature of the contribution. Icons represent main code sub-categories (purple lines overwrites participants names)

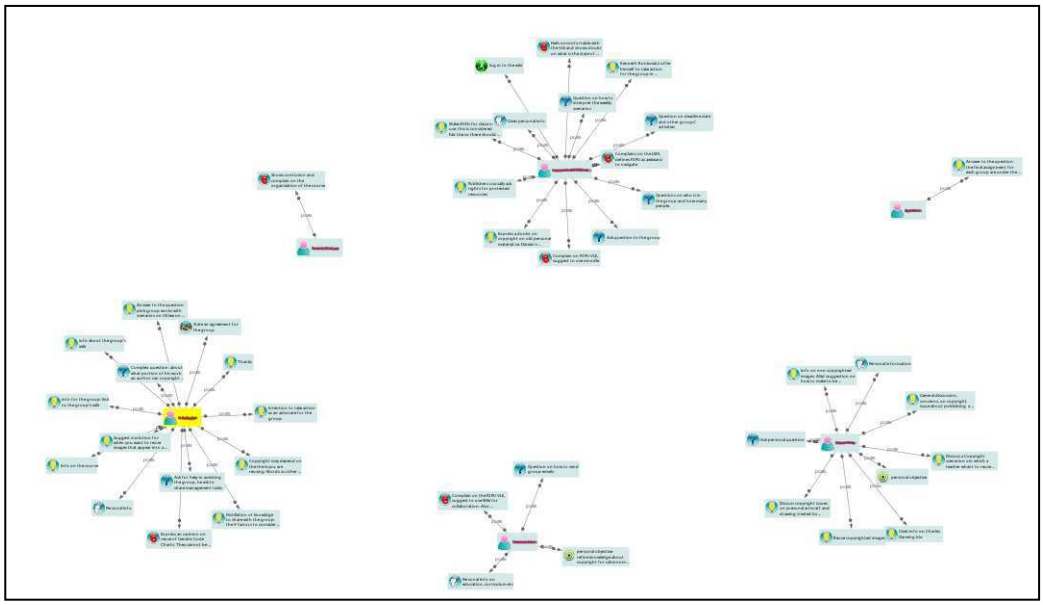

Figure 5: Clusters representation of memos per participant and posts

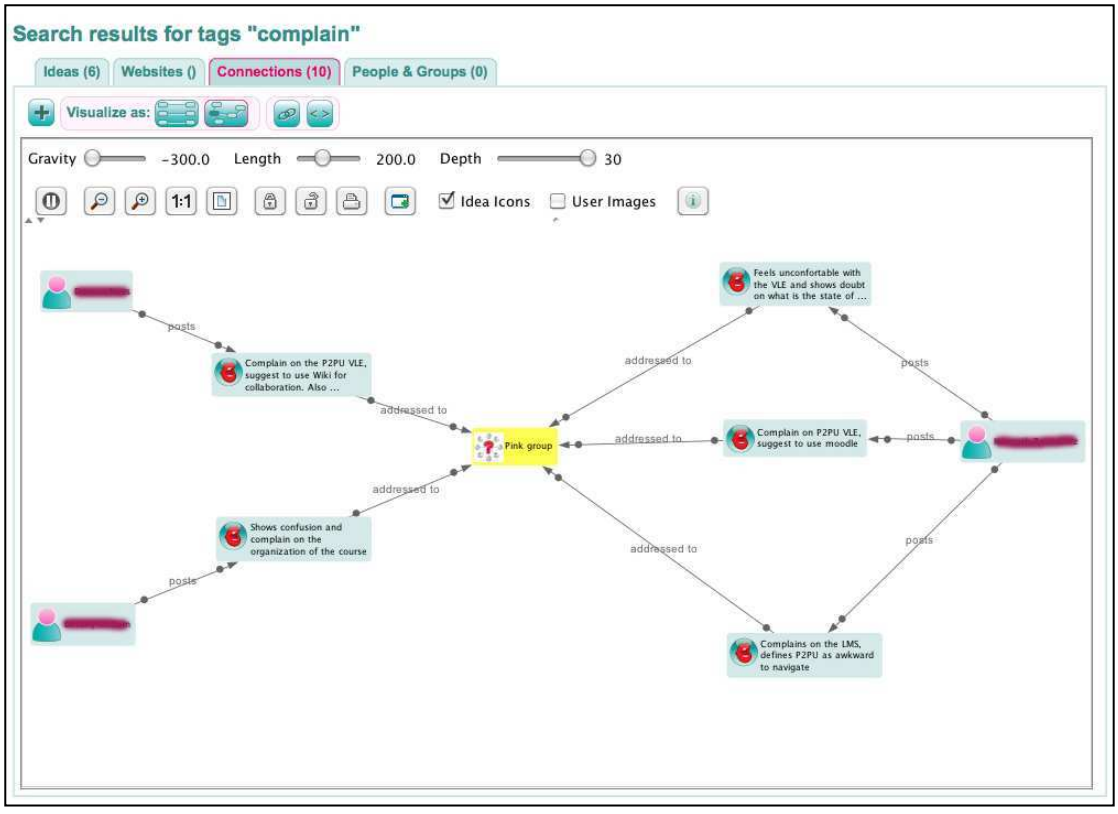

Figure 6: Coupled search of memos by code and semantic connection

Figure 7: P2PU: Copyright for Educators group discussion space

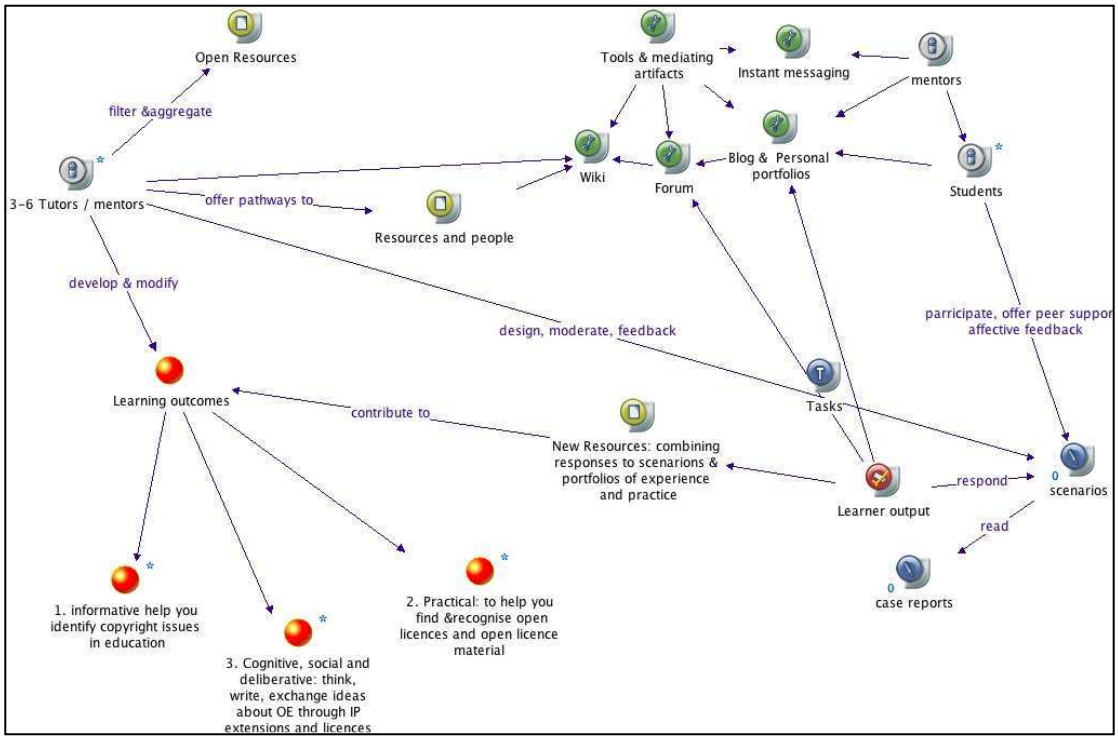

Figure 8: Implicit pedagogical design in the P2PU course 'Copyright for Educators'

Acknowledgments

Our thanks to the OLnet project (http://olnet.org/) in which context Cohere is being developed; and to The William and Flora Hewlett Foundation that is funding The Open University to work with Carnegie Mellon University to develop the OLnet project.

Bibliographic references

De Liddo, A. (2010). From open content to open thinking. In: World Conference on Educational Multimedia, Hypermedia and Telecommunications (Ed-Media 2010), 29-30 Jun, Toronto, Canada.

Denzin, N. K. and Lincoln, Y. S. (2000). *Handbook of Qualitative Research*. (2nd Edition). Thousand Oaks, CA.: Sage.

Hine, C. (2000). *Virtual Ethnography*. London: Sage,.

Jones, S. (1999) (ed.) *Doing Internet research: critical issues and methods for examining the Net*. Thousand Oaks, CA. and London: Sage

Markham, A. & Baym, N. K. (Eds) (2009). *Internet Inquiry: Conversations About Method*. Thousand Oaks, CA. and London: Sage.

Murthy, D. (2008). Digital Ethnography: An Examination of the Use of New Technologies for Social Research. *Sociology*. 42(5): 837-855.

Snape, D. and Spencer, L. (2003). The Foundations of Qualitative Research. In J. Richie and J. Lewis (Eds.). Qualitative Research Practice (p. 1-23). London: Sage.

Strauss, A. L., and Corbin, J., (1998). *Basics of Qualitative Research: Techniques and Procedures for developing Grounded Theory*. London: Sage.

About the authors

Anna De Liddo

Research Associate, Knowledge Media Institute, Open University (UK)

Anna De Liddo is Research Associate at Knowledge Media Institute of the Open University (Milton Keynes, UK), where she works in the Open Learning Network project (www.olnet.org) at the design and development of a Collective Intelligence socio-technical infrastructure to enhance collaborative learning in Open Education. She gained her PhD at Polytechnic of Bari, Italy, investigating ICT for Participatory Planning and Deliberation. After that, she held a Post-Doc position at the Open University within the ESSENCE Project, investigating and evaluating human-centred computing tools to help tackling wicked problems such as Climate Change.

KMi (Knowledge Media Institute)
Open University
Walton Hall,

Milton Keynes,
MK7 6AA, UK
a.deliddo@open.ac.uk

Panagiota Alevizou

Post-doctoral researcher at the Open University's Institute of Educational Technology

Panagiota Alevizou is a post-doctoral researcher at the Open University's Institute of Educational Technology working on the Open Learning Networks project (Olnet). As part of her research she has been engaging with numerous stakeholders and projects in the OER community to develop working framework on the nature of openess and collaboration that characterizes the mediation of open resources, while addressing the opportunities and challenges relating to participatory interfaces, web 2.0 pedagogies, adoption and (re)use. Her broader background is in media and communications and her interest in open source/ open content communities was sparked while working on her PhD and has informed her teaching and research at the universities of Sussex and London School of Economics and Political Science

IET (Institute of Educational Technology)
1st Floor Blue, Jennie Lee Building
The Open University,
Walton Hall,
Milton Keynes,
MK7 6AA, UK
p.alevizou@open.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Bridging Formal/Informal Learning

Yoshimi Fukuhara,*Satoshi Yamawaki, Yasutaka Kageyama****

*Office of Research Administration, Keio University (Japan)

**Castalia Co., Ltd

Abstract

Recently many OER activities have been getting popular, and users who access those content for informal learning are increasing. Most popular OER must be OCW, which has been proposed and promoted by MIT since 2001. In Japan OCW has been penetrating gradually since 2005. However in terms of formal learning utilization ICT technology has not been so popular yet in Japanese higher education field. In this paper two case studies, one is formal e-Learning using OCW, and the other is portal site of open contents from universities are described

Keywords

OCW, informal learning, formal learning, e-Learning, LMS, SaaS

Recommended citation:

Fukuhara, Yoshimi; Yamawaki, Satoshi; Kageyama Yasutaka (2010). Bridging Formal/Informal Learning. In *Open Ed 2010 Proceedings* . Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/5142>

1. Introduction

Recently informal learning is getting popular not only for business-persons but also for house wives and students. And various content archives which are good for informal learning is preparing lately. Typical one is OCW, which was originated in MIT and has been spreading out globally.[1,2] On the other hand in terms of formal learning, e-Learning system has been used widely in private sectors but it has not penetrated so deeply in higher education field in Japan. There are some obstacles for e-Learning system adoption in each university. In most universities it is difficult to hire or train a full-time engineer or technologist for e-Learning system operation and management and a content creator who designs and creates e-learning content from scratch.

In this paper we mention two case studies to promote bridging formal and informal learning. First we describe a trial to use OCW contents in a formal course and made evaluation.[3,4] Secondly we introduce a new trial for encouraging informal learning using formal learning contents.

2. History and background

Keio University launched its OCW site on May 2005 with other five universities as the first OCW activity in Japan. At the beginning syllabi and lecture notes were published mainly and then in 2007 we have started lecture videos distribution and since 2008 we have shifted to focusing on more lecture video distribution. And as a result of movie distribution more than forty thousand users have accessed our OCW site monthly. Now totally 45 courses, which consists of 28 Japanese courses and 17 English courses, are published from Keio OCW web site and lecture videos are published in 18 courses of 45.

On the other hand in Faculty of Economics they have carried out e-Learning practice in some lectures as supplemental materials for formal courses since 2007 and it have been approved as a formal online course without classroom lecture from 2008. In this course the lecture notes of those courses have been published in OCW for public use from the beginning but we had not distributed lecture videos at first. However on the occasion of expansion of OCW material to lecture movies, we decided contents sharing between e-Learning and OCW. As the context, the discipline of this course is “history of economics” and so basic contents is unchangeable in this type of field, so that lecture contents recorded in previous year can be reused as contents for the course in next year.

And a full-time technologist had assigned for e-Learning system operation so far, but we changed the basic policy from the inhouse operation to an use of LMS provided by an external

vender as SaaS because it will still take more time to enhance e-Learning to the whole campus level and cost reduction was required for e-Learning.

3. Potential for informal learning

JOCW have carried out opinion poll regarding Open education in higher education in Japan. The survey was conducted as a form of Internet research, which was taken for twelve hundred examinees on the Internet to distribute questionnaire consist of thirty-seven questions. The summary of the survey result is as below.

(1) More than 90% gave positive evaluation on opening up of lectures in universities.
(2) Awareness of OCW is gradually increasing.
(3) Persons who would like to use OCW contents for their own learning are more than 80%.
(4) Two-third of respondents answered that as many universities as possible regardless of national, public or private should launch OCW.
(5) Ranking of discipline for OCW is Economics (30%), Letters (27-28%), Business administration (23-27%), Information science (22-25%), respectively.

4. Case Study1: Formal e-Learning using OCW content

System configuration

In this practice all lecture videos of the courses are stored in the OCW server located in the campus and provided as OCW contents for all end-users as well as the other OCW contents. Students who registered this course accessed to the LMS instead of OCW server and LMS presented the course materials as if it stored in the LMS. When the registered students request LMS to learn this course, LMS accesses to the OCW server and presents the materials re-directly. System configuration is shown at Fig.1 .

In case of OCW users, no learning management has been provided because OCW is a free publication and no registration is required to learn. But in case of the registered students it is essentially required to make access to LMS with user IDs and passwords. For them all learning logs were recorded and learning process for each student was managed in LMS and confirmation tests were prepared at the end of each lecture. And if the score of the test does not reached the passing mark, all such students are not allowed to access to the next lecture.

Result of the practice and Evaluation

(1) Practice on learning

We carried out the learning practice for “Economic history in Japan” which was provided as a formal course at Faculty of Economics in spring semester 2009. In this practice 249 students registered and 232 of them really started e-Learning program. We set prerequisite for intermediate exams, which is, by 1st exam student had to complete from 1st to 7th lectures, by 2nd exam to 14th lecture, by 3rd exam to 20th lecture respectively. Dropping out rate by each intermediate exam is shown in Fig.2.

According to Fig.2 by the 1st exam nine students had dropped out and by the 2nd exam more seven students had dropped out, then by the 3rd exam 2 and no more had dropped out.

(2) Evaluation by the questionnaires

We sent out questionnaires consist of 23 questions to all registered students after a term exam. We received 179 effective answers from 232 of all students. Some results of the questionnaires are as follows.

Q1. How many days did you take to complete all lectures?

Answers to Q1: 30% and more of the students took 36 days and more, 23% took 8-14 days, and also 23% took 15-21 days. (See Fig.3)

Q2. How did you take your web lecture usually?

Answers to Q2: 65% of the students used their free time and 17% used pre-scheduled time. (See Fig.4)

5. Case Study2: iUniv, portal site of open contents from universities and mobile

Mobile device and social media are keys for next generation of education. We introduce our social learning service featured OER.

Digital contents change its form and volume as mobile device and social media spreads widely. Internet became a huge learning platform itself. By accessing digital contents or get connected with other people, internet users can get knowledge about various subjects. Social learning, a new learning style on social media, is expected to be the next big wave on internet, and OER would be a big part of it. In this session, we introduce our social learning service, "iUniv", as well as case study of some universities including Keio Univ, where formal academic contents are used in informal learning situations. Also, we explain the concept "Free Flow Education (FFE)". FFE is a new style of sharing knowledge. Any learner can access educational contents or share his/her knowledge,

therefore creates learning in multiple flow. Mobility is key in FFE . Our mobile application, "iUniv" that works on iPhone, iPad and Android will be featured.

6. Conclusions

First, We implemented e-Learning program using LMS as SaaS and lecture videos of OCW contents. By introducing this configuration we realized high quality and flexible e-Learning with reasonable cost. Such a configuration must be practical for universities being early stage of adopting e-Learning. Particularly for small and middle size universities it is difficult to assign a fulltime engineer for operation and maintenance and the formal-informal combining approach could be expecting as a practical and better solution in near future. In addition using LMS as SaaS provided by the experienced provider could be expected to get a flexible and a quick feedback and improvements of the system. In this practice very high final completion rate, 92% was achieved. We distributed the questionnaires to all registered students and it was clarified that e-Learning could provide deeper learning environment than the classroom lecture and students made a good use of that environment. In the future we will improve the demerits pointed out in this practice and provide more desirable e-Learning environment.

Secondly, we introduced iUniv which is portal site for informal learning using formal learning courses. Users can access to contents with various terminals like iPone, iPad and smartphone. iUniv has been begun to use in some universities just before and it will be required to make evaluation from various point of view.

Figures

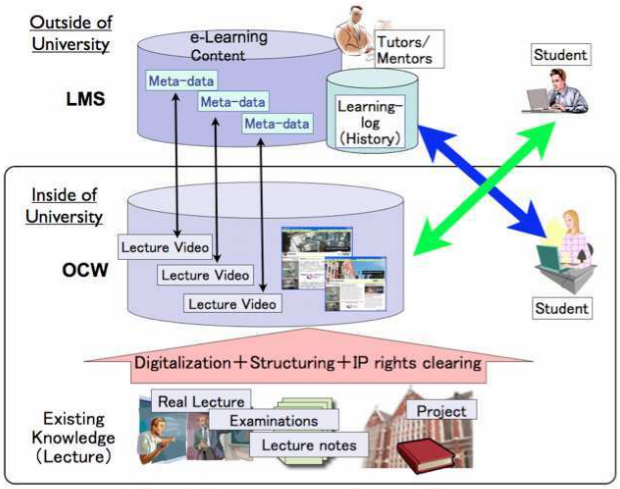

Fig.1 System configuration

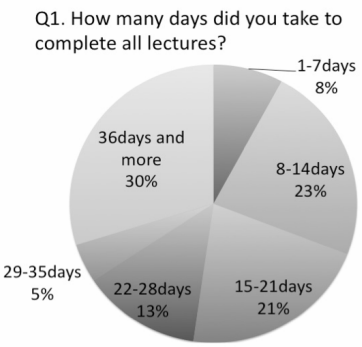

Fig.3 Result of the questionnaires1

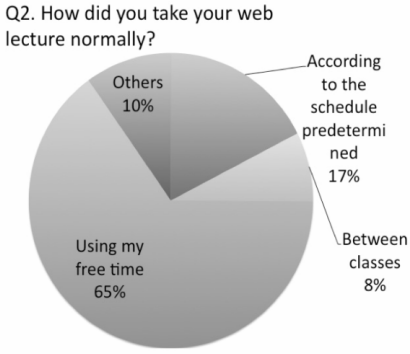

Fig.4 Result of the questionnaires2

Notes

1. Miyagawa, S (2004), “MIT’s OpenCourseWare after one year”, Journal of Information Processing and Management Vol.46, No.12, pp797-803.
2. Doshita, M, Fukuhara, Y (2006), “The evaluation of the Keio OCW project focusing on feedback from users and academic contributors”, Research report of JSET Conferences, JSET06-02, pp.109-116.
3. Fukuhara, Y (2008), “Current status of OCW in Japan”, Proceedings of APRU 9th Distance Learning and the Internet Conference 2008, 19-22 November 2008, pp.221-223.
4. Fukuhara, Y (2009), “Creating user community for OCW through sharing lecture movies”, Proceedings of ED-MEDIA 2009, 22-26, June, 2009, pp.4190-4193.

About the authors

Yoshimi Fukuhara
Office of Research Administration

Keio University
Japan
fukuhara@z3.keio.jp

Satoshi Yamawaki
Castalia Co., Ltd.

5F DF Building, 2-2-8 Minami Aoyama,
Tokyo 107-0062
Japan
sato@castalia.co.jp

Yasutaka Kageyama
Castalia Co., Ltd.

5F DF Building, 2-2-8 Minami Aoyama,
Tokyo 107-0062
Japan
ykage@castalia.co.jp

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Open to the users' needs: combining user-centered design, standards and open source software

Muriel Garreta Domingo,* Francesc Santanach Delisau*
* Office of Learning Technologies, Universitat Oberta de Catalunya (UOC).

Abstract
This case study introduces our continuous work to enhance the virtual classroom in order to provide faculty and students with an environment open to their needs, compliant with learning standards and, therefore compatible with other e-learning environments, and based on open source software. The result is a modulable, sustainable and interoperable learning environment that can be adapted to different teaching and learning situations by incorporating the LMS integrated tools as well as wikis, blogs, forums and Moodle activities among others.

Keywords
Technology Enhanced Learning (TEL), user-centered design, interoperability, Learning Management System (LMS), Virtual Classroom, standards, Open Source, IMS Basic LTI, e-learning tools, service oriented, SOA, learning technologies

---

Recommended citation:
Garreta, M.; Santanach, F. (2010). Open to the users' needs: combining user-centered design, standards and open source software. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].< http://hdl.handle.net/10609/4865>

---

1. Introduction

This case study explains how to create a flexible environment to answer the users' needs. A user-centered design methodology is followed to work closely to the end users – both faculty and students - and be aware of their needs, wants and limitations. Open source software and standards are the basis of the technological approach. This model results in a sustainable and adaptable environment both for the present and the future needs.

The Universitat Oberta de Catalunya (Open University of Catalonia, UOC) is a fifteen year-old completely online university with more than 50,000 students and 2,500 lecturers. The UOC offers more than 20 undergraduate degrees as well as several graduate programs in fields such as Business, Humanities, Computer Science, Psychology and Asian Studies among others.

The UOC virtual campus is an integrated e-learning environment that allows students to pursue their studies completely online with the exception of taking final exams. The UOC's Learning Management System (LMS) is a in-house product and has been used as an e-learning platform at UOC for more than 14 years. This LMS has evolved with the University and the pedagogical and technological needs. A critical success factor of a LMS is flexibility to meet evolving standards and new conceptual requirements, so, in 2006, it was decided to start a UOC's new virtual campus version following user-centered design (UCD) and Service Oriented (SOA) approaches and standards. The first part to be adapted and developed according to these new requirements was the virtual classroom.

In large educational communities like the UOC, different user types can be found, each of them with their own interests, needs, preferences and limitations. UCD techniques allow to discover such user types and provide methodologies that ensure that design and software development takes into account these user profiles and needs. Thus, the use of a UCD process and methods are key to define the features, tools and characteristics of the virtual classroom.

Nevertheless, new requirements come also from the evolution of Internet and technology in general, as well as from the University stakeholders. As new applications such as wikis, blogs, microblogs and others appear and are improved, users demand more available tools for the teaching and learning process. The University as an institution also demands innovation and diversity as key drivers. New educational programs are being opened and new target users are being aimed; including different user types but also different regions and countries.

This results in an increasing diversity of users – both faculty and students – and of educational needs that require a flexible model both from a functional and pedagogical standpoint and from a technical perspective. Ensuring that any new application meets the users' needs is essential for its success. Having an interoperable virtual campus is also mandatory to allow the integration of these applications.

The present article introduces the different key factors of e-learning tools integration process: 1) the user-centered design approach to guide the functional, visual but also technical characteristics of the end product; 2) an interoperable, specifications and standards based approach to guide the software and technical development in order to create the basic technological layer to ensure that the

UCD requirements are met; and 3) an open and flexible integration process for new e-learning tools as a result of the previous aspects.

2. The User-Centered Design (UCD) Approach

Technology Enhanced Learning (TEL) is by default technological but the focus is still on the learning and teaching processes. In order to provide a good TEL experience, a user-centered design (UCD) process is key to understand the users' needs and limitations. At the UOC, UCD methods are used to choose and design the best learning tools and environment.

User-centered design is a design philosophy and a product development approach that places the end user of an application in the center of each design phase in order to ensure that the end product will answer to the users' needs, wants and limitations. The redesign of the UOC virtual classroom project followed such an approach so as to provide a better user experience to our users as well as to facilitate the teaching and learning processes of students, tutors and faculty members.

The ISO 13407 (Human-centred design processes for interactive systems) [6] is an international standard that provides guidance on achieving quality in use by incorporating UCD activities throughout the life cycle of interactive product. The standard defines four activities that need to start at the earliest stages of a project: 1) understand and specify the context of use; 2) specify the user and organizational requirements; 3) produce design solutions; and 4) evaluate designs against requirements.

Therefore, a classic UCD process includes all these steps for each project. Nevertheless, within the UOC environment we have separated them. First, because our target users are always the same and, although we have seen an increasing diversity of user types, we do not need to create user profiles and personas for each project. Second, to be able to follow agile software development methodologies, which are the best suited for integrating new e-learning tools, we need to start the design process earlier and we manage to do so by reducing the user requirements phase.

In sum, if we take the ISO 13407 activities as a reference, we have the first two activities - understand and specify the context of use and specify the user and organizational requirements – which are done at the UOC as a project per se, mostly independent of the implementation of new tools. And, on the other side, the two following activities - produce design solutions and evaluate designs against requirements – which are done on a project basis. The designs are therefore evaluated against the requirements that come from the general user gathering requirements and the specific requirements which are defined for each e-learning tool.

3. Interoperability, Specifications and Standards

Learning standards such as IMS Basic Learning Tools Interoperability (IMS Basic LTI) [5], IMS Question and Test Interoperability (IMS QTI) [4], IMS Learning Design (IMS LD) [3], Open

Knowledge Initiative Open Service Interface Definitions (OKI OSIDs) [10] and The Sharable Content Object Reference Model (SCORM) [1] are used to promote and facilitate interoperability. These standards help 1) guide the definition of the virtual classroom and tools as well as 2) define the development components to ensure connection among internal modules and external software and environments.

Most e-learning systems use a combination of three kinds of standards or specifications: data representations specs, communication specs and interfaces specs; each providing particular interoperability and integration benefits.

Data representation specifications covers: the structures, meaning, and particular vocabularies associated with data. Current examples of this are: SCORM, IMS QTI and IMS LD. Data representation allows two systems to import and export data.

Communication specifications define the manner in which two systems or machines communicate with each other. Current examples of this are: SOAP, REST or HTTP. If an application supports a particular protocol, it will be able to communicate with another system or service if they also use this protocol.

An Interface specification is a contract that defines and separates the responsibilities between the two sides. Current examples of this are: OKI OSIDs and IMS Basic LTI. Using interface specifications allows the use and substitution of different service implementations and can be used to cover up underlying changes in technology.

A high level architecture could help people understand how all the individual specifications surrounding educational systems fit together. This would provide some common context for interpreting the individual pieces and promote adoption for all the specifications. The UOC's virtual campus architecture is based on a service oriented model (SOA). In SOA, the system is modeled around a set of modules with a public functionality and responsibility and a set of mechanisms that allow interaction between the services [9]. Under this architecture model and using standards, heterogeneous tools (Java, PHP and others) can interact with some services of an also heterogeneous platform: Moodle (PHP), Sakai (Java), UOC Virtual Campus and others. The tools connect to the system using a set of basic services, which act as a bridge and a link. Each tool has its own internal architecture and the most appropriate technology to solve its business logic.

The UOC Campus Services are compatible and use the IMS Basic LTI mechanisms as basis. IMS Basic LTI specifies the LMS data that needs to be transferred to an external tool so it may be executed into the LMS without putting the system into risk. There are IMS Basic LTI implementations for many of the LMS – such as Moodle, Sakai and Blackboard –, and a number of plug-ins for a good set of tools like wikis, blogs and others. IMS Basic LTI covers the basics of authentication and authorization services, but does not allow yet other key issues like transferring tool tracking information to the LMS (see Logging Service below), or managing tool user interface translation to other languages (see Internationalization Service below). So the UOC Campus Services extend the IMS Basic LTI functionality to cover the aspects not yet included. In spite of this, it has been decided to use quite a reduced set of services. A limited number of services facilitates the integration of external tools. Therefore, the tools integrated can communicate with the LMS using five services:

The **authentication** service not only allows the user to log into the system but also finds out if the user is logged in. This is a mandatory service in any computer program with user registration.

The **authorization** service allows to know if the user is authorized to act on certain resources and contexts. This is mandatory in any system in which the users play different roles.

The **logging** service allows program activity data to be stored. Log data allows, for example, a lecturer to see what use students make of classroom resources and learning tools.

The **internationalization** service supports learning tools declaring their interface literals. This makes it possible to provide translations to other languages in the LMS. Subsequently, the literals can be displayed in any of the languages available in the tool.

The **configuration** service supports defining, assigning and transferring parameters between tools and the LMS.

4. Integrating New e-Learning tools

The richness of a virtual classroom depends on the availability of e-learning tools. Its success depends on how easy they can be administrated and used. Both aspects are especially relevant to support various course typologies as well as different pedagogical models. Generally, educational models are implemented by using and combining different tools ruled by a certain pedagogical approach. Also the course typology defines the need of specific tools. As a consequence, the diversity of tools available for faculty to facilitate the teaching and learning processes is a fundamental factor with great impact on the quality of learning.

These tools are becoming increasingly diverse and complex. In recent years, there has been a growing tendency to use non educational-designed resources as educational ones (e.g., blogs and wikis). Complex tools such as broadcasting and video conferencing via the Internet have also become even more common in e-learning. Not to mention the need to integrate a growing list of services to be found in the Internet cloud, like Facebook, Twitter, Youtube and others.

As previously mentioned, we have several factors that lead to the integration of new e-learning tools as a common model. The primary criteria for doing so is to provide a better teaching and learning experience by working closely with faculty and students. Open source software is the first option to consider when selecting a new tool to be integrated, however it is not a mandatory requirement. Following are 4 cases regarding the integration of new learning tools:

The blogs solution. The WordPress platform [14] was the first blog application installed at the UOC virtual campus and it is the solution that we currently have. WordPress facilitates the integration and extension of the application features via plug-ins. This solution works perfectly within our environment and several plug-ins have been developed in-house in order to answer the different faculty needs and requirements. Nevertheless, after several semesters with this solution running, we came across a limitation of the WordPress solution: that is the amount of blogs that it can support (the performance problems appeared with over 2,000 blogs and 20,000 users). Since hundreds of new blogs are created each semester., we have had to create separate installations: one for permanent blogs and for semester-long blogs.

The wiki solution. We initially integrated two open source wikis: MediaWiki [7] and Tikiwiki [12]. We had about 5 courses using them but the adoption rate was very low. In order to use these wikis, both faculty and students were required some previous knowledge thus leading to a high learning curve to use the tool within the virtual classroom. Besides, there are cases in which faculty

want the benefits of using a wiki but this does not include learning the wiki grammar. As a consequence, we decided to integrate a commercial solution (Wikispaces [13]) and the results have been amazing. After a semester of usage, we have more than 500 wikis created and 4,500 user registered. The advantages for the users are that Wikispaces is a very simple tool that has been designed for educational purposes. From a technical perspective, the integration has also been very successful. The APIs solution provided by Wikispaces has allowed for the necessary integration (specially single sign-on and autonomous creation of wikis by faculty members) and has resulted in a very low level of incidences.

The forums solution. In-house forums were developed with the creation of the virtual campus 14 years ago. The forums were updated in 2002 but over the years have become obsolete. We are currently piloting a new solution based on the open source phpBB forums [11]. Nevertheless, we are already aware that we will not be able to use the current adapted version for a long time. The error has been that the code source of the application was changed to deeply preventing from being able to update the forums version without having to redo must of the adaptations we have done. This is a case in which an open source tool provided a good solution but the adaptation process to meet the education needs has resulted in changes that are to tied to the adapted version of the application.

Moodle's activity modules integration. Moodle's activity modules [8] have been integrated into the UOC classrooms. The faculty at UOC have a classroom configuration tool that allows them to select the most suitable e-learning tools to be used throughout the course. With this development, lecturers can choose the tools available in the UOC classroom as well as any activity module available in Moodle like quiz, forums, wikis and others.

In summary, open source software is not the only application type available in the virtual classrooms, since our faculty and students needs are the primary criteria to choose a learning tool. Nevertheless, as long as possible, open source software (OSS) solutions are considered and adopted as their benefits for learning are well known. Coppola and Neelley explained them as follows [2]: the software evolves more rapidly and organically; users' needs are rapidly met as the OSS model harnesses their collective expertise and contribution; new versions are released very often and rely on the community of users and developers to test it, resulting in superior quality software tested on more platforms, and in more environments than most commercial software; the development "team" is often largely volunteers, distributed, many in numbers, and diverse; and security is enhanced because the code is exposed to the world.

As we have illustrated with our current integrations, in order to get the most out of applying OSS and make it a sustainable model, a fine balance needs to be found between updating these open source tools to incorporate the improvements from the community and adapting each version to our users' needs and environment.

5. Conclusions

According to our experience, a critical success factor of a LMS is flexibility to meet new conceptual and users' requirements and to integrate evolving technology. In order to create such an environment, we have separated the core classroom structure from the different learning tools. Our users want a constant environment – they do not want to learn how to use a specific classroom for

each course – as well as the option to include the tools needed for each learning and teaching situation.

In order to select, adapt and integrate the best learning tool we work very close to faculty and students by following a user-centered design methodology. This means, on one side, knowing who they are, what they need and want, and their limitations. On the other side, it also means placing them at the center during the specific projects aimed at providing the classroom with a new learning tool.

From a technological point of view, an environment based on standards and prepared for interoperability is essential to guarantee the flexibility and modularity demanded by our users.

Open source solutions offer many advantages and allow for the integration of different and diverse tools. At the same time, in order to really benefit from these advantages and make them a sustainable option, the source application needs to be adapted and integrated without changing its core. Otherwise, when a new version comes out, all the work has to be started from scratch.

On the other hand, sometimes the adaptations of the open source tool required by our users are so many, that alternatives solutions – even if commercial – need to be considered.

Bibliographic references

Advanced Distributed Learning Initiative. (2009). *SCORM 2004 4th Edition Version 1.1 Documentation*. Retrieved from http://www.adlnet.gov/Technologies/scorm/SCORMSDocuments/2004%204th%20Edition/Overview.aspx

Coppola, C. & Neelley, E. (2004). *Open source open learning: Why open source makes sense for education*. Retrieved from http://www.rsmart.com/assets/OpenSourceOpensLearningJuly2004.pdf

IMS Global Learning Consortium. (2003). *IMS GLC Learning Design Best Practice and Implementation Guide*. Retrieved from http://www.imsglobal.org/learningdesign/ldv1p0/imsld_bestv1p0.html

IMS Global Learning Consortium. (2006). *IMS GLC Question and Test Interoperability Overview*. Retrieved from http://www.imsglobal.org/question/qtiv2p1pd2/imsqti_oviewv2p1pd2.html

IMS Global Learning Consortium. (2010). *IMS GLC Learning Tools Interoperability Basic LTI Implementation Guide*. Retrieved from http://www.imsglobal.org/lti/blti/bltiv1p0pd/LTI_BasicLTI_Implementation_Guide_v1p0p1pd.html

International Organization for Standardization. (1999). ISO 13407. *Human-centred design processes for interactive systems*. Retrieved from http://www.iso.org/cate/d21197.html

MediaWiki. (2010). *The MediaWiki Website*. Retrieved from http://www.mediawiki.org

Moodle. (2010). *Moodle. Getting started for teachers. Activity modules*. Retrieved from http://docs.moodle.org/en/Getting_started_for_teachers

OASIS. (2006). *OASIS. Reference Model for Service Oriented Architecture 1.0*. Retrieved from http://docs.oasis-open.org/soa-rm/v1.0/soa-rm.pdf

Open Knowledge Initiative. (2004). *Open Knowledge Initiative Open Service Interface Definitions*. Retrieved from http://www.okiproject.org

phpBB. (2010). *phpBB Forums Website*. Retrieved from http://www.phpbb.com/

Tikiwiki. (2010). *Tiki Wiki Website*. Retrieved from http://tikiwiki.org/

Wikispaces. (2010). *Wikispaces Website*. Retrieved from http://www.wikispaces.com/

WordPress. (2010). *The WordPress Website*. Retrieved from http://wordpress.org/

About the authors

Muriel Garreta Domingo

Office of Learning Technologies, Universitat Oberta de Catalunya (UOC).

Muriel Garreta Domingo is a Senior Product Manager and User Experience Analyst at UOC. She holds a Master's in Human-Computer Interaction from Carnegie Mellon (USA), a multilinguism and ICT post-graduate degree from Université Charles de Gaulle - Lille 3 (France) and a bachelor's degree in Journalism from Universitat Autònoma de Barcelona (Spain). As a member of the Office of Learning Technologies, she leads the learning tools development with a wholistic and user-centered design approach.

Office of Learning Technologies, Universitat Oberta de Catalunya (UOC)
Av. Tibidabo 47, 08035 Barcelona, Spain
murielgd@uoc.edu

Francesc Santanach Delisau

Office of Learning Technologies, Universitat Oberta de Catalunya (UOC).

Francesc Santanach Delisau has a Bachelor degree in Software Engineering from the Polytechnic University of Catalonia (UPC). He currently works as a Senior Product Manager and Software Architect at UOC. He is not only responsible for the design and technical architecture of the Campus Project (http://www.campusproject.org), but also for the development of the architecture of the UOC Virtual Campus. He also runs projects in the field of education contents, e-learning tools and standards, such as SCORM, IMS QTI, videoconferencing, audio and video blogs, IMS LTI and OKI OSIDs. He has also been an author of learning materials and tutor for the UOC.

Office of Learning Technologies, Universitat Oberta de Catalunya (UOC)
Av. Tibidabo 47, 08035 Barcelona, Spain
fsantanach@uoc.edu

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/
Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University
Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

AgShare: Building Community and Content with Multiple Partners

Christine Geith, Ph.D.,* Neil Butcher, Karen Vignare,*** Nathan R. Yergler,**** Krishna Alluri*****

* Assistant Provost and Executive Director of MSUglobal Learning Solutions, Michigan State University.

** OER Strategist, OER Africa, South African Institute for Distance Education.

*** Director, MSUglobal Learning Solutions, Michigan State University.

**** Chief Technology Officer, Creative Commons.

*****Consultant, Facilitator in International Development.

Abstract

Michigan State University and OER Africa are creating a win-win collaboration of existing organizations for African publishing, localizing, and sharing of teaching and learning materials that fill critical resource gaps in African MSc agriculture curriculum. By the end of the 18-month planning and pilot initiative, African agriculture universities, faculty, students, researchers, NGO leaders, extension staff, and farmers will participate in building AgShare by demonstrating its benefits and outcomes and by building momentum and support for growth.

Keywords

Open Educational Resources, Africa, Agriculture, Curriculum, Higher Education

Recommended citation:

Geith, C.; Butcher, N.; Vignare, K. et al. (2010). AgShare: Building Community and Content with Multiple Partners. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].< http://hdl.handle.net/10609/4862>

Background

Africa requires bold and innovative agricultural development to help the continent's smallholder farming families move out of poverty and hunger. To do so, farming must change from low-skill manual labor intensive industry to farming as a knowledge-intensive networked sector (World Bank, 2007). For those of us responsible for the advancement of higher education, the challenge is to build research, training, and outreach programs that can respond to the demands for innovation in the "new agriculture."

Graduates of African Masters of Science (MSc) programs in agriculture are potentially major change agents for African agriculture. They can become the brightest future leaders in industry, government, and academia and be positioned to implement impactful change that will directly and positively affect small farmers and rural communities. Enabling them to fulfill this potential with the appropriate graduate education and training in Africa requires, among other things, providing faculty with upgraded curriculum. Open educational resources (OER) can be instrumental in addressing these requirements through products and processes that support curriculum innovation. Agricultural education in African universities is severely hampered by out-of-date graduate teaching materials, coupled with inadequate funding to purchase new textbooks and teaching aids. If planned and implemented properly, OER can help overcome these limitations because by their very nature, OER are produced to be shared, modified, and made freely available through learning networks (Keats, 2003).

African agricultural education is also severely limited by the gaps between classroom teaching and research that positively affects farming practice and rural wellbeing. Improving the effectiveness of agricultural technology generation and dissemination systems requires responsiveness to farmer needs. At present, stakeholders, particularly farmers as the end-users of technology, generally contribute little to identifying research or curriculum priorities. Moreover, university and faculty often originate from urban areas and sometimes have limited first hand agricultural experience. Additionally, linkages with external stakeholders are not well established or supported to convey important current information on the status of regional agricultural challenges. The result is that many students and faculty are disconnected from the context and issues of smallholder farmers (Allen & Ochs, 2008).

Effective engagement with these stakeholders during content development cycles can help to bridge gaps in the curriculum. By observing farmer practices and listening carefully to local farmers during their field research, students and faculty can incorporate this information into course materials. Releasing this material as OER provides a strategy for the creation and co-creation of knowledge and a method by which African university faculty, students, and scientists can share their knowledge in the classroom, nationally, across the continent, and globally. These OERs can be openly shared and re-used as case studies and best practices in classroom teaching. Equally significant – not only can the open content be useful, but the process of co-creation itself is valuable in building the capacity of participating faculty and students to be responsive to farmer needs.

The AgShare Solution

AgShare is an 18-month planning and piloting initiative funded by the Bill & Melinda Gates Foundation during which Michigan State University (MSU) and OER Africa (an initiative of the South African Institute for Distance Education) are working with African anchor partners to build the foundation of the AgShare Open Educational Resources (OER) collaboration. MSU and OER Africa are facilitating the process by which AgShare becomes a catalyst for collaboration and alignment among existing African, OER and agricultural organizations to strengthen MSc agriculture curriculum. The leadership and organizational structure of the collaboration will be finalized by the end of the initiative and includes three types of partners: universities, community-wide partners (NGO, extension and stakeholders in agricultural value chains), and content providers.

During the pilot phase, the objective of AgShare is to implement a series of proof-of-concept initiatives, which will seek to demonstrate that:

1) Course materials can be created relatively rapidly and cost-effectively in areas of need by harnessing and adapting existing openly available educational resources rather than developing these from scratch;
2) Deployment of such course materials into higher education program, if designed according to sound educational principles, can lead to direct and immediate improvements in the quality of the learning experience and thus create enhanced conditions for improving learning outcomes for learners participating in those programs;
3) Where course materials are developed as OER against clearly defined educational needs, there are immediate and practical opportunities to facilitate their re-use by other university faculties of agriculture;
4) Actively engaging students in the production of educational materials will enhance their own learning experience;
5) Building structured relationships between academics, students, content suppliers and community-wide partners such as farmers, farmers' associations and agri-businesses to facilitate the creation and sharing of OER can have positive impact for all parties;
6) Once OER have been created for specific educational purposes (i.e. Master's Degree program) through such structured relationships, it becomes easier and cheaper to re-package these materials for different target audiences (for example, farmers or agri-business) than if one seeks to produce materials separately for each of these target audiences.

The proof-of-concept projects are designed to create a strong evidence base for the value of harnessing OER to support the development of agriculture in Africa.

Community Design

AgShare is engaging four broad types of partners during the planning phase and pilots. In broad terms partners were defined as follows:

1) *African university partners*- with a view to exploring the potential for harnessing OER to improve the quality of postgraduate program in agriculture on the continent, to be identified through a needs analysis process.
2) *Community-wide partners*- potentially including community-based organizations, non-governmental organizations, agricultural extension officers, national agricultural extension systems, national agricultural research systems, and Farmers' Groups/Associations/Organizations. These potential partners will need to be identified through consultation with AgShare's African university partners and will be engaged according to their potential to contribute to creating successful OER pilots with those university partners.
3) *Resource partners*- African and non-African organizations that produce resources relevant to the planning, development, production, and use of AgShare OER materials. Many potential partners can be identified here, and specific relationships are pursued once needs and pilot OER projects are defined with the university partners.
4) *Donors*- to be identified and engaged through processes largely independent of the pilot projects.

AgShare can only succeed in the long run if each partner believes that it will gain from this initiative, and that it can define and measure that gain. African university partners have the potential of learning that educational and economic benefits can ensue from both the creation of OER and its effective use. Participation in AgShare should be of benefit to community-wide partners because they will be able to see the direct relationship between their work and university curricula through the creation OER. Resource partners will gain because their publications and resources will have wider circulation and enhanced recognition within the global knowledge pool. This is particularly important for African journals, which are not sufficiently known internationally.

Anchor Partners

We decided to start by identifying universities as anchor partners, with the understanding that to align with MSc Agriculture curriculum gaps, the starting point is faculty and their needs for teaching materials. Our first strategy for engaging potential university partners in the AgShare project was via circulation of a needs assessment questionnaire examining the unmet needs of different postgraduate programs in agriculture. The questionnaire was circulated to selected schools, based on recommendations from the directors of two well-established African university consortia in agriculture universities specifically focused on construction of regional master's degree programs: Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) and the Collaborative Masters Program in Agricultural and Applied Economics (CMAAE). We limited the

geographic scope of initial partners to East Africa, where CMAAE, RUFORUM and OER Africa are headquartered, in order to contain travel costs.

Through discussion with RUFORUM, it was decided to focus on the Agriculture Information Communication Management (AICM) Program, as there are clear and immediate needs for development of materials, thus providing a timely opportunity to test the creation and use of a full course using OER, which can be easily adapted and replicated across a network of universities. Haramaya University was selected by RUFORUM to participate in the pilot because it is actively involved in the development of the AICM program and has an excellent track record.

Through circulation of the questionnaire by CMAAE, Moi and Haramaya Universities were selected because they demonstrated greatest willingness to participate. As a leader in the CMAAE network, Moi provides an opportunity to test the creation and use of OER materials (cases) across a network of universities. Inclusion of Haramaya in this pilot also provides opportunities for building synergies across two pilot projects, with a view to building better long-term sustainability in OER practices in that institution.

Makerere University was selected because it is one of the oldest Institutions in Africa and is internationally known in research and graduate training programs in agriculture. Additionally, it has a strong infrastructure and reputation for managing and participating in international projects relating to research and graduate training. Makerere offered a unique opportunity to test the creation and use of OER as part of graduate student field research in the high-priority agriculture field of dairy production which spans the colleges of agriculture and veterinary medicine.

United States International University (USIU), Kenya, was selected, as a leading business school seeking to develop a pedagogical model and a framework that utilizes a practical case method and active learning processes to assist farmers to transform their traditional practice of farming as a livelihood to farming as a business enterprise. USIU offers a unique opportunity to test the co-creation of OER developed by adapting existing content from USIU to the needs of leaders of producer organizations and farmer associations. The collaborative content generation is through partnerships between the USIU business school, agriculture universities and community-wide partners. The pedagogical model and the OER development process have the potential for new agribusiness curriculum.

Community-Wide Partners and Resource Partners

AgShare is premised on developing partnerships among the African universities and community-wide partners for collaborative content (OER) development. Some of the pilots have already identified potential NGO partners based on their existing working relationships. For example, Makerere is already working with a dairy cooperative in Uganda near Queen Elizabeth Park and also working with FLOSS4EDU, an IT capacity-building NGO in Kenya.

Extensive research to find appropriate materials in the agricultural sciences relevant to AgShare identified many important resources that are freely available on the Internet. Some of these resources were produced by organizations that do not think of themselves as publishers in the traditional sense of the word. We have therefore decided to use the more inclusive words “content

providers" and "resources" to describe the work that we will do on sourcing pertinent materials and on collaboration with the organizations that create them. In addition, although all of the resources are freely available, they are copyright protected. We are initiating partnership relationships for AgShare driven by the specific needs of the pilot projects. These needs are unfolding as the projects are implemented and include the Food and Agricultural Organization of the United Nations (FAO), open access journals and theses publishers.

Pilot Projects

Four university pilot projects are underway. They each have a different focus which allows the core team to pilot test different approaches for authoring, sharing, customizing and using OER to strengthen MSc agriculture curriculum.

Makerere is focused on improving dairy production while improving the use of graduate students in the processes of working with farmers and providing science-based, timely OER which can be used in MSc course modules in both the veterinary school and the agriculture school. Involving students directly in the research process, capturing the work with and for farmers, will provide replicable model for many other important commodities.

Haramaya is developing a master's level course that directly impacts Extension. It is a course in the RUFORUM Agriculture Information Communication Management master's program and has potential for network-wide localization and replication, as well as a model for subsequent courses.

USIU is developing OER that utilizes a practical case method and active learning to build an ICT applications course for mid-sized farmers and farmer organizations. This OER module will also meet the needs of MSc agriculture faculty in at least one partner university. The pilot will also develop an AgShare Fellows program that will embed expertise within the faculty and students to create and use OER, which are aimed at assisting farmers to transform their traditional practice of farming as a livelihood to farming as a business enterprise. The collaborative content generation is through partnerships between USIU business school, agriculture universities and community-wide partners. The pedagogical model and the OER development process have the potential for an entirely new agribusiness curriculum.

The CMAEE pilot involves two institutions, Moi and Haramaya, building commodity focused case studies that will be used in the program in Agricultural and Applied Economics. Cases will focus on the Economic Role of Prices and Approaches to the Study of Agricultural Market Organization for Coffee in Ethiopia and Maize in Kenya. Students will be involved in creating the cases and community-wide partners will be involved as subjects in the cases and also in the review of the materials. This collaborative approach to the creation of case studies can be a potentially cost-effective way of producing cases that can be used by all CMAAE institutions, as well as other universities.

The AgShare Eco-system

Running parallel to the university-based pilots is the development of tools and processes to make agriculture OER and the work of AgShare more visible in the global knowledge pool. OER Africa is working with Creative Commons, MSU, and a range of other technical partners to begin constructing an online 'eco-system' for AgShare, designed to enable flow of content through existing systems and increase the discoverability of that content online by people searching for agricultural content. The AgShare 'eco-system' will include support for preparing published OER for distribution as well as pushing content to other distribution channels and platforms (see http://www.oerafrica.org/agricultureoer). For example, AgShare output will be easily findable in Google and other search engines, and indexed in Agris. We are also using the FAO AGROVOC thesaurus, a multilingual, structured and controlled vocabulary designed to cover the terminology of all subject fields in agriculture, forestry, fisheries, food and related domains (e.g. environment).

A key component in the AgShare eco-system is DiscoverEd, an open source search tool developed by Creative Commons. Creative Commons is improving DiscoverEd as part of the AgShare project to better support the alignment of OER production with demand, and to support easy and accurate discovery of OER relevant to the project. To support the alignment of OER production, DiscoverEd is being improved to provide demand metrics, which will enable the direction of resource-development to those areas where demand (from MSc agriculture faculty, for example) is greatest. Support for additional metadata fields and metadata provenance tracking has already been completed as part of the project. Features improved and added to DiscoverEd for AgShare will become part of the core distribution, simplifying the customization process in the future for other communities of interest.

Results of the AgShare ecosystem and the DiscoverEd component are critical for enabling time-saving discovery of relevant open educational resources in African agriculture and to make visible African contributions to the global knowledge pool.

Conclusion

This phase of the AgShare project is focused on gathering evidence of OER impact and documenting a process by which AgShare can be extended and scaled up, including an engagement plan for additional collaborators and co-funders. Equally important is our work to demonstrate improved discoverability of African agriculture resources. We expect our findings to positively influence the way others think about OER in Africa, in agriculture curriculum, and beyond.

Bibliographic references

Allen, D. W., Ochs, M.A. (2008). *Building pathways out of rural poverty through investments in agricultural information systems*. Retrieved from the WorldAgInfo Web site: http://worldaginfo.org/files/WorldAgInfo%20Final%20Report%20Web.pdf

Keats, D. (2003). Collaborative development of open content: A process model to unlock the potential for African universities. *First Monday*. (8) 2.

The World Bank. (2007). *World development report 2008: Agriculture for development*. Retrieved from World Bank Web site: http://siteresources.worldbank.org/INTWDR2008/Resources/WDR_00_book.pdf

About the authors

Christine Geith, Ph.D.

Assistant Provost and Executive Director of MSUglobal Learning Solutions, Michigan State University.

Dr. Christine Geith has been pioneering new approaches in higher education for more than 20 years using educational technology, online learning and entrepreneurial approaches. She was a founding member of the Global University Alliance and a founding partner in the development of Learn2Grow.com, the Global Community Security Institute, AmericanCitizenPlanner.com and MyHorseUniversity.com. Chris has an MBA and a Ph.D. in Higher Education and experience including director of the Educational Technology Center at Rochester Institute of Technology and currently executive director of MSUglobal and assistant provost at Michigan State University. Chris leads the OpenCourseWare initiative at MSU and uses Open Educational Resources for international development projects such as AgShare and the Food Safety Knowledge Network.

Michigan State University
51 Kellogg Center, East Lansing, MI USA 48824
geith@msu.edu

Neil Butcher

OER Strategist, OER Africa, South African Institute for Distance Education.

Neil Butcher is based in South Africa, from where he has provided policy and technical advice and support to a range of national and international clients regarding educational planning, uses of educational technology and distance education, both as a full-time employee at the South African Institute for Distance Education (SAIDE) from 1993 to 2001 and as Director of Neil Butcher & Associates. He has worked with various educational institutions, assisting with transformation efforts that focus on effectively harnessing the potential of distance education methods and educational technology. Neil has travelled extensively through Africa conducting research on higher education, distance education, and educational technology for a range of organizations,

governments, and donors. He is currently working as an OER Strategist with SAIDE on its new OER Africa Initiative, which is funded by the Hewlett Foundation and is managing the Partnership for Higher Education in Africa's Educational Technology Initiative.

South African Institute for Distance Education
64 Galway Road, Parkview,
Johannesburg, South Africa
neilshel@nba.co.za

Karen Vignare

Director, MSUglobal Learning Solutions, Michigan State University.

Karen Vignare currently serves as the Director of the Customer Experience at Michigan State University. In that role, Karen is responsible for creating online entrepreneurial businesses for extending both non-credit and credit programs at MSU. She oversees business planning, technology planning, open educational resources, instructional design and customer service. She publishes regularly on various topics in online learning. She has an M.B.A from the University of Rochester's William Simon School of Business and Ed. S. from Nova Southeastern University and is a doctoral candidate.

Michigan State University
51 Kellogg Center, East Lansing, MI USA 48824
vignare@msu.edu

Nathan R. Yergler

Chief Technology Officer, Creative Commons.

Nathan R. Yergler is Chief Technology Officer at Creative Commons. Mr. Yergler joined Creative Commons as a software engineer in 2004, and has been responsible for developing the technical infrastructure which supports Creative Commons licenses, as well as tools for users of the licenses. Previously, he held a faculty position at Canterbury School. While at Canterbury, Mr. Yergler developed learning technology to connect teachers, students, and parents. He pioneered the use of Python in Canterbury School's Computer Science courses, developing both introductory and advanced elective curricula. Mr. Yergler holds a B.S. in Computer Science from Purdue University.

Creative Commons, 171 2nd Street, Suite 300,
San Francisco, CA USA 94107
nathan@yergler.net

Krishna Alluri
Consultant, Facilitator in International Development.

Krishna Alluri, Ph.D., is providing consulting services to agricultural and educational institutions and international organizations for development. Krishna recently retired as Education Specialist, Food Security & Environment and Team Leader, Learning for Livelihoods sector from the Commonwealth of Learning (COL), Vancouver, BC, Canada. Prior to joining COL, Krishna worked with the International Rice Research Institute (IRRI), Philippines, and the International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria, as a scientist and international network coordinator for Sub Sahara Africa for over 20 years. Krishna Alluri has over 50 publications on topics related to education & learning with technology for livelihoods, food security, environmental sustainability, agricultural research and rural development. Krishna Alluri is a consultant for AgShare project to assist in identifying and securing participation of African anchor partners and other stakeholders with emphasis on community-wide partners, as well as assist in defining shared practices.

449 West 46th Avenue
Vancouver, British Columbia
CANADA V5Y 2X4
krishna.alluri@gmail.com

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Use of open educational resources at the UOC

Roger Griset,* José Manuel Rivera López**
*Specialist at Educational Resources, Universitat Oberta de Catalunya
**Technology Manager at Learning Technology, Universitat Oberta de Catalunya

Abstract
The Open University of Catalonia (UOC: *Universitat Oberta de Catalunya*) is currently implementing its 2009-2014 Strategic Plan, which devotes an entire section to open educational resources. The working group on this topic is drafting a report that establishes the objectives to be met, analyses the current lay of the land and sets out the actions required to meet the objectives. This paper examines each of these three points.

Keywords
Open Educational Resources, OER, learning resources, e-learning, OpenCourseWare, OCW

Recommended citation:
Griset, Roger; Rivera López, José Manuel (2010). Use of open educational resources at the UOC. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy]. <http://hdl.handle.net/10609/4901>

Introduction

This paper addresses open educational resources (hereinafter, OERs) at the Open University of Catalonia (UOC: Universitat Oberta de Catalunya). This introduction will offer a brief overview of the UOC and its relationship to OERs.

The UOC

The UOC is an online distance university. Teaching takes place in virtual classrooms that are equipped with the necessary media for professors and students to communicate: forum, notice board, e-mail, calendar, etc. The educational resources used by students as guides and sources of knowledge are also available through the classroom. However, the main learning tool is not these resources but rather the assessable activities carried out as part of each course.

Educational resources at the UOC

Educational resources, in conjunction with the professor's guide, must allow students to carry out the educational activities for a subject. Traditionally, each subject has had its own materials, designed and drafted specifically for it, containing everything or nearly everything a student needs to know to pass.

OERs at the UOC

About three years ago, the UOC began to include a clause in its author agreements authorising it to publish these resources under a Creative Commons licence. It then set up an OpenCourseWare website and began to publish those materials subject to open agreements on it.

There was a precedent for this at the university. In keeping with its content, GNU FDL licences were arranged for the materials for the master's degree programme in free software, and, indeed, these materials are known to be widely used in the field of free software.

Recently, the university drew up a 2009-2014 Strategic Plan, which devotes an entire section to OERs. It is within the framework of this plan that the university has seriously begun to consider the position and actions it should take in relation to this topic. The report being drafted by the working group covers three main points: objectives, analysis and actions. The objectives refer to the situation the university would like to reach; the analysis describes the current lay of the land; and the actions refer to what needs to be done to achieve the desired outcome.

Objectives

The objectives with regard to the adoption of OERs are twofold. First, the university aims to make its internal content available to others. This entails a series of benefits and obligations. Second, it aims to take advantage of resources created by others. Both lines of action have considerable potential.

Cutting costs

Given the current rate of deployment, which has increased with the implementation of the new European Higher Education Area (EHEA), the creation of new material for each subject is proving to be unsustainable. This situation is further compounded when the material in question must be constantly reviewed and updated.

Using external resources created by other universities would seem to be the clearest way to cut costs in this sphere. However, these 'external' resources could just as easily be internal ones. That is, if the UOC were to change the way it makes its internal resources, the same resources could be used for multiple subjects.

Enhancing quality

OERs should be used in such a way that the quality of the materials is enhanced autonomously and independently of the university that created them. Releasing a resource, making it available to the community at large, also means giving the community the chance to improve its quality.

Brand positioning

MIT was the first to realise that opening its content to the public is an excellent marketing tool in the form of transparency. In a word, if you believe in the quality of what you do, you have nothing to fear in showing it to the world.Marketing the academic offer

The materials could also serve to publicise the university's academic offer. Many students will value the chance to see the content for a given subject before enrolling in it.

Social responsibility

Contributing to educating the society of which it forms a part is part of the university's mission. Given that these materials were partially funded with public money, making them available to the public would seem to be an ineluctable act of responsibility.

Internal analysis

Before designing a strategy, the current lay of the land must be thoroughly understood. A poor understanding of ourselves is the main obstacle to be overcome before proposing any action.

Statistics

The main challenge in assessing the current situation is the lack of reliable data and valid indicators for the analysis. It is especially important to determine, out of all the resources used, which are internal and which are external and, out of the latter group, which resources are subject to fees and which are free.

Return on investment

The funds allocated to each subject for resources are not based on the number of students. Each subject is given the same amount of funding for resources, regardless of how many students enrol.

Student attitudes

Students attach significant value to having materials that were specifically designed to help them follow the subject. Students pay for the materials made by the university, and, taken as a whole, these payments are a significant source of revenue.

Material publishing system

The system for creating materials is quite well-established. Professors must anticipate the need to create new materials one year in advance so that the necessary funding can be allocated in the budget. They must then find authors and review and submit the original texts four months prior to the start of the academic year. Finally, they must revise the published materials.
The materials are published in XML. They are available in multiple formats, which are generated automatically: website, PDF, epub, mobipocket, audio, video, and an XML file that is saved in a repository.
Subsequently, some of these materials are sold as books outside the university. In all cases, the cost of the materials is considered an investment and forms part of the university's assets.

Faculty dedication

It is easier for a professor to create a resource from scratch than to try to use an existing one. In the former case, he or she commissions the work from external authors and only needs to revise it. In the latter case, the professor him or herself must find and adapt the resources.

Dominant position of the provider

Authors are the university's main content provider. Professors commission the content and ensure the quality thereof, but in most cases it is actually written by external authors. These external authors sometimes hold a dominant position vis-à-vis the university and can thus impose their own conditions. For example, they may refuse to allow their content to be openly published.

Additional source of income

The creation of new materials, and the revision and updating thereof, is an additional source of income for faculty members and their circle of collaborators, which gives rise to a situation of mutual dependence.

Materials as a value-added feature

The resources created by the university itself are regarded by the institution, as well as, most likely, by students, as a value-added feature that sets the university apart from other similar institutions.

Customised materials

The materials created at the university are tailored to the relevant teaching plan. Consequently, students can often pass a subject using only these materials. The materials are moreover translated into the teaching language (Catalan or Spanish).

OpenCourseWare website

Three years ago, the UOC set up an OpenCourseWare website, where it publishes its open materials grouped by field of knowledge and subject. The UOC belongs to the OpenCourseWare Consortium (OCWC) and attends its meetings.

Government grants

Most of the resources currently classified as open are subsidised by the Spanish Ministry of Culture under the e-Alquimia programme. This seems to be a recurring feature at educational institutions; however, it is necessary to determine what business model should be used for open content beyond government funding.

External resources

Most of the external resources used in the classrooms are fee-based. In other words, a fee is paid to a publisher entitling the UOC to use these resources, usually articles or book chapters, for a given period of time and with a given number of students.
The UOC is scrupulous on this point and ensures that classrooms do not use resources without paying for the copyrights.

Actions

This section sets out the strategies to be followed in order to meet the objectives. It also attempts to address some of the potential obstacles and reservations that may hinder the achievement thereof.

Creation of a general policy

The university must have a general policy with regard to content, as opposed to a policy of exceptions and special treatments, which gives rise to a host of particularities that are difficult to manage and regulate.

Modular content

Content must be modular: it must address specific topics and do so in the most decontextualised way possible with regard to the subject at hand. This will make it easier to use in other contexts.
To this end, a way must be found to deal with the increase in processing entailed by such modularisation, as the number of 'products', or independent resources, will grow fivefold. This will, for instance, make the production, storage and dispatch of printed materials substantially more complicated. How resources are organised in the classroom will also need to be rethought.

Increase the use of external resources

This is a two-pronged strategy. First, the number of internal resources that may be produced for each subject must be limited. This limit must be linked to the projected return on investment (ROI), such that a subject with many students would receive more funding than one with just a few.

Second, external resources must be used to cover the gaps that will be left by the internal ones. To facilitate this use, faculty members should be trained in the use of existing OER repositories, a system for commissioning the selection of resources from an external expert should be put into place, and a support group should be created to help faculty members choose resources.

Indeed, ideally internal material should only be used to hold a set of external resources together, as an extension of the teaching plan. Internal resources with content should only be created for those aspects of the subject that truly are not covered by quality external resources.

Self-editable content

Updating a resource, regardless of how minor the modification, requires launching an entire editing process: fixing the XML, correcting the galley proofs, generating the formats, printing and re-dispatching hard copies... The creation of self-editable content by faculty members would stave off the need for many of the minor re-editions that are made.

It is thus necessary, first, to determine which system is best suited for making self-editable resources and, second, to find a system that logs all the modifications made to a resource.

Multi-campus

The collaborative creation of resources by multiple universities can help to optimise the creation costs. It is necessary to determine how this collaboration will be carried out.

Collaboration agreements

In keeping with the previous point, agreements can be signed with companies, foundations and other types of organisations with expertise to offer in their respective fields, whereby the partner institution authors content in exchange for training or the publication of the resources and vice versa.

Calls for providers

Under the sole provider system currently used by the university, prices are unlikely to match actual market needs. Calls for providers could make it easier to bring prices into line with actual market

demand, taking into account, as noted above, that different quality products could be offered depending on the projected ROI.

Marketing plan

It is not enough to open content to the public and post it in the institutional repository. It must be publicised, as it is part of the university's brand and serves as an advertisement for its training offer. A specific marketing plan must thus be crafted for OERs that contemplates strategies for the dissemination thereof.

Students

It is important to anticipate potential student reactions to the new paradigm. UOC students attach significant value to the materials specifically designed for each subject. How will they react if these materials disappear only to be replaced by a heterogeneous set of resources? The fact that students will not want to pay for resources that are freely available online must also be taken into account.

Conclusion

It seems inevitable that universities will end up making all or part of their content open to the public; however, this must be done in a planned, useful and sustainable way. Isolated initiatives at the university itself can begin to forge a path forward; however, they often lead to a dead end.

The creation of a general open content policy at the university would allow it to close the loop and take advantage of these resources, both for its own benefit and for that of the educational community at large.

Releasing resources without regarding their release as anything more than a marketing strategy is not sustainable. The way these resources are created, and how they are used in classrooms, must be changed.

As a result of this paradigm shift, we must move away from materials that contain everything a student needs to know to pass a given subject and towards sets of resources that must be interpreted in order to extract the necessary knowledge. This is not an isolated change affecting only the resources, but rather one that will affect the learning process itself.

Bibliographic references

Committee for Economic, D. (2009). Harnessing Openness to Improve Research, Teaching and Learning in Higher Education. *Committee for Economic Development*, Retrieved from ERIC database.

Daniel, J., Kanwar, A., & Uvalic-Trumbic, S. (2009). Breaking Higher Education's Iron Triangle: Access, Cost, and Quality**.** *Change: The Magazine of Higher Learning, 41*(2), 30-35. Retrieved from ERIC database.

dos Santos, A. (2008). The Discourses of OERs: How "Flat" Is This World?. *Journal of Interactive Media in Education*, Retrieved from ERIC database.

Fulantelli, G., Gentile, M., Taibi, D., & Allegra, M. (2008). The Open Learning Object Model to Promote Open Educational Resources. *Journal of Interactive Media in Education*, Retrieved from ERIC database.

Gourley, B., & Lane, A. (2009). Re-Invigorating Openness at The Open University: The Role of Open Educational Resources. *Open Learning, 24*(1), 57-65. Retrieved from ERIC database.

Harley, D., Lawrence, S., Acord, S., Dixson, J., & University of California, B. (2009). Affordable and Open Textbooks: An Exploratory Study of Faculty Attitudes. Research & Occasional Paper Series. CSHE.9.09. *Center for Studies in Higher Education*, Retrieved from ERIC database.

Hilton, J., Wiley, D., Stein, J., & Johnson, A. (2010). The Four "R"s of Openness and ALMS Analysis: Frameworks for Open Educational Resources. *Open Learning*, *25*(1), 37-44. Retrieved from ERIC database.

Schuwer, R., & Mulder, F. (2009). OpenER, a Dutch Initiative in Open Educational Resources. *Open Learning*, *24*(1), 67-76. Retrieved from ERIC database.

Wiley, D., & Gurrell, S. (2009). A Decade of Development. *Open Learning*, *24*(1), 11-21. Retrieved from ERIC database.

About the authors

Roger Griset

Specialist at Educational Resources, Universitat Oberta de Catalunya

Roger Griset was trained as a librarian. He joined the UOC's Educational Resources Department five years ago. He is responsible for maintaining the university's OpenCourseWare website and participates in innovation projects on educational resources and the creation of digital repositories.

Universitat Oberta de Catalunya
Rambla del Poble Nou 156,
08018 Barcelona, Spain
rgriset@uoc.edu.

José Manuel Rivera López
Technology Manager at Learning Technology, Universitat Oberta de Catalunya

Josep Rivera is Product Manager for Digital Contents at the Learning Technologies office of the Open University of Catalonia. He is Engineer for the UPC, and has degrees in Marketing and Management at the UOC. He is the leader of MyWay and TRia projects and participates in Matterhorn international initiative.

Universitat Oberta de Catalunya
Avinguda Tibidabo 47
08035 Barcelona, Spain
jrivera@uoc.edu.

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

The relationships between technology and open education in the development of a resilient higher education

Dr Richard Hall,* Joss Winn**

* University e-Learning Co-ordinator, Directorate of Library Services, De Montfort University.

** Educational Technologist, Centre for Educational Research & Development Brayford Pool, Lincoln.

Abstract

The place of technology in the development of coherent educational responses to environmental and socio-economic disruption is here placed under scrutiny. One emerging area of interest is the role of technology in addressing more complex learning futures, and more especially in facilitating individual and social resilience, or the ability to manage and overcome disruption. However, the extent to which higher education practitioners can utilise technology to this end is framed by their approaches to the curriculum, and the socio-cultural practices within which they are located. This paper discusses how open education might enable learners to engage with uncertainty through social action within a form of higher education that is more resilient to economic, environmental and energy-related disruption. It asks whether open higher education can be (re)claimed by users and communities within specific contexts and curricula, in order to engage with an uncertain world.

Keywords

critical pedagogy; curriculum; disruption; higher education; open education; resilience; technology

The relationships between technology and open education in the development of a resilient higher education, Richard Hall, Joss Winn ©

Recommended citation:
Hall, R.; Winn, J. (2010). The relationships between technology and open education in the development of a resilient higher education. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].< http://hdl.handle.net/10609/4867>

Introduction

The place of technology in pedagogic discourse is a core element higher education (HE) research and development (Facer and Sandford, 2010; United Kingdom Higher Education Academy (HEA)/JISC, 2010; Ravenscroft, 2009; Selwyn, 2010). Emergent work focuses upon personalisation, informal learning, open education and latterly in building resilience (Attwell, 2010; Downes, 2010; Hall, 2009; Winn, 2010a). It has been contended that the ability of users to integrate a range of institutional and non-institutional networks, content and tools, extends their reflexivity and identity as students and citizens (Hall and Hall, 2010; University of Reading, 2010).

However, there is a danger that an uncritically determinist approach emerges, with a view of students-as-expert-consumers of technology (United Kingdom Department of Business, Innovation and Skills (DBIS), 2009; Higher Education Funding Council for England (HEFCE), 2010). There is a tendency for the "how" of technological implementation to be elevated ahead of the "why" of its use, and for the imperatives imposed by the dominant political economy to be ignored. A developing critique of techno-essentialism highlights that educational technology must be seen as socially, culturally and politically-grounded. In this view, some of the opportunities for the re-invention of HE are being lost as the radical effects of technology are neutralised (Feenberg, 1999; FutureLab, 2009; Hemmi *et al.*, 2009; Selwyn, 2010).

In a more critical view, the institutional use of technology in HE has to be placed into a context of wider societal disruption, in the form of large-scale public sector debt and budgetary cuts, climate change, energy security and peak oil (Hall, 2010; Winn, 2009). By focussing on disruption, a more radical critique emerges that is tied to action, and which includes a fuller engagement with the possibilities of open education to build resilient responses to moments of crisis (Hopkins, 2009). Resilience is emerging as a major theme in discussions of the sustainability of HE (Jones *et al.*, 2010), with its focus upon the diversity and modularity of systems or environments tied to appropriate feedback loops.

This paper begins to critique the place of technology in catalysing open educational approaches within HE, and in enabling students to understand the causes of societal disruption and thereby develop resilience. The critical use of technology within an open curriculum for resilience is one possible approach that may develop aspects of individual and communal action within HE. The qualities of technology that underpin the development of such a curriculum are highlighted. At issue is whether the deployment of technology in more open educational spaces can enable individuals to develop their decision-making and agency, and underpin a resilient form of HE that can persist in spite of crises.

Educational Futures

Current thinking about technology in HE is generally positivist and limited in the depth of its critique. For instance, whilst the New Media Consortium (2010) argues that learning and teaching practices need to be seen in light of civic engagement and cultural complexity, it avoids questioning the impact of political economy on these possibilities. Leadbeater (2009) suggests that HE should offer students and staff disruptive curricula experiences, in order to reflect the complexity of the external world. The idea is to re-form the curriculum in light of a changing, life-world (Jackson, 2008).

More critically, Facer and Sandford (2010, p. 75) question "the chronological imperialism of accounts of inevitable and universal futures", focused upon always-on technology, and participative, inclusive, democratic change. Such questioning highlights the structural and cultural complexities of the use of technology, linked to societal development and political economy, and asks us to consider deeper, ethical imperatives. Neary and Winn (2009) have amplified this demand for re-formation to describe more revolutionary possibilities embedded within the social relations of education. They stress the significance of the student actively producing her lived experience, with the production of intellectuality being a critical, pedagogic act of resistance, in opposition to the consumption of knowledge (Giroux, 2008). The student is encouraged to transcend and live in *excess* of her socially-defined role as a learner.

In this future, the student learns to become a revolutionary social being (Neary and Hagyard, 2010) breeding mass, social intellectuality (Neary and Winn, 2009). As a result, tensions in the following must be addressed: the interplay between social relationships and power; the management of anxiety and hope (Giroux, 2010); and, the tendency of economic imperatives to breed alienation. These tensions are amplified by societal disruption, and the development of responses requires a critique of the relationships between technology and open education.

Technology, Open Education and Political Economy

Open education is a critique of institutionalised systems of education. An engagement with the possibilities for open education enables us to examine our "power-to" change our social relations, rather than to exist in a state where some-one or some-thing has "power-over" both our work and ourselves (Holloway, 2002). As a form of praxis such engagements are hopful, and Giroux (2010, p. 1) notes that hope is a critical value in this process: "Hope makes the leap for us between *critical education*, which tells us what must be changed; *political agency*, which gives us the means to make change; and the *concrete struggles* through which change happens."

The hopeful possibilities of open education include:

> enhancing our ability to create spaces for reflecting upon our participation in the activity and labour of (self-) discovery and (self-) invention (Attwell, 2010);
> catalysing a culture and set of values that offer spaces for cultural reinvention; and
> re-fashioning democratic and participative social relationships.

However, participation is an often co-opted word, de-based to a form of therapeutic engagement between individuals whose power-to govern and create in a situation/activity is markedly different (Anstein, 1969; Hall, 2006). These differences impact how work is constructed, and how it is perceived and valued. As a result, it is possible that the institutionalisation of open education becomes alienating precisely because "it is just another way of creating capital out of immaterial labour" (Winn, 2010b).

This is also true for the development of open education in the form of open educational resources (OERs), which appear to be innovatory, only to be a re-hashing and reinforcement of many of the defining attributes of mass production: automation and standardisation; efficiency; and the reification of the resource as product. This is strangely regressive and promotes pedagogy-as-production, curricula-as-distribution and learning-as-consumption. In this institutionalised form, OERs-as-open-education refer to the free movement and regeneration of reified commodities protected by liberal property laws (Creative Commons) that guarantee a level of autonomy to digital objects over and above the rights of teaching (labour) and learning (apprenticeship) from which they are abstracted. In parallel the labour that produced them is placed under the control and supervision of quality assurance, through impact measures. Here technology is the cause of our educational provision rather than being a variable of its production (Noble 1984).

In overcoming alienation, debating and fighting for the *idea* (but not the form) of the University, infused with and by a culture of openness, is vital. Such resistance might usefully be centred on deliberating the social relations that enable learners and tutors to manage societal and environmental disruption, rather than situating open education within neoliberal business models (HEA/JISC, 2010). Developing democratic or open practices in education is critical, and this underpins radical re-conceptualisations of educational practice, for example mass intellectuality (Hardt and Negri, 2000), a pedagogy of excess (Neary and Hagyard, 2010) and student-as-producer (Neary and Winn, 2009).

These re-conceptions are founded upon deeper understandings of the socio-cultural contexts within which technology is deployed (Selwyn, 2010), underpinned by political economy (Hall, 2010), and a critique of the neoliberal educational project that promotes HE-as-consumption (Amsler and Canaan, 2008; Neary, 2010; Noble, 1998). In the latter, the use of technology for humanist ends is subsumed within an essentialist discourse of efficiency, value-for-money and more-for-less (DBIS, 2009; Willetts, 2010). In contrast, critics like Noble (1984) and Bijker (1995) argue that technological development and deployment is social and consists of an evolving range of possibilities whose revelation is socio-culturally determined. Thus, both technological development and emerging educational forms, which are seen as catalysts for unsustainable discourses of 'innovation' and 'efficiency', demand critique through the lens of political economy. In the face of disruption, sustainable discourses of the idea of HE are critical.

The Impact of Disruption and Resilience on Open Education

The dominance of the neoliberal form of high technology rests on the extent to which it conceals the complexity and destructiveness of its modes of production and distribution. The “disarming disguise” (Noble 1998) of high technology is at its most effective, magical and seductive, when it abstracts our human condition from our socio-cultural environment. Yet the very real, physical impacts of climate change and energy depletion fundamentally undermine this comfortable position, affecting the ways in which we provision HE. The imminent threat of peak oil (The Oil Drum, 2010), and the impacts it will have *both* on production-led notions of 'progress' *and* on our energy security and availability (Natural Environment Research Council, 2009), alongside the link between oil production and economic cycles of growth and contraction (Winn, 2009), requires a radical re-evaluation of the form, complexity and commercial orientation of our universities. A future scenario of energy scarcity equates to a future scenario of economic and technological impoverishment that in-turn affects HE.

Education and technology do not exist in a vacuum, and just as their relationship is pragmatically bounded by energy availability, security, and the impact of debt on HE teaching budgets (Guardian, 2010), there is also an ethical imperative for HE to discuss the impacts of its activities on its wider communities and environment. One of the cracks or interstices in the formal education system that open models of education demonstrate is the hope for pedagogic partnership and co-governance between different community actors in shared practices, which in-turn positively impacts our lives and the environment we live in (DEMOS, 2009a). In widening this crack, the development of resilient approaches to HE is critical.

Resilience denotes the ability of *individuals* and *communities* to learn and adapt, to mitigate risks, to prepare solutions to problems, to respond to risks that are realised, and to recover from dislocations (Hopkins, 2009). For Hopkins (2009), resilience is “the capacity of a system to absorb disturbance and reorganise while undergoing change, so as to retain essentially the same function, structure, identity and feedbacks”. This focuses upon defining problems and framing solutions contextually, around our abilities to change and adapt rather than control and manage, in ways that

are shared, reciprocal and self-reliant. Resilience is fundamental to sustainability, in enabling individuals and communities to manage crises and disruptions, and to find alternatives.

Hopkins (2009) identifies three elements to resilience, with implications for the relationship between technology and open education. Firstly, resilience comes through diversity within networks or associations, and encompasses a broad base of livelihoods, skills and capabilities, resource use, and access to human and energy systems. Secondly, modularity within communities or networks underpins increased self-reliance. Thus, the ability of communities to tap into 'surge protectors', such as diverse areas of expertise or resource-supply, can help them to achieve their aims. Thirdly, tightness of feedback loops, so that people are not divorced from the outcomes of their decision-making and actions, ensures enhanced planning and delivery.

In overcoming disruption, it is vital that networks or communities, such as HE providers and their own open/closed communities, develop and share the skill-sets of their members, and that those members become agents in the world (Neary and Winn, 2009). DEMOS (2009b) argue that communities have a choice between reliance on government and its resources, and its approach to command and control, or developing an empowering day-to-day, scalable resilience. Such resilience develops engagement, education, empowerment and encouragement. Resilient forms of HE should have the capacity to help students, staff and wider communities to develop these attributes. As technology offers reach, usability, accessibility and timely feedback, it is a key to developing a resilient higher education, with openness (i.e. shared, decentralised and accessible) at its core.

A Resilient Education?

Sharing as a means of overcoming crises is founded upon co-governance, and this should be central to the development of openness in the idea of the twenty-first century university. This is exemplified by:

> the Really Open University's (ROU) emphasis on the need for praxis, in re-asserting the idea of the university as a site for critical action, resistance and opposition, led by students (ROU, 2010); and
> the Peer to Peer University's (2010) approach to sharing and accreditation.

This also aligns with the model for organic intellectual endeavour proposed by Gramsci (1971), in challenging institutional or state-legitimised power and hegemonic ideologies, through an engagement with, and challenging of values and attitudes, and by developing "good sense". It also develops Williams' (1961) view of the power of cultures that are publicly defined and fought for, and which enable a socio-educational transformation that critiques legitimation and alienation, as well as the value of sharing and active participation in practical life. Through such an approach, the idea of the university might come to be re-framed as active, creative, self-aware and socially-constructed, rather than simply the production of diminished or controlled spaces, impacted by business models and metrics, and instrumental engagements.

A critique of the interplay between technology and open education, and the development of an open curriculum for resilience, highlights four risks.

1. There is a risk that individual rather than social empowerment is laid bare, and that within a libertarian educational structure, the focus is placed on access to technology as the driver for individual, economic emancipation. In this view, there is a need for constant innovation in technology and technological practices, in order to empower ever more diverse groups of learners, including those in developing countries (OpenCourseware, 2010; Rossini, 2010; Seeley Brown and Adler, 2008).
2. There is a risk that open technological solutions simply replicate or re-produce a dominant political economy in education, in-line with an ideology of business-as-usual (HEA/JISC, 2010). As a result, that which is claimed as innovatory becomes subservient to a dominant mode of production and merely enables institutions to have new power-over products and labour.
3. Academics and students risk fetishising the outcomes/products of their labour as a form of currency (Pfaffenberger,1988). This is especially true in the case of *both* OERs *and* personal learning environments, which risk being disconnected from a deeper critique of open, higher education.
4. Academics and administrators risk fetishising students as autonomous agents, able to engage in an environment, using specific tools and interacting with specific OERs, rather than seeing engagement as socially emergent and negotiated (Hall, 2010).

Moving beyond these risks to develop an open curriculum for resilience is more complex than a technological fix or even more innovation, and requires us to recognise and engage in the critique of an assemblage of other activities or practices.

Harvey (2010) argues that there are seven activity areas that underpin meaningful social change.

1. Technological and organisational forms of production, exchange and consumption.
2. Relations to nature and the environment.
3. Social relations between people.
4. Mental conceptions of the world, embracing knowledges and cultural understandings and beliefs.
5. Labour processes and production of specific goods, geographies, services or affects.
6. Institutional, legal and governmental arrangements.
7. The conduct of daily life that underpins social reproduction.

These activity areas help educators and students examine how HE might deliver an open curriculum for resilience.

1. How do educators and students prioritise the use of technologies that catalyse engagement with a broader, open context of learning and education, with trusted peers, and help to raise a literacy of openness, which legitimises sharing as social practice and as social process?
2. Though education, how do educators and students use technology to enable the types of participatory engagement and re-production of groups like the Autonomous Geographies Collective (2009) or Trapese (2010), where the production of resources is a secondary outcome to the re-fashioning of social relationships and praxis that it enables?
3. How do educators and students resist the increasing discourse of cost-effectiveness, monetisation, economic value, efficiency that afflicts our discussion of open education and

technology (Lamb and Groom, 2007; Wiley, 2010), and which assumes that business-as-usual is sustainable?

4. How do educators and students disengage from activities that risk marginalising cultures through allegedly open education? Are non-Western cultures engaging in open education and the production of OERs through the languages of colonialism or by focusing on native socio-cultural forms (African Virtual University, 2010)? At what point does the use of technology in open education become part of a post-colonial discourse focused upon new markets?
5. How do educators and students utilise OERs to open-up trans-disciplinary approaches to global crises, like peak oil and climate change? How can the emerging array of open subject resources be utilised across boundaries (be they personal, subject, programme, course, institutional or national), in order to challenge sites of power in the University and beyond?

These questions enable ways of challenging hegemonic, mental conceptions of the world and framing new social relations in light of developing crises. In turn, this requires curricula and socio-educational leadership.

Conclusion

Open forms of HE are crucial in our overcoming of socio-economic disruption, and in framing spaces for personal and communal resilience. A key role for open curriculum development is the critique of hegemonic discourses and the contexts in which they emerge so that they can be challenged, and so that co-governance as well as co-production can be enabled and tested. A key role for technology, in a world of increasing uncertainty, where disruption threatens our approaches, is to enable individuals to engage in authentic partnerships, in mentoring and enquiry, and in the processes of community and social governance and action.

There is still a risk that the provision of frameworks for free associations between individuals will leave some people marginalised, and the creation of appropriate contexts that spark or forge opportunities for participation is pedagogically critical. Equally, the tensions evoked within institutions around, for instance: the ownership of technology; the openness of networks and practices; the structures of management data; engagement with communities at scale; and the validation/accreditation of curricula; need to be addressed. Despite these tensions, the capacity of technology to improve the opportunities for people to work together to shape and solve problems, and to further their critical understanding of themselves and of the world they live in, is significant.

Technology underpins the development of an open curriculum for resilience in three key areas.

1. The enhancement of student-agency, in producing *both* relationships within and across open communities, *and* open, socially-situated tasks is important. The student's power-over the tools she uses and her power-to negotiate agreed socio-cultural norms is fundamental here, although issues to do with social anxiety, difference, self-conception and allegiance within closed groups, and the marginalisation of certain users, form potential risks. However, a modular approach to the use of technology for agreed tasks in meaningful networks is one aspect of defining resilience.

2. Re-framing HE experiences as open, in order to allow learners to test their self-concept is critical. Educational technologies offer an array of supportive networking contexts where learners can model practice and self-expression. Formative development is on-going and demands a range of open engagements on a range of tasks with a range of roles in a range of networks. This diverse learning approach is a second aspect of defining resilience.
3. Feedback for learning from multiple perspectives underpins authentic personal development. Technologies facilitate near real-time feedback and enable the student to recognise the impact of her actions, which is a third aspect in the definition of resilience.

In this tripartite approach, the production and re-use of artefacts is of secondary importance to the social relationships that are re-defined by educators and students, and the focus on people and values that is in-turn assembled through open education (Lamb, 2010). In overcoming alienation and disruption, a resilient open education enables us to critique institutionalised forms of education. The challenge is to develop such a critique.

Bibliographic references

African Virtual University. (2010). *African Virtual University*. Retrieved from http://www.avu.org/

Amsler, S. S., & and Canaan, J. (2008). Whither critical education in the neoliberal university? Two practitioners' reflections on constraints and possibilities. Enhancing Learning in the Social Sciences**, 1**(1). Retrieved from: http://bit.ly/bSQ8KY

Anstein, S. R. (1969). A Ladder of Citizen Participation. *Journal of the American Institute of Planners*, 35(4), 216-24.

Attwell, G. (2010). *Notes on open education and critical pedagogy*. Retrieved from http://bit.ly/d3a2kK

Autonomous Geographies Collective. (2009). *Autonomous Geographies*. Retrieved from http://www.autonomousgeographies.org/

Bijker, W. (1995). *Of bicycles, bakelites and bulbs: Toward a Theory of Sociotechnical Change*. Cambridge, MA: MIT Press.

DBIS. (2009). *Higher Ambitions*. Retrieved from http://bit.ly/aNOrn5

DEMOS. (2009a). *The Edgeless University*. Retrieved from http://bit.ly/15yRl9

DEMOS. (2009b). *Resilient Nation*. Retrieved from http://bit.ly/b4N6WA

Downes, S. (2010). *Collaboration and Cooperation*. Retrieved from http://www.downes.ca/post/53303

Facer, K., & Sandford. R. (2010). The next 25 years?: future scenarios and future directions for education and technology. *Journal of Computer Assisted Learning*, 26(1), 74–93. doi: 10.1111/j.1365-2729.2009.00337.x

Feenberg, A. (1999). *Questioning Technology*. London: Routledge.

FutureLab. (2009). *Enquiring Minds: Year 4 report: Innovative approaches to curriculum reform*. Retrieved from: http://bit.ly/3MtrM2.

Giroux, H. A. (2nd edition, 2008). *Border crossings: Cultural workers and the politics of education*. London: Routledge.

Giroux, H. A. (2010). When Hope Is Subversive. *Tikkun*, 19(4), 1-4. Retrieved from http://www.henryagiroux.com/online_articles/Tikkun%20piece.pdf

Gramsci, A. (1971). *Selections from the Prison Notebooks*. London: Lawrence and Wishart.

The Guardian. (2010). *University teaching budgets slashed*. Retrieved from: http://bit.ly/cmpzpJ

Hall, R. (2006). Battery-farming or free-ranging: towards citizen participation in e-learning environments. e-Learning**,** 3(4), 505-18. doi: 10.2304/elea.2006.3.4.505

Hall, R. (2009). *Towards a resilient curriculum for HE*. Retrieved from http://bit.ly/9Nxdvs

Hall, R. (2010). *The political economy of openness in HE: or what is the point of it all?* Retrieved from http://bit.ly/b4c6ln

Hall, R., & Hall, M. (forthcoming, 2010). Scoping the pedagogic relationship between self-efficacy and Web 2.0 technologies. Learning, Media and Technology**.**

Hardt, M., & Negri, A. (2000). *Empire*. Cambridge, MA.: Harvard University Press.

Harvey, D. (2010). *The Enigma of Capital: And the Crises of Capitalism*. London: Profile Books.

HEA/JISC. (2010). *Open Educational Resources Programme*. Retrieved from http://www.jisc.ac.uk/oer

HEFCE. (2010). *HEFCE Strategic Plan, 2006-11*. Retrieved from http://www.hefce.ac.uk/aboutus/stratplan/

Hemmi, A., Bayne, S. & Land, R. (2009). The appropriation and repurposing of social technologies in higher education. *Journal of Computer Assisted Learning*, 25(1), 19–30. doi: 10.1111/j.1365-2729.2008.00306.x

Holloway, J. (2002). *Change the World Without Taking Power*. London: Pluto Press.

Hopkins, R. (2009). *Resilience Thinking: an article for the latest 'Resurgence'*. Retrieved from http://bit.ly/3ugobl

Jackson, N. (2008). A Life-Wide Curriculum: Enriching a traditional WIL scheme through new approaches to experience-based learning. *Proceedings of the WACE Symposium*. Sydney: WACE.

Jones, P., Selby, D. & Sterling, S. (2010). *Sustainability Education Perspectives and Practice across Higher Education.* London: *Earthscan***.**

Lamb, B. (2010). *Open Contempt*. Retrieved from http://wiki.ubc.ca/Open_Contempt

Lamb, B., & Groom, J. (2010). Never Mind the Edupunks; or, The Great Web 2.0 Swindle. EDUCAUSE Review**,** 45(4), 50–8. Retrieved from http://bit.ly/98zN1m

Leadbeater, C. (2008). *We-think: Mass innovation, not mass production: The Power of Mass Creativity*. London: Profile Books.

Natural Environment Research Council. (2009). *"Significant risk" of oil production peaking in ten years*. Retrieved from http://bit.ly/YoGC7

Neary, M., & Winn, J. (2009). Student as Producer: Reinventing the Undergraduate Curriculum. In M. Neary, H. Stevenson, & L. Bell, (Eds.), *The Future of Higher Education: Policy, Pedagogy and the Student Experience* (192-210). London: Continuum.

Neary, M. (In Press, 2010). Pedagogy of Excess – an Alternative Political Economy of Student Life. In M. Molesworth, L. Nixon & R. Scullion (Eds.), *The Marketisation of Higher Education The Student as Consumer*. London: Routledge.

Neary., M. & Hagyard, A. (In Press, 2010). Pedagogy of Excess: an alternative political economy of student life. In M. Molesworth, L. Nixon & R. Scullion (Eds.), *The Marketisation of Higher Education The Student as Consumer*. London: Routledge.

New Media Consortium. (2010). *Horizon Report 2010*. Retrieved from http://bit.ly/7slBrj

Noble, D. F. (1984). *Forces of production: A social history of industrial automation*. New York: Alfred A. Knopf.

Noble, D. F. (1998). Digital diploma mills: The automation of higher education. *First Monday*, 3(1). Retrieved from http://bit.ly/cU1ml9

The Oil Drum. (2010). *The Science of Oil and Peak Oil Revisited*. Retrieved from http://bit.ly/aabvUq

OpenCourseware Consortium. (2010). *The OpenCourseware Consortium*. Retrieved from http://www.ocwconsortium.org/

Peer to Peer University. (2010). *About P2PU*. Retrieved from http://p2pu.org/

Pfaffenberger, B. (1988). Fetishised Objects and Humanised Nature: Towards an Anthropology of Technology. *Man*, 23(2), 236-252.

Ravenscroft, A. (2009). Social software, Web 2.0 and learning: status and implications of an evolving paradigm. *Journal of Computer Assisted Learning*, 25(1), 1–5. doi: 10.1111/j.1365-2729.2008.00308.x

ROU. (2010). *The Really Open University*. Retrieved from http://bit.ly/bS0tl8

Rossini, C. (2010). Access to Knowledge as a Foundation for an Open World. **EDUCAUSE** Review**,** 45(4), 60–8. Retrieved from http://bit.ly/dfWOtA

Seeley Brown, J. S., & Adler, R. P. (2008). Minds on Fire: Open Education, the Long Tail, and Learning 2.0. EDUCAUSE Review**,** 43(1), 16–32. Retrieved from http://bit.ly/Oggee

Selwyn, N. (2010). Looking beyond learning: notes towards the critical study of educational technology. *Journal of Computer Assisted Learning*, 26(1), 65–73. doi: 10.1111/j.1365-2729.2009.00338.x

Trapese. (2010). *Trapese Popular Education Collective*. Retrieved from http://trapese.clearerchannel.org/

University of Reading. (2010). *This Is Me project*. Retrieved from http://thisisme.reading.ac.uk/

Wiley, D. (2010). Openness as Catalyst for an Educational Reformation. EDUCAUSE Review**,** 45(4), 14–20. Retrieved from http://bit.ly/aIspJ5

Willetts, D. (2010). *Speech to Universities UK Annual Conference*. Retrieved from http://bit.ly/buESpV

Williams, Raymond (1961) *The Long Revolution*. London: Chatto & Windus.

Winn, J. (2009). *Oil and the story of energy*. Retrieved from http://bit.ly/6vtHBS

Winn, J. (2010a). *Resilient Education*. Retrieved from http://bit.ly/9sexuE

Winn, J. (2010b). *Open Education and Sustainability*. Retrieved from http://bit.ly/9BUv0t

About the authors

Dr Richard Hall

University e-Learning Co-ordinator, Directorate of Library Services, De Montfort University.

Dr Richard Hall is De Montfort University's e-Learning Co-ordinator. He is also a United Kingdom National Teaching Fellow and a Reader in Education and Technology. He is responsible for the academic implementation of Technology-Enhanced Learning [TEL] with the aim of enhancing the student experience. Richard has worked on several United Kingdom research projects that have investigated: mainstreaming Web 2.0 technologies across the University; the relationship between transitions into Higher Education and Independent Learning; Green ICT; and the use of technologies to support students studying remotely.

Directorate of Library Services
De Montfort University, United Kingdom
LE1 9BH
Rhall1@dmu.ac.uk

Joss Winn

Educational Technologist, Centre for Educational Research & Development Brayford Pool, Lincoln.

Joss Winn works in the Centre for Educational Research and Development (CERD) at the University of Lincoln (United Kingdom), where he undertakes research and development into the use of technology in Higher Education. He also runs the Lincoln Academic Commons where CERD evaluate open source software and provide information to staff and students about Open Access and Open Education. Joss holds degrees in Buddhist Studies (London, Michigan) and in Film Archiving (East Anglia). He previously worked for Amnesty International.

Centre for Educational Research & Development
Brayford Pool, Lincoln
Lincolnshire, LN6 7TS United Kingdom
jwinn@lincoln.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Faculty and Student Perspectives Toward Open Courseware, and Open Access Publishing: Some Comparisons Between European and North American Populations

Joseph Hardin*, Aristóteles Cañero**
*Mujo Research.
** Universidad Politécnica de Valencia

Abstract
Instructor and student beliefs, attitudes and intentions toward contributing to local open courseware (OCW) sites have been investigated through campus-wide surveys at Universidad Politecnica de Valencia and the University of Michigan. In addition, at the University of Michigan, faculty have been queried about their participation in open access (OA) publishing. We compare the instructor and student data concerning OCW between the two institutions, and introduce the investigation of open access publishing in relation to open courseware publishing.

Keywords
Opencourseware, open courseware, OCW, open educational resources, OER, open access, survey research, Sakai, web science, open scholarship

---

Recommended citation:

Hardin, J.; Cañero, A. (2010). Faculty and Student Perspectives Toward Open Courseware, and Open Access Publishing: Some Comparisons Between European and North American Populations. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/5261>

Introduction

Instructor and student beliefs, attitudes and intentions toward contributing to local open courseware (OCW) sites have been investigated through campus-wide surveys at Universidad Politecnica de Valencia and the University of Michigan. In addition, at the University of Michigan, faculty have been queried about their participation in open access (OA) publishing. We compare the instructor and student data concerning OCW between the two institutions, and introduce the investigation of open access publishing in relation to open courseware publishing. We point out some places where these results can be of use in development of local OCW efforts, and invite participation in future surveys and analyses.

What Do We Know?

What do we know about the perceptions of teachers and students at our institutions of higher education regarding OCW? Or about their support of OCW initiatives at their local campuses? Or, crucially, about the intentions of teaching staff to contribute course materials to a prospective or nascent local site? At those schools that have some OCW presence there has been work done to see what students and faculty see as the benefits of OCW (MIT, 2010) and to determine the main on-campus uses of OCW materials, and some studies of all users, mainly using pop-up questionnaires, have been done to see how the materials are used (Lee, 2010). A series of studies are underway to evaluate the effectiveness of some kinds of OCW (Lane, 2008; Lovett, 2008). Some data has been collected to see how many incoming students use the existing OCW sites of universities as tools for evaluating those schools, and to what extent such evaluations figure in their decisions to attend (Carson, 2009). Relatively little has been done, and less published, that investigates teacher and student support for the development of local OCW sites.

But there is a line of reasoning that would hold that the beliefs, attitudes and intentions of faculty and students toward OCW are interesting areas of study in their own right, as windows onto evolving perceptions and practices in academia in the internet age, that they are a critical part of a well-motivated approach to the development of local OCW efforts, through providing information on the perspectives of local stakeholders toward OCW initiatives, and through providing useful information, sometimes revelatory, about support from various components of the local academic community. When this line of thinking is part of a local strategy for OCW development that weds top-down and bottom-up approaches to building support for local efforts, providing detailed information on the locations, levels and kinds of support for OCW within the local academic community, particularly the level of material contribution that can be expected from teaching staff and the various ways that they and students might see value in an institutional OCW site, then such studies can come into their own.

Results from these surveys can make clear the often widespread interest in OCW among teaching staff and students, thus encouraging the provision of support; provide information on disciplinary or departmental differences that might lead to effective targeting of early resources and the building of communities of peer support, often crucial to the growth of efforts beyond a small cadre of early adopters (cite); show already existing differences in approaches to openness that

characterize some populations on campus, differences that might point to emerging changes in how teaching and learning are being done in the academy. These differences might be grounded in generational differences in experiences and relationships to emerging technologies and their use, or to the components of real value in teaching. At the inception of campus-wide discussions, such surveys can at the very least provide participants with well grounded data about the perspectives of members of the academic community toward open courseware and help move the discussion beyond anecdotal and individual perspectives.

Needless to say, such an approach of trying to understand the local community's perspectives and practices vis a vis OCW would be useful, from this perspective, in all the possible contexts of OCW formation, whether there was outside funding or high-level mandates or not. But the emphasis here, beyond the strong argument of the value of tracking and understanding what and how our students and faculty are thinking about and acting on open possibilities strictly from a curiosity for knowledge, is the use of these types of findings in building local, ground-up OCW efforts. Even though we have a growing OCW community internationally among our institutions of higher education, we still have not really begun to tap the wealth of resources available in our institutions, nor have we gone far in making clear the benefits of open practices, nor even, it may seem, in surfacing the significant support for such efforts that already exists in our institutions.

In this paper we will report on and discuss two OCW Contributor Surveys, at UPV and UM, that are embedded in larger local OCW efforts. These two studies provide foundational information on what familiarity teaching staff and students have with OCW, and their perspectives on contributing materials or time to the creation of OCW for a local site. In addition the studies also shed light on aspects of "convince-ability" of those who might describe themselves as "Neutral" on a 5-point scale when answering questions on the OCW survey. This comes from the UPV study. Some initial results from a set of open access (OA) questions that were asked on the UM study in addition to the OCW questions, comparing faculty perspectives and participation in OA with their views on OCW are also presented, pointing toward relations between these two open resource initiatives, and informing possible strategies.

UM CTools and OCW Surveys and MISI Surveys

Over the last two years the Sakai Collaboration and Learning Environment (CLE) community has been conducting online surveys concerning faculty and student perceptions and use of educational technology. As the project website says: "MISI, or the Multi-Institutional Survey Initiative, is an endeavor among Sakai institutions to ask similar questions of instructors and students across Sakai implementations. Through this initiative, we hope to build on the successful 2009 effort to compare and contrast similarities and differences between institutions as well as provide feedback to improve Sakai development in the future."(Lonn-MISI, 2010a) This survey in 2010 has 30 institutional participants scattered around the world. See the MISI site for more information, a list of participants, a global map of participants, and aggregated results from the 2009 survey (Lonn-MISI, 2010b).

The MISI surveys were built to some extent on a series of surveys done at UMich over the last 5 years directed at the Sakai-based CTools system. This survey first incorporated some OCW questions 3 years ago, in 2007. These questions have changed very slightly as an OCW site at UMIch has been developed, but have asked the same core set of questions around OCW familiarity, perceived value and use, and respondent intention to participate in OCW by contributing course materials, on the part of the teaching staff; or helping teaching staff prepare course materials for the OCW site on the part of students. A discussion of the results of the OCW questions asked on the 2008 and 2009 University of Michigan surveys can be found at Hardin, 2010. This past year, the UM survey also incorporated a set of questions about Open Access participation, use and perceptions on the part of the teaching staff.

For the 2010 MISI survey a number of the OCW questions that have been used on the University of Michigan CTools surveys were submitted for use by the MISI participants. Use of the questions was voluntary, as the whole MISI effort is, and 6 schools included them in their local surveys. The questions were translated for some of the local surveys. So, for the first time, we have comparable data from schools in Europe as well as North America, and beyond the University of Michigan, that can inform us of similarities and differences among student and instructor populations concerning OCW. A discussion and comparison of the results from the University of Danubius-Galati, Romania, and the University of Michigan 2010 surveys were the subject of a paper submitted to the IADIS conference in Timisuara, Romania, to be held in October, 2010. A pre-print can be found at http://www-personal.umich.edu/~hardin/Talks/IADIS2010-HardinOCW-finalpdf.pdf

The Universidad Politecnica de Valencia participated in the MISI educational technology surveys this year, and also asked the set of OCW questions. A random sample of 30% of the instructors (n=800) were invited to respond, and a random sample of 5% of the students (n=1,920) stratified by college were invited as well across the set of OCW questions. They had responses from 230 instructors and 186 students; which resulted in response rates of 28.7% for instructors and 9.7% for students. In the University of Michigan survey for 2010 “all instructional faculty were invited to respond (n=7,626). There was a 13% response rate to the survey (n=1,017). A random sample of 25% of the student body, stratified by college/department, was invited to respond (n=9,095). There was a 16% response rate to the survey (n=1,415). The survey was administered online via UM.Lessons [a locally developed tool used for test and survey construction and administration] in April 2010. There was an incentive for instructor and student participants to be entered in a random drawing for $50 gift certificates (4 instructors and 4 students).” (Lonn, 2010)

Instructor and Student Knowledge and Perspectives on OCW

At the beginning of the survey a brief description of Open Courseware was given: “Open CourseWare (OCW) is a learning technology movement among a growing number of higher-ed institutions. Typically, faculty volunteer to have course material (e.g. syllabus, reading lists, exercises, lecture notes, example papers, tests, etc.) posted on a web site available to the public. The

most well known such site is the MIT OCW site, where a large number of faculty have contributed to their institutional site. There are a number of OCW sites at other institutions as well." Then the respondents were asked a number of questions.

Both instructors and students were initially queried about their familiarity with Open Courseware. The results are displayed in Figures 1 and 2. About half (49.8%) of the University of Michigan faculty professed to have never heard of OCW. For the Valencia instructors about a third (35.2%) said they had never heard of OCW. 27.8% of Michigan instructors and 32.6% of Valencia instructors said that while they had heard of OCW, they had never visited a site. So 77.6% of the Michigan and 67.8% of the Valencia instructors had never been to an OCW site. Among those remaining, who had visited, used material from or published to an OCW site, there was a higher percentage of Valencia instructors (11.3%) who had published OCW materials than Michigan instructors (2.7%). Although we can see the beginnings of OCW participation among survey respondents, particularly among the Valencia instructors, any way we approach these figures we find a very large component of our students and faculty who are deeply uninformed about open courseware.

Given this large base of ignorance concerning OCW, one might expect that instructors and students would be rather uninterested in OCW. But the responses to further questions leads us in another direction. When asked if they would contribute their course materials to a local OCW site, a considerable 45.2% of the Michigan and a whopping 85.8% of the Valencia instructors agree or strongly agree that they would. See Figure 3. For the Michigan instructors a further 31.5% are neutral on the question. Only 23.3% of the Michigan and 14.3% of the Valencia instructors disagree or strongly disagree with the notion of contributing their own course materials to a local OCW site. The first thing these data suggest is that at both institutions there is a significant community of potential OCW contributors, instructors who say they are willing to contribute their course materials to a local OCW site.

The second thing that is apparent is that the Valencia response options were constructed differently than the Michigan response options. The Valencia survey used a 4-point scale from Strongly Agree, through Agree, to Disagree, and finally to Strongly Disagree. The Michigan survey used a 5-point scale with a center option of Neutral. The differences between such approaches when using scales like this have been widely debated (see http://en.wikipedia.org/wiki/Likert_scale for a starting point, or), with the advantages and disadvantages of each for different purposes discussed. One question in this debate revolves around the issue of reliability: is it a good idea to force respondents to take a position on one side of the question or the other, increasing your information on their positions, or does such forcing of responses, without giving the option of a "neither agree or disagree" or "neutral" option, lead to unreliable data? Others have to do with the use of 4 versus 5 point scales in further analyses. But for us the question here is whether or not the difference in scales potentially provides any insight into the "Neutrals" in the 5 point scale. It is not uncommon to suggest in the interpretation of such 5 point scales that the "Neutrals" are open to arguments regarding the question at hand. Here it is the question of OCW contribution. And the Valencia data, while not providing anything in the way of proof, does provide us with a route to determine whether we can consider those in the "Neutral" category as actually "leaners" toward contributing, whether they would be open to well motivated arguments. The method for investigating this of course is to use the alternate scale in a future version of the survey, for Valencia to use a 5-point scale or for Michigan to use a 4-point scale. For now, we are left with the suggestive nature of the data with

respect to the Michigan Neutrals, and the very large support for OCW contribution that is apparent among Valencia respondents.

When asked whether they would use OCW materials from a local site themselves 55.7% of the Michigan instructors and 91.9% of the Valencia instructors agreed or strongly agreed. See Figure 4. And 38.3% of the Michigan and 96% of the Valencia instructors said they would encourage others to publish on the local site. See Figure 5. Again, while there is much more support for such activities at Universidad Politecnica de Valencia than the University of Michigan, there is considerable evidence both for a wide community of use at both schools and for peer support of publication.

When the survey asked students about their familiarity with OCW 75.5% of the Michigan students and a comparable 76.6% of Valencia students responded that they had never heard of OCW. See Figure 2. However, when asked if they would volunteer to help faculty publish course or other materials on the local site, 26.6% of the Michigan and 66.2% of the Valencia respondents agreed or strongly agreed.See Figures 6 and 7. On the student questions, the Valencia survey used a 5-point response option. When asked if they would use the materials on a local OCW site 72.8% of the Michigan and 85.6% of the Valencia students agreed or strongly agreed. See Figures 6 and 7. When asked if they would encourage other students to use the materials 62.8% of the Michigan and 83.8% of the Valencia students agreed or strongly agreed. See Figures 6 and 7. Even though students at both schools evinced a low familiarity with OCW materials, when such materials were described to them, as in the survey description, they show considerable support for using, encouraging others to use and even helping with the construction of OCW materials.

OCW and Open Access

The University of Michigan survey had an additional set of questions on open access (OA) perceptions and practices among instructors. The questions asked about current attitudes and activity in publishing and using open access articles and about beliefs about the future importance of open access. See Figure 8. A deeper analysis of these questions in relation to OCW beliefs and intentions is underway, but here we will describe some of the early results.

The questions were prefaced with a definition of open access publishing: “Open Access (OA) publishing includes the practices of:

1. publishing in journals that make their contents freely available on the web to anyone

2. authors providing free copies of their articles, either before or after peer review, on their own web site or an institutional web site (e.g., departmental or library site).”

The responses show that 17.2% of the respondents had published in OA journals, and 31% planned on doing so in the future. 18% of the respondents put up pre-prints of their articles and 26.1% put up copies of their published articles. So the results point to a significant population already involved in open access publishing. In addition, 51% of the respondents agreed or strongly

agreed with the statement: “I think OA publishing is becoming important for the generation and dissemination of knowledge.” Open access efforts have much to build on: a considerable group of existing practitioners and a perception among many that OA is becoming more important.

However, there are some points that are important to consider when looking at these results. The first is that there are currently wide differences between disciplines in use and perceptions concerning OA. As the recent Center for the Study of Higher Education study (Harley, 2010) made clear, differences in disciplinary methods of assigning credit and value to publishing in various forms and forums are great, and those looking to advance their careers are often tied to existing criteria for advancement. These disciplinary differences show up in our data also, with medical and natural science faculty participating in OA activities more than others, for instance. These disciplinary differences in participation in OA publishing, combined with the differences among types of instructors (tenure-track, vs lecturers, for instance) in adoption of OCW discussed in earlier work using these data (Hardin, 2010), length of experience differences that point to younger instructors embracing OCW more than older (as reported at the recent OCWC conference, and as the data in this survey support), and differences between campuses as seen here and in another study using these OCW questions (Hardin et al, 2010), one must be extremely careful, and detailed in their analyses, in discussing the possible relations between OCW and OA beliefs and participation. While the early analyses we have underway do show possibly interesting relations between the two types of open publishing, open access and open courseware, for example between beliefs in the growing importance of OA and the intention to contribute OCW materials, they also show that these relations are moderated by the considerations mentioned above and hence not at all straightforward. Future analyses, and future data brought to these analyses, will help us understand much better how faculty think and act concerning open activities.

Conclusion and Invitation to Participate

The investigation of instructor and student orientations toward OCW and OA is really just beginning. As these studies show, there is considerable interest and a significant community of potential contributors to OCW in the researched institutions of higher education, and the results of surveys of these types can help expose that often latent demand and provide insight into how to invest resources in local OCW developments. Providing similar data on ongoing practices and developing perspectives on OA among faculty may be of similar use in developing local OA efforts or expanding existing ones. Finally, investigating the relationships between instructors’ thinking on OA and OCW publishing will provide us both insight into how these creators of open resources approach these activities themselves, and give us ways to approach these faculty in the development of expanding communities of open scholarship.

Building these understandings, both within regional and local communities and between them, rests on increasing the number of participants in the survey of institutions of higher education globally. What we have described here are just first steps. The next steps involve both deepening our analyses and understanding of existing data and building a much larger base of data, one that

can naturally include longitudinal studies as we combine snapshots of institutions such as those discussed here. Then we can get a feel for the evolving understandings and activities that instructors and students bring to open education and research as they develop over the coming years. And we can increase our contributions to the building of those communities. For anyone interested in participating in this type of investigations, or who would like help in using these tools in understanding their own local communities, please contact the authors.

Figures

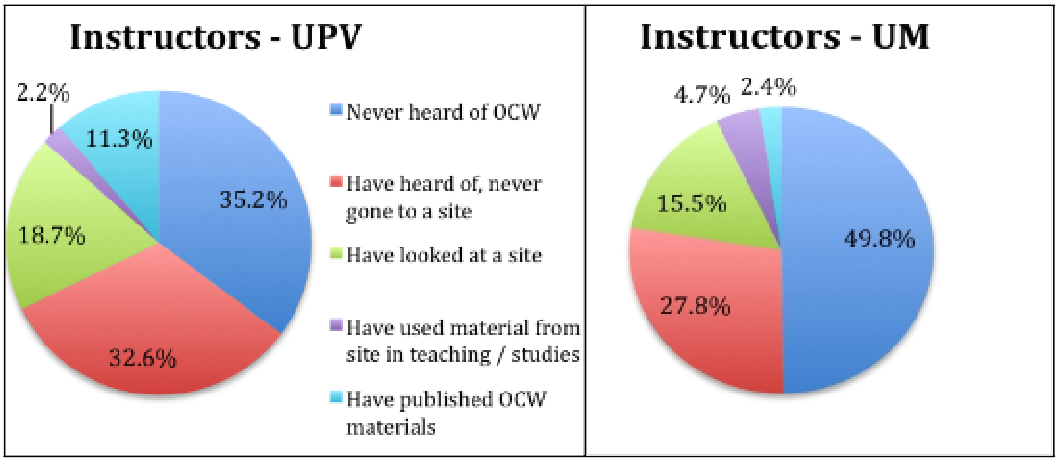

Figure 1 - Instructor Familiarity with OCW

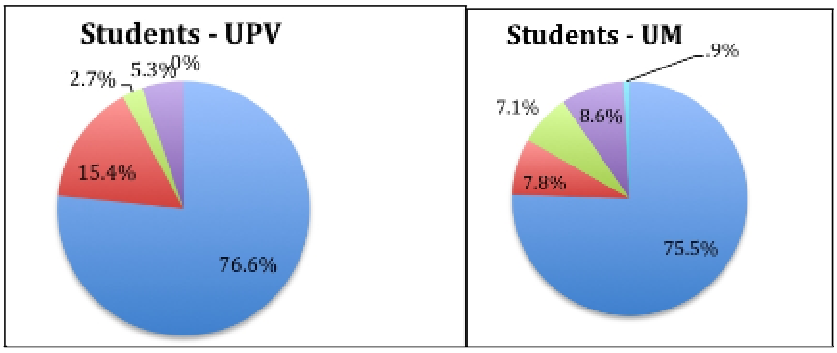

Figure 2 - Student Familiarity with OCW

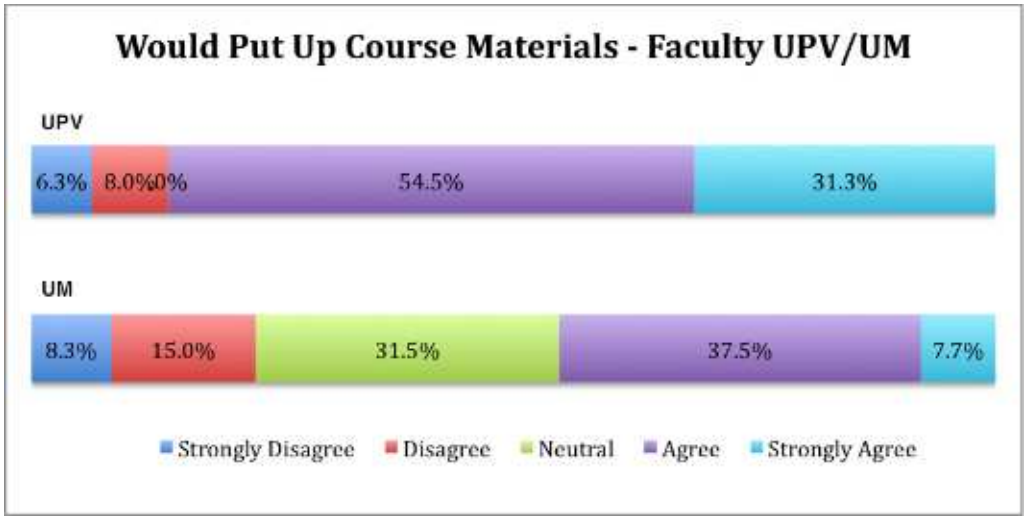

Figure 3 - Comparison of "Would put up course materials on local OCW site" responses.

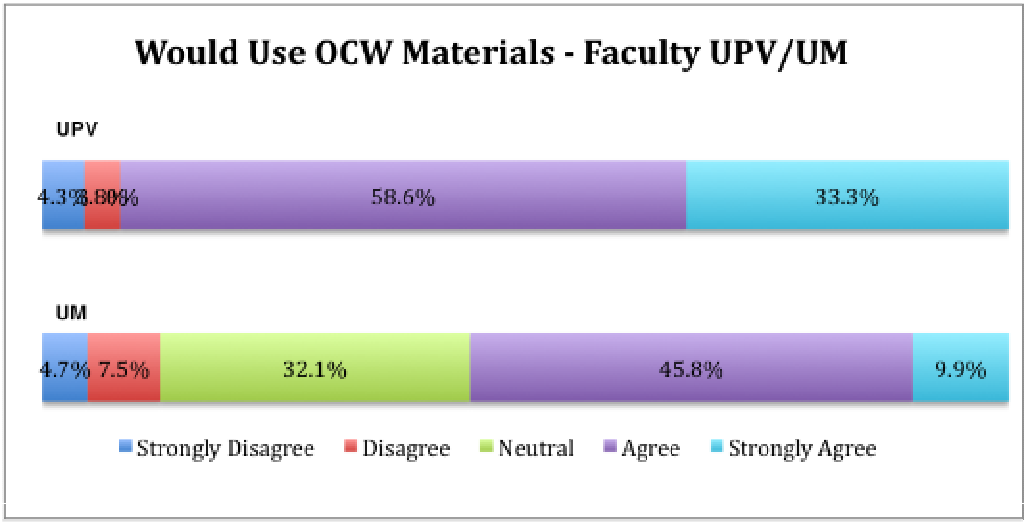

Figure 4 - Comparison of "Would use materials from local OCW site."

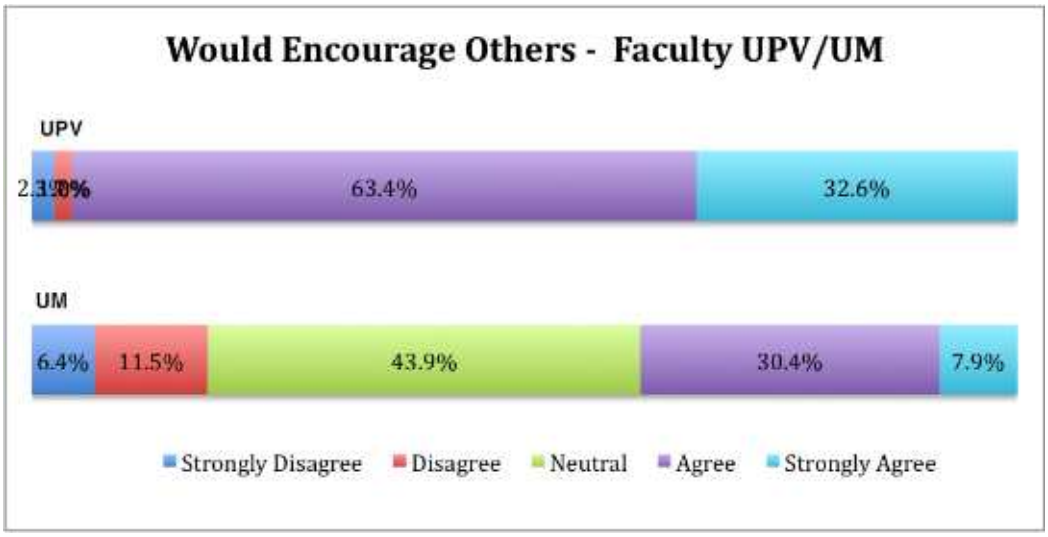

Figure 5 - Comparison of "Would encourage my colleagues to publish materials on a local OCW site."

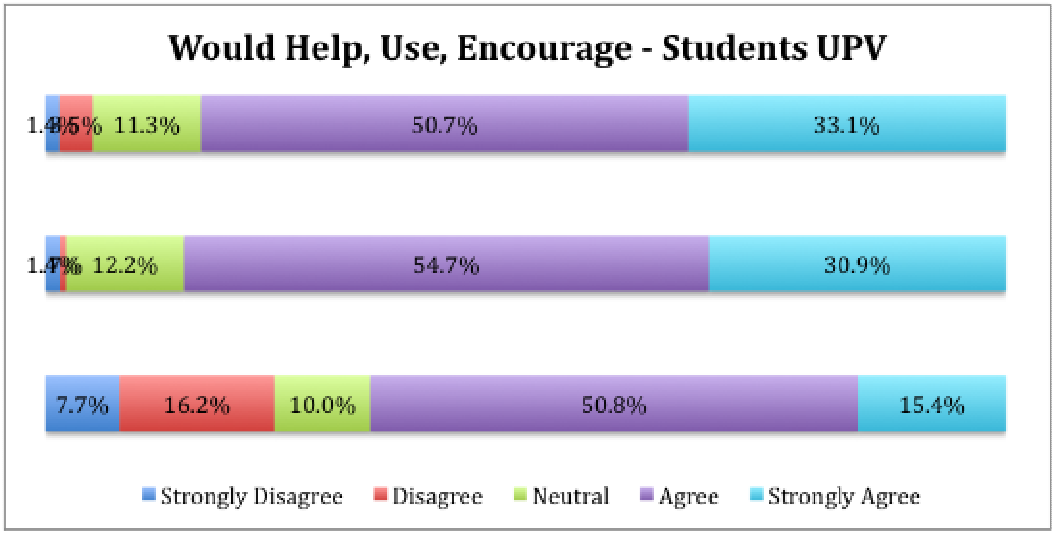

Figure 6 - Universidad Politecnica de Valencia student responses to "Would volunteer to help faculty publish course materials...on local OCW site (top); "Would use course materials or other educational resources from local site (middle); "Would encourage other students to use course materials from local OCW site" (bottom).

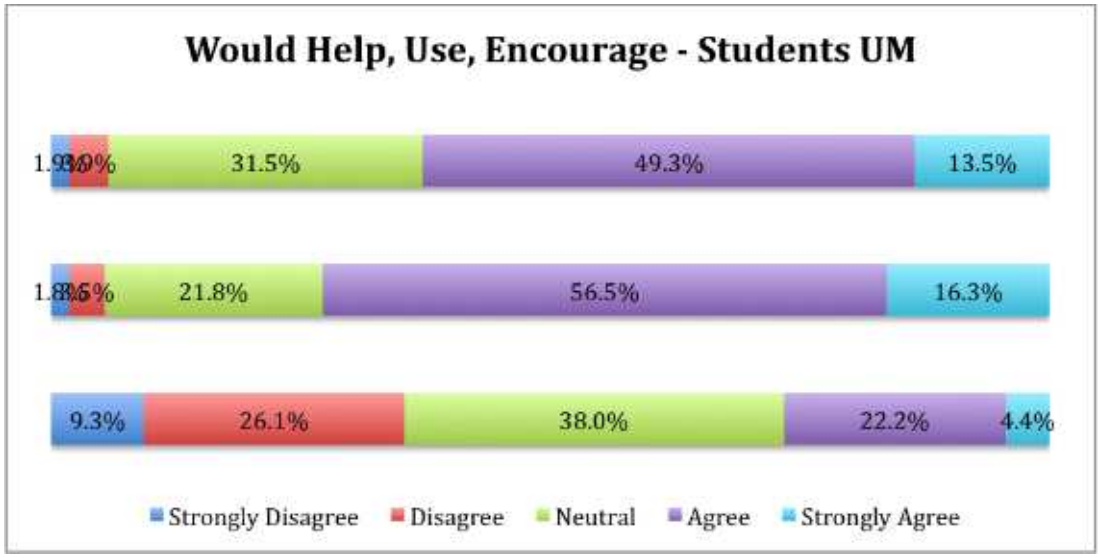

Figure 7 - University of Michigan student responses to "Would volunteer to help faculty publish course materials...on local OCW site (top); "Would use course materials or other educational resources from local site (middle); "Would encourage other students to use course materials from local OCW site" (bottom).

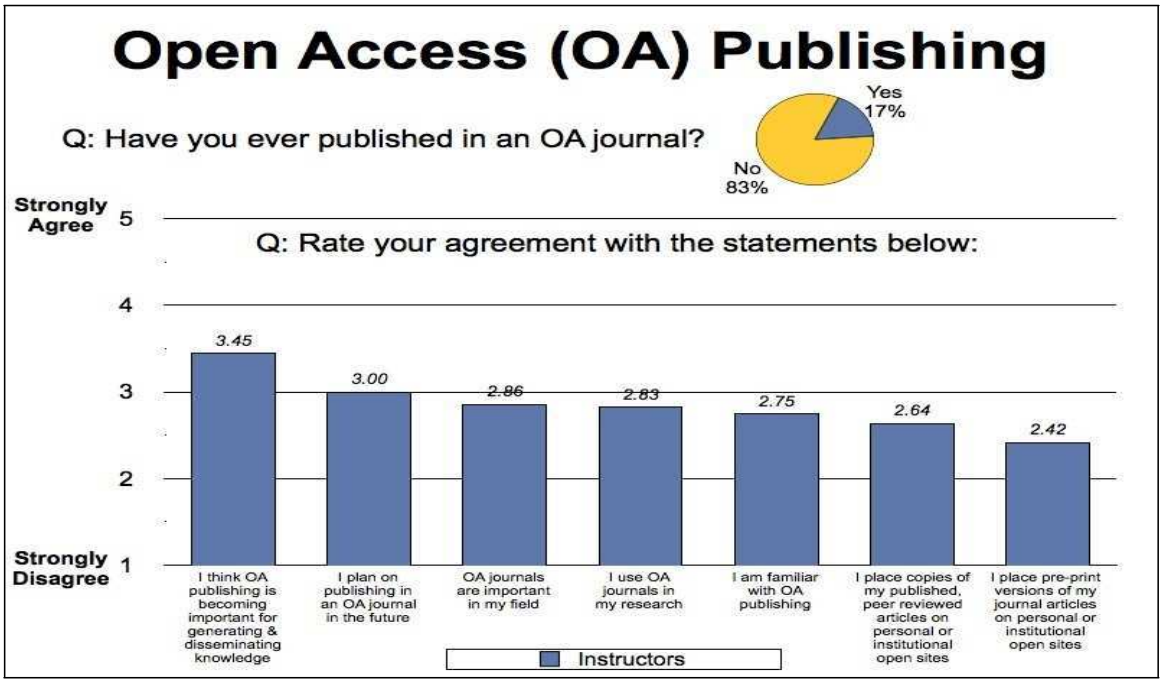

Figure 8 - Results from University of Michigan Open Access (OA) questions.

Bibliographic references

Carson, S. (2009). 2009 Program Evaluation Findings Summary. http://ocw.mit.edu/ans7870/global/09_Eval_Summary.pdf

Hardin, Joseph (2010). OCW Creation in HE Institutions, OCWC 2010 International Conference, Hanoi. http://www-personal.umich.edu/~hardin/Talks/OCWC2010Hanoi

Hardin, Severin and Pu că (2010). Open CourseWare (OCW) Contributions: Recent Results from Romanian and American Teaching Staff and Student Surveys (under submission, IADIS 2010 Timisoara Conference). http://www-personal.umich.edu/~hardin/Talks/IADIS2010-HardinOCW-finalpdf.pdf

Harley, D. et al. (2010). Assessing the Future Landscape of Scholarly Communication: An Exploration of Faculty Values and Needs in Seven Disciplines, January 2010; Center for the Study of Higher Education, University of California, Berkeley. http://cshe.berkeley.edu/research/scholarlycommunication/

Lane, A. B. Katz, R. N. (ed) (2008). Who puts the education into open educational content?. The tower and the cloud: Higher education and information technology revisited EDUCAUSE, Boulder, CO.

Lee, Mary et al. (2010). Tufts Opencourseware, Statistical Analysis: Pop-up Survey Results: 2009 - Faculty, April 14, 2010, personal correspondence.

Lonn, S., Teasley, S. D. & Krumm, A. (2010). Selected results from the 2010 CTools survey: Ann Arbor campus instructors and students.
https://ctools.umich.edu/access/content/public/surveys

Lonn-MISI (2010a) - http://confluence.sakaiproject.org/display/UDAT/2010+MISI

Lonn-MISI (2010) - http://confluence.sakaiproject.org/display/UDAT/2009+MISI+Selected+Results

Lovett, M., Meyer, O., & Thille, C. (2008). The Open Learning Initiative: Measuring the effectiveness of the OLI statistics course in accelerating student learning. Journal of Interactive Media in Education.
http://jime.open.ac.uk/2008/14

MIT site surveys (2010). http://ocw.mit.edu/OcwWeb/web/about/stats/index.htm

Miyagawa, Shigeru, OpenCourseWare at Home: While OCW idea takes off globally, project provides tangible benefits to the MIT community, MIT Faculty newsletter Vol. XVIII No 3.

About the authors

Joseph Hardin
Mujo Research.
hardin@umich.edu

Aristóteles Cañero
Universidad Politecnica de Valencia.
acanero@asic.upv.es

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/
Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

Conversation is the Key: A Short History of Smarthistory.org

Dr. Beth Harris,* Dr. Steven Zucker*
* Founder and Executive Editor, Smarthistory.org.

Abstract
Smarthistory.org is a proven, sustainable model for open educational resources in the Humanities. We discuss lessons learned during its agile development. Smarthistory.org is a free, creative-commons licensed, multi-media web-book designed as a dynamic enhancement or substitute for the traditional art history textbook. It uses conversation instead of the impersonal voice of the typical textbook in-order to reveal disagreement, emotion, and the experience of looking. The listener remains engaged with both the content and the interaction of the speakers. These conversations model close looking and a willingness to encounter and engage the unfamiliar. Smarthistory takes the inherent dialogic and multimedia nature of the web and uses it as a pedagogical method. This extendable Humanities framework uses an open-source content management system making Smarthistory inexpensive to create, and easy to manage and update. Its chronological timeline/chapter-based format integrates new contributions into a single historical framework, a structure applicable across the Humanities.

Keywords
art, art history, Smarthistory, textbooks, sustainability, OER, teaching, learning, conversation, instruction

Recommended citation:
Harris, B.; Zucker, S. (2010). Conversation is the Key: A Short History of Smarthistory.org. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/5081>

This essay examines the genesis, iterative growth, adoption, and uses of Smarthistory.org, a free, creative-commons licensed, multi-media web-book designed as a dynamic enhancement (or substitute) for the traditional art history textbook. Smarthistory's pages variously combine text, image, maps, links, and video, but our primary "tool" is perhaps the very oldest one—conversation. We use unscripted discussion to model for our listeners how to approach an unfamiliar and perhaps difficult work of art. In our conversations, our students can hear us take risks and learn from each other and this not only engages them, it models close looking, careful listening, and a degree of engagement with the object that we want our students to develop. With Smarthistory, we have tried to be entertaining and enlightening while eschewing an authoritative voice in favor of reliable but personal and opinionated experience. This makes us very different from the traditional textbook (which continues to be replicated in the online environment), and even from many OERs.

Smarthistory.org is a model for sustainable Open Educational Resources because it relies on volunteers, it exists outside of any educational institution, it runs on an open source content management system, and it has a minimal annual operating budget. In addition, it's structure is chronological and can easily be adapted to other Humanities-based disciplines (figure 1)**.**

In 2009, Smarthistory.org won the Webby award for education, and the year before that, the gold award from AVICOM—the arm of the International Committee of Museums dedicated to multimedia. In 2009 Smarthistory was visited more than 450,000 times from 197 countries and territories, a 337-percent increase over the previous year. Preliminary figures suggest continued growth in 2010.

Smarthistory is widely used by teachers as an enhancement to the textbook, and is used by some as a subsitute for the textbook. Clearly, all textbooks—indeed all print publications—are at a crossroads. Like many other disciplines, the teaching and learning of art history stands to gain from new media. This is because digital media privileges the image, the very object of our discipline. Textbooks, with their seemingly singular, authoritative and impersonal voice, discipline-specific focus, and encyclopedic and chronological sweep, are directly at odds with many of the characteristics of new media, which favor numerous distinct voices, participation on the part of the reader, the remixing of content, personalized reading paths, and content that can be customized and revised immediately.

Our experience with Smarthistory.org suggests that art history instruction can significantly benefit from these and other qualities of new media. The relationship between text and image is a hallmark of the traditional art history textbook but has too often had the unfortunate effect of favoring text. Readers new to art history often look to the text to explain the image and look to the image only for what has been discussed in print. With Smarthistory, we have found that we can use audio and video to facilitate close, sustained looking at an object. We can also use new media to create an art history that is open to the viewers' emotion and experience, and one that models for our students how they can wrestle with unfamiliar works of art themselves.

Although the site was designed initially for college students, we have found that informal learners and high school teachers and their college-bound students also use the site. One instructor, who teaches an advanced placement art history course wrote to us that, "this is a really poor state...kids don't get to travel much and there were less than 200 ap [advance placement] art history tests taken in my state this year and I am all about exposing rural kids to the larger world."

She continued,

> *I can't tell you how much I love your site. I am sure you read this sort of love letter every day, but I just watched the Ecstasy of St. Theresa and then wandered over to Sant'Andrea and felt like I had found a way to explain Bernini so well and connect it to what my students do every day in their own work as emerging artists.*

In another recent email, a teacher, whose students may not expect to attend college wrote,

> *What a fantastic website! I am a new art teacher at a low income, Title I high school....I stumbled upon your website from another art teacher's website and I am absolutely hooked. Every project we do is structured around art history and your videos and virtual tours have become invaluable to me! My students have never left a 5 mile radius and may never be able to travel to see some of these incredible works of art. This generation of kids needs engaging via video and I am loving the entire site. I love your virtual tours because it exposes these poor students to a way of talking and looking at things as never before-we have talked lots about how to look at art and it helps them so much to hear you all talking intellectually about art work. They have never never been exposed to that-and with an 85 percent drop out rate they may never ever have the chance to take even art history 101.*

Smarthistory is helping teachers who are not specialists in art history find strategies to make the subject accessible and meaningful to students who might otherwise not have cultural resources available to them. And for college students, the site is fast becoming an attractive alternative to the commercial textbook whose short life cycle and $100+ price tag has increasingly become a barrier.

In the United States, federal and state initiatives to explore open textbooks have been prompted by rising prices, which can be as much as 72% of tuition at public institutions. Of course, these costs are borne by college students, but they are also indirectly subsidized by the government through student loan and tuition assistance programs. At the secondary level, textbook expenses are borne directly by local municipalities. The General Accounting Office (GAO) concluded that between December 1986 and 2004 college textbook costs increased at roughly twice the rate of inflation keeping pace with tuition increases at approximately six percent annually or 186% during this period (General Accounting Office, *College Textbooks: Enhanced Offerings Appear to Drive Recent Price Increases*, 2005). The 2007 *Study on the Affordability of College Textbooks* reported that textbook prices "represent a significant barrier to access and persistence" in education (United States Department of Education, *Study on the Affordability of College Textbooks*, 2007)

The rapid escalation in textbook costs was found to be the result of changes in the market—publishers indicated the need for additional support for the increasing numbers of part-time faculty, increasing investments in technology add-ons, and the increasing pace in which new editions are introduced. According to the General Accounting Office 2005 report, 10 to 20 years ago, publishers introduced revised editions every 4 to 5 years. This practice has been significantly accelerated so that new editions are now published on a 3 to 4 year cycle. Publishers cite the need for up-to-date content as a prime motivation, but its no accident that rapidly released editions efficiently inhibit the resale market. It is not just students who struggle with the short life-cycle of the textbook, since

teachers must revise their syllabi for each new edition. Given these stresses, new models are inevitable.

The development of open textbooks and other Online Educational Resources is being supported and studied in numerous public and privately financed initiatives. As of September 2010, the OER Commons linked to more than 4,000 open resources in the humanities at the secondary level and over 5,000 resources for post-secondary learners. Unfortunately, many of these Open Educational Resources are simply text and images that have been uploaded to the web as a PDF or in other static formats. We believe that in order for open textbooks to be successful, the nature of the web and the lessons of social networks must be recognized and built into the underlying design of the OER.

We began Smarthistory.org in 2005 (figure 2). It has grown in direct response to the needs of students, their professors, and informal learners. Soon after podcasting began, we purchased a $30 microphone, plugged it into an iPod and went to the Metropolitan Museum of Art in New York to create alternative museum audioguides—something that was more accessible and personal than the scripted monologues then offered. Essentially, we stood in front of a painting or sculpture and had a spontaneous conversation. We really had no plans beyond that. We posted our unscripted (though edited) audio conversations on a blog using the Blogger interface, and after we had completed half-a-dozen or so, created a map indicating the locations of the works that we had discussed. We're not sure if anyone ever downloaded these podcasts or listened to them in the museum. However, we quickly had success in an area we hadn't anticipated.

Soon after we started the blog, we added these illustrated audio files to the art history courses we were teaching online (the second half of the Western survey and Modern art). Student response was immediate and very positive. Our students loved the conversations and told us that our little experiment really helped them learn. So, in addition to focusing on more museum content, we began to record audio conversations about canonical monuments taught in the courses we were teaching. Soon, students in our face-to-face courses were also listening to our audios. Our next step was to create simple videos—assembling images in a Powerpoint, and then recording conversations with screen capture with programs like Camtasia. Sometimes we recorded conversations with a third or even a fourth colleague. After creating a few dozen videos and audios, we realized that it would be beneficial to put them into a chronological and stylistic framework, and so the first Smarthistory site was born **(Figure 3)**. By this time we were using Wordpress and we were able to use its pages functionality with an out-of-the-box template, to organize our material chronologically and by style. Student feedback has been consistently and overwhelmingly positive.

Here's an example:

The videos help me a lot! I find it easier to retain the info[rmation] from the videos as opposed to reading several pages about the topic. It's definitely easier for me to focus on the visuals while listening to the descriptions at the same time. They are a definite reinforcement—

We also took a hard look at the photographs that illustrate art history texts, which tend to frame objects against black backgrounds, view altars straight on from unacknowledged scaffolding or in churches emptied of the visitors that bring the art to life. We use these images in Smarthistory, but wherever possible, we make a point to pair them with contextual images and now video that reveal the object as it is normally seen, surrounded by tourists, worshippers, and museum guards. For our

video on Picasso's *Still Life with Chair Caning*, we included photographs of oil cloth, chair caning and cafe tables which we think make the work more relevant to our students. We also link to Flickr images that our visitors submit. This combination of snapshots with more pristine monument images give our students valuable contextual information as well as a sense of the work of art as it is experienced in the early 21st century, as an object in their world.

Thanks to generous support from the Samuel H. Kress Foundation, we completely redesigned Smarthistory.org during the summer of 2008 to more closely align its content and user interface. (Figure 3) The new structure allows students to approach the narratives of art history using any of several embedded navigation paths. These include artists' name, historical period, style, theme, or even by using the prominent visual navigation that keeps the artwork front and center (this appears both on the home page and at the bottom of each object page). Smarthistory.org is among the few open educational resources that uses the capabilities of the web for non-linear, multimedia learning. We continue to reinvent Smarthistory.org, listening and responding to the needs of users and to new opportunities.

We have been fortunate to work with Dr. Elpida Makriyannis, a researcher from OLnet, an Open University and Carnegie Mellon University research initiative funded by the William and Flora Hewlett Foundation. Dr. Makriyannis is particularly interested in how OERs are used and late last year, she developed a survey that we linked to from the Smarthistory.org homepage. Her analysis of the results offered found that respondents consider the quality of the site's content to be quite strong. (84.8% rated the quality as excellent or very good). Respondents identified personal interest as the primary reason for using the site, this was followed by college instructors who use it in their teaching and then by students in college. Slightly more than half of the students who responded said they used it even though it was not assigned by their instructor, suggesting that the website offers something valuable beyond textbook readings (based on Google Analytics statistics, it is clear to us that the few college students who did respond represent a significantly larger number who did not). Smarthistory's interactivity and accessibility were cited as important strengths as was the use of conversation. When instructors were asked why they have not assigned Smarthistory, insufficient breadth of material was the most commonly cited issue. Though gaps still exist, we have made significant strides in addressing this concern by adding a substantial number of additional pages. The lack of non-Western material was also a specific concern.

Smarthistory currently treats fewer than 300 works of art and architecture though it is continuously growing. We are particularly aware that we have not addressed non-Western art and have sought to remedy this. To date, twenty-three curators, museum educators, and professors have contributed content. We have reached out to other art historians and museum professionals seeking additional material but because hiring, tenure and promotion committees are only starting to recognize the value of online publishing, those scholars who do contribute, do so primarily because they believe in the value of our project. It is important to note that, at least in the United States, authoring a textbook is often devalued and not seen on par with research. We are actively looking for partners and we are interested in sharing what we have developed with colleagues.

We know that Smarthistory is currently used as a substitute for the textbook, but Smarthistory needs more content. We believe that educating faculty about creative commons licensing, making contributions to OERs part of the tenure and promotion process, and making it easy for faculty to share the content they are developing for their courses (currently for the closed environment of the learning management system) is the key to the growth of Smarthistory and other OERs. In addition,

the chilling effect around copyright of images, especially for the discipline of art history, should not be underestimated. The model we have developed, of a repository that supports a freshman survey course, relies on voluntary contributions, and that runs so cheaply it requires no institutional investment makes Smarthistory a model for sustainable other Open Educational Resources in the humanities.

Figures

Figure 1 - Dr. Elpida Makriyannis, Key points of the Smarthistory interview, Smarthistory.org OLnet Research Stream (source: http://olnet.org/node/92)

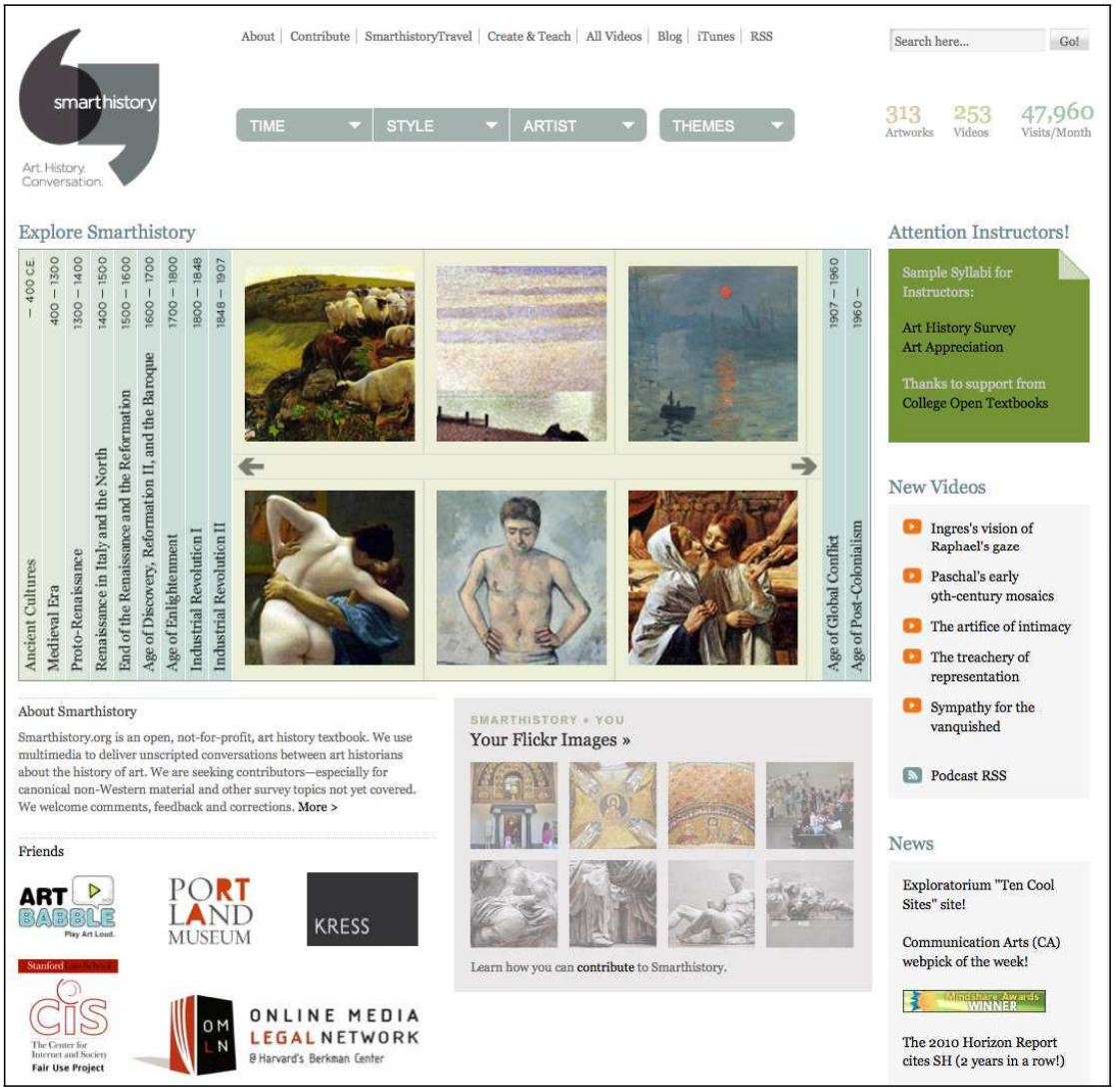

Figure 2 - Smarthistory.org home page

Bibliographic references

United States General Accounting Office (July 29, 2005). *Report to Congressional Requesters: College Textbooks: Enhanced Offerings Appear to Drive Recent Price Increases*. Retrieved October 17, 2010 from: http://www.gao.gov/products/GAO-05-806

United States Department of Education, Advisory Committee on Student Financial Assistance (May, 2007). *Study on the Affordability of College Textbooks. Turn the Page: Making College Textbook More Affordable*. Retrieved October 17, 2010 from: http://www2.ed.gov/about/bdscomm/list/acsfa/edlite-txtbkstudy.html

About the authors

Dr. Beth Harris

Founder and Executive Editor, Smarthistory.org.

Dr. Beth Harris is Director of DIgital Learning at a NYC museum. Before that, she was assistant professor of art history at the Fashion Institute of Technology, where she taught both online and in the classroom. She also directed FIT's large distance learning program. She has presented papers on instructional technology at conferences across the country (including the College Art Association, New Media Consortium, Educause, Merlot, etc.). Dr. Harris has authored essays on teaching with image technology including "The Slide Library: A Posthumous Assessment in the Service of Our Digital Future," *Teaching Art History with Technology: Case Studies* (2008).

633A President Street
Brooklyn, NY
11215 USA
beth.harris@gmail.com

Dr. Steven Zucker

Founder and Executive Editor, Smarthistory.org.

Dr Steven Zucker is Chair of History of Art and Design at Pratt Institiute. Previously, he was dean of the School of Graduate Studies at the Fashion Institute of Technology, State University of New York as well as chair of their art history department. He has taught at The School of Visual Arts, Hunter College, and at The Museum of Modern Art. Dr. Zucker is a recipient of the SUNY Chancellor's Award for Excellence in Teaching. With Dr. Beth Harris, he created Smarthistory.org and organized two conferences, "Small Tools/Big Ideas: a conference on the discipline-specific technologies reshaping the practice of teaching art and art history," and "Beyond the Slide Library: Digital Media in the Art and Art History Classroom."

10 Woodbrook Road
Pleasantville, NY
10570 USA
drszucker@gmail.com

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Business Models in OER, a Contingency Approach

Dr. Anne Helsdingen,* Ben Janssen, M.A.,* Dr. Ir. Stefan Schuwer*
* Open University of The Netherlands.

Abstract
We will present an analysis of data from a literature review and semi-structured interviews with experts on OER, to identify different aspects of OER business models and to establish how the success of the OER initiatives is measured. The results collected thus far show that two different business models for OER initiatives exist, but no data on their success or failure is published. We propose a framework for measuring success of OER initiatives.

Keywords
review, interviews, Open Educational Resources, business models

Recommended citation:
Helsdingen, A.; Janssen, B.; Schuwer, S. (2010). Business Models in OER, a Contingency Approach. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy]. <http://hdl.handle.net/10609/5039>

Introduction

Open Educational Resources encompass a wide set of resources – e.g., learning materials, courseware, software tools, educational services and support – that are freely shared within an educational community. There are many ways to do so, in terms of underlying technology, development, maintenance, support, and funding schemes. Downes (2007) provides an overview of these diverse models for funding, technical, content and staffing. But although several case studies and other reports on OER initiatives have been published (e.g., Caswell, Henson, Jensen & Wiley, 2008; Smith, 2009), it seems that sustainable OER business models have yet to take shape (Stacey, 2007; Smith, 2009).

This study focuses on analyzing some of the current OER initiatives according to the Canvas model of Osterwalder & Pigneur (2010). This model identifies 9 building blocks: a) value proposition, b) customer segments, c) customer relationships, d) channels, e) revenue streams, f) key resources, g) key activities, h) key partnerships and i) cost structure. Furthermore, we systematically review the literature on OER, focusing on a) which (case) studies exist that measure effects of OER, and b) what performance indicators, are used in these studies.

Method

Interviews

Semi-structured interviews (see e.g., Lindof & Taylor, 2002) were conducted with 10 experts, all participants in the Open Courseware project.[1] These interviews were videotaped for analysis afterwards. In these interviews, answers to the following questions was sought:

1. What type of OER are offered?
2. Why do you provide OER?
3. How do you develop the OER?
4. How do you support or maintain the OER?
5. How do you deliver OER to your customers?
6. Who are your customers?
7. How do you interact with your customers?

8. How do your customers value your products?
9. How are the OER embedded in your organisation?
10. Are there partners involved in the development or delivery of OER?
11. What are the life-cycle costs of the OER?
12. How do you finance the OER?
13. Do the OER generate revenue?
14. What are the costs of NOT providing OER (e.g. missed opportunity in sales of regular products, consequences of lower ranking image)?

Additional information on each of the initiatives was collected from their websites.

Literature review

For the systematic review on OER, a computer search was conducted on the internet database Scopus using search term Open Educational Resources as keyword. The search resulted in 32 hits. These search hits were imported in Excell. Studies that evaluated impact, effect or use of OER were selected from these. On the basis of the abstracts of these 32 references only 11 met the selection criterion. The selection did not include any publications before 2007.

Results

Interviews and Internet search

Information from the interviews (http:// http://dspace.ou.nl/simple-search?query=helsdingen&submit=Go) and websites of the organizations, is structured according to the 9 building blocks of the Canvas. But first, the goals and ambitions of the initiatives are stated.

Goals

The organizations state a variety of reasons for delivering OER, and even within an organisation, different departments can have different reasons to offer OER. However, we can distinguish four major goals that the organisations want to reach with their OER:

Enhance their reputation: to attract new students, to generate funding, to be able to start fruitful collaborations with other institutes.

Support students and researchers: offer easy ways for finding information, to stimulate collaboration between departments, to offer future students good insight in what can be expected from fee-based programs.

Enhance the quality of their education: using innovative technology, creating collaborative and open learning environments, and open distribution means teachers are encouraged to enhance the quality of materials, use the input from outside the institutions for enhancement of materials.

Share knowledge: provide self-learners, alumni and others with access to the knowledge resources of the institute, create new insights and develop new approaches for education collaboratively in the open learning environment.

Value proposition

Three types of propositions can be distinguished: a) materials that may serve as building blocks for developing courses and courseware, b) introductory courses or parts of a course meant to provide insight into a complete course or that is additional to other (closed) course material, or c) complete courses that can be taken, including online interactive sessions with peers, but with minimal teacher feedback or support. Sporadically, feedback from a coach or teacher was provided to learners in the open course. None of the initiatives listed here provide accredited diplomas or certificates for their open courses.

Customer segments

Several classes of customers are identified. The largest group, for most of the initiatives listed in table 1 (http://dspace.ou.nl/simple-search?query=helsdingen&submit=Go), are self-learners. These may be people that, as stated by Patrick McAndrew,[2] are looking to connect to other people with the same interest. At the University of California at Irvine, for example, there is a group of people studying materials on gifted children that have now formed an online community. As not all initiatives provide tools for social networking, however, there are also individual learners just working through the materials. A second group of customers is formed by students that are enrolled in fee-based programs at a college or university. These students may be distributed and thus more efficiently reached or they use the open materials in addition to the closed materials of the fee-based program. The third largest group is educational professionals, using the open materials for developing or enriching their own courses.

Looking at table 1, some other types of customers can be identified, such as special needs or disadvantaged groups, or people without access to on-campus programs, but whether these are reached remains unclear. MIT OCW statistics, for example, show that their audience comprises of 42% students, 43% self-learners, 9% educators and 6% other.[3] From these statistics, special needs groups cannot be distinguished from the self-learners.

Customer relationships

We can roughly identify two types of relationships: one-way content-push relationship and the everyone-contributes relationship. The content-push relationships sometimes have a secondary aim to market fee-based programs to their customers. Although they solicit feedback from their customers, no real collaboration or input is sought for developing or adapting the materials that are offered. In everyone-contributes relationships the customer is also contributing to the materials. Here, marketing of fee-based programs is less common, although Wikieducator has set up a mirror site to advantage fee-based services, and Flatworldknowledge advertises print-on-demand books. The materials published on e.g. Wikieducator or Connexxions are not reviewed by the organization, but the identity of the developers and of people that contribute to the materials is published.

Channels

Most OER are offered through a dedicated website. The organizations that also offer fee-based programs usually have a link from their homepage to the OER website. Some organizations now offer web 2.0 tools for social networking and community building, however, only two organizations have integrated these tools in their courses in the sense that working within a virtual group is a requirement of the course.

Many, but not all, organizations have their courses being listed in courseware databases (OCW finder, Connexxions, Merlot).

Revenue streams

Most of the organizations rely on foundation or government funding and are not actively seeking for (financial) revenue from their OER activities. Although they indicate that enhancing their reputation by providing high-quality OER may generate more funding. For some, revenue might be expected from transfer into fee-based programs or products, although not many organizations promote that transfer. UCLA at Irvine presents information on whether the free course can also be taken for a credit and thus directs learners who are interested in accreditation to their fee-based program. They also target their marketing of fee-based courses at specific communities that have emerged around an open collection. Similarly, Flatworldknowledge presents its fee-based products next to free offers, thus generating continuous attention for these. MIT OCW has, apart from its' request for donations, integrated revenue generating activities in its open courseware materials: All reading materials have a link to a retail website that sponsors MIT OCW for each sale it thus makes.

Other approaches for creating revenue are requesting micro-contributions from individuals, or offering fee-based services, although not many organizations have implemented such schemes successfully. Wikiwijs has a different strategy in that offers access to open and closed content, thus generating interest from vendors/ distributors of closed educational materials. This interest results in collaborations with commercial parties and may thus generate revenue.

Apart from the financial revenues, organizations expect to generate revenue that is not directly expressed in money: Better quality learning materials, more co-operation with other institutions, reducing number of drop-outs among students of the first year fee-based programs, to name the most mentioned.

Key resources

The key resources are mainly the individual teachers or faculty members at the universities and educational institutes that are asked to develop their courseware for self-study and open online access. Staff for audiovisual support, e-learning expertise, or legal issues are usually associated with a small centralized services desk. For the organizations such as Connexxions, Wikieducator or

Flatworldknowledge, the key resources lie outside their span of control, i.e. they are dependent on individuals who are contributing in their personal capacity.

Key activities

We can distinguish between three types of activities: a) digitizing existing courses and course materials, b) making digitized materials suitable for self-study and free distribution, and c) creating an active community that uses and contributes to the open courseware. Educational institutes are mainly involved in the first two activities, although the StOER initiative is also focused on creating an active user-community because some of its open content is organized around that community. For organizations such as Wikieducator, Connexxions, Wikiwijs and Flatworldknowledge, the main activities involve creating an active user and contributor community.

Key partnerships

Many of the initiatives in table 1 are single institute activities, sometimes with support of institutions that are more experienced in OER or e-learning. An example of the latter is the support of MIT for the UOC OCW initiative. Few collaborations exist, but mainly at the level of exchange of ideas (TU Delft & OU NL), and not many in collaboratively developing OER.

Cost structure

The costs for creation and distribution of open online educational materials are high, estimates vary from 10.000 to 150.000 euros per course (Johanson & Wiley, 2010). Cost drivers in this process are the man-hours involved in digitizing text-based materials, creating courses that are suitable for self-study, and making video or audio podcasts. These fixed costs differ for the initiatives listed in table 1. Distance-learning institutions already have most of their materials digitized and suitable for self-study, but regular universities often have to start from scratch. Although often not counted in their costs, their major cost drivers are the teachers having to adapt all their materials for online publication, followed by the support from some centralized educational office in legal, audiovisual and other services. It is the latter that seems often solely accounted when costs are regarded. For organizations that rely mainly on contributions from individuals, such as Wikieducator, the fixed costs are very low. Typically, a staff of 2 can manage day-to-day business.

Variable costs are usually lower for OER, because most organizations do not provide any services to their customers other than the content. Thus, it requires only updating of materials and maintaining the website. In the community based initiatives, such as Wikieducator or Wikiwijs, the costs for updating, maintaining, reviewing and adapting materials, as well as providing feedback, coaching and support, is distributed among all individual contributors. The only variable cost left for the distributor is cost for data- storage, website support and maintenance.

Literature review

Table 2 (http://http://dspace.ou.nl/simple-search?query=helsdingen&submit=Go) presents an overview of the outcomes obtained in the recent literature on OER. Many of the 11 studies that covered specific OER effects measures or case evaluations, focused on capturing the user experience. Performance measures identified in these studies are, e.g., ease of use, re-use behaviours, attitude towards specific OER elements, formation of communities. Other issues that are assessed in the listed studies are the costs of OER development, and revenue generated by OER. There we no studies that focused on evaluation of the learning value of OER and impact of OER on distribution of knowledge in society. Therefore, we also studied the websites of all the initiatives listed in Table 1, to identify whether evaluation data were published there.

Many OER providers keep track of website statistics: amount and origin of visits, what they download, and so forth. The OU collects data on the amount of students they attract through the Openlearn initiative for their fee-based program. Also, anecdotal evidence for customer satisfaction and successes is collected in the form of personal stories from customers, and examples of efficient re-use of materials. The UCLA at Irvine also gathers data on their reputation in terms of Internet presence (ranking at search engines, # websites linking to their pages) and occurrence in regular press. However, establishing whether other goals are reached, such as whether or not the open educational materials are of better quality than closed materials, or whether drop-out rates of first year students in the fee-based programs are lower as a result of the OER provided, is not often established.

Discussion

This study focused on investigating OER initiatives using the analysis model of Osterwalder & Pigneur (2009). We have conducted interviews, reviewed literature and searched on the Internet to collect information on the business model of the various initiatives. Although the initiatives differ on many aspects, using this model we can distinguish two different groups of OER initiatives.

The first group focuses mainly on pushing OER content on their website as a service for students, self-learners and educational professionals. These organizations do not have OER at the core of their business plan, but rather offer OER as an addition to their regular business. They are mainly involved in digitizing their educational materials, and making them suitable for self-study and open access publication. Their focus is on enhancing their reputation and offer support to students and researchers. Because they have little interaction with their users and only few of these type of organizations offer social software tools, they do not seem to be interested to use the community for establishing collaborative learning environments, or for reviewing /revising published learning materials.

In their aim to share knowledge and enhance the quality of learning, they may not be as successful as they hope to be. First of all, they do not seem to adapt their proposition to specific customers. Many of the OER courses are adaptations from fee-based courses, thus giving the impression that the special needs of self-learners, or disadvantaged groups, have not been considered in the development of the OER. Maybe this is because they lack knowledge: Apart from

some rough demographical data, many are not collecting details on the learning needs of their customers. Secondly, many of the OER are content oriented, instead of organized to create meaningful learning experiences for the learner. Thirdly, the open learning environment that these organizations have created provide little or no feedback to learners, other than worked out examples that they can use to verify their own solutions. With respect to their ambition to share knowledge, the lack of interaction with their customers in the creation and adaptation of OER suggest that these institutions are not so much sharing but rather giving away.

Revenues generated by these organizations usually are government or foundation funding and transfer to fee-based programs, although not many seem to actively promote this transfer. They usually offer the OER in a dedicated, separate website, and they do not have smart teasers or interactive webtools integrated in their OER presentation to seduce users to look at fee-based programs.

The second group of OER initiatives are organizations that are dedicated to creating and servicing a large community of contributors and users of OER. Their business model is built around the OER. These organizations' primary activity is to realize a web-environment and active community in which developing, sharing, adapting and finding OER is facilitated and encouraged. Their goals seem to be to share knowledge and to enhance the quality of learning materials. However, they often lack a vast knowledge base, do not employ course developers, teachers or researchers, and thus are dependent on the contributions of independent individuals. The materials offered are very diverse: They range from complete language courses to small learning objects such as pictures. They usually do not have an official peer-review procedure although some form of quality control may emerge from the virtual community using and adapting materials. The organizations are actively seeking input from their visitors, offer tools for OER development, facilitate search for OER is facilitated and re-use of materials is encouraged. Even training programs and workshops are organized to teach users how to create OER. However, support in the didactical aspects of the OER is somewhat lacking: The OER are often content-oriented, and only sporadically materials are found that present meaningful activities to learners. In the latter case, feedback is usually provided by peers. Thus, although sharing and interaction may result in large amounts of materials offered, frequent revisions and reviews, the quality of materials and learning experiences cannot always be guaranteed.

Revenues generated by these websites are mainly government or foundation funding, although schemes such as crowdfunding, promoting fee-based services or materials are increasingly implemented. Nevertheless, because these initiatives thrive on individuals contributing in the personal capacity, their costs of operation are much lower than for the other group of organizations.

Our review of literature showed that effect or impact evaluations are rare, and mainly focus on user experiences, not on societal impact or learning effects. Therefore, for establishing whether the analyzed initiatives are successful we propose performance indicators as listed in table 3. These are translations of the identified goals into desired effects for which performance indicators can be defined, formulated in such a way that data on them can be collected on the basis of observation of 'going concern'. This is similar to the pre-existing-control-transfer method (Campbell & Stanley, 1963) where performance data from the older group can be compared to data of performance by the new group who were educated with the new technology.

Conclusions

Two different groups of OER initiatives can be distinguished: those that have OER as an addition to their regular activities, and those that are centred around OER. They differ on their ambitions, and many other aspects, however, we have not found differences in the success of these types of initiatives. This is partly due to the fact that not many impact or effects studies are published. For follow-up we propose a framework for measuring success based on performance indicators that are derived from the ambitions of the OER initiatives and formulated such that measurement is relatively easy.

Acknowledgements

This research was made possible by a grant from the Directorate Learning and Working, established by the Dutch Ministry of Education, Culture and Science and the Ministry of Social Affairs.

Tables

Goal	Desired effect	Performance indicator
Enhance reputation		Rank
	Attract new students	Mutation in growth percentages of new students per year
	Generate funding	Success rate of proposals
	Collaborate with other institutes	Mutation in growth of # of collaborations
Support students & teachers	Offer easy ways of finding information	User evaluations
	Collaboration between departments	Mutation in growth of # of collaborative projects
	Offer insight in fee-base program for future students	Difference in first-year drop-out rates between programs with open content and programs without open content
Enhance quality of education	Better quality materials	Expert evaluations Average revision cycle for learning materials
	Better learning experiences	Compare student results of fee-based programs that provide open content with student results of programs that only offer closed content.
Share knowledge	Educate self-learners	# of self-learners # virtual communities active on a subject
	Support alumni	# of alumni website visitors # of active alumni
	Creation and innovation in collaboration	# of adapted materials # of contributions from individual learners # of discussion groups, or other virtual communities

Table 3: goals, desired effects and performance indicators for the success of OER. Note: The data on number of new students, or number of collaborations need to be related to the average growth that has been observed in these numbers during the years that no OER were available, or they need to be compared to growth numbers of other departments that are similar but do not offer OER.

Notes

1. Open courseware project is a collaboration of higher education institutions and associated organizations from around the world creating a body of open educational content using a shared model. See http://www.ocwconsortium.org/aboutus
2. see interview at http://http://dspace.ou.nl/simple-search?query=helsdingen&submit=Go
3. http://mit.ocw.edu/ans7870/global/09_Eval_Summary.pdf

Bibliographic references

Abelson, H. (2008). The creation of OpenCourseWare at MIT. *Journal of Science Education and Technology, 17*, 164-174.

Campbell, D.T. & Stanley J.C. (1963). *Experimental and Quasi-Experimental Designs for Research*. Chicago, Illinois: Rand McNally & Company.

Caswell, T., Henson, S., Jensen, M., Wiley, D. (2008). Open educational Resources: Enabling universal education. *International Review of Research in Open and Distance Learning*, 9, 1-11.

Dinevski, D. (2008). Open educational resources and lifelong learning. *Proceedings of the International Conference on Information Technology Interfaces, ITI*. 117-122.

Dos Santos Ferreira, G.M. (2009). New spaces, new tools, new roles: Two case studies on the impact of open educational resources. *International Journal of Learning,16*, 273-286.

Downes, S. (2007). *Models for Sustainable Open Educational Resources. International Journal of Knowledge and Learning Objects*, 3, 29-42.

Hilton III, J., Wiley, D. (2010). Free: Why authors are giving books away on the internet, *TechTrends, 54*, 43-49.

Johansen, J., Wiley, D. (2010, in press). A sustainable model for OpenCourseWare development. *Educational Technology Research and Development*, 1-14.

Lee, M. M., Lin, M.-F.G., Bonk, C.J. (2007). OOPS, turning MIT opencourseware into Chinese: An analysis of a community of practice of global translators. *International Review of Research in Open and Distance Learning, 8*.

Manisha, Bandyopadhyay, T. (2009). A case study on content sharing by leveraging Open Educational Resources framework. *International Workshop on Technology for Education, T4E'09*, 116-119.

McGrath, O.G. (2009). Analyzing usage in a large coursecasting service: Issues & strategies. Proceedings of the 2009 ACM SIGUCCS Fall *Conference*, 139-141

Millard, D.E., Howard, Y., McSweeney, P., Arrebola, M., Borthwick, K., Varella, S. (2009). Phantom tasks and invisible rubric: The challenges of remixing learning objects in the wild. *Lecture Notes in Computer Science, 5794 LNCS*, 127-139.

Osterwalder, A., & Pigneur, Y. (2010, in press). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers.* From (13-05-2010): http://alexosterwalder.com/index.html and http://www.businessmodelgeneration.com

Petrides, L., Nguyen, L., Kargliani, A., Jimes, C. (2008). Open educational resources: Inquiring into author reuse behaviors. *Lecture Notes in Computer Science, 5192 LNCS*, 344-353.

Smith, M. S. (2009). Opening Education, Science**,** 323, 89 – 93 DOI: 10.1126/science.1168018

Stacey, P. (2007). Open educational resources in a global context. *First Monday*, 12. From (14-05-2010): http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1769/1649

Wenk, B. (2010). Open educational resources (OER) inspire teaching and learning. *IEEE Education Engineering Conference, EDUCON 2010*. Pp. 435-442.

Wilson, T. (2008). New ways of mediating learning: Investigating the implications of adopting open educational resources for tertiary education at an institution in the United Kingdom as compared to one in South Africa. *International Review of Research in Open and Distance Learning, 9*.

About the authors

Dr. Anne Helsdingen

Open University of The Netherlands.

Researcher at Centre for Learning Sciences and Technologies, Open University of The Netherlands, Heerlen.

Open Universiteit
Valkenburgerweg 177, Heerlen
The Netherlands
anne.helsdingen@ou.nl

Ben Janssen, M.A.

Open University of The Netherlands.

Senior Advisor to the Executive Board of the Open University of The Netherlands, Heerlen.

Open Universiteit
Valkenburgerweg 177, Heerlen
The Netherlands
ben.janssen@ou.nl

Dr. Ir. Stefan Schuwer

Open University of The Netherlands.

Associate professor at the Open University of The Netherlands.

Open Universiteit
Valkenburgerweg 177, Heerlen
The Netherlands
Robert.Schuwer@ou.nl

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Building Capacity in Developing Countries:
OER for Food Safety

Gwyn Heyboer,* Sunnie Kim, Leslie D. Bourquin,*** Deepa Thiagarajan******

* Senior Instructional Designer/Project Manager, MSU global, Michigan State University

** Creative Technology Strategist, MSU global, Michigan State University

*** Professor of Food Science and Human Nutrition and Extension Food Safety Specialist Department of Food Science and Human Nutrition, and National Food Safety and Toxicology Center (Michigan State University)

**** Assistant Professor, Institute of International Agriculture, Michigan State University

Abstract

The Food Safety Knowledge Network (FSKN) was developed through the collaboration of Michigan State University and a professional network of international food industry retailers and manufacturers. The key objective of the FSKN project is to provide technical resources, in a cost effective way, in order to promote food safety in developing countries and for small and less developed companies. FSKN uses a competency based model including a framework, OERs, and assessments. These tools are being used to support face-to-face training, fully online training, and to gauge the learning outcomes of a series of pilot groups which were held in India, Egypt, and China.

Keywords

OER, open education, resources, food safety, competency framework, online training, assessment

---

Recommended citation:

Heyboer, Gwyn; Kim, Sunnie; Bourquin, Leslie D. et al. (2010). Building Capacity in Developing Countries: OER for Food Safety. In *Open Ed 2010 Proceedings* . Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4841>

---

1. Introduction

At Michigan State University, considerable effort has been directed at new ways to address global issues in agriculture, especially to improve food safety and to increase access to markets for developing countries. We have developed a model centered around open educational resources and the use of mainly open software tools that focuses on solving an issue critical to consumers, industry, and higher education. Our goal is to find a purposeful and sustainable approach to openness that targets established communities around a practice. This model directs content that is focused on the dissemination of best practices to address the growing need for individual competency understanding at the food manufacturing level.

The Partnership of Food Industry Development (PFID), located in the College of Agriculture and Natural Resources at Michigan State University, and MSUglobal have teamed with industry partners and foundations to support the Food Safety Knowledge Network (FSKN) project which focuses on training, information sharing, and capacity building in developing countries. This project is generously funded by the Hewlett Foundation and USAID.

To date, FSKN has accomplished the following activities:

Brought together industry experts from around the world to develop a competency framework for Basic Level Requirements for Food Manufacture.

Developed and aggregated resources aligned with the 13 key areas outlined in the competency framework. These resources have been submitted by various content partners as well as created from training events that have taken place in India, China, and Egypt.

Developed a competency-mapping tool using Creative Commons' DiscoverEd search tool and Drupal content management system to align resources with the competencies.

Worked with international experts to develop a bank of test items assessing the 13 competency areas. These test items were rigorously reviewed and used for pre- and post-assessments for online and face-to-face trainings.

Piloted the model (competency framework, assessments, and resources) through online and face-to-face trainings in developing countries.

2. Project Details

The FSKN project is based on a competency model including a framework, OERs, and both pre- and post-assessments. FSKN gives participating suppliers the opportunity to achieve higher levels of food safety which in turn could ultimately allow suppliers to gain certification to the Consumer Goods Forum – Global Food Safety Initiative (GFSI) recognized schemes. The core of the project was initially based on a document developed by the Consumer Goods Forum - Global Markets Working Group titled "Basic Level Requirements for Food Manufacture," that defines

characteristics food manufacturers should follow in order to obtain food safety certification. In May of 2009 members of the Consumer Goods Forum - Global Markets Working Group and MSU faculty members approved a list of 13 basic level requirements for food manufacturers called Core Level 1 (see figure 1) which captures 30 percent of the requirements outlined in the Basic Level Requirements for Food manufacture document.

Competency Framework

The Food Safety Knowledge Network Pilot Group, jointly led by the GFSI and Michigan State University (MSU), began the development of competencies of individuals (those responsible for food safety management systems within their organizations) based on Core Level 1. From December 2008 to January 2010 stakeholders held several meetings to develop the competency statements for each basic level requirement. The stakeholder group included faculty, government representatives, and private industry experts in the area of food safety. The initial meeting was held over two days in February of 2009 in Amsterdam and included six individuals, as well as a moderator from Michigan State University. The competency statements were further reviewed by the group online. In March of 2010 the statements were again reviewed by the GFSI technical working group which consisted of industry experts.

Learning Resources/OER

A flexible, yet sustainable approach for developing learning resources was directed by the MSUglobal team of online learning experts and instructional designers. This team developed a procedure document for developing OERs in order to streamline the content development process. One challenge for the designers was the need to develop resources that could be used as a stand-alone resource or as part of a full course of learning modules since some learners would only need to find resources on a specific topic area. The content also had to be in several formats in order to provide access to those with variations of connectivity to the Internet.

The first learning resources were derived from a workshop offered in Chennai, India on food safety. The presenters in the workshop offered the pre-assessment, presentations on each competency area for Core Level 1, and a post-assessment. The lectures were recorded using the software programs of Camtasia and Relay allowing for immediate output types including PowerPoint, video, and an audio file. The PowerPoint slides were made available as PDF files and open office documents. Training manuals and transcripts were also developed from the workshop resources. The resources were initially produced in English but were later translated into Mandarin Chinese and Arabic for specific pilot groups.

Additional content for supporting the competencies was researched by the MSUglobal team and reviewed by food safety experts. Resources were found from other universities and non-governmental organizations that aligned with the Core Level 1 competencies. The search for additional content is ongoing.

Assessments

Test items were created for each competency statement for Core Level 1. Four industry experts were trained by a Michigan State University researcher on how to develop quality test items. They developed at least four test items for each competency statement. Once a first draft of the test items were created, they were internally reviewed and randomly selected for a pre- and post-assessment. Each assessment consisted of approximately 130 test items in addition to 10 demographic questions.

Members of the FSKN team held a face-to-face training in September of 2009 where lectures were given based on the competencies for Core Level 1. The first draft of the pre- and post-assessment were administered to the participants. After the workshop the items were analyzed and modifications were made to any test items that did not fit the criteria of the FSKN team. Based on the results, changes were also made to the lectures.

Competency Mapping Tool

While the competencies and assessments were being developed, another team including individuals from MSUglobal and the Michigan State University Virtual University of Design and Technology (vuDAT) were designing the technical aspects of the project including a central web site. Together they created an online framework to support the learning resources and competencies, which was based on open source technology. The goal of the site was to map OER resources to the competency framework and also integrate the Creative Commons DiscoverEd search tool. The FSKN site is found at: http://foodsafetyknowledgenetwork.org.

Drupal was selected as the content management software package for developing the FSKN site since it has a large community of developers and many custom applications to choose from. However, Drupal did not offer a way to map the learning resources to a competency mapping tool. As a result, programmers from vuDAT created an open source module that allows users to correlate content to specific competency in a framework: http://foodsafetyknowledgenetwork.org/correlate. The competency framework module was designed so that a team of subject matter reviewers could easy view any learning resources that would need to be correlated to a specific competency.

The FSKN team envisions the Food Safety Knowledge Network site as a long-term training solution to challenges found in specific sectors of the food industry in relation to food safety. As the project continues to evolve, additional resources will be mapped to the competency framework. In order to improve the findability of resources, the Creative Commons' DiscoverEd open source search tool was built into the site. The DiscoverEd tool allows users to have advanced searching capability allowing for search results from selected curators. It also allows for specific metadata to be shown with the results. Custom code was developed in order to integrate DiscoverEd and Drupal and required both an RSS feed and Open Architecture Index (OAI) tools which pull resources from web sites that support specific competencies. For any organization that does not want to implement OAI on their site, MSUg will upload the content to a site that does use OAI.

Pilot Groups

Five pilot groups collaborated with the Food Safety Knowledge Network for training resources and assessments. The pilot groups allowed the FSKN team to develop content, test the pre- and post-assessment instruments, and also introduce the competency framework to the food safety industry. The pilots used both face-to-face and online materials and allowed for the translation of some resources into Mandarin Chinese and Arabic.

1. **India :** The first pilot program was part of a three-day food safety training in Chennai, India in September of 2009. The workshop consisted of 74 participants from 25 companies and 6 public sector organizations. Participants completed a paper version of the pre-assessment. After the pre-assessment they listened to two days of lectures specifically developed to coincide with the Core Level 1 competencies. At the end of the workshop the participants completed a post-assessment. The assessment forms were brought back to Michigan State University for scanning and analysis. The lectures from the workshop were electronically captured using Camtasia and Relay in order to create online resources that supported the competency framework. The resources from the workshop were made available online: http://fskntraining.org/training/basiclevelchennai.
2. **India:** A large, private wholesale food retailer in India, Metro Cash and Carry, was the source for the second pilot program. This pilot consisted of a completely online training program. Participants were required to take the pre-assessment online within a two week time frame. Next, they had two months to review resources relating to the specific competencies. The learning content consisted of recorded lectures from the first pilot in Chennai, India and the lectures were uploaded in a linear framework to a content management system. Participants were able to choose which resources they needed to review and resources were available in a variety of formats including flash video, audio, PPT, and PDF. Participants could also request a CD of the resources. At the end of the pilot the participants had two weeks to complete the online post-assessment. This training was held from September 2009 through December 2009 and included 63 participants.
3. **Egypt:** The third pilot, located in Cairo, Egypt, was a face-to-face training session of 36 participants in November of 2009. This training session was held in partnership with the United National Industrial Development Organization and Macro with the goal of educating potential suppliers for Macro. This pilot included a train-the-trainer approach where eight trainers were taught by one subject matter expert. At a later date, the trainees gave the lectures to the workshop participants. For this training, the learning materials from the workshop held in Chennai, India were translated into Arabic.
4. **India:** The fourth pilot was held completely online for TaTa Tea which is the world's second largest distributor of tea. This pilot was run similarly to the Metro Cash and Carry pilot however; it was used as an internal training program for their employees. The pilot consisted of 29 individuals.
5. **China:** The fifth pilot was a face-to-face training held in Shanghai, China in November of 2009. It was a four-day program developed by FSKN team members for Coca-Cola employees which included bottlers, suppliers, and sub-suppliers. The training consisted of the same learning materials and assessments as previous pilots; however, the content was translated into Mandarin Chinese. The training also included additional lectures on Good Manufacturing

Practices (GAP), Good Manufacturing Practices (GMP), Hazard Analysis and Critical Control Points (HACCP), Food Safety Management Systems (ISO 22000:2005), and PAS 220:2008. There were 142 participants in the training. All of the resources were recorded and made available online. Participants were encouraged to introduce their co-workers and employees to the FKSN program so they would have the option of going through the content at their own pace (http://fskntraining.org/training/coca-colafoodsafety09).

All of the pilot programs demonstrated effectiveness of the nearly 90 training resources developed through the FSKN pilots. There was a 6-16% increase in score between the pre and post-assessment. The pilot members did vary by experience, education level, and previous training. Those with the lowest scores on the pre-tests showed the most improvement. The online learners preferred the audio files resources when compared to video. Since the materials were developed in an open format they were easily adaptable into different languages. Currently, the resources are freely available and are being used by individuals in the food industry.

3. Discussion

Over the past two years the FSKN team has made significant progress in improving the availability of online, open resources relating to food safety. Some achievements include the development of over 100 competency statements, the creation of over 90 OERs relating to food safety, and the development of assessment instruments based on the Core Level 1 competency statements. Five successful pilot programs were launched with nearly 350 participants.

Even with the amount of success, there were challenges during the project such as gaining a high number of additional learning resources. Working with additional content partners proved to be difficult with a limited amount of staff. Even though most organizations saw the value of the FSKN program, they were hesitant in giving the time to put together new resources or change their web site in order to allow for the OAI feed. It takes a considerable amount of time to recruit content partners, explain OERs, and review content.

One difference between academic institutions and the organizations involved in pilot programs is that private organizations have certain legal restrictions which affect the FSKN project. European law will hold food companies liable for any illness or injury that is caused by their products. They are also liable for the work performance of their employees. Due to these liability issues these organizations cannot have their organizations labeled on FSKN materials.

Another challenge is the availability of experts to develop the resources. Subject matter experts were needed in developing and reviewing the competency statements, resources, and assessments. The subject matter experts on the FSKN team consisted of two faculty members from Michigan State University and an industry expert. These experts had to give a lot of their time in developing the project. Capturing the lectures at the initial pilot project proved to be an efficient way to develop a learning resource and face-to-face meetings were important as the experts were internationally located.

4. Summary

The FSKN project drew together higher education and private industry in the development of a model for providing educational resources for those who may not have access to quality materials. The model brought expertise to developing countries and increased the knowledge base of several organizations. Future plans for the project include additional pilot programs and the expansion of the FSKN model to the next level of food safety competencies (Core Level 2).

Figures

Figure 1. The 13 Basic Level Requirements for food manufacturers

About the authors

Gwyn Heyboer

Senior Instructional Designer/Project Manager, MSU global, Michigan State University

Gwyn is the Senior Instructional Designer and a Project Manager at MSUglobal. She has over 10 years of experience in higher education focusing on instructional design, program evaluation, organizational development, training, and project management. Also, she has teaching experience as an adjunct faculty member at a community college in the area of communication. Gwyn has worked on a variety of projects in the areas of technology and agriculture such as managing an online teaching certification program for faculty at a community college, assisting faculty in the development of online courses, and currently developing credit and non-credit learning opportunities.

Michigan State University
51 Kellogg Center
East Lansing, MI 48824
heyboerg@msu.edu

Sunnie Kim

Creative Technology Strategist, MSU global, Michigan State University

Sunnie is a Creative Technologies Strategist and Instructional Designer at MSUglobal. She researches and evaluates new tools and technologies to see if/how they can be implemented into current programs and workflows. As an instructional designer, she helps develop and produce online, non-credit courses. Sunnie also helps spearhead MSU's open educational resources (OER) initiatives and is MSUglobal's self-proclaimed resident OER specialist

Michigan State University
51 Kellogg Center
East Lansing, MI 48824
heyboerg@msu.edu

Leslie D. Bourquin

Professor of Food Science and Human Nutrition and Extension Food Safety Specialist Department of Food Science and Human Nutrition, and National Food Safety and Toxicology Center

Dr. Bourquin is a Professor and Food Safety Specialist in the Department of Food Science and Human Nutrition, and the National Food Safety and Toxicology Center at Michigan State University. He also is a core faculty member in the Center for Advanced Studies in International Development and the Center for Integrative Toxicology at Michigan State University. Dr. Bourquin's research program focuses on the impacts of public and private food safety standards, barriers to their acceptance and effective implementation by the food industry, and the potential

impacts of these standards on public health. Dr. Bourquin's outreach and development work focuses on applied research, education and capacity building, and risk communication on food safety issues.

Michigan State University
139A G. M. Trout FSHN Building
East Lansing, MI 48824-1224
bourqui1@msu.edu

Deepa Thiagarajan

Assistant Professor, Institute of International Agriculture, Michigan State University

Dr. Thiagarajan is appointed as a Visiting Assistant Professor in the Institute of International Agriculture and is Director of the USAID-MSU-Indian Horticulture Development Alliance (IHDA) project, which is based at MSU with in-country project staff based in New Delhi and Hyderabad. Currently, Dr. Thiagarajan's global agrifood systems development work focuses on applied research, education and capacity building on food safety issues and market development for agricultural commodities in developing countries. Dr. Thiagarajan also provides leadership to additional international development programs under the general oversight of the Institute of International Agriculture at Michigan State University.

Michigan State University
319 Agriculture Hall
East Lansing, MI 48824-1224
thiagara@msu.edu

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University
Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/ Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

OpenSpires

Opening up Oxford like never before

Melissa Highton,* Peter Robinson**

* Head of the Learning Technology Group, Oxford University Computing Services

** Manager of Learning Technology Services, Learning Technology Group, Oxford University Computing Services

Abstract

Oxford University learning technologies group offer a model for effective practice in creating and using OER in research-led teaching environments where academic practice includes dissemination of research which aids/supplements teaching but is not primarily designed as a teaching resource. The University is perceived by many people to be an exclusive institution. It is certainly unique and complex, with characteristics and traditions established over 900 years. An Oxford education offers an exciting combination of privilege and open-mindedness. The role and sustainability of open education technologies in this environment is subtle. Any strategy to effectively encourage the uptake of OERs must be informed by original thinking and reflection about the culture of the organisation. The OpenSpires project was a successful initiative to establish a sustainable set of policies and workflows that would allow departments from across the University of Oxford to regularly publish high quality open content material for global reuse.

Keywords

OER, institutional culture, institutional change, challenges, sustainability, policy and strategy

---

Recommended citation:

Highton, Melissa; Robinson, Peter (2010). OpenSpires: Opening up Oxford like never before. In *Open Ed 2010 Proceedings* . Barcelona: UOC, OU, BYU.

[Accessed:Dd/mm/yy].<http://hdl.handle.net/10609/4842>

Introduction

It could be said that Oxford University in the United Kingdom is perceived by many people to be an exclusive institution. It is certainly unique and complex, with characteristics and traditions established over 900 years. An Oxford education offers an exciting combination of privilege and open-mindedness. Staff and students work in a closed physical environment –shaped by gates, walls and private cloisters. The business of the University however, is characterised by a deep commitment to publication, communication and the dissemination of new knowledge.

The role and sustainability of open education technologies in this environment is subtle. Any strategy to effectively encourage the uptake of open educational resources (OER) must be informed by original thinking and reflection about the culture of the organisation and lessons learned in other places. The challenge to learning technology managers and leaders working at an institutional level is in matching not just the right technology to the right learning situation, but in matching the best approach to the needs of the institution.

The OpenSpires project has been a successful initiative to establish a sustainable set of policies and workflows that would allow departments from across the University of Oxford to regularly publish high quality open content material for global reuse. The project was supported by the Higher Education Academy/JISC Open Educational Resources Programme.

The trend towards sharing software programmes (open source software) and research outcomes (open access publishing) are already strong at oxford. This year we have made significant progress with open content by tackling legal, licensing and discoverability issues as part of the knowledge creation and publication process. OpenSpires has given us the opportunity to explore with academic colleagues their perceptions of IPR and their position of comfort in relation to new media platforms. They have challenged us, as so they should, but we have been able to support them in making informed choices and in return 130 colleagues have signed creative commons licences for their podcast materials.

OpenSpires

In October 2008, Oxford University launched its podcasts web portal (http://podcasts.ox.ac.uk) and its iTunes U site (http://itunes.ox.ac.uk). The University currently has over 1650 audio and video podcasts from all subject areas which are free to download for personal use. The material has been provided by high-profile academics and features talks, interviews, lectures and panel discussions. Oxford has experienced considerable success from its podcasting web site and iTunes U presence: 2 million downloads in the first year, a number one in the global download charts and several items regularly in the top ten.

The OpenSpires project was part of the Institutional strand of the JISC Open Educational Resources (OER) Programme. Within the Institutional strand, Oxford University aimed to assess and report on the implications of releasing OER from a research-led institution. Our project built upon experience of two earlier OER projects at Oxford: the JISC-funded MOSAIC project in

Continuing Education (http://mosaic.conted.ox.ac.uk/) and the Mathematics Institute courses which are published under the terms of OpenCourseWare (http://www.maths.ox.ac.uk/opencourseware). Building on this success, Open Spires set out to release educational audio and video content as OER, making it free for reuse and redistribution by third parties globally, provided it is used in a non-commercial way and attributed to its creator. The project aimed to support academic content creators in the production of these materials and in the change of practice required to make informed decisions about releasing their material as OER.

Sustainability

Content generated during the life of the OpenSpires project reflects the academic activity of the University. There are over 20,000 students at Oxford, including 12,000 undergraduates and 8,000 postgraduates. 8,000 staff 30% are fulltime on research. Each year 15,000 people take part in courses offered by the Department for Continuing Education, making Oxford University one of the largest providers of continuing education in the United Kingdom. About 1000 of those learners take courses delivered fully online. Much of the teaching provision is based on traditional methods of small group or one to one discussion.

OpenSpires OER includes lecture series, public seminars, conference presentations, interviews, peer-to-peer conversations, and panel discussions. Generally the recordings are part of regular teaching or research activities and therefore keep the additional work required by the academic to a minimum. Contributors are generally Professors, Heads of Department and visiting high-profile speakers with many demands on their time, which increases the importance of minimising contributor effort and establishing processes which add value at the centre.

We adopted a clear, well-defined format for audio and video recordings to reduce the impact on academics but also to standardise workflows to reduce the costs of production. The Oxford Podcasting Service based in the Learning Technologies Group provided advice and guidance where possible on the best format for the recording, e.g. video, screen cast, or audio only, so that it would best represent the subject matter. We also explored the legal issues around content release. As a result of the University's intellectual property statutes, Oxford academics will tend to own the materials that the OpenSpires project would like to distribute. We thus needed to obtain licences to, or assignments of, the necessary rights from the academics. The licence used for the iTunesU project did not provide us with the rights we needed to achieve Creative Commons release, so we therefore drafted a new licence with much help from the University's Legal Services.

Open content literacy

For this project Open Content Literacy was defined as: "knowing when and why open content is needed, where to find and share it, and how to create, evaluate, and use it in an ethical manner."

While it is not uncommon for academic colleagues to search the web for materials to use in their teaching most tutors at Oxford remain unaware of the growing pool of open educational resources. The project provided training to increase open content literacy across the University, thereby embedding the production of OER as part of standard institutional activities. If academics are to become creators of open educational content the support for that activity will likely lie with those who currently support the skills for online content creation. These are staff who work in learning technology or media production roles. The training programmes offered by the Learning Technology Group included issues of copyright and IPR along with choices about where to put and publish materials e.g. in a virtual learning environment, on departmental and college websites or on platforms such as YouTube or Itunes U. Learning Technology Group staff and IT trainers also learned about OER in order to take a lead in raising levels of open content literacy within the organisation.

In order to embed the production of OER at Oxford we identified areas of existing academic practice and aligned our technological activities to those. The community of practice at Oxford is shaped and defined by shared history tradition and repertoire. The primary unit of change is neither the individual nor the institution, but the informal 'communities ' which academics form within Colleges as they pursue shared endeavours over time. During this project we explored a range of ways to support change and agency in those communities. The result is a broad framework for thinking about learning technology as a process of social participation in a research community.

Evaluation

Evaluation was carried out throughout the project by the project team. Progress against work packages and key milestones was monitored weekly at project team meetings, following Oxford University Computing Services' project methodology. Members of the OpenSpires Steering Group offered advice and guidance throughout the life of the project and attended an interim review meeting to evaluate progress against the project objectives.

An evaluation framework was compiled itemising factors to evaluate and detailing evidence collected during the project. The factors to evaluate were designed to provide evidence to determine if the devolved model of content creation was sustainable and adept at creating a reliable flow of new material suitable for release under a Creative Commons licence.

Results

In less than a year more than 150 Oxford academics and visiting speakers donated material to support their subject communities, each contributor signing a Creative Commons licence that allows their material to be promoted for reuse in education world-wide. The material was generated in the life of the project and the subjects covered include politics, economics, globalisation, environmental change, business, research ethics, medicine, physics, English, philosophy, classics, and art history.

The project focused on audio-visual recordings and supporting resources as the University had an existing cost-effective content creation process for this. The success of the project was due to the adoption of a devolved model of content production providing a clear workflow process for department support staff to follow which minimised academic support time. A programme of training activities was established to increase open content literacy across the University. The project leveraged new popular open outreach channels such as the University video portal and iTunesU. Institutional marketing and a clear communication strategy improved the discoverability of the digitised material leading to consistent download figures. Reports of usage by learners encouraged the academics involved and reflected well on the work of the departments. All OpenSpires material is openly available on the web and free to download by anyone, without restrictions or registration. The material is promoted as free for reuse in education worldwide and is clearly labelled with Creative Commons licence. All material is syndicated through RSS to be freely surfaced in subject centre portals and is available through the United Kingdom national OER repository, JorumOpen.

About the authors

Melissa Highton

Head of the Learning Technology Group, Oxford University Computing Services

Melissa has management responsibility for the Learning Technologies Group in Oxford University Computing Service; she has institutional responsibility for e-learning strategy, the VLE and IT skills and training. She is a Fellow of Kellogg College and works closely with the E-learning Research Group in the Department of Education. She is the senior manager responsible for Oxford's current OER initiatives and the development of open-source learning technologies.

Oxford University Computing Services
University of Oxford
13 Banbury Road
Oxford, UK OX2 6NN
melissa.highton@oucs.ox.ac.uk

Peter Robinson

Manager of Learning Technology Services, Learning Technology Group, Oxford University Computing Services

Peter is an experienced multimedia developer and has 15 years experience working on a variety of ICT projects with academics at the University. He is managing the institutional iTunes U project and regularly trains staff on podcasting. Peter was PI on the JISC STEEPLE podcasting project collaboration between Oxford, Cambridge and the Open University and on the JISC OpenSpires OER project.

Oxford University Computing Services
University of Oxford
13 Banbury Road. Oxford
UK OX2 6NN
peter.robinson@oucs.ox.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Sustaining OER at the University of Cape Town: Free, but not cheap

Cheryl Hodgkinson-Wiliams,* Shihaam Donnelly**

* Associate Professor, Centre for Educational Technology, University of Cape Town

** Intern, Centre for Educational Technology, University of Cape Town

Abstract

Open educational resource (OER) initiatives have made the shift from being a fringe activity to one that is increasingly considered as a key component in both teaching and learning in higher education and in the fulfilment of universities' mission and goals. Although the reduction in the cost of materials is often cited as a potential benefit of OER, this potential benefit has not yet been realised in practice necessitating thoughtful consideration of various strategies for new OER initiatives such as the OpenContent directory at the University of Cape Town (UCT) in South Africa.

This paper reviews the range of sustainability strategies mentioned in the literature, plots the results of a small-scale OER sustainability survey against these strategies and explains how these findings and other papers on OER initiatives were used to inform an in-house workshop at UCT to deliberate the future strategy for the sustainability of OER at UCT.

Keywords

open educational resources, open content, sustainability

Recommended citation:

Hodgkinson-Wiliams, Cheryl; Donnelly, Shihaam (2010). Sustaining OER at the University of Cape Town: Free, but not cheap. In *Open Ed 2010 Proceedings* . Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4843>

Introduction

Open educational resource (OER) initiatives have made the shift from being a fringe activity to one that is increasingly considered as a key component in both teaching and learning in higher education and in the fulfilment of universities' mission and goals. Emerging from individual initiatives such as Wayne Hodgins' promotion of the concept of 'learning objects' that he envisaged as "a new conceptual model for content creation and distribution ... destined to change the shape and form of learning" (2004:1) and David Wiley's notion of "open content", along with his creation of the first widely adopted open license for content (the Open Publication License), the OER movement has gradually developed into an international movement. Thanks to the subsequent creation of Creative Commons Licences spearheaded by Lawrence Lessig and his colleagues in 2001, MIT had the legal provisions for its ground-breaking OER initiative, MIT OpenCourseWare, which greatly encouraged the emerging OER community. The standardising of the term "open educational resources" by UNESCO in 2002 (UNESCO 2002) further rallied interested individuals and institutions around the practice of sharing resources.

Although the reduction in the cost of materials is often cited as a potential explicit or implicit benefit of OER (d'Antoni 2009; Lane 2008), this potential benefit has not been realised in practice as yet (Hodgkinson-Williams 2010). The sad demise of Utah State University's (USU) OER initiative in June 2009 due to financial woes (Parry 2009) is indicative of the precariousness of OER projects, particularly during an economic recession. At the time USU was the second largest OCW collection with over 80 courses, receiving 2000 unique visitors to the site every day (Wiley 2009). It is therefore not a surprise that Martin Weller refers to financial sustainability of OER as 'the daddy of all the arguments' (Weller 2010).

When the University of Cape (UCT) in South Africa decided to embark upon an OER initiative in 2009, these financial sustainability challenges necessitated thoughtful consideration of various strategies that the initiative could adopt. While seed-funding for the OER initiative of R800 000 (approximately $100 000) was provided by the Shuttleworth Foundation, plans for a sustainable OER initiative were considered before the final choices of the size and shape of the UCT OpenContent directory, which was launched on the 12 February 2010, were made. These plans were informed by the sustainability strategies mentioned in the literature (Downes 2007; Wiley 2007), through reflection on the recommendations from the OpeningScholarship project undertaken at UCT in 2007-2008 (Centre for Educational Technology 2009) and through personal communication with members of other OER initiatives such as the University of Michigan's Open.Michigan project.

The following section describes the sustainability strategies mentioned in the literature that the UCT OER development team were able to consider in the development of a strategy for the UCT OpenContent directory. The subsequent section plots the results of a small-scale OER sustainability survey undertaken for a paper commissioned by the Commonwealth of Learning (Hodgkinson-Williams 2010) against these strategies, and the final section explains how these strategic ideas were used in an in-house OER sustainability workshop to plan for the future of the UCT OpenContent directory which has moved from an externally funded project to an institutional project.

Before moving onto the discussion about sustainability strategies, clarification of the term 'sustainability' is necessary. We adopt the understanding of sustainability outlined by the Joint Information Steering Committee (JISC) in the United Kingdom, namely that:

> "Sustainability in relation to OERs is closely linked to the business model or approach that an individual, group or institution adopts to release, manage and support OERs. It is not just about sustaining existing OERs but about **embedding processes** and **transforming practices** to support ongoing OER production and release." (JISC 2010, bold in the original.)

Possible sustainability strategies

The seminal papers by Downes (2007) and Wiley (2007) on the sustainability of OER initiatives provided the basis for the deliberations by the UCT OER team. Table 1 indicates the options considered by the OER team prior to the launch of the UCT OpenContent directory.

Through iterations of deliberation, the OER team settled on the following key principles for ensuring the sustainability of the UCT OpenContent initiative:

- The OER initiative would be resource-based and not course-based (i.e. individual resources such as e-books, manuals, lectures captured on podcasts or webcasts, lecture notes or presentations) so that resources from the current collection held by academics could be made available almost immediately
- The OER initiative would generally not host resources, but rather act as a directory to where the resources are already hosted so as to reduce duplication and maximise the use of existing infrastructure
- The OER initiative would approach a philanthropic funder to provide seed-funding for the development of a directory, for the marketing of this directory and for providing initial training sessions for academic staff willing to share their resources so as to illustrate the concept to academics, students and senior management at UCT
- The software selection would privilege open source software and would need to be integrated with the UCT login system so that there was no special username and login required for academics to contribute their resources
- The software would need to allow individual academics to upload and maintain their resources directly so that the process of making materials available would not need intermediary technical personnel, apart from those checking for copyright compliance
- To ensure visibility and discoverability, the UCT OpenContent would feed into international aggregating services such as OER Commons and would therefore need to comply with international metadata standards
- A 'moderation' process would only include checking for copyright compliance and not include an institutional quality assurance process so that the responsibility of the accuracy of the resource was taken by the academic author – following the "pride-of-authorship" model
- The management of the OER initiative would be built into the portfolio of the Curriculum Development Officer in the Centre for Educational Technology (CET) as this person

already deals with supporting the development of digital resources for teaching and learning

The maintenance of the UCT OpenContent directory would be included in CET's Learning Technologies team's portfolio

The OER initiative would be seen as part of a more ambitious Open.UCT project that included making research and community engagement resources available to the general public and would need to work collaboratively with these 'open' initiatives and any other OER initiative such as the Health OER project in the Faculty of Health Sciences.

These principles helped to shape the design of the UCT OpenContent directory and its development using a customised version of Drupal, which allowed individual academics to upload and tag their resource (using the DublinCore metadata standards) with the minimum of effort. The choice of the software was partially influenced by discussions with colleagues from the University of Michigan, but predominantly directed by the OER UCT team's OER software platform evaluation.

Shortly after the launch of the UCT OpenContent directory, the Director of the OER UCT Project was commissioned by the Commonwealth of Learning to write a paper on the benefits and challenges of OER for higher education institutions with a specific focus on quality assurance and reduction in costs (Hodgkinson-Williams 2010). An email survey was sent to ten individual OER champions identified by the OER team at UCT or identified in special OER journal editions. Four open-ended questions about quality assurance and financial sustainability were posed and to which five individuals responded by email and one via a Skype discussion.

The responses to one of the financial sustainability questions - *How has your institution's OER initiative been funded to-date?* - are mapped to the strategies suggested by Downes (2007) and Wiley (2007) to highlight the actual strategies adopted (See Figure 1).

Shortly after the launch of the UCT OpenContent directory, the Director of the OER UCT Project was commissioned by the Commonwealth of Learning to write a paper on the benefits and challenges of OER for higher education institutions with a specific focus on quality assurance and reduction in costs (Hodgkinson-Williams 2010). An email survey was sent to ten individual OER champions identified by the OER team at UCT or identified in special OER journal editions. Four open-ended questions about quality assurance and financial sustainability were posed and to which five individuals responded by email and one via a Skype discussion.

The responses to one of the financial sustainability questions - *How has your institution's OER initiative been funded to-date?* - are mapped to the strategies suggested by Downes (2007) and Wiley (2007) to highlight the actual strategies adopted.

Analysis of the survey suggests that currently actual strategies adopted seem to cluster around external donor funding and internal institutional funding but are extending to include governmental funding, membership to consortia, donations from alumni and via affiliate agreements and the development of new service models. What is clear from each of the examples above is that institutions are adopting a mix of strategies, but are increasingly inclining towards institutional support and exploring additional strategies such as seed-funding from donor foundations ceases to be a main strategy.

Shaping further sustainability strategies

The findings of the Hodgkinson-Williams 2010 study as well as the paper from Butcher (2010) and Luo, Ng'ambi and Hanss (2010) were used to inform an in-house workshop to deliberate the future strategy for the sustainability of OER at UCT. A range of suggestions were made during the workshop, but were not finally decided upon as the prioritising and final decision-making process is still in progress.

In an endeavour to make sense of these various strategic options, the following framework is used to classify the various strategies at an international, national, provincial, institutional and individual level. The financial category includes strategies for income generation and potential cost reduction, while the technical category includes strategies related to the development of the UCT OpenContent directory itself. The social category includes visions of OER, policy and procedures, while the legal category includes aspects related to intellectual property rights.

Conclusion

What this analysis of the potential strategies for the sustainability of the UCT OpenContent directory suggests is that the sustainability of OER cannot be seen in isolation from an institutional perspective on the value of OER as part of its institutional mission. While individual academics can share their resources independently through other social media, institutional infrastructure such as the OpenContent directory can assist in optimising this sharing in an organised fashion. However, the OER initiative is dependent upon embedding processes and transforming practices within the institution to support ongoing OER production and more widely on the growing demand for OER internationally.

Figures and Tables

Model*	**Description**	**UCT's position**
Endowment	Base funding is managed by a fund administrator and the project is sustained from interest earned on that fund	Not an immediate strategy. May be one to consider once the UCT OpenContent directory has proved its worth to the institution
Membership	A coalition of interested organizations is invited to contribute a certain sum, either as seed only or as an annual contribution or subscription; this fund generates operating revenues for the OER service	As UCT already belongs to the Sakai community and has reaped the benefits of this collaboration for its course management system, Vula, this is a strategy to consider
Donations or	A project deemed worthy of support by	Not an immediate strategy. May be one to

Voluntary support	the wider community requests and receives donations	consider once the UCT OpenContent directory has proved its worth to the institution
Conversion	A resource or service is given away for free in order to convert the consumer of the freebie to a paying customer	Not part of the initial planning, but indirectly could attract students to UCT
Contributor-Pay	A model where the provider pays upfront to make the contribution available for free	Although no monetary payment is made, the UCT OpenContent directory will rely on contributors making the investment of time to make their resource freely available
Sponsorship or corporate	A model where sponsorship is sought from a corporate	Would be a possible strategy for individual resources or for specific resources from various disciplines
Institutional	A model where an institution assumes the responsibility itself for an OER initiative	Definitely a consideration – particularly with the management of the UCT OpenContent and the ongoing maintenance of the site
Governmental	A model where governmental provides direct funding for OER projects	While not on the horizon yet, this is a strategy to pursue long-term in association with other South African higher education institutions
Partnerships and Exchanges	A non-financial model that seeks to reduce costs by sharing insights across OER networks	Definitely an option for UCT given the institutional relationship with the University of Michigan
Foundation	Seed-funding from philanthropic foundations	Essential to initiate the UCT OpenContent directory
Replacement mode	Educational content stored, disseminated, and re-used through an OER initiative replaces the use of other technology software and infrastructure such as course management systems, etc.	Not as a replacement model, but perhaps as a way of using the course management system, Vula, to share resources.
Segmentation - "value-added" services	A model that adds value to services to specific user segments and charges them for these services.	Not an initial option, but may be worth considering in the longer term

Table 1: Possible stustainability strategies suggested in the literature (*Adapted and summarised from Downes 2007: 34-35; Wiley 2007: 16-17)

Model*	Adopted by	Comment
Membership	OpenCourseware Consortium Connexions Consortium	The Connexions Consortium has about 18 members, but the numbers are growing. Dues range from $2,500 -$20 000 USD (Thierstein, Connexions)
Donations or Voluntary support	MIT - alumni	*Alumni have donated $1.2 M in 3 major gifts. Additionally, we've received small gifts which in total are about to surpass $500 K (from alum and non-alum donors)* (Carson, MIT

		OCW)
Conversion	Connexions	Connexions receives about 15% of the cost of books printed from the site
Sponsorship or corporate	Connexions	Connexions had some corporate grants (Thierstein, Connexions)
Institutional	MIT, OU, JHSPH, OUNL, UCT	*MIT has also contributed about $8M from the general institute budget and currently supports about half the annual cost.* (Carson, MIT OCW) *OpenLearn has been granted about £3 million to date of internal investment* (Lane, OU)
Governmental	OU OUNL	*OpenLearn has received £3 million for 2009-2012 from a Government Agency (The Higher Education Funding Council for England)* (Lane, OU) *OUNL is one of the two partners of the national initiative Wikiwijs of the Ministry of Education which generates about EUR 1M per year* (Schuwer, OUNL)
Foundation	MIT, OU, JHSPH, OUNL, Connexions, UCT	*MIT has generated $33M in external funding for the development of course materials over the past 9 years* (Carson, MIT OCW) *OpenLearn has received £4.65 million for 2006-2008 from the William and Flora Hewlett Foundation to date* (Lane, OU) *JHSPH OCW was initiated by a grant of $834,000 from the Hewlett Foundations for a period of 4 years* (Kanchanaraksa, JHSPH)
Segmentation - "value-added" services	OUNL	*We are in the process of changing our business model from offering courses to offering services* (Schuwer, OUNL)
Affiliate agreements	MIT agreement with Amazon.com	*Standard affiliate agreement with Amazon which nets us about $40 K per year. Not huge, but money otherwise left on the table* (Carson, MIT)

Table 2: Actual sustainability models adopted in selected OER initiatives (*Adapted and extended from Downes 2007: 34-35; Wiley 2007: 16-17 & Hodgkinson-Williams 2010)

	Financial	**Technical**	**Social**	**Legal**
International	Soliciting funds for OER grants from international donor agencies Soliciting funds for OER research from international	Continuing to liaise with international aggregating services on technical	Establishing the demand for and use of OER among staff and students in HEIs and by the general public	Continuing to contribute to ways in which to use alternative licensing

	research agencies	standards		
National	Applying for OER development grants from the national government's Skills Development Levy fund Soliciting support from local commerce and industry, or even NGOs for the sponsorship on individual OER Brokering affiliate agreements with online resource distributors or even publishers			Continuing to work with the legal lead of Creative Commons South Africa
Provincial			Participating in provincial collaborative OER projects	
Institutional	Investigating the possibility of "top-slicing" some of the research grants for making elements of research available as OER Linking the UCT OpenContent to the online admissions system		Institutionalising the advocacy role of OER Developing a OER policy Recognising the value of OER development in performance appraisal processes Encouraging new OER contributors through workshops with new academic staff and Heads of	Adopting a balanced copyright strategy that endeavours to protect the individual OER author and UCT, but is not overly prescriptive Encouraging good copyright practices through copyright workshops

			Departments	
Departmental	Lobbying for institutional research funds to conduct OER research	CET: Providing feedback to UCT OpenContent contributors on how their materials are being used Introducing other forms of tagging of UCT OpenContent to make materials more discoverable Marketing OER resources individually	CET: Establishing the demand for, use of and/or contribution to UCT OpenContent among staff, students & the general public	
Individual		Sharing materials that are fairly unique and focus on local content		

Table 3: Possbile sustainability strategies at UCT

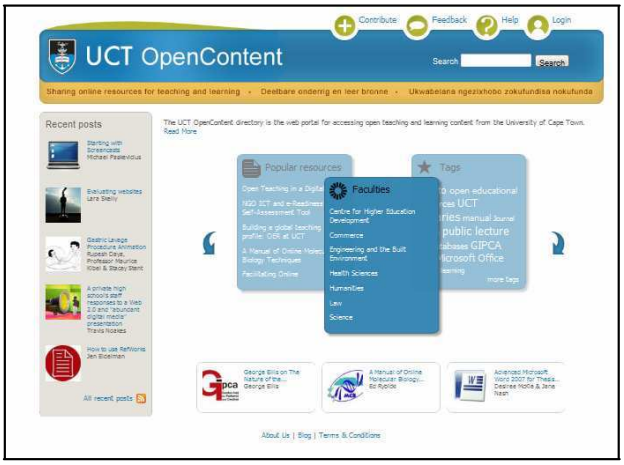

Figure 1. UCT OpenContent - http://opencontent.uct.ac.za/

Bibliographic references

Butcher, N. (2010). OER Dossier. Retrieved from: http://oerworkshop.weebly.com/--oer-dossier.html

Centre for Educational Technology. (2009). OpeningScholarship project. Retrieved from: http://www.cet.uct.ac.za/OpeningScholarship

D' Antoni, S. (2007). Open Educational Resource and Open Content for Higher Education. *Revista de Universidad y Sociedad del Conocimiento, año/vol. 4,número 001 Universitat Oberta de Catalunya Catalunya, España*, 4(1), 1-8. Retrieved from http://www.uoc.edu/rusc/4/1/dt/eng/dantoni.pdf

Downes S. (2007). Models for sustainable open educational resources. *Interdisciplinary Journal of Knowledge and Learning Objects* 3: 29-44. Retrieved from: http://www.downes.ca/cgi-bin/page.cgi?post=33401

Hodgins, H.W. (2004). The Future of Learning Objects. In J.R. Lohmann & M.L. Corradini (Eds.) *2002 ECI Conference on e-Technologies in Engineering Education: Learning Outcomes Providing Future Possibilities*, Davos, Switzerland. Retrieved from: http://services.bepress.com/cgi/viewcontent.cgi?article=1012&context=eci/etechnologies

Hodgkinson-Williams, CA (2010). Benefits and challenges of OER for higher education institutions. Paper commissioned by the Commonwealth of Learning for the Workshop Discussions at the Open Educational Resources (OER) Workshop for Heads of Commonwealth Universities and Workshop for Quality Assurance Agencies. Retrieved from: http://www.col.org/SiteCollectionDocuments/OER_BenefitsChallenges_presentation.pdf

JISC. (2010). Open Educational Resources InfoKit. Sustainability. Retrieved from: https://openeducationalresources.pbworks.com/Sustainability

Lane, A. (2008). Reflections on sustaining Open Educational Resources: An institutional case study. *eLearning Papers www.elearningpapers.eu*. No. 10, September. Retrieved from: http://www.elearningeuropa.info/files/media/media16677.pdf

Luo, A. Ng'ambi, D. and Hanss, T. (2010). Towards Building a Productive, Scalable and Sustainable Collaboration Model for Open Educational Resources in Proceedings of the ACM 2010 International Conference on Supporting Group Work.

Parry, M. (September 3, 2009). Utah State U.'s OpenCourseWare Closes Because of Budget Woes. Retrieved from: http://chronicle.com/blogPost/Utah-State-Us-OpenCourseWare/7913/

UNESCO. (2002). UNESCO Promotes New Initiative for Free Educational Resources on the Internet. Retrieved from http://www.unesco.org/education/news_en/080702_free_edu_ress.shtml

Weller, M. (February 10, 2010). Those OER issues. Retrieved from: http://nogoodreason.typepad.co.uk/no_good_reason/2010/02/those-oer-issues.html

Wiley, D. (2007). On the Sustainability of Open Educational Resource Initiatives in Higher Education. Paper commissioned by the OECD's Centre for Educational Research and Innovation (CERI) for the project on Open Educational Resources. Retrieved from: http://www.oecd.org/dataoecd/33/9/38645447.pdf

Wiley, D. (July 2, 2009). Thank you, Marion. Retrieved from: http://opencontent.org/blog/archives/967

About the authors

Cheryl Hodgkinson-Wiliams

Associate Professor, Centre for Educational Technology, University of Cape Town

Cheryl Hodgkinson-Williams holds a PhD in the field of Information Communication Technology (ICT) in Education from the University of Pretoria. She held academic posts as Senior Lecturer at the University of Pretoria from 1994 to June 1998 and as an Associate Professor in ICT in Education at Rhodes University from July 1998 to June 2007 before joining the University of Cape Town as a full-time researcher in July 2007 and then from October 2008 as an Associate Professor in the Centre for Educational Technology. She teaches on the Post Graduate ICTs in Education Programme with a special focus on online learning design and research design and supervises MEd ICT and PhD students. Her current area of research is around open educational resources and e-portfolios in Higher Education.

Centre for Educational Technology
University of Cape Town
Private Bag Rondebosch
Cape Town, South Africa.
cheryl.hodgkinson-williams@uct.ac.za

Shihaam Donnelly
Intern, Centre for Educational Technology, University of Cape Town

Shihaam Donnelly holds a LLM in the field of Biotechnology and Intellectual Property Law from the University of Cape Town. While completing her LLB, she held a post as a research and development assistant at the Faculty of Law from 2006 to 2008. In 2010, she joined the Centre for Educational Technology as an educational technology intern. Her current areas of interest are open educational resources, Creative Commons licensing and copyright clearance issues.

Centre for Educational Technology
University of Cape Town
Private Bag Rondebosch
Cape Town, South Africa.
shihaamdonnelly@gmail.com

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

TwHistory: Sharing History Using Twitter

Marion Jensen,* Tom Caswell,* Justin Ball, Joel Duffin(PhD),*** Rob Barton***

*PhD Student (Utah State University), **COO (Tatemae LLC), ***CEO (Tatemae LLC)

Abstract

In light of the fact that several studies indicate that students can benefit from deeper understandings of the processes by which historical accounts are constructed, history educators have increasingly been focused on finding ways to teach students how to read and reason about events in the same manner as professional historians (Wineburg, 2001; Spoehr & Spoehr, 1994; Hynd, Holschuh, & Hubbard, 2004; Wiley & Voss, 1996). One possible resource for supporting this development may come out of emerging web-based technologies. New technologies and increased access to historical records and artifacts posted the Internet may be precisely the tools that can help students (Bass, Rosenzweig, & Mason, 1999). Given the right context, we believe it is possible to combine such resources and tools to create an environment for students that could strengthen their abilities to read and reason about historical events. Moreover, we believe that social media, specifically, microblogging (Nardi, Schiano, Gumbrecht, & Swartz, 2004) could play a key role.

Keywords

historical reenactment, Twitter, social media, history education

Recommended citation:

Jensen, M.; Caswell, T.; Ball, J. et al.(2010). TwHistory: Sharing History Using Twitter. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/4942>

Twitter is a micro-blogging service that enables a person to broadcast ideas or events to anyone following. *TwHistory* (http://twhistory.com) adapts this communication stream by using it to represent historical figures based on excerpts from journals, letters, or other primary source documents. *Twitter* provides all the necessary elements for a recreating a historical event: individual profiles, communication, relationships, and time. Followers of *Twitter* reenactments get updates in real-time as the historical figures represented in a particular reenactment "communicate" by sending tweets, or *Twitter* messages, about what is happening. The 140-character messages are sent as close as possible to the time and day of the actual event and are shifted to the present tense to give the sense that they are happening in real-time. Here we outline the basic elements for how to set up a *TwHistory* historical reenactment.

Students are tasked with representing a historical figure during a reenactment. While this may not align perfectly with the practice of historians, it does align well with the practice of history (e.g. living history museums). Students are asked to research and then deliver a role as a historical figure. This is a complex problem because it usually involves identifying relevant historical documents and evaluating evidence that may not always be consistent. Students may need to research the person's career, develop and utilize information literacy and writing skills, and collaborate with other groups.

The *TwHistory* development framework can be divided into four steps: 1) Role assignment, 2) content creation, 3) content sequencing, and 4) deployment. First, participants organize themselves and identify key historical figures. Once the cast of historical characters is set students most decide who will research whom. It may be beneficial to employ smaller groups of 3-4 students in order to provide more characters for the reenactment while still promoting discussion about where to search for appropriate information on the figure, reflection on the quality and relevance of the information found, and group decision making about how to incorporate the information into the reenactment.

In the second step, the content is researched, evaluated, and discussed. This step is where the bulk of the work as historian happens. Once the group is in agreement about what to portray and how, the tweets are written and scheduled to be sent at a specific time during the reenactment. Each historical figure should have a *Twitter* account with a user name that conveys who the character is, and each character's tweets should represent that historical figure as accurately as possible, based on the available historical evidence.

The third step involves combining all the character tweets together in chronological order. This provides an opportunity for students to verify that participants have written appropriate tweets that fit properly with the other *Twitter* characters. In the fourth step, the *Twitter* messages are scheduled with a timer program so that each tweet is sent at the appropriate times (Figure 1). The idea is to match the date and time of the events as closely as possible.

To prove the concept, a small group of volunteers developed *TwHistory* and "tweeted" the Battle of Gettysburg using journals and letters from fifteen soldiers present at the battle. The experiment generated many followers, and interest in the project grew. When one of the characters died on the first day of the virtual battle of Gettysburg, many followers retweeted this event, and that message brought additional followers as they became aware of the reenactment.

Once the virtual battle had gone viral, a diverse set of followers subscribed to the *Twitter* feeds. One of the Gettysburg followers was Carla Federman, a high school teacher in the American Midwest. She adapted the Gettysburg model as part of her Cold War History course. In that class, students re-enacted the Cuban missile crisis.

Classroom use of TwHistory

The Cuban Missile Crisis *Twitter* reenactment was the first case of *TwHistory* use in the classroom. Mrs. Federman organized her class into small groups, with each group responsible for representing a particular historical figure in the Crisis. During the two-week activity, students were given class time to research relevant sources, including primary sources from the Library of Congress website. Feedback from this preliminary classroom implementation was positive, with the teacher reporting student engagement and an interest to do another TwHistory reenactment in the future.

Part of learning to think historically involves seeking to understand the context in which historical events take place. Although Mrs. Federman encouraged her Cold War History students to stay in character with their *Twitter* messages, they did not always do so. At one point in the reenactment Khrushchev sends a message after conducting a nuclear test and exclaims, "Boo-yah!" This highlights the potential need for peer review and assessment in future implementations of *TwHistory*.

Conclusion

Future implementations are planned to explore the potential for student-created virtual reenactments to help students think like historians. Of particular interest is the decision-making process used in evaluating, prioritizing, contextualizing, and portraying specific people, moments, and ideas within a larger historical narrative. Activities like TwHistory not only offer an engaging opportunity for students to make complex decisions about representing historical narratives, they also help students understand the often subjective nature of the historical accounts presented to them in textbooks and other media. Preliminary feedback from Mrs. Federman suggests potential gains in engagement and understanding, but a more carefully monitored implementation is yet to be explored. Activities like *TwHistory* are promising and worthy of study because they offer an engaging opportunity for students to begin to learn the skills of a historian and share history using social media.

Figures

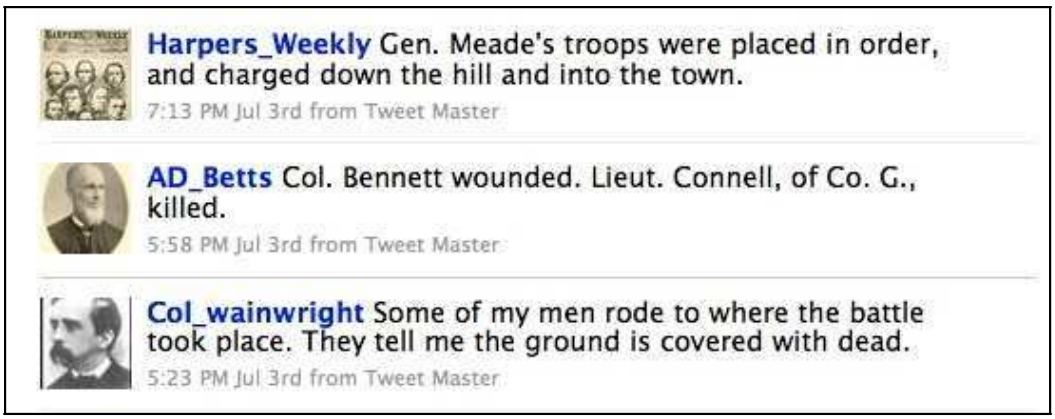

Figure 1 - Example *Twitter* stream from the Battle of Gettysburg

Bibliographic references

Bass, R., Rosenzweig, R., & Mason, G. (1999). Rewiring the history and social studies classroom: Needs, frameworks, dangers, and proposals. *Journal of Education*, *181*(3), 41-62.

Hynd, C., Holschuh, J. P., & Hubbard, B. P. (2004). Thinking Like a Historian: College Students' Reading of Multiple Historical Documents. *Journal of Literacy Research, 36*(2), 141-176.

Nardi, B., Schiano, D., Gumbrecht, M., & Swartz, L. (2004). Why we blog. *Communications of the ACM, 47*(12), 41-46.

Scheurman, G., & Newmann, F.M. (1998). Authentic intellectual work in social studies: putting performance before pedagogy. *Social Education, 62*(1), 21– 35.

Spoehr, K., & Spoehr, L. (1994). Learning to think historically. *Educational Psychologist*, *29*(2), 71.

Wiley, J., & Voss, J. F. (1996). The Effects of "Playing Historian" on Learning in History. *Applied Cognitive Psychology*, *10*(7), 63-72.

Wineburg, S. (2001). *Historical Thinking*. Philadelphia, PA: Temple University Press.

About the authors

Marion Jensen

PhD Student, Utah State University.

Marion Jensen (@marionjensen) is co-founder of TwHistory.org and a doctoral student at Utah State University in the Department of Instructional Technology and Learning Sciences. Marion is a Senior Instructional Designer at American Express.

289 S. 650 W.
Farmington, UT 84025
USA
marionjensen@gmail.com

Tom Caswell

PhD Student, Utah State University.

Tom Caswell (@tom4cam) is co-founder of TwHistory.org and a doctoral student at Utah State University in the Department of Instructional Technology and Learning Sciences. Tom is Open Education Project Manager at the Washington State Board for Community and Technical Colleges (SBCTC).

1349 Davis Ave.
Logan, UT 84321
USA
caswell.tom@gmail.com

Justin Ball
COO, Tatemae LLC.

Justin Ball (@jbasdf) is a software consultant and entrepreneur with a passion for Ruby. He has been involved with numerous Open Education software development projects, including Folksemantic, OER Finder, OER Recommender, and others.

PO Box 529
Millville, UT 84326
USA

Joel Duffin, PhD
CEO, Tatemae LLC.

Joel Duffin (@oxtralite) is an entrepenuer and software developer with a love for designing software and understanding how people learn. Joel enjoys scheming about how to design and leverage software systems and online content to encourage youth to engage in science, technology, engineering, and mathematics.

PO Box 529
Millville, UT 84326
USA

Rob Barton
PhD Student, Utah State University.

Rob Barton (@robmba) is a TwHistory researcher and a doctoral student at Utah State University in the Department of Instructional Technology and Learning Sciences. Rob currently works as an instructional designer at Western Governors University.

1535 East 1200 North
Logan, Utah 84341
USA
rdbarton@gmail.com

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Reaching the Heart of the University: Libraries and the Future of OER

Pieter Kleymeer,* Molly Kleinman, Ted Hanss*****

* Open Education Manager, Office of Enabling Technologies, University of Michigan Medical School

** Special Assistant to the Dean of Libraries, University of Michigan Library

*** Director of the Office of Enabling Technologies, Office of Enabling Technologies, University of Michigan Medical School

Abstract

University libraries are well positioned to run or support OER production and publication operations. Many university libraries already have the technical, service, and policy infrastructure in place that would provide economies of scale for nascent and mature OER projects. Given a number of aligning factors, the University of Michigan (U-M) has an excellent opportunity to integrate Open.Michigan, its OER operation, into the University Library. This paper presents the case for greater university library involvement in OER projects generally, with U-M as a case study.

Keywords

Libraries, OER, OCW, sustainability, university, academic, infrastructure, publishing, policy

---

Recommended citation:

Kleymeer, P.; Kleinman, M.; Hanss, T. (2010). Reaching the Heart of the University: Libraries and the Future of OER. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.

[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4866>

Introduction

University libraries are well positioned to run or support open educational resource (OER) production and publication operations, but so far most academic institutions developing OER have little or no integration with their respective libraries. Many university libraries already have the technical, service, and policy infrastructure in place that would provide economies of scale for nascent and mature OER projects. Given a number of aligning factors, the University of Michigan (U-M) has an excellent opportunity to integrate Open.Michigan, its OER operation, into the University Library. While the U-M Library's established publishing apparatus is larger than that of most academic libraries, many institutions share elements that would make OER integration feasible in one form or another. This paper presents the case for greater university library involvement in OER projects generally, with U-M as a case study.

Libraries were among the first OER producers, digitizing and sharing digital content even before the arrival of the public Internet. These early "digital library" projects were spearheaded by libraries in support of their missions to collect, preserve, and provide access to knowledge and information. In the United States, the Library of Congress launched one of the first efforts with a pilot program in 1990 that became the American Memory Historical Collections.[1] The program digitized public domain historical materials from the Library's collections, including documents, moving images, sound recordings, and print and photographic media, and selected forty-four schools and libraries across the country to receive CD-ROMs of all the materials. In 1994, after the internet had arisen as a viable multimedia distribution system, the program moved online and the Library of Congress launched the National Digital Library Program, "a pioneering systematic effort to digitize some of the foremost historical treasures in the Library and other major research archives and make them readily available on the Web to Congress, scholars, educators, students, the general public, and the global Internet community."[2] With a wave of funding support from the government (National Science Foundation Digital Library Initiative) and a handful of committed foundations (The Andrew W. Mellon Foundation, the J. Paul Getty Foundation and the W.K. Kellogg Foundation), similar projects soon sprung up at university libraries across the country, notably including Harvard, Cornell, the University of Virginia, and the University of Michigan (Greenstein and Thorin, 2002).

Many of the libraries that experimented with digital publishing in the 1990's now have established operations to share free content online, and they have been joined by libraries large and small, academic and public, all with the same mission: to improve access to scholarly, educational, and historical materials for everyone.[3] Indeed, the missions and goals of the new crop of OER initiatives align closely with those of academic libraries. Academic OER initiatives and university libraries share a determination to improve access to all kinds of scholarly and educational materials, both on their campuses and throughout the world. Given those dovetailing values, partnerships between OER initiatives and libraries seem not just logistically convenient but philosophically obvious.

The Advantages of Libraries

In addition to this convenient philosophical convergence, there are two key advantages that many university libraries share, and OER initiatives need: infrastructure and relationships.

Infrastructure: Depending on the institution, areas where existing library infrastructure could support OER include search and discovery, copyright expertise, data storage, metadata and indexing, and institutional repositories and preservation. Most OER shops are isolated in individual departments or as stand-alone units and do not have access to the kind of robust support available in many libraries.[4] In trying to create duplicate infrastructure, OER groups may be missing opportunities to use existing and proven systems.

- Search and discovery: For a long time, libraries have been engaged in the struggle to help their users find the information they need quickly and seamlessly. Many academic libraries have programmers and other experts working on the problem of improving search results across large bodies of heterogeneous content in databases, library catalogs, and across the open web. This expertise would be valuable to OER operations that have invested a great deal in producing content, but have not yet figured out how to make that content findable to all the people who could use it.[5]

- Copyright expertise: In recent years, many academic libraries have created positions for copyright or scholarly communications specialists. These librarians provide outreach and education to faculty, staff, and students on a range of issues including publishing agreements, author rights, licensing contracts, and open access policies. Access to this copyright expertise would serve OER initiatives in two ways: helping to create policy and answer questions related to the use of third party content and licensing in OER, and supporting outreach efforts by helping to educate faculty about their rights as authors and creators and about the value of sharing.

- Data storage: In order to support the aforementioned digital collections, libraries have access to excellent storage systems for electronic content, along with carefully developed standards to keep those collections safe and accessible. Some run their own servers, while others partner with the central campus IT provider or use an external service, but the result is reliable storage that is protected against data loss and server outages. The storage infrastructure available to OER initiatives varies widely across institutions and depends a great deal on where the project is housed. On some campuses, the storage options available outside the library may be better than those in it, but on others the storage infrastructure in the library is top notch and would be an excellent home for OER.

- Metadata and indexing: Libraries have been cataloguing and indexing materials for centuries, and they have carried this expertise forward into the networked era. Metadata experts in libraries could serve as consultants for OER projects, either formally or informally, in order to help standardize and improve metadata for open content.

- Institutional repositories and preservation: Universities across the country are launching institutional repositories (IRs) to preserve and make available the scholarly output from their campuses. Many OER projects either use dedicated OER or open courseware publishing platforms such as eduCommons, learning management systems like Sakai or Moodle, or have created their own, but these systems are not designed for preservation of materials or formats. Using platforms like DSpace and Fedora, IRs contain materials in a wide range of formats, and are committed both to making the content freely available and discoverable on the open web, and to preserving the

content over the very long term. Few digital publishing operations have concerned themselves with long-term preservation, and as a result gigabytes of born digital content, websites and publications have already been lost (Brand, 1999). Depositing OER into institutional repositories opens up a new potential avenue of discovery while also ensuring that the material will be available for years to come.

Many of the infrastructural benefits in libraries could be available to OER initiatives without formally becoming a part of the library. Indeed, for many OER shops, collaborations with their libraries in some or all of these areas may be sufficient to meet the needs of the project. However, the next advantage will be harder to capitalize on through simple collaboration.

Relationships: Living at the heart of the University

Most university libraries have a central and trusted position in the lives of faculty, students, and administrators on their campuses. Librarians support curriculum development, guide instructors to appropriate learning content, and assist with research. According to data collected by the Association for Research Libraries (ARL), the average research library in the United States answers tens of thousands of reference questions each year (ARL Statistics, 2009). While gate counts are not collected by ARL, at a representative institution like the University of Washington, which sits towards the middle of ARL size rankings, that number is in the millions.[6] Despite the changes brought by technology and the availability of scholarly and educational content online, people on university campuses still use their libraries and librarians every day. Areas in which librarians have skills that are relevant to OER programs include outreach and education, curriculum development, and instructional support.

- Outreach and education: Public services librarians spend their time developing programming, reaching out to faculty and students, and teaching research skills. They know intimately which outreach strategies will work best for different departments, disciplines, and subcultures across campus. For OER projects that are struggling to recruit more faculty participation, or to inform students of the existence and usefulness of OER, librarians can offer not just guidance on effective marketing and outreach, but also a direct and trusted line to faculty and students all over campus.

- Curriculum development: In many institutions, librarians are immersed in the process of curriculum development and are engaged directly as facilitators in courses, a position from which they can help both students and faculty access OER, and turn course materials, both faculty and student produced, into OER.

- Instructional support: Some university libraries offer instructional design support, and many more help faculty identify and locate materials to use in their courses. Increasingly, librarians are using this role to point their faculty towards open content of all kinds (Kleinman, 2008). When a course is taught with OER in mind from the beginning, it is much easier to openly license it later.

When we refer to that oft-quoted line (so oft-quoted that we are not actually sure whom to quote), “Libraries are the heart of universities,” what we mean is this: Libraries are for everyone. Libraries provide services to every student, instructor, and staff member from every school, college, and department on a campus. When libraries are not beholden to the interests of a specific unit or department, they can be trusted to direct their financial, personnel, and technical resources in a manner that will provide the most benefit to the most people. This is exactly the kind of reputation

OER publishing initiatives should want to have. An affiliation with the library signifies trustworthiness, sensibleness, and a commitment to the common good.

Case Study: OER and the Library at the University of Michigan

We now turn our attention to the case study underway at the University of Michigan. In March 2010, a small group within the University Library submitted a report to Dean of Libraries Paul Courant recommending that the Library launch a University-wide program housed in its MPublishing unit to publish and collect OER. The group argued that the Library should focus on integrating some or all of the existing Open.Michigan OER operation into the Library to capitalize on the experience and connections that operation had already built. Courant charged a task force with researching the requirements for developing a University-wide OER program in the Library, including the staffing and resource needs and potential funding sources, and that task force delivered its report in August 2010. As of this writing, the Library is in the process of making a final decision about taking on responsibility for OER publishing at the University, but a number of collaborations are already underway, and some of the groundwork has been completed.

Open.Michigan

Open.Michigan is a project based in the University of Michigan Medical School and is dedicated to enabling educators, students and staff to make their instructional and educational resources available to everyone in the world. It is supervised by Ted Hanss, director of the Office of Enabling Technologies, which is a part of the Dean's Office in the Medical School. The Office of Enabling Technologies was created as an incubator for new technologies, techniques, and activities that might be of use to the instructional and research missions of the Medical School. The Open.Michigan project was born from the initiative of a few graduate students and the Dean's conviction that open education had a place in medical instruction.

The mission of Open.Michigan is to "increase knowledge and sharing in the higher education community through fostering an open culture." Most of the activity in service of this mission is directly related to OER production and publishing in some form, but there is also an underlying effort to change the climate at the University of Michigan to encourage sharing and foster a participatory learning environment.

Open.Michigan consists of four major areas of activity:

1) *The production of OER from U-M courses and learning materials, and outreach and consulting services related to OER production:* Open Education Specialists partner with faculty who wish to create any form of OER, including courses, textbooks, and datasets, support faculty who are seeking open content to use in their teaching, and promote the use and creation of OER throughout the

campus. This work includes an effort to educate faculty about copyright and to encourage them to create courses using material that is licensed for downstream copying and adaptation.

2) *The development of processes and software to support OER production and publishing*: Open.Michigan developed a distributed OER production process called dScribe, which uses student volunteers in U-M courses to collect course materials, run them through a copyright clearance process, replace proprietary third party materials with public domain or Creative Commons licensed content, and republish the courses as OER in the Open.Michigan OER repository. To support this work, Open.Michigan developed an open source software application called OERca that facilitates the copyright clearance process. Open.Michigan also worked with a contractor to build an open source OER publishing platform on Drupal.

3) *The Open.Michigan website, which serves as a gateway to a wide spectrum of "open" initiatives at the University of Michigan and collaborating institutions*: This website highlights relevant projects throughout the University, including many Library initiatives, and serves as a publishing platform for over 60 courses and resources produced as OER from 10 different units, schools and colleges at U-M.

4) *African Health OER Network, a partnership between the U-M Medical School, OER Africa, and several health science universities across the continent*: Funded by the Hewlett Foundation, the aim of the project is to improve health science education in Africa and enable teaching resources to flow back and forth between U-M and African health science schools. The participating schools are collaborating on content creation, production and publishing development, and advocacy and policymaking related to OER.

The University of Michigan Library

The University of Michigan Library in Ann Arbor is one of the largest university library systems in the United States. Comprising several locations across campus, the Library holds more than 8 million volumes and serves more than 3 million patrons per year. In a typical year, the University Library teaches more than 1,000 classes to 20,000 undergraduates, graduate students, and faculty through course-integrated instruction and technology-focused programs. The overarching mission of the University Library is to support the research and scholarship of students and faculty. In recent years, many non-traditional activities that support scholarship have begun to fit under the Library's umbrella, including publishing, technology instruction, copyright advocacy, and software development.

The University Library launched its first digitization and open access projects in the early 1990's. The Making of America project was a Mellon Foundation-funded partnership among U-M, Cornell University, and the Library of Congress that created one of the first digital libraries of public domain content.[7] Since then, the Library has built a robust digital publishing program that includes a copyright office, an institutional repository, and an experimental unit that publishes open access scholarly journals, monograph series, public domain image collections, print-on-demand textbooks, and reprints. When it assumed responsibility for the University of Michigan Press in

2009, the University Library organized a new unit called MPublishing and consolidated within it tremendous expertise in the skills necessary to create and publish open digital content. Recently, the U-M Library began exploring the addition of OER to its portfolio with the potential integration of Open.Michigan into MPublishing.

Moving OER into the Library

The task force on moving Open.Michigan into the University Library identified several advantages that would be gained from such a shift, many of them outlined in the section above: the Library has a broader reach and relationships throughout campus, and has already established much of the infrastructure and expertise necessary to support OER production. In addition to its primary work with the Medical School, Open.Michigan has partnered with the College of Literature, Science and Arts, the College of Engineering, the Taubman College of Architecture and Urban Planning, and the Schools of Dentistry, Education, Information, Nursing, Public Health, and Public Policy to support their OER efforts. Creating a central home for OER publishing would give the operation more freedom to support all interested faculty and students on campus. Furthermore, developing a central unit that helps manage the production, storage, access, and preservation of OER would allow the University to achieve efficiencies.

In anticipation of a potential move, several collaborations between Open.Michigan and the University Library are already underway. These collaborations support the work of Open.Michigan, and can continue to do so even if the proposed integration does not move forward.

- Copyright: Both Open.Michigan and the Library have outreach and education programs related to copyright, licensing, and author rights, and over the last year there has been ongoing cooperation to join forces and reduce overlap. One of the Library's copyright specialists offers workshops that include copyright basics along with instruction on how to find, use, and create OER, and helps provide copyright trainings for dScribes. He also coordinates Open.Michigan's legal and policy meetings, where the Library Copyright Office, U-M's General Counsel's Office, and Open.Michigan create and discuss policies for copyright and OER production.

- Preservation: At the start of 2010, Open.Michigan began archiving courses and resources in Deep Blue, the University Library's institutional repository, where they will be preserved over the long term. The primary access point for Open.Michigan's OER is a custom-built Drupal website on hosted Medical School servers. Deposit in Deep Blue, a customized DSpace platform, will ensure that these resources are available well into the future.

- Student outreach: The Library has a robust outreach program for undergraduates, one that recently expanded with the opening of a new "media commons" in North Quad, a building that just opened and includes space for dormitories, several academic departments, and a variety of common spaces, many with large display screens. The Library oversees the common spaces, and Open.Michigan is working with the North Quad librarian to offer programming and other activities to support student engagement with open content.

The remaining question to be resolved before a final decision can be made on moving OER into the library is funding: the University Library cannot take on an OER publishing initiative without additional money. As of this writing, conversations are underway to investigate potential funding sources that may involve an ongoing partnership with the Medical School, in addition to support

from the Provost, individual departments and colleges on campus, the Alumni Association, and a partial cost recovery model. The University Library has a strong track record of turning open content into revenue streams, most notably with its reprint series.[8] Successes elsewhere in monetizing open educational resources, such as Flat World Knowledge's print textbook sales or MIT's recruitment of donors, suggest that similar opportunities are available for Michigan.

Conclusion

To achieve long-term sustainability, university-based OER projects need a stable and well-funded home. OER projects will only sustain themselves by demonstrating lasting value to their home institutions. By partnering with libraries -- entities that already share the open philosophy and have already proven their value to the academy -- it will be possible for OER operations to become more firmly embedded in the spirit and structure of the campus. Early digital library projects may have a lesson here for OER operations; in a survey of university libraries that launched successful digital library projects, all fifteen respondents cited "substantial institutional commitment" as crucial for their longevity and success (Greenstein and Thorin, 2002).

There is another, less tangible potential benefit to be gained from working more closely with university libraries. If the goal of OER production is to change the culture in the academy, to create a community of teaching and learning that is more participatory, more open, and more accessible, to shift the value system towards one that privileges research and teaching materials that are available for use and reuse over content that is restricted and locked away, what better place from which to launch such an ambitious program than the library, the heart of the university? There is real work to be done if we hope to live in a world where scholarship and knowledge are available to all. Bringing OER into libraries offers us an opportunity to get a few steps closer to that world by applying all the expertise and infrastructure of libraries to the challenge of opening up teaching materials in a way that makes them usable, findable, and durable.

Notes

1. http://memory.loc.gov/.
2. http://lcweb2.loc.gov/ammem/about/index.html.
3. Some examples include Cornell Windows on the Past (http://cdl.library.cornell.edu/), the California Digital Library (http://www.cdlib.org/), and the New York Public Library http://www.nypl.org/collections/nypl-collections).
4. For example, the Johns Hopkins OCW initiative is housed in the Bloomberg School of Public Health (http://ocw.jhsph.edu/), while Utah State's OCW group is unaffiliated with a larger university entity (http://ocw.usu.edu/).
5. Notwithstanding the early attempts of Creative Commons and their DiscoverEd project http://learn.creativecommons.org/wp-content/uploads/2009/07/discovered-paper-17-july-2009.pdf.

6. www.libqual.org/documents/admin/HillerLAFDenver.ppt.
7. http://quod.lib.umich.edu/m/moagrp/.
8. The Michigan Historical Reprint Series http://www.lib.umich.edu/spo/reprints.html and University of Michigan Faculty Reprints http://www.lib.umich.edu/spo/facultyreprints.html.

Bibliographic references

ARL Statistics 2007-2008. (2009) Association of Research Libraries. http://www.arl.org/bm~doc/arlstat08.pdf

Brand, S. (1999). Escaping the Digital Dark Age. *Library Journal*. vol. 124. Issue 2, p46-49. http://web.archive.org/web/20050923024519/http://library.colstate.edu/libr1105/kramer/cadeau/deadm2.html

Greenstein, D. and Thorin, S. E. (2002). *The Digital Library: A Biography*. Digital Library Federation and the Council on Library and Information Resources. http://www.clir.org/PUBS/reports/pub109/pub109.pdf

Kleinman, M. (2008). The beauty of "Some Rights Reserved": Introducing Creative Commons to librarians, faculty, and students. *C&RL News.* Vol. 69, No. 10. http://www.ala.org/ala/mgrps/divs/acrl/publications/crlnews/2008/nov/beautyofsrr.cfm

About the authors

Pieter Kleymeer

Open Education Manager, Office of Enabling Technologies, University of Michigan Medical School.

Pieter Kleymeer is the Open Education Manager working for the Office of Enabling Technologies at the University of Michigan Medical School. Prior to his work at the University of Michigan, Pieter was an electronics engineer engaged in telecommunications policy at the United States Federal Communications Commission. Pieter earned his B.S.E. from the University of Michigan College of Engineering, and his M.S. in Information from the University of Michigan School of Information.

Office of Enabling Technologies
University of Michigan Medical School
4101 Medical Science I
1301 Catherine Street SPC 5624
Ann Arbor, MI 48109-5624
pkleymee@umich.edu

Molly Kleinman
Special Assistant to the Dean of Libraries, University of Michigan Library.

Molly Kleinman is Special Assistant to the Dean of Libraries at the University of Michigan. Previously, Molly served as Copyright Specialist for the University of Michigan Library. She is an instructor for the Association of College and Research Libraries Scholarly Communications 101 Roadshow, and was a member of the 2007-2009 team of Copyright Scholars for the American Library Association's Copyright Advisory Network. Molly received her B.A. in English from Bryn Mawr College, and her M.S. in Information from the University of Michigan School of Information.

University of Michigan Library
913 South University Avenue
Ann Arbor, MI 48109-1190
makleinm@umich.edu

Ted Hanss
Director of the Office of Enabling Technologies, Office of Enabling Technologies, University of Michigan Medical School.

Ted Hanss is the Director of Enabling Technologies for the University of Michigan Medical School. Ted returned to the U-M campus in September 2004 after spending eight years as the director of applications development for the Internet2 consortium. Before Internet2, Ted served for several years as a senior manager in the University of Michigan's Information Technology Division. Ted has a B.S. in Biology from Boston College and an MBA from the University of Michigan.

Office of Enabling Technologies
University of Michigan Medical School
4101 Medical Science I
1301 Catherine Street SPC 5624
Ann Arbor, MI 48109-5624
ted@umich.edu

This proceeding – unless indicated otherwise – is covered by the Creative Commons Spain Attribution 3.0 licence. You may copy, distribute, transmit and adapt the work, provided you attribute it (authorship) in the manner specified by the author(s) or licensor(s). The full text of the licence can be consulted here: http://creativecommons.org/licenses/by/3.0/es/deed.en.

Open online courses in Colombia: Report of an educational and technological experiment

Diego E. Leal Fonseca

Master's degree in Computing and Systems Engineering from Universidad de los Andes (Colombia)

Abstract

Based on a discussion of the background, features and limitations of open online courses, this paper describes a technological solution to support their offering, built on online tools that don't require self-managed hosting. This is a proof of concept that intends to highlight the possibilities and obstacles related to this kind of educational practice in a Latin American context.

Keywords

open education, open online courses, open teaching, open educational resources

Recommended citation:

Leal Fonseca, Diego E. (2010). Open online courses in Colombia: Report of an educational and technological experiment. In *Open Ed 2010 Proceedings* . Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].<http://hdl.handle.net/10609/5101>

1. Introduction

In September 2009, building on the experiences developed by David Wiley, Alec Couros, Stephen Downes and George Siemens (as described by Fini et al. (2008), Fini (2009), Wiley and Hilton (2009) and Couros (2010)), the first open online course offered in Spanish was launched in Colombia. This course (called *e-Learning* -ELRN-) was part of the master's program in Educational Informatics at Universidad de la Sabana (Bogotá), and included for-credit participants who were formally enrolled, as well as people participating in open modality (who don't pay for the course and don't receive a certificate when it ends). Three new courses have been offered so far, based on the ideas and technology used in the first experience: one by EAFIT University (Medellín) called *Groups, Networks and Communities* (GRYC), a new offering of ELRN at Universidad de la Sabana in the first semester of 2010, and a new course called *Teaching in learning environments supported by Information and Communication Technologies* (DocTIC), offered by Universidad Pontificia Bolivariana (Medellín) between July and September 2010.

The solution proposed takes into account that email is the most widely used online communication tool in Colombia and technologies such as RSS are still unknown to most people. Also, given that not all teachers have access to learning management system (LMS) platforms, the tools used have been chosen because of their wide availability and easiness of reuse.

2. Background

Open online courses are a recent practice, which builds upon the work developed in the Open Educational Resources (OER) area. OER initiatives are usually concerned with content production, publication and storage, and only in recent years other experiences going beyond the mere provision of educational materials have emerged, proposing openness in different academic and educational services. Wiley and Hilton (2009) describe several ways in which this notion of *openness* reflects in some higher education institutions, and refer to an emerging practice which they call *open teaching*, in which:

> "…faculty publish their course materials online under an open license before the beginning of the course and invite others from outside their university to participate in the course together with the “official students” of the course. In many cases, all students (both tuition-paying and informal students) post their work to publicly accessible blogs for critique and discussion by the larger group."

Examples of this practice, though recent, have created new areas of interest that are just starting to be explored. In September 2008, Stephen Downes and George Siemens offered for the first time a massive open online course (MOOC), which addressed in its design some specific aspects of what it means to offer open learning experiences at a large scale. The course Connectivism and Connective Knowledge (CCK) showed the importance of having mechanisms to identify, aggregate and redistribute the work developed by participants in such a course.

The technology used in many open courses has been analyzed by Fini et al. (2008), Fini (2009) and Mak et al. (2010). Couros (2010) provides a rationale for the technology used, which consists of:

> **Syllabus / Activities:** Published on self-hosted or public wiki platforms.
>
> **Individual reflection:** Participants publish their contributions in blogs hosted on public services.
>
> **Asynchronous Communication:** Centralized communication happens on mailing lists (on services as Google Groups) or discussion forums (on Moodle installations).
>
> **Synchronous communication:** Participants meet regularly on lecture/follow-up sessions through Web conferencing platforms such as WiZiQ or Elluminate.
>
> **Resource bookmarking:** Participants tag relevant resources on social bookmarking services such as Delicious or Diigo.

Centralized asynchronous communication has been very relevant in the first open courses offered in North America, because there were no tools allowing easy access to the distributed content (posts and comments) created by participants. In some cases, instructors use OPML files to simplify the process of aggregating blogs, but this solution requires participants to be familiar with the use of RSS aggregators (such as Google Reader) and to include the continuous reading of such sources as part of their information consumption habits.

In order to offer an alternative to this situation, the 2008 version of CCK made use of a content aggregation and redistribution platform which collected the posts generated in the course blogs, and offered the possibility to subscribe to a daily e-mail message summarizing the activity happening along the course. This platform (gRSShopper, developed by Stephen Downes), is an open source application written in Perl that, once installed on a web server, allows for the aggregation, organization and distribution of information coming from RSS feeds and other sources. Distribution is made through e-mail daily messages, which may also include comments and suggestions by the course facilitators.

Recent courses have explored other technological solutions. *Futures of Education*, offered between April and June 2010 by Dave Cormier and George Siemens, used a self-hosted installation of the Drupal Content Management System (CMS), which enabled internal blogs and forums, but did not include a daily, automatically generated e-mail. On the other hand, Stephen Downes and Rita Kop's *Critical Literacies*, offered between May and June 2010, used Moodle as the platform to publish central activities and discussions, and gRSShopper to aggregate and redistribute blog entries via e-mail (in the same way it was done in 2008 and 2009 editions of CCK).

In Latin America, until September 2009 there are no documented experiences of this kind. Although there are some experiences using blogs in higher education, these are often developed within a LMS, and do not address the problem of aggregation and automatic redistribution of information coming from the wide network. Even though some of them make use of materials that

could be classified as Open Educational Resources, they are not examples of open teaching, on the terms described by Wiley and Hilton (2009).

3. Problem definition

The starting point of this work is the issue of designing and delivering a local open course in Spanish, building on the work developed by Wiley, Couros, Downes and Siemens, and taking into account local restrictions as well as some practical limitations of those experiences.
For instance, given that content is completely distributed, in some of these courses it is difficult (both for teachers and participants) to monitor conversations taking place in blogs. In some courses, although the technology used for aggregation and redistribution of information is available to anyone, it requires to have a server on which to install it, involving a high level of technical skill. This limits the use of such technology by teachers who might be interested in emulating such practices.

In consequence, the question to be solved is: Is it possible to 'replicate' a platform for information aggregation and redistribution (such as gRSShopper) using public tools (i.e. that don't require self-hosting), which can be freely used and even replicated later?

4. Design intentions

The technological design intended to provide an answer to the limitations identified above. It seeks to make reuse and replication possible by any participant in a given course. This means avoiding for-pay tools and solutions that require self-hosting. It also aims to facilitate access to content via e-mail, while providing options for more experienced users. Finally, following the ideas of *openness* expressed by Wiley and Hilton (2009), the tools used should not only facilitate access, but make possible the public collection and redistribution of information. For this reason, applications such as Moodle or social networking platforms like Facebook were discarded.

The experience proposed necessarily took into account that, outside of formal educational settings and certain corporate spaces, the use of a LMS is rather limited, and sometimes non-existent. The information environment that current students are facing and will face, is increasingly unstructured and distributed, so it makes sense to try and go beyond the organized environment simulated by a LMS, and create an experience that allows participants to work first-hand in such an information environment, thus developing skills to perform effectively on it. Following the CCK experience, there was also an intention to test some of the ideas proposed by connectivism and, in some cases, to allow participants to enhance their personal learning environment throughout the course. The detailed explanation of the decisions concerning learning design, however, is part of another paper.

5. Proposed solution

The solution implemented is illustrated in Figure 1. Each participant created at the beginning of the course a personal blog in any of the public services available for this purpose (such as Blogger or Wordpress). In some cases, participants used existing blogs. These were the main sources of information and, once created, had to be registered in a Google Docs form, which was embedded in the course wiki (published in PBworks).

The form was linked to Yahoo Pipes using the CSV export utility of Google Docs (using ideas outlined by Hirst (2008)). Incoming information was then processed by Yahoo Pipes, compiling the registered feeds into a single feed, which included posts produced by all participants. Finally, this feed was sent to Google Feedburner, where the possibility of e-mail subscriptions was enabled.
This allowed participants to subscribe to course content through RSS only if they wanted to, because they had a choice of receiving a daily e-mail message with a compilation of the posts published during the previous day. Comments made on all blogs were also collected into a single feed, which allowed the same subscription alternatives mentioned above.

The process was transparent to participants, who only needed to have a blog to publish the content they created for the course, and to subscribe to the daily post and comment digests to monitor the work of the whole group. Additionally, participants used a Diigo group (a social bookmarking platform) to compile resources related to the subjects of the different courses.

This solution did not limit what advanced users could do, because blogs include, by means of embed code, content published on several other services (such as Slideshare, YouTube or Flickr, for example). In addition, the feeds generated were connected via Twitterfeed to a Twitter account created for each course, allowing for "real time" updates of information coming from the feeds, and notifications of resources collected in the Diigo group. This enabled participants with different information consumption habits to receive information according to their personal preferences.

To summarize, following the example of Wiley, Couros, Downes and Siemens' courses, a wiki was used as a platform to publish the weekly activities of the course. Blogs were the main tool for student reflection, as well as the place where asynchronous, decentralized discussions were held. Resources were compiled in Diigo, and weekly synchronous sessions were held in platforms such as WiZiQ or Elluminate. The problem of aggregation and redistribution was solved using a mash-up of Google Docs, Yahoo Pipes and Google Feedburner.

As illustrated in Figure 2, the core of this approach relies on Yahoo pipes. Several pipes have been built and parameterized, which means that reuse becomes an easier process, although it is clearly not a trivial one.

The main pipe (getPosts) aggregates blog entries as described above, and uses several parameters to generate its output:

> The list of ‘course’ feeds (CSV format, coming from Google Docs)
>
> The feed of a course blog (optional, which may or may not be used by the facilitator to broadcast timely information)
>
> Start and end dates, which delimit the beginning and the end of a given ‘course’
>
> A maximum number of items generated, used to solve a limitation of Google Feedburner, which does not allow input feeds with a size greater than 512Kb.

It is possible to adjust these parameters in order to get custom output from different sources and specific time periods.

At the end of the first course offered, the importance of having a mechanism to track blog comments made by participants was evident. To solve this, a new *pipe* (getComments) was built, using as input the compiled RSS feed of blog posts (generated by the first *pipe).* This *pipe* processes each post and automatically identifies and obtains the corresponding comment feed (when available), thereby generating a single feed that compiles all the comments made in all posts. As in the previous case, this pipe includes start and end dates and a maximum number of items to be generated. In addition, the *pipe* collects specific Twitter *hashtags*, as well as optional RSS feeds from any other services (e.g., Google Groups, or Moodle forums). The product of this second pipe is also sent to Google Feedburner, enabling subscription via e-mail.

The third *pipe* in the sequence (getGraph), takes as input the RSS feed for comments and information from the Google Docs form, and generates a new feed that specifies who commented whom. This information serves as a starting point for building graphs that represent the emerging conversation among the participants of the course, constituting an important monitoring tool for both instructors and students. The detail of this approach is part of another paper.

6. Results

The solution described was first used in September 2009, and has been tested with four different groups. Table 1 shows the summary of participation in the courses offered. It is worth noting that even though participants subscribe to information from a course, this does not mean they do participate actively on it.

Table 2 shows the summary of subscriptions to the feeds used in the different courses. The first column shows the average number of subscribers throughout the existence of the subscription, while the maximum number refers to the peak of subscriptions reached during the time the subscription was available. Note also that the two offers of ELRN are not being differentiated, as participants could activate or cancel their subscription at any time. That's why the last column refers to the email subscribers active at the time of writing of this document.

It is clear that the most important results are not related to the use of the technology but instead to the learning outcomes of the experience. Detailed information about these issues is being collected at the time, so there are no formal results to report yet. However, an informal review of participants' blogs suggests that the course design actually helps them to see a clear alternative to the kind of activities promoted in a LMS, demonstrating the possibilities of blogs as tools for reflective thinking.

7. Discussion

Many users make mistakes in the URLs they provide when registering, and some others use previous blogs, which can include information unrelated to the course. In order to fix these errors, a manual review of the registered feeds has been done in every course. The errors found suggest a limited skill level of many people interested in the courses, and leaves open questions about whether or not is it possible to automate this review process.

Although the use of various media types articulated through blogs is allowed, it is worth mentioning that the predominant communication medium is still text. This is neither good nor bad in itself, but it makes possible to quickly address issues such as inclusion, for example. A course that can be followed through email facilitates access to blind people and several other disabilities, and opens a possibility of interaction for communities that still have limited Internet access (via mobile devices, for example).

Unfortunately, Feedburner e-mail subscriptions are not flexible enough, so participants cannot decide how often to receive notifications (default is daily). It is difficult to get an output such as the one generated using gRSShopper, where facilitators could comment on specific content before they reached participants. To that extent, customization is being sacrificed for ease of replication.

Possibly the most important issue with this solution is at the same time one of its strengths: it depends completely on third party, online services. Any future changes to the Yahoo Pipes engine, or any policy changes in any of the tools used could bring a disruption (or even a full stop) of the aggregation services.

This makes clear the convenience of LMS, platforms that greatly simplify the work of recording, organizing and managing course information. The proposed solution serves as a demonstration of how technology can be articulated to simplify tracking in a distributed and unstructured information environment. Yet, it is clear that its current state still presents obstacles to teachers willing to explore the practice of open teaching, raising questions about the potential growth of these experiences.

That said, there is an opportunity to develop new platforms that enable easy information aggregation and redistribution, making reuse easier at the same time. The approach described in this paper, as well as conceptual designs such as EduFeedr (Põldoja, 2009) and gRSShopper, are a starting point in this exploration. Together with an analytics layer, such platforms could even become a reasonable alternative to a LMS for some teachers.

Finally, it is important to say that the number of tools used seemed to be too large for some participants. This is interesting, considering the array of other tools not proposed as mandatory (such as social networking platforms, microblogging, etc.) It is quite possible that this perception is based on the habit of having a LMS that provides a single access point to everything that has to be done in a course. However, this raises again one of the arguments mentioned above: whatever the area, it is very unlikely to find one single place where someone recommends what resources are to be read, or where someone assesses and gives ongoing feedback, as in a LMS. If a course (and thus, the educational institution) intends to reflect the current ecosystem of information and technology, it is not only desirable but also necessary to bring students into this kind of environment.

8. Prospective

Even though reuse of the *pipes* built depends on an improved documentation of the process, there are already people using this infrastructure for their own courses. A group of Argentinean students are offering an open course based on it, and some participants in ELRN and DocTIC have started to use it for experiments in their own classrooms as well. Their experiences will be very important to test the possibilities of this proposal.

The experience described opens some additional questions and possibilities. There are some interesting implications when thinking on a larger scale. For example, what would it mean for a model like this to be implemented at the level of a full academic program? What if all the content produced were to be aggregated in other platforms and redistributed in a personalized way? Could this be a decentralized alternative to a LMS, focused on another type of tracking and activities? These are just some of the questions that this experience opens for future study.

Figures and Tables

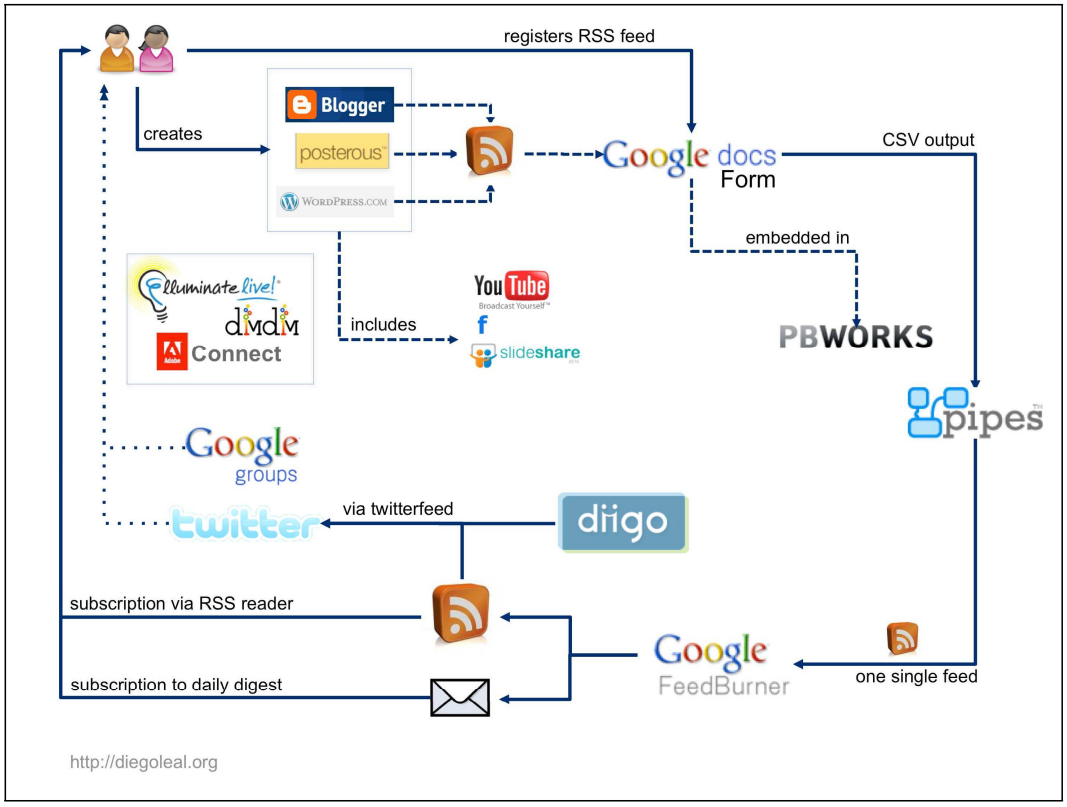

Figure 1. Technological solution implemented

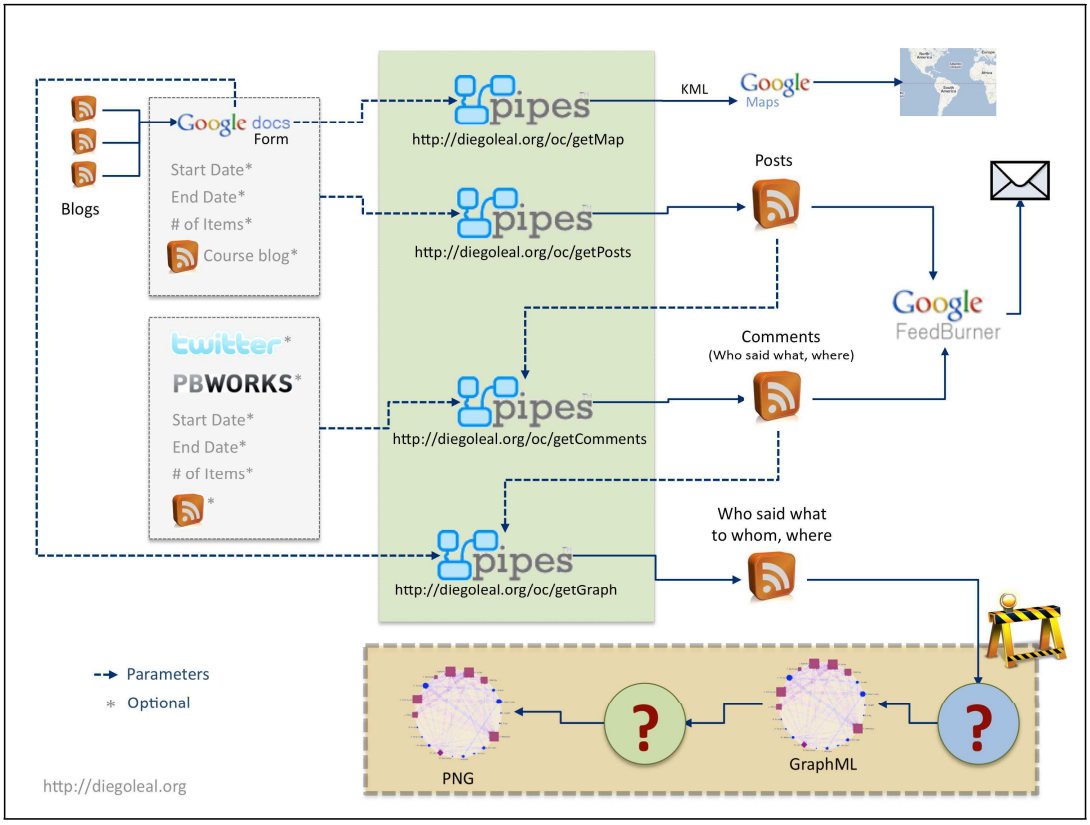

Figure 2. Information flow in the proposed solution

	Enrolled			Completed the course / Active		
Course	**For-credit**	**Open**	**Total**	**For-credit**	**Open**	**Total**
ELRN09	13	31	44	12	4	16
GRYC10	7	34	41	7	3	10
ELRN10	14	29	43	10	4	14
DOCTIC10	25	93	118	25	4	29
Total	**59**	**187**	**246**	**54**	**15**	**69**

Table 1. Summary of participation in the courses offered

	Subscribers		
Feed	**Average**	**Max.**	**e-mail subs. (04/08/2010)**
ELRN-Posts	33	48	20
ELRN-Comments	7	17	3
GRYC-Posts	27	49	17
GRYC-Comments	8	18	7
DocTIC-Posts	35	96	23
DocTIC-Comments	24	76	14

Table 2: Subscription statistics (provided by Feedburner)

Bibliographic references

Couros, A. (2010). Developing Personal Learning Networks for Open and Social Learning. In G. Veletsianos (Ed.), *Emerging Technologies in Distance Education* (pp. 109-128). Athabasca University Press. Retrieved from http://www.aupress.ca/books/120177/ebook/06_Veletsianos_2010-Emerging_Technologies_in_Distance_Education.pdf

Fini, A. (2009). The Technological Dimension of a Massive Open Online Course: The Case of the CCK08 Course Tools. *The International Review of Research in Open and Distance Learning*, *10*(5). Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/643

Fini, A., Formiconi, A., Giorni, A., Pirruccello, N., Spadavecchia, E., & Zibordi, E. (2008). IntroOpenEd 2007: an experience on Open Education by a virtual community of teachers. *Journal of e-Learning and Knowledge Society*, *4*(1), 231-239.

Hirst, T. (2008, October 14). Data Scraping Wikipedia with Google Spreadsheets. *OUseful.Info, the blog…*. Retrieved December 20, 2009, from http://blog.ouseful.info/2008/10/14/data-scraping-wikipedia-with-google-spreadsheets/

Mak, S. F. J., Williams, R., & Mackness, J. (2010). Blogs and Forums as Communication and Learning Tools in a MOOC. In L. Dirckinck-Holmfeld, V. Hodgson, C. Jones, M. de Laat, D. McConnell, & T. Ryberg (Eds.), *Proceedings of the 7th International Conference on Networked Learning 2010*. Presented at the International Conference on Networked Learning 2010, Aalborg, Denmark. Retrieved from http://www.lancs.ac.uk/fss/organisations/netlc/past/nlc2010/abstracts/PDFs/Mak.pdf

Põldoja, H. (2009). EduFeedr — Redesigning the Feed Reader for an Open Education. In *Proceedings of the Open 2009 Symposium*. Helsinki, Finland. Retrieved from http://www.scribd.com/doc/22965114/EduFeedr-%E2%80%94-Redesigning-the-Feed-Reader-for-an-Open-Education

Wiley, D., & Hilton III, J. (2009). Openness, Dynamic Specialization, and the Disaggregated Future of Higher Education. *The International Review of Research in Open and Distance Learning*, *10*(5). Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/768

About the author

Diego E. Leal Fonseca

Master's degree in Computing and Systems Engineering from Universidad de los Andes (Colombia)

Diego holds a Master's degree in Computing and Systems Engineering from Universidad de los Andes (Colombia), where he worked until 2007 as researcher and advisor at the R&D Laboratory on Educational Informatics (LIDIE). Until April 2008, he was Project Manager for the National Program on Media and ICT Use in Higher Education at the Colombian Ministry of Education. Currently, he works as research advisor for EAFIT University (Medellín. Colombia), and he does consulting work on innovation in education with the use of technology for several Latin American organizations. Diego lives in Rio de Janeiro, writes (http://www.diegoleal.org/blog) about the impact of new media on learning and society, and tinkers with the design of open learning environments.

diego@diegoleal.org

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Justifying Institutional Investment in OER Development: OERs as Marketing Vehicle

Dr. Theo Lynn,* Dr. Laurent Muzellec,* Neil Bruton*
* DCU Leadership, Innovation and Knowledge Research Centre, DCU Business School, Dublin City University.

Abstract
The higher education sector has become increasingly competitive and prospective students are adopting a consumerist approach to institution and programme choice. In response, higher education marketing has become more complex, market-oriented and business-like. Financial sustainability of open education resource (OER) projects is a widespread concern. This paper explores the extent to which a classical product placement framework can be applied to OERs to justify institutional funding in OER projects as a marketing investment. It is argued that OERs designed on this premise can increase cognitive, affective and conative brand outcomes while providing the traditional educational and societal benefits associated with OERs. A series of propositions are presented that may form the basis of a future research agenda.

Keywords
Open Education Resources, Marketing, Sustainability, Institutional Investment, Return on Investment, Research Agenda, Product Placement, Hybrid Messages

---

Recommended citation:
Lynn, T.; Muzellec, L.; Bruton, N. (2010). Justifying Institutional Investment in OER Development: OERs as Marketing Vehicle. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/5084>

Introduction

Recent research suggested that the higher education sector has become increasingly competitive and that prospective students are adopting a consumerist approach to institution and programme choice (Maringe, 2006; Voss, Gruber & Szmigin, 2007). This is compounded by the increasing awareness of ranking systems and evidences that rankings impact on both student recruitment and institutional reputation (Hazelkorn, 2008). Whilst research on higher education marketing in many respects is at an early stage of conceptualisation, evidence suggests that it is increasingly complex, market-oriented and business-like (Nicolescu, 2009). While the most frequently met type of marketing activity conducted by higher education institutions may be strong promotional and communication for student recruitment (typically through publicity and other institution-controlled promotional material), Nicolescu and others have suggested an increased focus by higher education marketing on the quality of the service including the teaching and the curriculum, research and other services (Nicolescu, 2009; Maringe & Gibbs, 2009).

Much of the higher education marketing literature suggests, and indeed there is a general consensus, that price, promotion (including promotional materials), programme specifics, prominence of academic staff and other additional benefits are important decision-making criteria for prospective students (Ivy, 2008). However much of this literature is based on the reasonable assumption that prospective students do not typically have the opportunity to experience programme content first-hand.

Open education resources can be defined in both wide and narrow terms but there is general consensus that it typically includes courseware, tools, and other media for use in learning and includes the freedom to copy, modify, redistribute as-is or in a modified version (Downes, 2007). Open education resources may include attribution and indeed may be free in a monetary sense, but not necessarily so (Downes, 2007). Financial sustainability as defined by the ability of a project to continue to fund its OER operations, is a significant challenge. Wiley (2007) noted that the projected annual budget for the MIT OCW project from 2007 to 2011 was USD4.3 million. A variety of models for funding OER projects have been suggested including the endowment, membership, donations, conversion, contributor-pay, sponsorship, institutional, governmental, replacement, foundation, segmentation and voluntary support models (Wiley, 2007). In all but three of these models, the motivation for funding OER projects is non-commercial. However, the conversion, segmentation and institutional models assume that by funding OERs, the funding body has the opportunity to derive a directly commercial benefit. In their definition of the conversion model (although made in the context of open source software), Sterne and Herring (2005) specifically identify the conversion of the "consumer of the freebie to a paying customer." Similarly, Dholakai (as cited by Wiley, 2007) specifically referenced the provision of "value-added" services to OER user segments as a means of funding the OER initiatives. In the Institutional model, while Wiley (2007) cited MIT's mission as the justification of investment in resources, one might argue that the MIT OCW initiative increases MIT's brand awareness and attracts consumers of MIT OCW courseware to customers of MIT products and services. In all models, some party subsidises the funding of the OER development, delivery and maintenance.

This paper explores the extent to which a classical product placement framework can be applied to open education resources in order to justify institutional investment in OER projects as a marketing investment while providing the traditional educational and societal benefits associated with OERs. It is argued that OERs designed on this premise can provide prominence to institutional brands and academic staff, exposes curriculum content and has the potential to increase cognitive, affective and conative brand outcomes. The next section introduces the concept of hybrid messages and product or

brand placement. This is followed by a discussion of how classical product placement theory can be applied to OERs. A series of propositions are presented that may form the basis of a future research agenda.

Hybrid Messages

While traditional advertising and publicity has obvious benefits, they also have drawbacks. While traditional advertising allows the sponsor to control the message content and format, the perceived source introduces scepticism (Calfee and Ringold, 1988). Conversely, while publicity is unpaid, the sponsor cannot control the message content or format. Hybrid messages are paid attempts to influence audiences for commercial character benefit using communications that project a non-commercial character (Balasubramanian, 1994). As the sponsor is not identified, audiences may not be aware of the commercial influence attempt and therefore may process the content of such communications differently than if the communication was more overtly commercial (Balasubramanian, 1994).

There are a number of different types of hybrid messages. These include product or brand placement, program tie-ins, program length commercials, and masked messages. Product or brand placement is an attempt to influence an audience via the planned and unobstrusive entry of a branded product or service into a media vehicle, typically a television program or movie, but increasingly product placements can be found in a variety of media including videogames and music videos (Calvert, 2008; Lynn & Muzellec, 2010). The placement may be paid for although not necessarily so. For example, Kodak did not pay for its Carousel product to be featured in the television series, 'Mad Men', although other manufacturers paid for placements in the same program. Program tie-ins are quid pro-quo arrangements between advertisers and progam sources i.e. in return for advertising, the product is featured in a program (Balasubramanian, 1994). A Program-Length Commercial (or "Infomercial") is a paid product message broadcast to television audiences using a format that resembles a legitimate program in both content and length (Balasubramanian, 1994; Chester & Montgomery, 1988). Masked messages are messages embedded in or on media that feature branded products with deliberate, typically unobvious, commercial intent (Balasubramanian, 1994). Masked messages may be delivered by paid experts or celebrity spokespersons whose legitimacy as experts or celebrities accentuates credibility (Balasubramanian, 1994).

OERs as a Form of Brand Placement: Towards a Future Research Agenda

By placing the funding of OERs within the marketing sphere and linking OER development and dissemination to student recruitment, OER evangelists may attract more funding and institutional support from the upper echelons of HEIs. Viewed as a form of hybrid message, OERs may be attractive marketing vehicles for HEI marketers by emphasising the HEI brand and the quality of the HEI's content and faculty. In many respects, OERs are analogous to product placements in that the HEIs "product" and "brand" is placed in a planned and unobtrusive way within a media vehicle, the OER, in an attempt to influence an audience, i.e. potential future students. While the HEI marketer's

motivation is different than the OER developer, both parties requirements can be satisfied. In fact, the HEI's brand may already be featured and so funding the OER merely recognises the contribution of the OER to increasing HEI brand effects.

Balasubramanian et al (2006) provided a comprehensive synthesis on the literature relation to product or brand placements and how such messages generate audience outcomes (Figure 1). They suggest that audience outcomes can be classified in to three categories – cognition, affect and conation.

Brand Effects

Cognition refers to the impact of brand typicality or incidence, placement recognition, brand salience and placement recall (Balasubramanian, et al, 2006). In the OER context, HEI brand placement in an OER may influence consumer judgements about brand typicality. For example, in the higher education sector, consumer perceptions may be skewed in relation to the HEI's marketplace presence or prominence in a given discipline. This may particularly be the case where a HEI funds a high-demand OER or a large volume of OERs. HEI brand placements may generate both long-term and short-term memory affects typically measured through recognition, salience or recall.

Affect refers to audience brand portrayal rating, identification with the story character or traits, identification with the brand and general brand attitude. While Balasubramanian et al (2006) noted that empathy and emotional identification processes are common in entertainment marketing particularly where characters are paired with placed brands (Deighton, Romer & McQueen, 1989; DeLorme & Reid, 1999, Gould & Gupta, 2006), there is little evidence of such a phenomenon in education. However, it is not unrealistic to think that the learner or consumer may wish to identify with a particular institution, discipline or prominent member of faculty.

Conation refers to audience purchase intention, brand choice or other brand usage behaviour. These outcomes are impacted by execution (setting) factors, which are largely in the control of the sponsor, individual-difference factors which are the personal traits of the consumer and the depth of the placement processing. Purchase intention, in the context of educational marketing, could be measured by programme inquiries, programme applications, programme enrolment or other commercial product or services purchase. Shapiro et al (1997) suggested that incidental brand exposures can increase the likelihood of the exposed brand being included in consideration sets. For less well known HEIs, merely being considered as option for further study may be an acceptable or desirable outcome. Research on the link between brand placement and actual brand usage is at an early stage of conceptualisation however Morton and Friedman (2002) have argued that a set of beliefs about movie placements may be useful predictors of product usage behaviour. In the case of education marketing, it may be possible that HEIs that feature their brand prominently in an OER may establish themselves as being prominent in that area or discipline, regardless of whether this is the case in reality.

Based on Balasubramanian et al's propositions relating to classical product placement, it is proposed that a research agenda could be established investigating variable relationships on HEI brand placement in OERs and effects from said placement. Execution factors, individual-level factors and processing depth are now discussed in this context.

Execution Factors

The execution factors presented by Balasubramanian et al can easily be adapted to the OER context and has significant implications for the design of OERs if funded for a marketing purpose. Firstly, both the opportunity to process the placement and exposure duration are considerable thereby potentially generating greater brand recognition. OERs, and specifically courseware, provide HEIs with the opportunity to place their brand, and indeed HEI faculty and research output, in a continuous display in front of a target segment for a prolonged period of time in the interface or content of the OER. This could even be through an advertisement at the beginning, during or end of an OER. This yields the following adapted propositions based on Balasubramanian et al (2006):

> ***Proposition 1a:*** *As HEI brand prominence increases, consumers can better differentiate the brand from other OER stimuli, thereby increasing cognitive outcomes.*
> ***Proposition 1b:*** *As HEI brand exposure duration increases, consumers can better process the brand's appearance or audio mention, thereby increasing cognitive outcomes.*
> ***Proposition 2:*** *As HEI brand exposure duration increases, consumers can better process the brand's appearance, thereby increasing cognitive outcomes.*

Secondly, HEIs may have the opportunity to impact mood and therefore attitude towards HEI brand placement. This area is complex. Unlike other media such as television or movie, OER-induced mood has not been explored. Does courseware induce a positive or negative mood? Can certain topics or design treatments impact mood? What effect does this have on the HEI brand placement? In classical product placement, research has suggested that the congruency and integration of the placement has an impact on brand effects (Balasubramanian et al, 2004); does this apply to HEI placement too? Therefore:

> ***Proposition 3:*** *Under positive OER-induced moods, placement outcomes are better than negative OER-induced moods.*

Thirdly, as OERs are typically digital, this facilitates retrospective branding thereby enhancing execution flexibility and removing the risk of funding unpopular, negative-mood inducing and other OERs not suited from HEI brand placement. This may also be attractive to OER developers as it may provide funding with low overhead or implementation costs. By being open, and indeed if free, there are multiple opportunities to deliver the OER through third party repositories giving the HEI further opportunities to process the placement. Based on Balasubramanian et al's (2006) proposition, one might posit:

> ***Proposition 4:*** *As execution flexibility increases, the impact increases with regards to all message outcomes.*

Fourthly, OERs offer HEIs the opportunity to present the brand in a variety of modes and not just visually but through audio mentions; dual mode placements have been found to produce better recall (Brennan and Babin, 2004; Gupta and Lord, 1998). Fifthly, the HEI has the opportunity to prime the

availability of the OER through traditional advertising and publicity or indeed through existing education programmes. As mentioned briefly, this may include embedded advertising at the beginning, during or end of an OER. However it should be noted that HEI or partisan priming may introduce credibility issues although to what extent this would impact OERs is unknown (Groenendyk & Valentino, 2002). One might therefore posit:

> ***Proposition 5:*** *Dual or multi-mode HEI brand placements generate better brand recall than single-mode placements.*
> ***Proposition 6a:*** *Primed OERs produce better cognitive outcomes than non-primed placements.*
> ***Proposition 6b:*** *Unprimed or third party-primed placements produce better affective outcomes than ad-primed placements.*

Sixthly, the HEI controls the type and amount of brand information presented. Indeed the HEI can choose to provide additional brand information on a telescopic basis within the OER providing greater depth of information than typically possible in traditional advertising. Finally, the HEI has control over the strength of the link between the brand and the specific content, editorial consistency, vehicle and medium. It can decide what content to sponsor, which faculty member to give prominence to and links to programmes etc.

> ***Proposition 7a:*** *Increasing brand information in an OER is likely to increase cognitive outcomes.*
> ***Proposition 7b:*** *Increasing brand information in an OER is likely to decrease both affective and conative outcomes.*
> ***Proposition 8a:*** *The stronger the association between the HEI brand and the content, the higher the elaboration of the HEI brand within the OER, which thereby increases cognitive outcomes.*
> ***Proposition 8b:*** *The stronger the positive (negative) association between the HEI brand and the content within the OER, the higher (lower) the affective outcomes.*

Individual-level Variables

Individual-level variables are largely outside the control of the education marketer or OER developer. Research has found that the Von Restorff effect may influence the recall of product placements (Wallace, 1965; Balasubramanian, 1994); less familiar brands may attract greater attention and produce superior cognitive outcomes (Nelson, 2002; Balasubramanian, 2006). However research also suggests that familiar brands facilitate identification with elements in programs. In the OER context, HEI brands, prominent faculty or alumni may facilitate such familiarity. Perceived fit is also recognised as an important factor on brand effects (Russell, 2002). Put simply, if a brand seems out of place, it may yield a higher level of recall but not necessarily higher levels of affective outcomes. This may occur where a HEI or member of faculty develops an OER in an area which is not their known area of subject domain expertise. The following adapted propositions based on Balasubramanian et al (2006):

Proposition 9a: *Unfamiliar HEI brands are more likely to increase cognitive outcomes than familiar HEI brands.*
Proposition 9b: *Unfamiliar faculty are more likely to increase cognitive outcomes than familiar faculty.*
Proposition 9c: *Audiences are less (more) likely to use unfamiliar (familiar) HEI brands for inferences about content than familiar brands.*
Proposition 9d: *Audiences are less (more) likely to use unfamiliar (familiar) faculty for inferences about content than familiar faculty.*
Proposition 10a: *In general, incongruent HEI brand placements produce higher cognitive outcomes than congruent ones.*
Proposition 10b: *In general, congruent placements yield higher affective outcomes than incongruent placements.*

Skepticism towards advertising has impacted attitudes towards ads and placements (Gupta, Balasubramanian and Klassen, 2000). In some instances, placements have been viewed as even more controversial than mere advertising and sponsors have been accused of "stealth advertising". The OER movement is largely non-commercial, overt commercial placements may be viewed negatively. As such the following adapted propositions based on Balasubramanian et al (2006):

Proposition 11: *Skepticism towards advertising will not impact affective outcomes of HEI brand placement in OERs.*
Proposition 12: *The higher the attitude towards placements, the higher the affective outcomes towards the HEI brand.*

Bhatnagar, Aksoy and Malkoc (2004) found evidence that viewer involvement with a program's content influences the effectiveness of *embedded* placements; this may not be the case with advertising *accompanying* programs featuring placements. As learners are typically highly involved with the learning material in an OER and the educational motivation may be strong (or else they simply would not complete or use the OER), this offers substantial optimism for education marketers. Research has also suggested that many viewers use placed brands to validate their existing identity and purchasing patterns or indeed enact a desired identity (Delorme & Reid, 1999; Kleine, Kleine & Kernan, 1993). It is not unreasonable to foresee a situation whereby certain OER consumers might be attracted by the prestige of certain brands e.g. MIT. the following adapted propositions based on Balasubramanian et al (2006):

Proposition 13a: *As a consumer's involvement with OERs increases (decreases), cognitive outcomes increase (decrease).*
Proposition 13b: *The higher the engagement in an OER, the higher the message outcomes for HEI brand placements in the OER.*
Proposition 13c: *Motivation to process brands for self-presentational purposes influences cognitive outcomes for HEI brand placements.*

Depth of Processing

Balasubramanian et al's model assumes that execution- and individual-level variables influence viewer processing of a given placement; in this case the learner processing of the HEI brand (Balasubramanian et al, 2006). For Balasubramanian et al, processing depth refers to the level of conscious processing of brand information. For example, does the brand merely appear in the background? Is it present visually, in audio or in multimedia? Is the brand central or peripheral to content? As such, the following propositions based on Balasubramanian et al (2006) are presented:

> ***Proposition 14a:*** *Unconscious processing of HEI brand placements relates to implicit memory and enhances affective and conative outcomes more than cognitive outcomes.*
> ***Proposition 14b:*** *Conscious processing of HEI brand placements (e.g. continuous reference of the HEI brand within the content of the OER) relates to explicit memory and enhances cognitive outcomes more than affective or conative outcomes.*

Summary and Conclusions

This paper illustrated how hybrid message and product (brand) placement concepts could be applied to open education resources by HEI brands and be used to justify investment by HEIs in OER development on marketing grounds. HEI brand placement in OERs raises several issues for OER developers not least the impact on content design. This paper focuses on the placement of HEI brands however could easily be applied to other third party sponsors including commercial sponsors. Despite substantial literature on product placement in marketing literature, there is very little related to education marketing or the use of OERs as a placement vehicle. This paper suggests that Balasubramanian et al's Integrative Framework for Product Placement could be adapted to form the basis of a model for future research on HEI brand placement in OERSs and offers some propositions that may form the basis of a future research agenda.

Figures

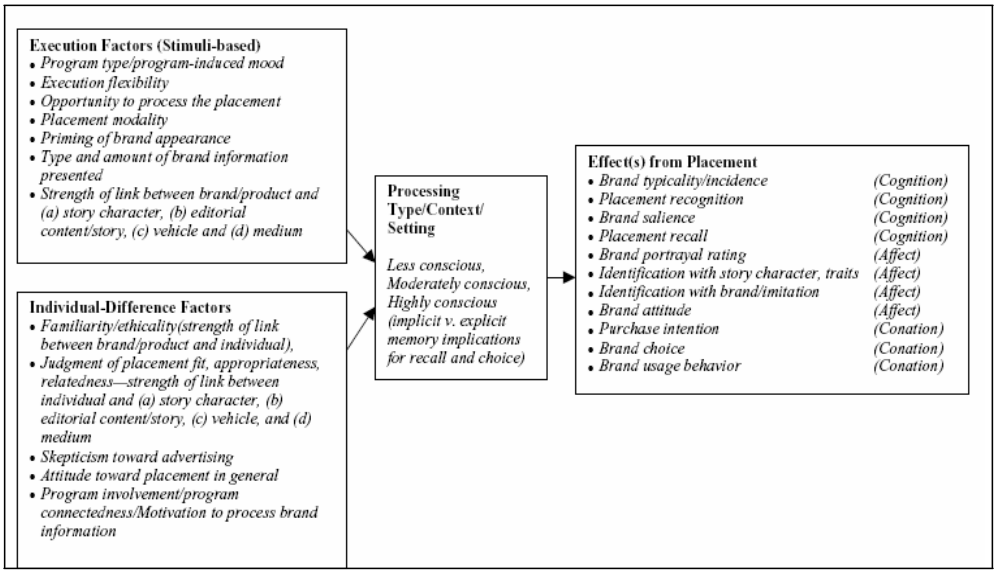

Figure 1 - Integrative Framework for Product Placement (Balasubramanian et al, 2006)

Bibliographic references

Balasubramanian, S. (1994). "Beyond advertising and publicity: hybrid messages and public policy issues," *Journal of Advertising, 23* (December), 29-46.

Balasubramanian, S.K., Karrh, J.A., and Patwardhan, H. (2006). "Audience response to product placements: an integrative framework and future research agenda," *Journal of Advertising, 35,* (3), 115–141.

Bhatnagar, N., Aksoy, L. and Malkoc, S.A. (2004). "Embedding brands within media content: the Impact of message, media, and consumer characteristics on placement efficiency," in *The Psychology of Entertainment Media*, L. J. Shrum, ed., Mahwah, NJ: Lawrence Erlbaum, 99–116.

Brennan, I. and Babin, L.A. (2004). "Brand placement recognition: the influence of presentation mode and brand familiarity," *Journal of Promotion Management, 10* (1/2), 185–202.

Calfee, J.E. and Ringold, D.J. (1988). 'Consumer skepticism and advertising regulation: what do the polls show?," *Advances in Consumer Research*, Michael J. Houston, ed., 15, 244-248.

Calvert, S.L. (2008). "Children as consumers: advertising and marketing," *The Future of Children, 18*(1), Children and Electronic Media (Spring, 2008), 205-234.

Deighton, J., Romer, D. and McQueen, J. (1989). "Using drama to persuade," *Journal of Consumer Research, 16* (December), 335–343.

DeLorme, D.E. and Reid, L.N. (1999). "Moviegoers' experiences and interpretations of brands in films revisited," *Journal of Advertising, 28* (2), 71–95.

Downes, S. (2007). "Models for sustainable open educational resources," *Interdisciplinary Journal of Knowledge and Learning Objects, 3,* Retrieved on September 10, 2010 from http://ijello.org/Volume3/IJKLOv3p029-044Downes.pdf.

Groenendyk, E.W. and Valentino N.A. (2002). "Of dark clouds and silver linings: effects of exposure to issue versus candidate advertising on persuasion, information retention, and issue salience," *Communication Research, 29* (3), 295–319.

Gupta, P.B., and Lord, K.R. (1998). "Product placement in movies: the effect of prominence and mode on audience recall," *Journal of Current Issues and Research in Advertising, 20* (1), 47–59.

Gupta, P.B., Balasubramanian, S.K. and Klassen, M. (2000). "Viewers' evaluations of product placements in movies: public policy Issues and managerial implications," *Journal of Current Issues and Research in Advertising, 22* (2), 41–52.

Hazelkorn, E. (2008). "Learning to live with league tables and ranking: the experience of institutional leaders," *Higher Education Policy* (2008) 21, 193–215.

Ivy, J. (2008). "A new higher education marketing mix: the 7Ps for MBA marketing", *International Journal of Educational Management, 22*(4), 288 – 299.

Kleine, R.E., Kleine, S.S. and Kernan, J.B. (1993). "Mundane consumption and the self: a social-identity perspective," *Journal of Consumer Psychology, 2* (3), 209–235.

Lynn, T. and Muzellec, L., (2010). "Hypervideo-based product placement: extending the research agenda", *Proceedings of the 13th Annual Conference of the Irish Academy of Management*, Cork Institute of Technology, Cork, Ireland, 1 – 3 September 2010.

Maringe, F. (2006). "University and course choice: implications for positioning, recruitment and marketing", *International Journal of Educational Management, 20*(6), pp.466 – 479.

Maringe, F. and Gibbs, P. (2008). "Marketing higher education: theory and practice," *Open University Press*. McGraw-Hill Education. England.

Nelson, Michelle R. (2002). “Recall of brand placements in computer/video games,” *Journal of Advertising Research, 42* (March/April), 80–92.

Nicolescu, L. (2009). “Applying marketing to higher education: scope and limits,” *Management & Marketing, 4*(2), 33-44.

Russell, C.A. (1998). “Toward a framework of product placement: theoretical propositions,” in *Advances in Consumer Research, vol. 25*, Joseph W. Alba and J. Wesley Hutchinson, eds., Provo, UT: Association for Consumer Research, 357–362.

Shapiro, S., MacInnis, D.J. and Heckler, S.E. (1997). “The effects of incidental ad exposure on the formation of consideration sets,” *Journal of Consumer Research, 24* (1), 94–104.

Sterne, P. & Herring, N. (2005). “*LinuxWorld: the conversion model*,” Linux World. Retrieved on September 10, 2010 from http://de.sys-con.com/read/158863.htm.

Voss, R., Gruber, T. and Szmigin, I. (2007). “Service quality in higher education: the role of student expectations,” *Journal of Business Research, 60*(9), 949-959.

Wallace, W.P. (1965). “Review of the historical, empirical, and theoretical status of the Von Restorff phenomenon,” *Psychological Bulletin, 63* (6), 410–424.

Wiley, D. (2006). “On the sustainability of open educational resource initiatives in higher education,” *Paper commissioned by the OECD’s Centre for Educational Research and Innovation (CERI)*. Retrieved on September 10, 2010 from http://www.oecd.org/edu/oer.

About the authors

Dr. Theo Lynn

DCU Leadership, Innovation and Knowledge Research Centre, DCU Business School, Dublin City University.

Dr. Theo Lynn is a Lecturer in Management in the DCU Business School where he teaches strategy at postgraduate level. He is Director of the DCU Leadership, Innovation and Knowledge Research Centre (LINK) and Director of Industry Engagement in DCU Business School. He has worked on a wide range of projects with major international organisations including Cambridge University Press, Microsoft, Intel, SMART Technologies, Channel 4 Learning, London Grid for Learning and many others. Most recently, Dr. Lynn has been working on digital participation and capacity-building initiatives with funding from Cambridge University Press and Nominet Foundation through the 4C Initiative and Techspectations initiatives.

DCU Leadership, Innovation and Knowledge Research Centre
DCU Business School
Dublin City University
Glasnevin, Dublin 9, Ireland
theo.lynn@dcu.ie

Dr. Laurent Muzellec

DCU Leadership, Innovation and Knowledge Research Centre, DCU Business School, Dublin City University.

Laurent Muzellec is an Associate Professor in Marketing at ESSCA Business School, France. He holds a PhD from UCD Michael Smurfit School of Business and an MBA from Texas A&M International University. His main research interests pertain to the field of strategic brand management. They incorporate rebranding and reputation, brand portfolio management, ebranding, brand content, hypervideo brand placement, virtual and fictional brands. His work has appeared in many journals including Industrial Marketing Management, the European Journal of Marketing, and the Journal of Product and Brand Management.

DCU Leadership, Innovation and Knowledge Research Centre
DCU Business School
Dublin City University
Glasnevin, Dublin 9, Ireland
laurent.muzellec@dcu.ie

Neil Bruton

DCU Leadership, Innovation and Knowledge Research Centre, DCU Business School, Dublin City University.

Neil is the project coordinator of the 4C Initiative which is a capacity building project for education run by the Leadership, Innovation and Knowledge Research Centre in Dublin City University. He holds a BA in International Business and Languages and an MBS in Marketing both from DCU. He completed his dissertation on the "Recruitment, Selection and Evaluation of Marketing Practitioners by Political Parties in Ireland" and this year has spoken at conferences such as OER10, EDGE 2010, and the Computers in Education Society of Ireland's annual conference.

DCU Leadership, Innovation and Knowledge Research Centre
DCU Business School
Dublin City University
Glasnevin, Dublin 9, Ireland
neil.bruton2@mail.dcu.ie

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Open Learning Network: the evidence of OER impact

Patrick McAndrew,* Karen Cropper**

* Associate Director (Learning & Teaching), Institute of Educational Technology, The Open University

** Project and Liaison Manager OLnet, Institute of Educational Technology, The Open University

Abstract

Much of the initial work on Open Educational Resources (OER) has inevitably concentrated on how to produce the resources themselves and to establish the idea in the community. It is now eight years since the term OER was first used and more than ten years since the concept of open content was described and a greater focus is now emerging on the way in which OER can influence policy and change the way in which educational systems help people learn. The Open University UK and Carnegie Mellon University are working in partnership on the OLnet (Open Learning Network), funded by The William and Flora Hewlett Foundation with the aims to search out the evidence for use and reuse of OER and to establish a network for information sharing about research in the field. This means both gathering evidence and developing approaches for how to research and understand ways to learn in a more open world, particularly linked to OER, but also looking at other influences.

Keywords

OER, research, policy, collective intelligence

Recommended citation:

McAndrew, Patrick; Cropper, Karen (2010). Open Learning Network: the evidence of OER impact. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU.

[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4844>

Introduction

There are some significant problems in education. In the United States there is great concern about the College system and how so many students fail to complete. In the UK cost concerns are reversing plans for the expansion of Higher Education. While in Africa the lack of teachers means that it is impossible to meet the demand for learning and achieve Millennium goals to provide schooling for all (Wolfenden, 2008). Across these and a diverse range of other problems, Open Educational Resources have the potential to make a difference. They point the way to a future direction for education and learning systems with sharing and access at the core: so that learners can bridge the gaps that occur in their own education and open sharing allows teaching to operate at scale. However, if this indeed is a possible future, we need to understand and demonstrate the value of open approaches built on the freeing up content. For OLnet the challenge to meet this need is reflected in its key research question, stated in the original proposal (http://olnet.org/node/476) as:

How can we build a robust evidence base to support and enhance the design, evaluation and use of OER?

And then refined into three sub-issues:

1. How can we improve the process of OER reuse/design, delivery, evaluation and data analysis?
2. How can we make the associated design processes and products more easily shared?
3. How can we build a socio-technical infrastructure to serve as a collective evolving intelligence for the community?

OLnet has worked on these aspects over its first year through a process of targeted research projects (for example in design (Dimitriadis, McAndrew, Conole and Makriyannis, 2009) and participatory learning (McAndrew, Scanlon and Clow, 2010), fellowships, and building a collective intelligence infrastructure (Buckingham Shum, 2009). This has led to a position where we have a range of evidence and views that are influencing our thinking together with observations of a changing landscape for OER. Those changes also provide an impetus to finding the messages that are needed for the area to progress.

In the next sections we look at the overall landscape of activity in OER, consider some of the work that we have carried out so far, and bring out refined goals for OLnet that reflect the way the sector has changed as well as the project. The original research questions remain to help shape our work but are now being revised to focus on the priorities that will help the OER sector.

The OER project landscape

A key driver for the identification of Open Educational Resources as an identifiable area of work has been the funding of a specific action on OER with the Educational Programme of the William and Flora Hewlett Foundation. One way to understand the field is to look at the data that is available

from those projects that have received funding within the programme. A specific action that OLnet is carrying out, starting in September 2010, is to review the reported findings across the more than 100 projects that have formed this programme. While it is too early to draw out firm conclusions this data is helping us to understand the profile and direction of activity that the funding has given.

In Figure 1 the main themes of activity associated with more than $70m of funding from 2001 to 2010 has been assessed from the activity and progress each project has reported (note: this is draft data that is not yet checked or validated). As might be expected the area with the greatest funding is related to the production of OER (either to initiate production or to sustain it through ongoing support), however there has been a change in attitude over time so that considering the same data divided into those projects funded before and since 2008 the picture changes. Less than 2% of funding before 2008 was directed at take up activities, such as awareness, training, use or OER and sustainability. Since 2008 such take up activity increases to over 15% with content based activities such as production and ongoing support dropping from nearly 60% to under 45% (based on preliminary data from analysis).

The nature of recent initiatives reflects this change. In the UK the JISC/HEA programme UKOER encouraged reuse and remixing rather than the development of new content for release, while the extended focus of the Hewlett Foundation's Education Programme considers the range of skills and expectations on learners require a "deeper learning" (http://www.hewlett.org/programs/education-program/deeper-learning) approach that positions OER as a key contributor to the changes needed for the conditions for deeper learning to be met. The Foundation is also a contributor to a collective action to identify the basis for "Next Generation Learning" (http://nextgenlearning.com/) These actions go beyond seeing OER as an approach that applies in isolation and positions them as changing the way that schools and education systems can operate. This clearly extends the expectations of the impact that can be achieved by the adoption of open licences with an underlying assumption that openness has the potential to break down otherwise rigid divisions between different parts of the educational operation. A boundary view of the education system sees the different state and country rules, demands of schools systems and universities, academic credit and accreditation, publishers and authors.

Many people have identified the contradictions and tensions in the current system but the solution is not clear. There may also be lessons from initiatives outside education about the difficulties of operating in local or regional manner in order to achieve difficult targets (Brown and Fisher, 2007). In the education section working locally has sometimes led to isolated examples of excellence but the cross over to other situations is inhibited by barriers of agreement and practice, and financial implications that are hard to judge. In a recent paper Wiley (2010) presents the case that openness offers an essential part of the future of education and that "the more open we are, the better education will be". Openness, as demonstrated in OER, works in those areas where it is more efficient to remove the barrier of cost and restricted practice. If content and methods are willingly made available then the rationale for protecting and limiting choice changes.

The vision for OER as described above is ambitious, but the steps that need to be taken are practical and pragmatic. No grand agreement is required to adopt a more open approach to content, rather as a producer it is relatively simple to select an open licence (typically Creative Commons) and to accept that the commercial opportunity and value is not harmed by allowing free release. Similarly, as a consumer of resources the choice is to use those sources that have least restrictions. This should be a relatively straightforward position to take, but is partly inhibited by the limited

range and uncertain quality of content released as OER. The inhibiting factor of choice is changing rapidly as the influence of the early adopters of Creative Commons and other public licences is reflected in the use of the licences in more mainstream services. Key examples are the use of Creative Commons based licences on services such as Flickr, Picasa, Jamendo and Soundcloud, together with the formal adoption of Creative Commons by Wikipedia in 2009. Concerns about quality are also changing as a model of use of open or free materials is becoming more accepted, one perspective is reflected in the work of the Open Educational Quality Initiative (OPAL) (http://oer-quality.org/) which rather than considering the quality in terms of Open Educational Resources takes a position that establishing quality and approaches to Open Education Practices is a more suitable approach.

Research approach: collective intelligence

One aspect of working in Open Educational Resources is the impact of the openness on ways of working. By releasing content with permission for others to change and reuse, or for anyone to access without the barrier of registration, the ways to gather controlled information are reduced. This means that the results from research into the open world may be tentative and often based on partial data. This has led to relatively slow publication, although recently several journals have recognised the interest in Open Educational Resources (for example JIME, Open Learning and EDUCAUSE Review have all produced special issues with OER as a focus). However, the experience gained by the practitioners means that it is important to adopt an approach that recognises the contribution that observations and opinions can make and encourage more rapid reflection. OLnet has taken a model of collective intelligence (Buckingham Shum, 2009) supported by tools to allow ideas to be put forward and then challenged or supported, rather than necessarily proved or assessed. A combination of blogs, questions, ideas and spaces for discussion (such as Cloudworks (Conole and Culver, 2009)) operate along with more conventional conferences and publication of papers to encourage sharing of ideas. Further tools that facilitate the argument process are under development and offer the potential to help both the OLnet researcher and other interested people weigh up the evidence.

In figure 2 the overall concept of collective intelligence is shown with various candidate technologies that can help the approach. Figure 3 shows the result of using one tool, Cohere, to data gathered online reflecting concerns and issues from an expert gathering (the Hewlett Grantee meeting in 2009 (http://cloudworks.ac.uk/cloudscape/view/873)). Cohere offers a space for annotating, organizing and connecting resources and reflect collaboratively on the understanding of such resources. But once those resources and annotations become large in number and more complex it can be difficult to make sense of them. To tackle this issue, Cohere provides filtering based on semantic connections between different elements. The filtering and the way in which each user can interact with the data helps to reduce cognitive overload in processing complex graphs and support them in focusing and making sense of specific issues. In the case illustrated in the figure, it helps bring out the potential research themes from statements and to collate them.

OLnet initial research

In its proposal OLnet set out areas of work and research but also expanded these into themes as work developed and links were established with companion projects. In the first year (March 2009-Feb 2010) OLnet focused on four areas:

Establishing the programme of work

Addressing research issues

Developing the technology to support collective intelligence.

Initiating the fellowship programme

The themes for research have included methodologies, design, operation of OER sites, participatory learning, cultural impact, and evaluation. Examples of progress across these strands and key contributors supported by OLnet as researchers include:

Reviewing the way in which social sites are organised by observing the trajectories of those who use the sites (Elpida Makriyannis)

Interviewing innovators in open access to see how those who perceive themselves as educators and those who don't are helping users support their learning (Giota Alevizou)

Comparing the willingness to take up and use OER in different sectors of education and in different parts of the world (Tina Wilson)

Examining the motivation of learners to use open educational resources comparing the social motivations with the educational ones (Kasia Kozinska)

Understanding the way that openness can help establish collaboration and allow input from different cultural and linguistic perspectives (Andreia Santos)

Developing and applying the collective intelligence infrastructure with trials on understanding climate change and the review of research questions for OER (Anna de Liddo and Michelle Bachler)

The fellowships have enabled further research activity in collaboration, including:

Developing understanding of community models and frameworks for participation (Jenny Preece)

Examining the different cultural and practical needs in different sectors including the infrastructure base in Africa (Pauline Ngimwa) and the potential barriers and enablers to use of OER in Turkey (Engin Kursun) and Russia (Svetlana Knyazeva)

Considering the ways in which open content can be designed and the alternative approach of designing patterns of activity that can be supported by different sorts of open resources (Yannis Dimitriadis)

Developing tools to help track content as it moves between different servers (Scott Leslie) and to incorporate greater interoperability into tools for collective intelligence (Chuck Severance).

Fuller details of some of these activities are presented in further papers at OpenED 2010 (http://openedconference.org/2010/program) and on the OLnet website (http://olnet.org).

Some of this research also raises ethical and practical issues. For example, in looking at the social aspects of participatory learning the researcher categorised over 3,000 sites, reviewed their structure and content, and then studied user journeys on the sites. Such research draws on public information but the providers of that information may have had no expectation that it might be analysed or

linked to models of behaviour. The ethical and pragmatic view is that such research activity is appropriate because no harm can be foreseen. The next stage in open research is to make the data as well as the conclusions public, and we are taking steps to build this practice into OLnet by providing less formal reports as we progress and by organising data in tools for others to access.

Priorities and directions

While OLnet will continue to meet its overall aim to gather evidence and share it with the community, the areas that give it direction and help set the priority for work has been reviewed and six goals brought out. The goals are determined from perceived needs of the sector so are not limited to actions within OLnet alone. It is also important that in setting out to meet these goals we retain a critical stance, and indeed some of the evidence that we have so far can be seen to offer support for a view, or to provide some contradiction with the view. As an example of this in goal 4 below we state a headline lesson that the model of learning is becoming more social. However behind that is data that supports this view: an increase in use of social tools and the blurring of ideas for self-improvement and for learning are becoming more blurred (emerging from observational work and interviews with key stakeholders), but also questions this view: the dominance of copyright as a concern and the primary focus on working with content on some OER sites (indicated by data from surveys and research on users of OER sites).

It is important to be to be aware that simple messages often have more complex stories behind them. However it is also important to communicate understandable goals and lessons. The six goals and brief lessons that were distilled from OLnet's initial work are:

1. Goal: Find evidence to support OER policy
   Lesson: There has been a change in emphasis from "OER as an end in itself" to "OER as a means to an end" to support changes in educational systems.
2. Goal: Provide design support for OER
   Lesson: Opening up resources also means that there are accessible open designs, and content that can be reshaped to fit alternative designs
3. Goal: Build an infrastructure that works - demonstrating uses of existing tools and developing new ones
   Lesson: OER are becoming integrated with other "free" resources, the tools that support this mixing are still to mature.
4. Goal: Show how free resources work for learning
   Lesson: The motivation for learning separates out and is no longer necessarily driven by accreditations but by more social routes to participation
5. Goal: Provide access to the lessons of content
   Lesson: There are several different models for the way that learners engage with content.

Taking this work forward the structure of OLnet, based on research areas and international fellowships, gives a good opportunity to develop greater understanding of the contexts in which

OER need to happen and the lessons to take from those context. This gives a sixth and perhaps in structural terms most important aspect to work on OER in understanding the many different contexts in which learning can occur.

6. Goal: Understand what transfers across context
   Lesson: The openness in OER can help break down the barriers between cultural and educational contexts.

Conclusion

Open Educational Resources provide one of the few practical examples of how formal educational systems change in approach with potential for impact on policy and practice. At the same time practical steps can be taken at different levels to implement that change from individual learners through teachers and institutions to national systems. The OER movement should be proud of its pioneering work but view OER beyond an end in itself.

Through the support of the William and Flora Hewlett Foundation OLnet has been able to achieve many positive outcomes through its role in conferences, fellowships and research findings as well as exploring open methods. Challenges remain and eventual success will depend on impact through the work of others and in how we can truly assist the collective work of the recognised and hidden communities of those working to develop a forward looking and open approach to education.

Figures

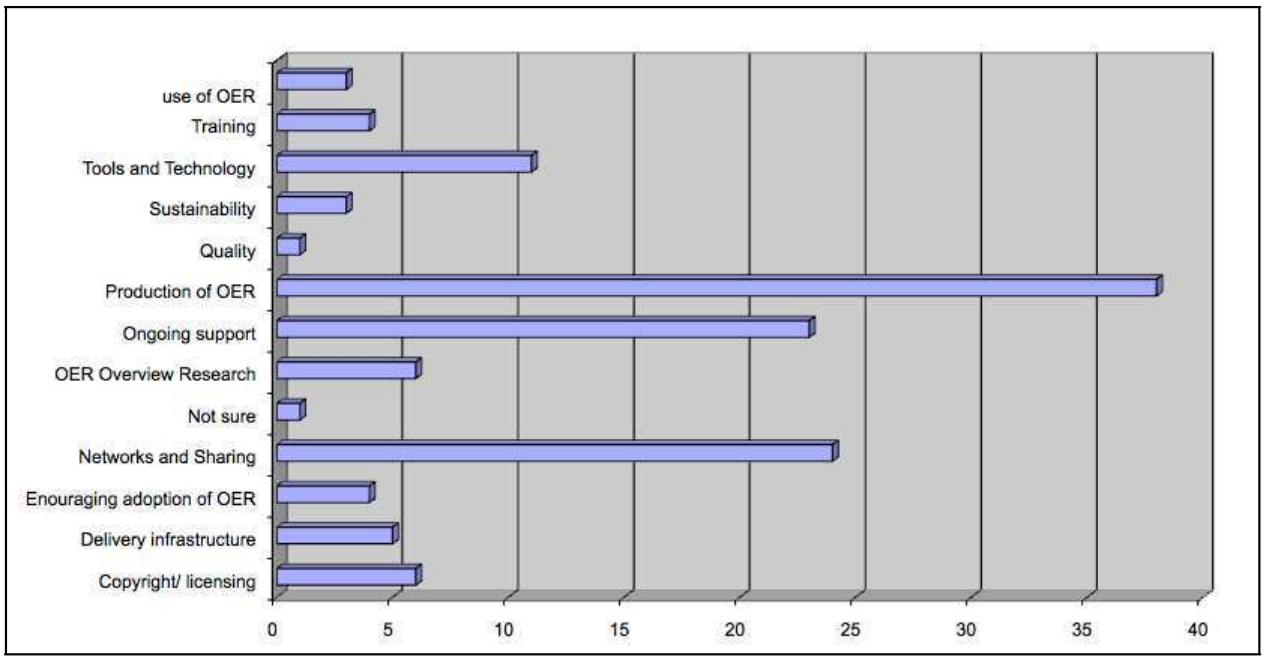

Figure 1: Funding of OER projects (m$) 2001-2010

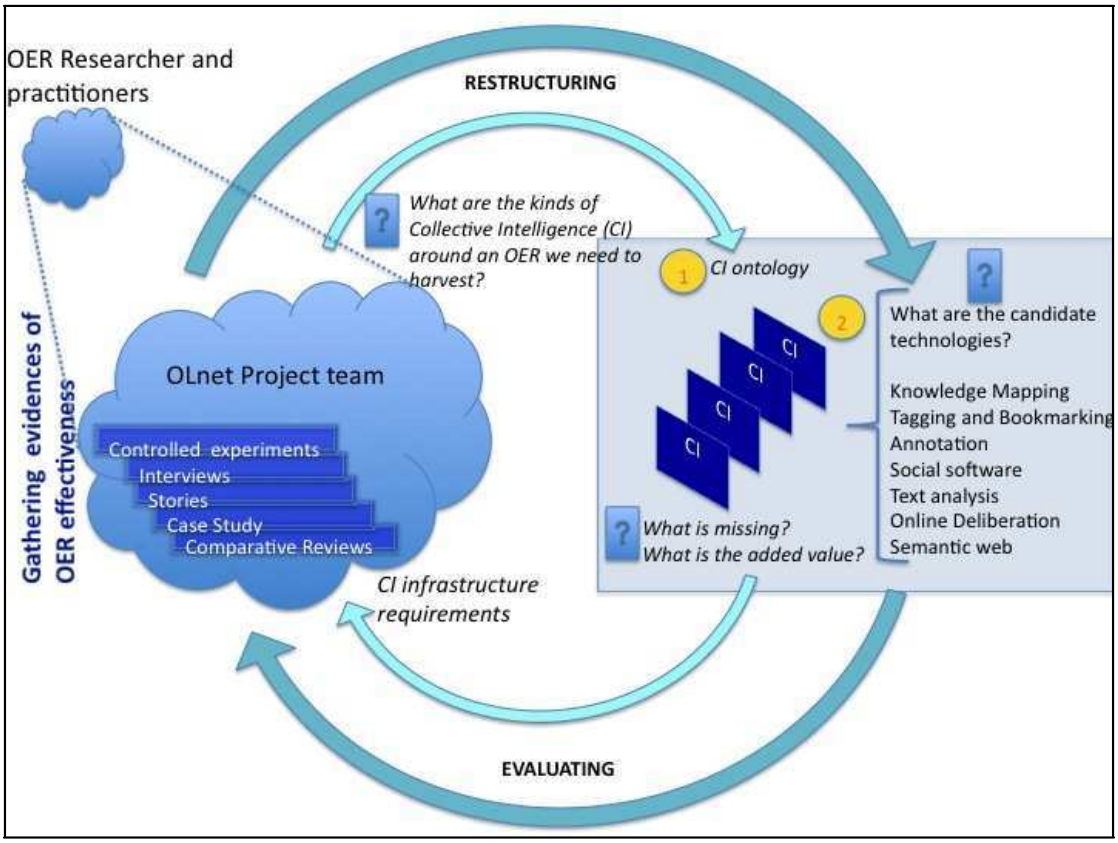

Figure 2: The collective intelligence approach (http://olnet.org/collective-intelligence)

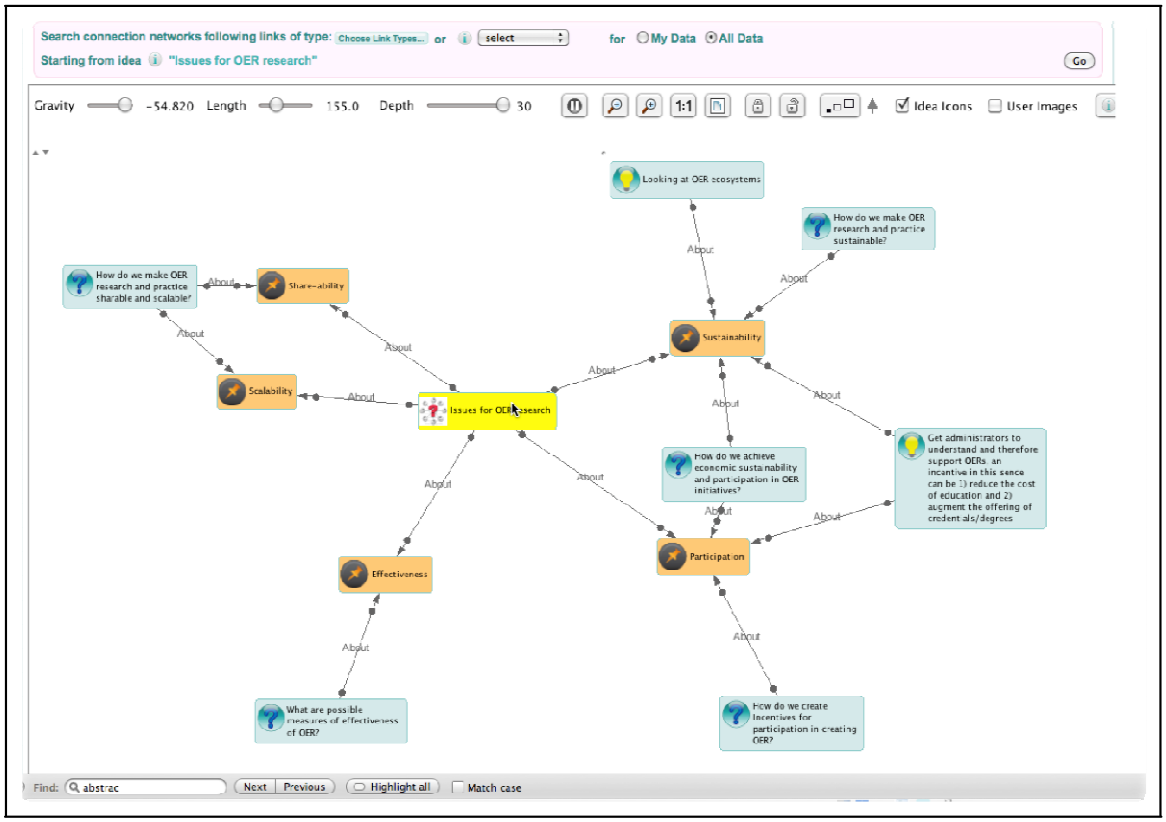

Figure 3: Illustrative use of Cohere to analyse issues

Acknowledgements

OLnet is funded by the William and Flora Hewlett Foundation. The authors would like to thank all of those who are researchers, fellows and contributors to OLnet. In particular for Figure 1, Tina Wilson provided the initial categorisation of projects and Figures 2 and 3 were produced by Anna de Liddo. We would also like to thank Candace Thille, co-director of OLnet based at CMU whose ideas are reflected in the original and future direction of OLnet.

Bibliographic references

Brown, P., and Fisher, L. (2007) Hard Lessons about Philanthropy & Community Change from the Neighborhood Improvement Initiative, *The William and Flora Hewlett Foundation*. http://www.hewlett.org/what-we-re-learning/evaluating-our-work/hard-lessons-about-philanthropy-community-change

Buckingham Shum, S. (2008) “Cohere: Towards Web 2.0 Argumentation,” in *Computational Models of Argument: Proceedings of COMMA 2008*, Ph. Besnard et al., eds. pp. 97–108. Amsterdam: IOS Press.

Conole, G. and Culver, J. (2009). The design of Cloudworks: applying social networking to foster the exchange of learning and teaching ideas and design, *Computers and Education*. 54(3), pp. 679–692.

Dimitriadis, Y., McAndrew, P., Conole, G. and Makriyannis, E. (2009), “New Design Approaches to Repurposing Open Educational Resources for Collaborative Learning Using Mediating Artefacts,” *Proceedings of ascilite 2009*, Auckland, New Zealand, December 6–9, 2009, pp. 200–207.

McAndrew, P., Scanlon, E. and Clow, D.(2010). An Open Future for Higher Education. *EDUCAUSE Quarterly*, 33(1). http://oro.open.ac.uk/21894/

Wiley, D. (2010). Openness as Catalyst for an Educational Reformation. *EDUCAUSE Review*, vol. 45, no. 4 (July/August 2010). pp14–20

Wolfenden, F. (2008). The TESSA OER Experience: Building sustainable models of production and user implementation. *Journal of Interactive Media in Education.* http://jime.open.ac.uk/2008/03/

About the authors

Patrick McAndrew

Associate Director (Learning & Teaching), Institute of Educational Technology, The Open University

Patrick McAndrew is Senior Lecturer in The Open University’s Institute of Educational Technology (IET). He has led a range of research projects addressing how materials and environments can support learning through the use of learning design and the provision of tools for learners. Patrick has a degree in Mathematics from the University of Oxford and a PhD in Computer Science from Heriot-Watt University in Edinburgh. He is Director of the Hewlett-funded OLnet initiative and Associate Director of Learning & Teaching in IET. Previously he was the Research and Evaluation Director of OpenLearn, a major initiative to provide open content for free education supported by The William and Flora Hewlett Foundation.

The Open University
Walton Hall
Milton Keynes
MK7 6AA
p.mcandrew@open.ac.uk

Karen Cropper
Project and Liaison Manager OLnet, Institute of Educational Technology, The Open University
University

Karen Cropper has been Project and Liaison Manager on the OLnet project since September 2009 and working for The Open University since December 2007. Originally trained as an engineer in Newcastle, her first job was as research engineer for Rolls Royce. She completed an MSc by research at UMIST whilst on a two year contract as a research assistant funded by a division of the Mars (GB) group. Karen worked in Local Government for 9 years, including posts in waste management, highways and public transport. She then developed an independent position in the Voluntary sector supporting fundraising and strategic planning, as well database and web design. Key achievements include raising £750,000 for a building and then project managing its construction. As Project and Liaison Manager Karen has oversight of OLnet and associated projects at The Open University and leads its Fellowship programme.

The Open University
Walton Hall
Milton Keynes
MK7 6AA
k.r.cropper@open.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Open access press vs traditional university presses on Amazon

Rory McGreal (PhD),* Edward Acqua**
* Professor & Assoc. VP, Research at Athabasca University.
** Analyst, Institutional Studies section of Advancement, Athabasca University.

Abstract
This study is a comparison AU Press with three other traditional (non-open access) Canadian university presses. The analysis is based on actual physical book sales on Amazon.com and Amazon.ca. Statistical methods include the sampling of the sales ranking of randomly selected books from each press. Results suggest that there is no significant difference in the ranking of printed books sold by AU Press in comparison with traditional university presses. However, AU Press, can demonstrate a significantly larger readership for its books as evidenced by thousands of downloads of the open electronic versions.

Keywords
open educational resources, open access, press, Amazon, ranking

Recommended citation:
McGreal, R.; Acqua, E. (2010). Open access press vs traditional university presses on Amazon. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/5082>

AU Press is Canada's first open access university press. This study is a comparison of AU Press with four other traditional Canadian university presses, which do not support open access at this time. The analysis is based on actual physical book sales on the largest online book retailer: Amazon.com and the Canadian version: Amazon.ca. Statistical methods are used to determine whether or not the traditional presses show higher sales. This includes the sampling of the sales ranking of ten randomly selected recently released books from each press. Results show that there is no significant difference in the number of printed books sold suggesting that releasing academic books on open access does not lessen physical book sales online in comparison with traditional university presses using Amazon as a measure. However, AU Press, because it is open access and publicly available at no cost, can boast of having a significantly larger readership for its books. The traditional university presses, because of their cost, print-only format, and other proprietary limitations are not readily available and therefore not accessible to potential readers.

Amazon Sales Ranking

The Amazon sales ranking number is provided as a service for authors and publishers, but can also be one useful gauge of the number of printed books purchased. The ranking provides a relative measure that is useful for assessing a book's sales performance on Amazon. The lower tranking number of a particular book can be interpreted as signifying higher sales. Two rankings were studied, based on both Amazon.com and Amazon.ca sales, which are updated each hour to reflect recent and historical sales of every book sold on the respective web sites. Significantly, this rating does not apply to Kindle books that have been increasing rapidly in sales volume (Rosenthal, 2010). For competitive reasons, Amazon does not release actual sales information to the public, so very few, if any people outside of Amazon know the actual sales numbers (Amazon, 2010).

However, Rampant Tech Press (n.d.) and Sampson (2010) have independently ventured to extrapolate the sales to a ranking order and have come up with similar information displayed on Figure 1.

Rosenthal (2010) provides similar estimates, noting that the lower ranking books (those with a higher ranking number, >#100 000) move comparatively little in their ranking as opposed to rather erratic movements in the best sellers (<#10,000). He notes that weak sellers decay relatively slowly. He observes that a title must sell at least one copy a year to remain above a rank of two million. As most academic books never reach these high rankings; they are with few exceptions to be considered "weak sellers" (>#100,000)

Sampson (2010) notes that the Amazon rankings provide only marginal sales data that are rough estimates at best. On the other hand he claims that the relative sales ranking can be useful for comparisons among books. Books with rankings between #10,000 and #100,000 are recalculated once a day; historic sales information plays a key role in these calculations. However, with books ranking higher than #100,000, which are also recalculated every day, history takes a back seat.

Methodology

Stratified sampling is a common probability method that is considered to be better than random sampling because the stratification reduces sampling error. The relevant stratum in this case was a subgroup of books published between 2008 and 2010. This was necessary because the targeted

population consisted of AU Press books. As AU Press is new, it only had published books in those years. Random sampling was then used to select a reasonable number of samples (n=12) from each publisher. This provided the researchers with confidence that the stratum represented each population well and accurately represented the overall publications in the years under investigation. Limiting the other presses to a subgroup made up of the most recent books published ensured a fair comparison with the new AU Press.

The sampled publications were then investigated to determine their ranking order on both Amazon.com and Amazon.ca. It was considered appropriate to investigate both "stores" as it was expected that Canadian scholarly publications would be relatively better sellers in Canada than internationally. The survey was also conducted on two dates separated by three months and the results have been averaged. Both Rosenthal (2010) and Sampson (2010) recommend this to get a more trustworthy ranking numbers as the numbers can be skewed drastically if measured on any one occasion.

The investigation

AU Press was compared with three of the major university presses in Canada, namely the University of Toronto Press (UTP), the University of Calgary Press (UCP), and the University of Alberta Press (UAP). The Amazon.com and Amazon.ca ranking results for these four university presses are available in Figures 2 and 3.

The investigation aimed to determine whether or not there was a ranking difference between the average ranking of the books in the open press and any or all of ranking averages of the traditional presses. AU Press which is the open university press was compared to the following traditional presses: University of Toronto Press, University of Calgary Press and University of Alberta Press in terms of sales ranking of these presses from Amazon (Amazon.ca & Amazon.com). First AU Press was compared to each of the traditional presses, and secondly it was compared to the three as a group using their ranking data from Amazon.

The Null Hypothesis was posited, stating that there would be no difference between the open press and the traditional presses using the mean sales rank (open press) = mean sales rank (traditional press) was tested at the 5% level of significance against The Alternative Hypothesis:

> that there is a difference, that is, the mean sales rank (open press) is not equal to the mean sales rank (traditional press).

The results are summarized in Figures 4 and 5. The t-statistics were computed and compared to the critical t-statistics of a two-tailed test. In all these cases, the null hypothesis could not be rejected at the 5% level of significance. The conclusion is that there seems to be no difference between the open press and the traditional press. The tests were however not statistically significant ($p>0.05$), indicating that the results might have happened by chance.

On the other hand, the open access books published by AU Press have been downloaded, on average, thousands of times by scholars and other users all over the world and particularly by those in developing countries. In the six months prior to this survey first being conducted, the average total downloads per full book was over 800 and more than 2000 if chapter downloads are included. The median download rate for full books was more than 250 and the total downloads median with

chapters was nearly 1000. Some of the more popular scholarly books had more than 2000 full book downloads and over 6 000 chapter and book downloads. See Figure 6.

AU Press books and chapters have been downloaded by scholars and other users all over the world. In more than sixty different countries. As expected the largest number of downloaders (more than 50%) are from Canada and the United States, but more than 33% of the other downloaders were from developing countries Others were from the emerging countries of Eastern Europe. Several books have also won distinguished international academic awards and have been reviewed and cited in leading scholarly journals.

This paper demonstrates that at least in the measure of physical book sales, there is no evidence that creating OERs for scholarly books decreases print book sales. There is no significant difference between the sale of printed books by traditional university presses when compared with an open access press, namely AU Press using the Amazon measures. There is however the added advantage of substantially increasing readership, especially in developing countries of scholarly books that are made available on line as OERs.

Figures

Rank #	Rampant Press Copies Sold/day	Sampson copies per week
> #1	3000	> 1,000 copies per week
> #10	650	200 – 1,000 copies per week
> #100	100	100 – 200 copies per week
> #1000	13	10 – 100 copies per week
> #10,000	2.2 (11 copies every 5 days)	1 – 10 copies per week
> #100,000	0.2 (1 copy every 5 days)	< 200 sold
> #1,000,000	0.006 (3 copies every 500 days)	< 40 books sold
> #2,000,000	0.0001 (1 copy every 1000 days)	1 book ordered

Figure 1 - Rank Number relation to sales (Rampant Tech Press, n. d.; Sampson, 2010)

Athabasca University Press	University of Toronto Press	University of Calgary Press	University of Alberta Press	Controlled Group Press
57,105	227,397	422,660	154,521	268,193
198,141	119,746	111,002	355,812	195,520
239,621	46,419	396,751	424,099	289,090
98,969	56,934	561,944	246,631	288,503
101,707	201,532	683,365	169,208	351,368
225,921	227,397	1,195,769	65,710	496,292
145,839	249,305	237,886	60,384	182,525
488,360	477,072	421,807	83,253	327,377
80,031	283,831	270,707	91,869	215,469
408,713	419,100	388,270	267,048	358,139
122,315	332,398	787,757	197,166	439,107

Figure 2 - Rankings from Amazon.ca January 2010

Athabasca University Press	University of Toronto Press	University of Calgary Press	University of Alberta Press	Controlled Group Press
1,260,279	2,393,121	3,124,635	1,290,317	2,269,358
705,438	3,337,710	160,272	3,428,847	2,308,943
1,062,251	1,190,429	1,048,357	4,068,647	2,102,478
1,765,283	735,372	1,797,624	776,928	1,103,308
2,940,755	2,992,991	647,557	1,365,207	1,668,585
4,472,042	2,393,121	3,076,338	999,705	2,156,388
1,086,172	1,483,875	724,521	334,671	847,689
1,712,101	2,376,571	4,938,289	2,865,188	3,393,349
2,637,674	2,248,576	4,312,491	4,205,723	3,588,930
2,087,648	618,051	3,634,196	8,581,611	4,277,953
1,068,800	1,654,718	2,006,625	3,419,384	2,360,242

Figure 3 - Rankings from Amazon.com January 2010

Description	*AUCA*	*GROUPS.CA*
Mean	196974.7	296647
Variance	1.93E+10	1.1E+10
Observations	11	12
Hypothesized Mean Difference	0	
df	19	
t Stat	-1.93098	
P(T<=t) one-tail	0.034272	
t Critical one-tail	1.729133	
P(T<=t) two-tail	0.068545	
t Critical two-tail	2.093024	
Since the t-calculated (-1.93098) lies within the acceptance interval (±2.093024) for a two-tailed test, we are unable to reject the null hypothesis that there is no difference between AU Press at amazon.ca and The Three Groups' Press at amazon.ca. The test is however not statistically significant (p>0.05)		

Figure 4 - Athabasca University at amazon.ca & The Group of Universities at amazon.ca

Description	*AUCOM*	*GROUPS.COM*
Mean	1890767.55	2370656.61
Variance	1.2222E+12	1.0718E+12
Observations	11	11
Hypothesized Mean Difference	0	
df	20	
t Stat	-1.0508471	
P(T<=t) one-tail	0.15293058	
t Critical one-tail	1.72471822	
P(T<=t) two-tail	0.30586116	
t Critical two-tail	2.08596344	
Since the t-calculated (-1.0508471) lies within the acceptance interval (±2.08596344) for a two-tailed test, we are unable to reject the null hypothesis that there is no difference between AU Press at amazon.com and The Three Groups' Press at amazon.com. The test is however not statistically significant (p>0.05)		

Figure 5 - Athabasca University at amazon.com & The 3 Groups at amazon.com

BOOKS	Aug'09	Sep'09	Oct'09	Nov'09	Dec'09	Jan'10
A	98	105	166	193	117	119
B	73	55	75	51	86	76
C	93	90	141	114	75	94
D	34	19	60	46	32	32
E	832	1439	1326	1158	818	1335
F	67	23	78	44	12	17
G	68	43	135	205	100	140
H	897	1090	1960	1642	1447	1447
I	144	137	220	219	161	92
J	93	110	134	166	113	90
K	182	127	249	160	267	124
L	36	218	306	261	186	215
M	0	606	506	299	209	255

Figure 6 - Monthly Book Downloads at AU Press

Bibliographic references

Amazon.com. (n. d.). What sales rank means. Retrieved from: http://www.amazon.com/gp/help/customer/display.html?nodeId=525376

Rampant Tech Press (n. d.). Inside the Amazon sales rank. Retrieved from: http://www.rampant-books.com/mgt_amazon_sales_rank.htm

Rosenthal, Morris (2010). Amazon sales rank for books: Graph explains what Amazon sales ranks mean. Retrieved from: http://www.fonerbooks.com/surfing.htm

Sampson, Brent. (2010). Navigating the Amazon sales ranking. Retrieved from: http://ezinearticles.com/?Navigating-the-Amazon-Sales-Ranking&id=41607

About the authors

Rory McGreal, PhD

Professor & Assoc. VP, Research at Athabasca University.

Professor Rory McGreal is the Associate VP Research at AU. He has been nominated by Canada for a UNESCO Chair in OER. He was previously Director of TeleEducation NB and a supervisor at Contact North. He has worked in the Middle East, Seychelles and Europe. He has been honored with the Wedemeyer Award for Distance Education practitioner.

Technology Enhanced Knowledge Research Institute
Athabasca University
1 University Drive
Athabasca AB T9S 3A3
CANADA
rory@athabascau.ca

Edward Acqua

Analyst, Institutional Studies section of Advancement, Athabasca University.

Dr. Edward Acqua is an analyst in the Institutional Studies section of Advancement at Athabasca University– Canada's Open University based in Alberta, Canada. He is responsible for analyzing data related to university initiatives.

Institutional Studies
Athabasca University
1 University Drive
Athabasca AB T9S 3A3
CANADA
edwarda@athabascau.ca

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/
Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

Approaches to OER Development

Rory McGreal, PhD
Professor & Assoc. VP, Research at Athabasca University.

Abstract
OER development is becoming more sophisticated as instructors and course specialists become more familiar with the environment. Most OER development approaches for online courses have been developed from those that were appropriate in the face-to-face context. However, the OER online environment opens up new possibilities for learning as well as holding particular limitations. This paper presents some approaches that OER implementers should bear in mind when initiating and supporting OER course development projects.

1. Beg, borrow, or steal courseware. Don't reinvent the wheel.
2. Take what exists and build the course around it.
3. Mix and match. Assemble. Don't create.
4. Avoid the "not invented here" syndrome.
5. Know the content – garbage in and garbage out.
6. Establish deadlines. Work to deadlines, but don't be unrealistic.
7. Estimate your costs and then double them. Double them again.
8. Be realistic in scheduling and scoping.
9. The project plan must be flexible. Be prepared for major shifts.
10. Build flexibly for reuse and repurposing – generalizability reduces costs
11. Provide different routes to learning.
12. Build to international standards.

There are necessary features in every OER, including introduction, schedule etc. but it is most important to keep the course as simple as possible. Extreme Programming (XP) methodology can be adapted from software engineering to aid in the course development process.

Keywords
OER, course development, reuse, standards

Recommended citation:
McGreal, R. (2010). Approaches to OER Development. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/5083>

OER development is becoming more sophisticated as instructors and course specialists become more familiar with the environment. Most approaches to OER creation have been developed from those that were appropriate in the face-to-face context. However, the online environment opens up new possibilities for learning and particular limitations. This paper presents several approaches, attempting to build on the knowledge base of distance education and traditional learning, adapting to the online environment and the strengths and weaknesses of software applications. Course developers can bear these in mind when initiating and supporting OER development projects.

1. Beg, borrow, (steal!) courseware. Don't reinvent the wheel.

Using previously created materials is almost always more efficient than creating your own. There is a growing body of freely accessible OERs, accessible online. Take advantage of them. It almost always easier to adapt existing materials to your needs than to develop them yourselves. If course materials you like are not available as OERs, , you can always take the idea and create your own content using the basic idea in neat courseware. You can make an OER. Remember, ideas are not copyrightable, only the specific expression of an idea is protected by copyright.

2. Take what exists and build the course around it.

This is one approach to course development that is tried and true. Early universities developed around monasteries or religious study groups, where teachers based their lessons on the Bible or other holy texts, that is - the content determined the learning. Now, most instructional design manuals insist that you not start with the content, but rather start with a needs analysis and build your course materials based on the specific learner needs that are identified in the analysis. Without undermining this approach, one can agree that the more traditional approach also has value and can be effective in promoting learning. Instructors can construct relevant courses, or at least relevant sections of courses based on materials that are already available. For example, a Geography instructor could design specific relevant tasks around a computer game, a computer simulation on running a city. Computer programming instructors could refer students to specific

free courses on Java programming that are available online. How about a history teaching module based on the ancient history game "*0. A.D.*"? Christiansen & Anderson (2004) reported on three courses at Athabasca University that employed this approach, building their courses around available materials. Courses in English and Nursing found this approach useful, finding OERs easy to come by. Mixing and matching modules from different sources can be highly effective using a course assembly approach rather than a creating one or spending too much time on adapting materials to make the "just right". "Good enough" is often preferable if it saves time and resources.

3. Avoid the "not invented here" syndrome.

Curriculum specialists, instructional designers, and individual teachers can find fault with any course materials. Turf protection is alive and kicking in most learning institutions. Nash (n. d.) refers to it also as the "let's re-invent the wheel" syndrome claiming that quite often "there are no other factors that dictate an internally developed solution would be superior." Material developed or chosen by someone else is commonly judged to be inferior. Sometimes settling for someone else's course material that is "good enough" is better than going to the expense and effort of creating your own "perfect" materials. Quebec "protestant" physics is not that different from Ontario "catholic" physics or Arizona public school physics. Quite often the only people who care are the curriculum specialists themselves, who can spend years arguing over the relative merits of different approaches, techniques, and content.

It may very well be appropriate to adapt an entire course produced by other institutions, but more likely, specific modules on relevant course topics will be more suitable. Externally produced learning objects can form the component parts of specific modules or larger courses. Often they can serve as alternate pathways to accommodate differing learning styles among the students or facilitate students using different software/hardware configurations or serve the special needs of learners with disabilities (Leeder, Davies, & Hall, n. d.).

4. Know the content – garbage in and garbage out

When you choose or create content, make sure that a real content expert is fully involved. Do not depend on non- specialists for the content. At the same time, the content specialists should be paired with instructional designers, because good subject-specific content does not necessarily translate into good learning content. Adaptation is necessary. This marriage of the content expertise with instructional design know-how forms the primary strength of distance education course development. Add a good web designer to this team and you have the makings of a solid web course.

5. Establish deadlines. Work to deadlines, but don't be unrealistic.

Procrastination is a common human trait. Time limits, whether externally or internally imposed are essential for the completion of course development projects. Deadlines should be established in consultation with the course development/assembly team. The tasks assigned must be seen to be realistic by those who have to complete them. Have people agree on the task deadlines and then see that they adhere to them. Written expectations for all team members are crucial. Beck (2000) in his approach to software projects recommends that short cycles with real deliverables

are best. It is too easy to get bogged down in details and never finish unless real achievable short-term goals with realistic deadlines are in place.

6. Estimate your costs and then double them. Double them again.

The budget established must be adequate for the tasks to be achieved. If a course has a very limited budget, then course creation and adaptation tasks must be controlled more than if a substantial budget is available. With limited funds, it is always more realistic to take OERs as is and avoid any significant development work (This also can be prudent even when you have significant funding!). The scope of a course development project must be controlled in order to keep costs down. "Must have" features should be incorporated in the course before the "bells and whistle" are added. This helps to keep a project on track and within budget.

7. Be realistic in scheduling and scoping.

Remember that nine women cannot produce a baby in one month. Hiring three more people never triples productivity (Brooks, 1995, p. 159). Use the agile, extreme programming approach in building courses: Have short iterations of at most two weeks in which a module is completed. Reduce the scope of the project if necessary, but do not compromise by extending the time or reducing quality. Make clear priorities. And make them REAL priorities. If everything is a priority, then nothing is. Clarify the relative importance of each task into three categories: Necessary, Desirable, Optional or use a scale.

Get a basic usable module up and running online. Remember that the first automobiles broke down every few hundred metres. The first airplanes were not considered air worthy. Getting a basic prototype up-and-running, no matter how faulty should be a top priority. Then test it. With this approach, if the module is not initially successful, you have not lost as much as you would have by waiting until a full multimedia product had been developed before launch.

Once you have the basic modules of a course available, use them as scaffolding to expand, building features into them, and then building around the newer features, like the layers of an onion. This lowers the costs of entry and lowers the risks. The course developers can learn from mistakes made in one layer before a new layer is built. Like in the automobile and airplane examples, the experience gained in building the first prototype is valuable in making subsequent builds better.

Assemble or build one course module at a time and then deliver them independently, before continuing on other modules. In any event, don't create the idea of a perfect course and then try to implement it – the "cathedral" approach. Ideas and features should be formulated as part of the experiences gained during delivery – the "bazaar" approach (Raymond, n. d.). As more courses are delivered, and experience is built up, the development team can afford to take more risks and increase the scope if it is warranted.

8. A course development project plan must be flexible. Be prepared for major shifts.

It is trite but true, to note that the world is rapidly changing. Course content that was valid yesterday can be outdated tomorrow. In many fields, new knowledge is being published on a monthly and even weekly basis. Any plan must take this into account. Courses must be constructed flexibly so as to allow for constant changes. Fortunately, the World Wide Web environment and the OER concept allowing for adaptations are ideally suited for altering content

on a regular basis. New relevant course materials covering the same content can also be obtained after a particular learning unit has been completed. Any plan must be flexible enough to allow for significant ongoing changes. Course materials must be reusable and adaptable for repurposing. To facilitate this, organize lessons as modules and construct learning objects. Learning objects are reusable digital resource encapsulated in a lesson or assemblage of lessons grouped in units, modules, courses and even programmes (McGreal, 2004).

9. Build flexibly for reuse and repurposing – generalizability reduces costs

Learning objects facilitate change in the type and amount of content, features and functionality of your course materials. Learning objects are self-contained and portable to different environments. Costs of overall development are reduced significantly when materials are generic, available for use in multiple content areas and formats. For example, an interactive ASCII conversion scale could be designed for use in various, introduction to information technology, mathematics, and computer programming courses if it is designed from the beginning to be adaptable and editable. This approach also makes ongoing maintenance and error correction much easier. Too many designers do not allow for multilingual capacity in their course structures. Many materials could be easily translated, if the course structure is open. For example, if text is not used inside graphics, translation into other languages is easier.

10. Elearning should involve the completion of meaningful tasks.

It is no secret that people learn by doing. ElBushra (1979) suggested that a set of related tasks make up a lesson. These tasks are the lesson. They are not extras. The tasks are not the text and presentation. They are practical activities undertaken by the students. They can include copying, notetaking, and calculating as well as more specialized activities. Their purpose is to reinforce concepts being studied and aid the memory with appropriate practice. The tasks together serve to achieve specific lesson goals. Course designers and teachers are responsible for ensuring that the learning tasks are sufficiently generalizable so that the knowledge acquired and the skills used can be applied in a wide variety of contexts.

11. Provide different routes to learning.

We know that different people, learn in different ways in different situations, at different rates, at different times of the day, week, month, year and life, based on different experiences, attitudes, and talents. Contrary to what all too many professionals believe, learning styles research does NOT support the view that individuals have a preferred learning style in ALL situations. The complexity of the concept being learned, the time of day, the comfort level of the learner with the material, the quality of the presentation format, the level of interactivity and many other factors can have a significant impact on the preferred individual learning style of a learner, which can change from time to time and situation to situation. Learners, who show a preference for “visual” learning in a standardized test, may find that in many other situations, they prefer a “kinetic” or “audio” style.

Nevertheless, if a choice of approaches and techniques are available to learners, they will be able to choose for themselves their preferred format and also be able to study the concept in a different format if they do not understand it the first time. When a concept is experienced in a variety of independent ways, learning is improved. Learners develop skills by using or working

on the concepts being taught. Different media and techniques match the way people need to think better than others (Bates, 1992).

12. The diagrams and charts included in the lessons should clarify the text.

Quite often graphics are superfluous and can actually detract from the learning experience (Mayer, 1989). Real-life images often contain too much information. Simple diagrams are usually superior, eliminating visual "noise" and focusing on the features that are critical to the understanding of the concept being taught. The designer should also consider the goal of the message and the level of the learners. Gilbert (1995, pp. 25-26) lists several approaches for the use of images to promote learning. Images should focus only on features that are critical to the concept being taught and be used for one or more of the following reasons:

1. prepare the learner;
2. attract and direct attention;
3. guide the learner through successive steps of complexity;
4. present the content repeatedly in a variety of contexts;
5. provide a vehicle for practice with immediate feedback; or
6. make connections.

An online Course should at a minimum have these basic features:

A title page;
An introduction to the course;
A course schedule, and a list of objectives and requirements;
The course content arranged into modules;
A Frequently Asked Question (FAQ) file;
A glossary of terms used in the course;
A table of contents, a search engine and/or index with a roadmap to the course;
A resources page with links to useful external course related information; and
A credits page listing the sponsors and the people who have developed the course along with an open access copyright statement (Creative Commons, GNU or public domain).

13. ***Build to standards.***

Course materials that are built to commonly accepted standards are easier to assemble, adapt and repurpose. As well as institutional standards for interface design and quality, developers must also ensure that their products conform to the emerging international metadata standards for learning objects (IEEE LOM, SCORM, IMS Common Cartridge). Use CanCore to facilitate the implementation of these standards (See: http://www.cancore.ca).

Create a standard procedure and "look" for course development in your institution and follow it intelligently. Be consistent in instructions, icons etc. The finished product should look like one person did it. Cyrs (1990) reminded us that ego gratification is not as important as consistency.

Conclusion

Most importantly, when assembling or building courses: Keep it Simple. Do not make the interface difficult to navigate. Use simple commands and easily understandable icons. Simple clean interfaces with no glitz are preferable to overly complex designs with bells and whistles. All too often the glitz detracts from the learning. Make it easy for the learner. Use plain, simple language. Explicitly state the course objectives on a separate course objectives page. Make the link between the assignments and the course materials clear. Let students clearly know what is expected of them for each individual assignment or test, and for the entire course and examinations. Clearly describe the resources that will be needed and the learning activities that will be undertaken (Eastmond & Ziegahn, 1995). In that the way, both the instructors and the learners can be confidently aware of the requirements of the course. And lastly, it is important not to procrastinate. Just do it.

Bibliographic references

Bates, A. W. (1992). Theory and practice in the use of technology in distance education. In *Theoretical Underpinnnings of Educaton at a Distance*. London: Routledge.

Beck, K. (2000). *Extreme programming explained*. Toronto: Addison-Wesley.

Brooks, F. P. (1995). *The Mythical Man-Month*: Addison-Wesley.

Christiansen, J.-A., & Anderson, T. (2004, March). Feasibility of course development based on learning objects: Research analysis of three case studies. *International Journal of Instructional Technology and Distance Learning, 1*(3). Retrieved from http://www.itdl.org/Journal/Mar_04/article02.htm

Cyrs, T., & Smith, F. A. (1990). *Teleclass Teaching: A Resource Guide* (2 ed.). Las Cruces, NM: New Mexico State University.

Eastmond, D., & Ziegahn, L. (1995). Instructional Design for the Online Classroom. In Z. L. Berge & M. P. Collins (Eds.), *Computer Mediated Communication and the Online Classroom: Distance Learning* (Vol. III, pp. 59 - 80). Creskill, NJ: Hampton Press Inc.

ElBushra, J. (1979). *Writing for Distance Education*. Cambridge, UK: International Extension College.

Farrell, R., Thomas, J. C., Dooley, S., Rubin, W. & Levy, S. (n. d.). Learner-driven Assembly of Web-based Courseware. Retrieved from www.editlib.org/d/14977/proceeding_14977.pdf

Gilbert, A., & Mitchell, N. (1995). Is a picture worth a thousand megabytes? *Journal of Interactive Instruction Development, 7*(4), 25 -32.

Leeder, D., Davies, T., & Hall, A. (n. d.). *Reusable learning objects for medical education: evolving a multiinstitutional collaboration*, Retrieved from http://www.ucel.ac.uk/documents/docs/068.pdf

Mayer, R. E. (1989). Systematic thinking fostered by illustrations in scientific text. *Journal of Educational Psychology, 81*, 240-246.

McGreal, R. (2004, September 4). Learning objects: A practical definition. *International Journal of Instructional Technology and Distance Learning (IJITDL), 9*(1). Retrieved from http://www.itdl.org/Journal/Sep_04/article02.htm

Nash, M. (n. d.). *Overcoming "Not invented here" syndrome*, Retrieved from http://www.developer.com/design/article.php/3338791

Raymond, E. S. (n. d.). The cathedral and the bazaar. Retrieved from http://catb.org/~esr/writings/homesteading/

About the authors

Rory McGreal, PhD

Professor & Assoc. VP, Research at Athabasca University.

Professor Rory McGreal is the Associate VP Research at AU. He has been nominated by Canada for a UNESCO Chair in OER. He was previously Director of TeleEducation NB and a supervisor at Contact North. He has worked in the Middle East, Seychelles and Europe. He has been honored with the Wedemeyer Award for Distance Education practitioner.

Technology Enhanced Knowledge Research Institute
Athabasca University
1 University Drive
Athabasca AB T9S 3A3
CANADA
rory@athabascau.ca

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/ Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

When the mummy is digital: preservation and dissemination

Julià Minguillón
Academic Director of the UOC UNESCO Chair in e-Learning

Abstract
Most educational institutions include nowadays a digital repository as part of their development and positioning strategy. The main goals of a digital repository are preservation and dissemination, which are some how contradictory, especially if the repository follows an open approach, as it is designed, built and managed from an institutional perspective, although it is intended to be used by teachers and learners. This fact may lead to a low level of usage, as final users are not able to integrate the learning object repository into their learning process. In this paper we will discuss how to promote open educational resources by connecting open repositories with open social networks, bridging the gap between resources and final users (teachers and learners).

Keywords
open educational resources, OERs, digital repositories, social networks, preservation, dissemination, learning process, virtual learning environments, e-learning

---

Recommended citation:
Minguillón, Julià (2010). When the mummy is digital: preservation and dissemination. In *Open Ed 2010 Proceedings.* Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4963>

Introduction

Virtual learning environments (VLEs) are nowadays in widespread use. From pure online virtual universities to traditional ones that offer learners a blended learning model, the use of web-based tools for teaching and learning has been steadily increasing, as wisely described by Taylor (1999). From an institutional point of view, VLEs may serve also as a mechanism for content management and dissemination. In fact, most universities have a digital library which reproduces the services from a traditional one, plus adding additional features. In the recent years, digital libraries have evolved to what we know as digital repositories, a basic piece of any educational institution (Lynch, 2003).

The term "repository" means, among other things, a place or container in which things can be stored for safety (i.e., preservation), as well as a place where things are kept for exhibition (i.e. dissemination), like a museum. But, at the same time, it also means a place of burial, a sepulchre, as well as a receptacle containing the relics of the dead. In this sense, preservation prevails over dissemination: repositories are designed to keep knowledge safe, rather than to allow "visitors" to manipulate it. This has been the traditional mission of libraries, where knowledge was only managed by experts and accessible to a few privileged cultivated people, due to the fragile nature of resources (papyrus and handwritten books). In this sense, we can think of repositories as pyramids, which were (naively but even though impressive) designed to keep the mummies of pharaohs forever. Notice that preservation means not only having an appropriate container but also applying some techniques to the object to be preserved, i.e., altering the original object in order to ensure it will be recoverable in a future when it will be needed.

Nevertheless, when we add the term "digital" to such definitions, things change radically, and new questions regarding the trade-off between preservation and dissemination arise (Levy and Marshall, 1995). Digital means that we can create exact copies which can be retrieved from the repository and further manipulated, without changing the original. In terms of education, we want everybody to go to the pyramid and see, touch and even leave with a copy of the mummy. Furthermore, we are interested in obtaining feedback from the audience, in order to know whether the mummy is of interest to them or not, if they have learnt something, if they have any question, and so.

The main problem with digital repositories is that, despite of they are virtual places, final users are obliged to visit them in order to find valuable resources. Although learning object repositories are an important piece of any educational initiative, they are not fully integrated into the learning process. The main reason is that digital repositories have emerged from an institutional initiative, created and managed by librarians and IT staff, neither by teachers nor students. As the learning process in virtual environments is evolving towards a more open social activity, taking advantage of the web 2.0 technologies (Downes, 2005), it seems natural to make digital repositories also part of this paradigm shift. As stated in (Margaryan and Littlejohn, 2009), repository curators focus on long-term, repository-centric goals, while final users are more concerned about the context and expect short-term outcomes. This is especially dramatic for open educational resources (OERs),

where dissemination is much more important than preservation, and final users need to be very involved with creation, management and sharing of learning resources.

Therefore, we need to think about how to make resources available, helping users to find them, but also allowing users to take the resources with them, and to organize such resources as part of their personal learning environment, whatever this means for each user. And, at the same time, repositories need to ensure that such resources will be available forever, following the appropriate preservation policies (Smith, 2005). On the other hand, creating a learning object repository is not a simple task but it must be accomplished from a bottom-up approach (i.e. a group of teachers) with a minimum institutional support (mostly from the IT support office), and organizational (from the library support office), although there are several preliminary questions that should be addressed (Margaryan and Littlejohn, 2009) to ensure the repository will be a valuable resource for the learning community, as well as many other critical issues that must be taken into account (McNaught, 2007).

Open Educational Resources

OERs have been the promise of providing people with high quality learning resources (Smith and Casserly, 2006). Initiatives such as MIT OpenCourseWare (OCW), MERLOT and others have shown the real possibilities of creating and sharing knowledge through Internet. We indeed live in an age of content abundance, and content can be considered as infrastructure for building adaptive and personalized learning paths, promoting both formal and informal learning. Nevertheless, although most educational institutions are adopting a more open approach, publishing huge amounts of open educational resources, reality is that these resources are barely used in other educational contexts.

The feeling about the current situation of the OER movement is that everybody (especially large educational institutions) is creating and publishing open educational resources, but it is difficult to know whether these resources are reused (and how) or not. But in order to be reused, any open educational resource should be, first of all, very visible and easy to find. Currently now, searching for OERs faces the problem of "content abundance" as opposite to "content scarcity", as there are so many resources and so many channels (search engines, general purpose repositories, Wikipedia, …) for discovering them that searching and browsing has become a experience similar to Google returning thousands of results in a flat list with no structure or hierarchy at all, which can be frustrating for non-advanced users (Ochoa, 2005).

As stated in (Paulsson, 2009), access to digital learning resources could be improved if common metadata schemes and vocabularies were used to describe them. This not even a reality for specific initiatives such as OCW, as every institution has created its own taxonomy and hierarchy or there is no structure at all. Furthermore, searching engines on top of OCW[1] use a Google-like search, by means of a textbox where the user specifies the search terms, with a few other possibilities (namely, language and source). Although repositories can be harvested (using the OAI and ORE protocols) in order to build large collections of educational resources, the lack of common metadata schemes and policies may make of searching and browsing a difficult task. Other well known problems about reusing open educational resources (and learning objects, in general) are, among other, granularity,

i.e. the size of what is considered a learning object, the use of proprietary file formats, the lack of widespread use of e-learning standards and specifications, the lack of information about its educational context and, especially, internationalization and localization issues.

Beyond visibility, our goal is to ensure that open repositories will promote the four "R" activities on open educational resources: reuse, revise, remix and redistribute (Wiley, 2010), while respecting basic preservation policies. In fact, "open" means no proprietary formats should be used to store objects in the repository, thus simplifying preservation. The main threat to preservation is revising (altering content) and redistributing (which ultimately means uploading new content to the repository), although all the four "R" may alter the learning object (including its metadata), as we will describe in the next section. It is out of the scope of this paper to define a preservation policy for learning objects under the "4R" paradigm, we only intend to define a new scenario for learning object repositories that will force the whole concept of preservation to be rethought.

Adding services on top of OERs

Learning in a virtual environment involves the use of a wide variety of learning objects, not only books or complete courses (such as those available through OCW), but also examples, exercises, simulations, multimedia documents, etc. These elements must be not only stored but also fully integrated into the learning process, helping learners to better contextualize these small chunks of knowledge. Browsing and searching for these resources should be a truly learning experience in itself. Therefore, learning object repositories should be designed taking into account not only the institutional requirements (i.e. preservation), but also the needs of the final users, namely teachers and especially learners (i.e. dissemination). This can be done by adding web 2.0 services to traditional repositories and making them to become more open.

New learning theories such as connectivism (Siemens, 2005) establish that learning is produced during the process of establishing new relationships between contents and concepts, rather than in the already acquired knowledge. Learning object repositories are important elements in the network built by the learner during his or her learning process, as they store not only the learning resources but also all the details of the learning experience itself. Learning occurs anytime, anywhere; learners do not need to go to a specific place to have a learning experience, on the contrary, they should be able to learn whatever, whenever, wherever. In this sense, social networks provide a basic support for this practice, but not the contents. Learners do not need to "know" everything; it is the ability to create, analyze and share connections between resources the one that generates knowledge. Learning is more than just content, which is just the infrastructure for the learning process (Wiley, 2001), so we need to provide learners with content but also with additional services to organize such content according to their own expectations and particularities.

Therefore, in order to promote the reuse of open educational resources, we propose to bridge both worlds, as introduced in (Córcoles et al., 2009). From the one side, by means of institutional repositories built on a top-down approach, more aimed towards preservation rather than promoting reuse and, from the other side, communities of practice and learning in the shape of social networks. We can combine the best of both worlds: reliable and permanent handles for well-described resources in learning object repositories with dynamic services available through social networks

and web 2.0 tools. So, once a user finds (and uses) a learning resource, whatever the source is, he or she should be able to add comments, to rate it, to make it favorite, to tag it with his or her own keywords, to share it with other learners and, finally, to subscribe to such resource, as follows:

Comment: in order to promote a continuous improvement of resources, learners should be able to make comments, place questions, correct small mistakes and so, using communication spaces directly related to the learning object, not separately. These annotations can create a micro-community of learning around a given learning object. Currently now, learners in a VLE must go to a specific place (a forum, board, mailbox or so) for making a question or placing a comment about a specific resource which is not there.

Rate: using a Likert-type scale, stars (from 0 to 5 or 10) or any other mechanism, the learner should be able to express his or her valuation of the resource. This information can be used to rank learning objects according to their explicit popularity.

Favorite: for those resources that really capture learner's interest, it should be possible to mark them as a very valuable resource, analogously to what users do with links using the possibilities of web browsers or web 2.0 services such as delicious or Google reader "star", for example.

Tag: learners should be able to describe learning resources using their own keywords, as a way of self-organizing concepts through the use of small notes. These tags can be analyzed to extract new keywords to be added as metadata.

Share: all of the previous actions should be shared using learner's usual communication channels, such as twitter, facebook, delicious and so. This is the basic idea behind a personal learning environment, that is, allow users to take control of learning resources wherever they want to. Furthermore, using web services such as Burnbit, resources could be even shared through P2P networks, thus making them available to a very large number of potential users.

Subscription: finally, learners should be aware of all interactions occurring around a specific resource, being able to subscribe to a given learning object, using RSS or any other similar technology, once again as part of their own personal learning environment.

Finally, although it is not a service on top of a particular educational resource, it would be very interesting to provide final users with a mechanism for proposing new resources that should be part of the repository, according to their opinion. Users should provide a link to the resource and as much information as possible about it. Depending on the repository policy for self-archiving, the resource will be available to the other users, once copyright issues and other aspects such as format have been validated. Obviously, in order to promote the "R" of redistribution, users should be able also to upload content to the repository, not only providing links to it.

As described in (Minguillón et al., 2010), all the interactions generated between resources and users through these services can be captured and stored in form of metadata as part of each learning object description. Although the proposed mechanism simplifies knowledge management as all the valuable information of a specific learning object is contained within itself, adding metadata to a learning object modifies it, thus jeopardizing preservation, strictly speaking. Obviously, a clean copy of the original learning object can be maintained for preservation purposes, but then all the interactions that change the content (such as the correction of minor mistakes) should be processed when the learning object undergoes any preservation procedure (i.e. an upgrade of its file format).

These interactions can be analyzed in order to better understand how learners use open educational resources, extracting useful information for improving both the system (i.e. the repository), as described in (Han et al., 2008), as well as the learning objects contained in it, as described in (Ferran et al., 2007). It may provide also useful information about the users, which can be used for profiling purposes, pursuing personalized services. The information stored as metadata can be used at three different levels, according to the respective user profile: repository managers, teachers and learners. Repository managers can analyze interaction data in order to detect and correct possible problems regarding repository usability, visibility of learning resources, patterns of searching and browsing and so. Teachers can see which resources are more (or less) valuable to learners, which are the most common questions and comments, etc. Finally, learners can share experiences through these services directly on top of the learning resources, learning one from each other.

Conclusions

Learning object repositories are nowadays a basic element of any virtual learning environment, but learners still need to go to the repository in order to manage their learning resources. Furthermore, they are not able to integrate such resources within their own learning process. Once a given resource is found, learners are only left with the possibility of consuming it, but nothing else. As repositories are still built and managed by librarians, final users have not the possibility of taking control on educational resources. The main reason is that repositories have been designed pursuing preservation, instead of dissemination from an open approach perspective, that is, reusing, revising, remixing and redistributing open educational resources.

In this paper we have described a collection of web 2.0 services that may be used by teachers and specially learners in order to integrate resources into the learning process. The main idea is adding some new functionalities on top of a digital repository, with the aim of creating a true learning community (even at a small scale) around every resource, making of it a valuable asset. Then, learners can build a learning path by adding the resources they find to their personal learning environment, keeping track of all the activity around a given educational resource. On the other hand, all the information captured during the interaction between learners, services and users can be analyzed in order to provide learners with better recommendations, thus improving browsing and searching for a specific resource. Teachers can also analyze these interactions to discover how learners use and evaluate educational resources, as well as improving them by keeping track of all comments and questions placed by learners.

Nevertheless, although new web 2.0 technologies can provide solutions for improving digital repositories, we need to change the way we organize learning resources. Educational institutions need to rethink the whole concept of digital repository. From large general-purpose institutional repositories, created and managed by librarians, it is necessary to evolve towards small thematic repositories managed by teachers, in order to be able to build true learning communities around a specific domain of knowledge. In this sense, e-learning (understood as web-based learning) needs to incorporate information science and knowledge management into the equation, following a user-centered approach.

Current and future research on this topic should include the development of a complete information architecture model for capturing and analyzing interaction between users, services and resources. This model should also take into account user profiling in order to provide personalized searches according to user's profile and context. We are currently now in the process of developing a layer of services on top of a DSpace thematic repository on Statistics[2] which will serve as a pilot experience for testing this architecture in a real scenario. This project is part of a largest one which tries to build a completely different user interface for DSpace based repositories, in order to replace term-driven searchers by a visual taxonomy, because browsing and searching for educational resources should be a learning experience in itself.

Finally, the possibility of connecting digital repositories with P2P networks and flooding them with OERs is also very interesting. P2P clients could include a new category (OER) and some new filtering options according to the desired characteristics of the educational resource (license, language, etc.), so finally resources will be available wherever learners are, that is, social networks and file-sharing networks, and not being confined into a particular digital repository. Mechanisms for tracking educational resources in such an open scenario will be needed, though.

Notes

1. http://www.ocwconsortium.org/courses/search.
2. http://oer.uoc.edu.

Bibliographic references

Córcoles, C., Minguillón, J., & Lamb, B. (2009). Building an open social learning community around a DSpace repository on Statistics. *Proceedings of the 4th International Conference on Open Repositories.*

Downes, S. (2005). E-learning 2.0. *eLearn Magazine*. Retrieved [15/9/2010] from http://www.elearnmag.org/subpage.cfm?section=articles&article=29-1

Ferran, N., Casadesús, J., Krakowska, M., & Minguillón, J. (2007). Enriching e-learning metadata through digital library usage analysis. *The Electronic Library, 25*(2), 148-165.

Han, P., Kortemeyer, G., Krämer, B.J., & von Prümmer, C. (2008). Exposure and Support of Latent Social Networks among Learning Object Repository Users. *Journal of Universal Computer Science, 14*(10), 1717-1738.

Levy, D.M., & Marshall, C.C. (1995). Going digital: a look at assumptions underlying digital libraries. *Communications of the ACM, 38*(4), 77–84.

Lynch, C.A. (2003). Institutional repositories: Essential infrastructure for scholarship in the digital age. *ARL, 226*, 1-7.

Margaryan, A., & Littlejohn, A. (2009). Repositories and communities at cross-purposes: issues in sharing and reuse of digital learning resources. *Journal of Computer Assisted Learning, 24*(4), 333-347.

McNaught, C. (2007). Developing criteria for successful learning repositories. In J. Filipe, J. Cordeiro & V. Pedrosa (Eds.), *Web Information Systems and Technologies* (pp. 8-18). Dordrecht: Springer

Minguillón, J., Rodríguez, M.E., & Conesa, J. (2010). Extending learning objects by means of social networking. *Proceedings of the 9th International Conference on Web-based Learning*.

Ochoa, X. (2005). Learning object repositories are useful, but are they usable? *Proceedings of IADIS Applied Computing*, 138-144.

Paulsson, F. (2009). Connecting learning object repositories: strategies, technologies and issues. *Proceedings of the Fourth International Conference on Internet and Web Applications and Services*. 583-589.

Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*, *2*(1), 3-10.

Smith, M. (2005). Exploring Variety in Digital Collections and the Implication for Digital Preservation. *Library Trends, 54*(1), 6-15.

Smith, M.S., & Casserly, C.M. (2006). The promise of Open Educational Resources. *Change*, *38*(5), 8-17.

Taylor, J.C. (1999). Distance education: the Fifth generation. *Proceedings of the 19th ICDE World Conference on Open Learning and Distance Education*.

Wiley, D. (2001). Peer-to-peer and learning objects: The new potential for collaborative constructivist learning online. *Proceedings of IEEE International Conference On Advanced Learning Technologies*, 494-495.

Wiley, D. (2010). Openness as a catalyst for an educational reformation. *Educause Review*, *45*(4), 14-20.

About the author

Julià Minguillón

Academic Director of the UOC UNESCO Chair in e-Learning

Julià Minguillón (Barcelona, Spain, 1968) received his Ph.D. from the Universitat Autònoma de Barcelona (UAB) in September 2002. In January 2001 he joined the Universitat Oberta de Catalunya (UOC) where he is a faculty member of the Computer Science, Multimedia and Telecommunication Studies department. Currently now he is the Academic Director of the UOC UNESCO Chair in e-Learning. His main research interests include the formal description of the learning process by means of ontologies, personalization by means of adaptive itineraries based on reusable learning objects, and user modelling applying web mining techniques for improving user experience and usability, accessibility and mobility. He is also interested in open educational resources and the uses of social tools for teaching and learning. He was in charge of the UOC participation in the OLCOS (Open Learning Content Observatory Services) EU funded project. He led the Spanish Government funded PERSONAL(ONTO) and E-MATH++ projects, which promote the use of learning object repositories in virtual learning environments. He also leads the METAOER project which aims to create an organized collection of open resources about open educational resources and practices.

Computer Science, Multimedia and Telecommunication Studies
Universitat Oberta de Catalunya
Rambla Poblenou 156, 08018 Barcelona, Spain
jminguillona@uoc.edu

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Innovative Applications

Open Educational Resources and Mobile Resources Repository for the Instruction of Educational Researchers in Mexico

Dr. Fernando J. Mortera-Gutierrez
Full Time Professor, Tecnológico de Monterrey (ITESM), Graduate School of Education, Virtual University.

Abstract
The movement of Open Educational Resources (OER) is one of the most important trends that are helping education through the Internet worldwide. "Tecnológico de Monterrey" (http://tecvirtual.itesm.mx/) in Mexico, with other Mexican higher education institutions, is creating an Internet/web based repository of OERs and Mobile Resources for the instruction and development of educational researchers at undergraduate, Master's and Doctoral level. There is a lack of open educational resources and material available at the Internet that can help and assist the development and education of educational researchers in Spanish speaking countries. This OER repository is part of a project that is experimenting new technology for the delivery of OERs from one repository (http://catedra.ruv.itesm.mx/) through an indexed OER catalog (http://www.temoa.info/) to mobile devices (Ipod, Iphone, MP3, MP4). This paper presentation will describe and comment about this project: outcomes, best practices, difficulties and technological constraints.

Keywords
Innovation, Educational Technology, Open Educational Resources, Mobile Resources, Communities of Practice, Researchers Career Development

---

Recommended citation:
Mortera, F. (2010). Innovative Applications: Open Educational Resources and Mobile Resources Repository for the Instruction of Educational Researchers in Mexico. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4863>

Introduction

The movement of Open Educational Resources (OER) is one of the most important trends that are helping education through the Internet worldwide, and it's a term that is being adopted every day in many educational institutions, from Higher Education to K-12 where OER are being created and used; especially those which have embraced distance education (e-learning) and information and communication technologies (ICT) as one of their major institutional and teaching efforts, such as "The Instituto Tecnológico y de Estudios Superiores de Monterrey" (ITESM –*Tecnológico de Monterrey*) has done in Mexico.

One of the most competitive private higher education institutions in Mexico, "El Tecnológico de Monterrey" (ITESM) (also named *TEC de Monterrey)*, has implemented for more than 20 years videoconferencing, TV satellite and online instruction to deliver distance education courses and programs, and also more than 10 years using different e-learning platforms (LearningSpace, BlackBoard, FirstClass, BSCW, WebTec) to enhance its traditional face-to-face and distance education programs at undergraduate and graduate level (Masters and Doctoral).

Through this e-learning electronic delivery educational platforms ITESM has reached all its 30 or more campuses around Mexico; allowing them delivery, currently, more than twelve thousand e-learning courses every semester. Blackboard is its major e-learning platform, and it is widely used both locally (each campus has certain autonomy in its use) and through the entire ITESM system.

To help this institutional distance education effort and to respond to Mexican and Latino American educational needs "*El Tecnológico de Monterrey*", and with other Mexican higher education institutions, they have developed an important educational initiative: an Internet/web based repository of OER and Mobile Resources for the instruction and development of educational researchers at undergraduate, Master's and Doctoral level.

There is a lack of educational resources and material available freely at the Internet that can help and assist the development and education of educational researchers in Spanish speaking countries. There is an important need for conducting educational research that can help to handle many of the different educational Mexican and Latin-American problems and issues. This educational research needs to be based on academic and scientific standards, one of the goals of this OER and Mobile Resources Repository is to give and make available methodological and epistemological tools and resources for conducting educational research with rigor and care.

This OER repository (http://catedra.ruv.itesm.mx/) is part of a project financed by CONACYT, a Mexican public institution, with the main objective to develop educational resources which will be accessible for everybody not only at the Internet and computer devices, also using mobile devices for *mobile open resources.* This OER repository is part of a project that is experimenting new technology for the delivery of OER from the repository (http://catedra.ruv.itesm.mx/) through an indexed OER catalog (http://www.temoa.info/) to mobile devices (Ipods, Iphone, MP3, MP4, and so on).

This OER and Mobile Resources Repository is connected with the ***TEMOA***, a Mexican OER indexed catalog (http://www.temoa.info/), named before Knowledge Hub (KHUB). Which was another important open educational initiative from Tecnológico de Monterrey. The initiative is conceived by the faculty's needs to find effective materials in teaching and learning and with the certainty that the resources found respects intellectual property and legal rights from their original authors. It is a public catalog that provides a multilingual search engine that allows the user to discover selected Open Educational Resources (OER) using metadata enriched by experts and enhanced by librarians, using Web 2.0 such faceted searching and social networking tools. The TEMOA website , former KHUB is for free use available on the Internet for teachers, professors and self-learners of all levels, from higher education to K12.

"At the heart of the movement toward Open Educational Resources is the simple and powerful idea that the world's knowledge is a public good and that technology in general and the World Wide Web in particular provide an extraordinary opportunity for everyone to share, use, and reuse knowledge. OER are the parts of that knowledge that comprise the fundamental components of education—content and tools for teaching, learning, and research" (Atkins, Brown, and Hammond, 2007, p. 6).

The OERs are important worldwide because they are helping and having impact on the different educational levels (through the Internet), at both dimensions: distance education and face-to-face education (Fountain y Mortera, 2007). The Tecnológico de Monterrey participates in the process of offering open educational resources available at the WWW through its initiative named TEMOA, and its new OER and Mobile Resources Repository for the instruction of educational researchers; doing this is trying to respond Mexican and Latin-American educational needs, and worldwide educational issues.

This paper will present the results, outcomes and experiences on a project about innovative applications and the use of new technologies using OER which allowed the delivery and transferability of knowledge through the Internet and mobile devices to help the instruction and educational formation of Educational Researches in Mexico and Latin-America.

Open Educational Resources and Mobile Resources for the Instruction of Educational Researchers Project

Currently, the Internet and the Information and Communication Technologies (ICT) are allowing access to open educational resources at different educational levels in the world; although these resources by themselves do not solve the diversity of educational issues and problematic, they contribute to the dissemination of educational material and they help to improve the educational conditions in different countries and societies around the world.

This paper has the objective to present the first stage of the project named "Open Educational Resources and Mobile Resources for the Instruction of Educational Researchers," funded by the

Corporation of Universities for the Development of Internet (CUDI) and the National Council for Science and Technology (CONACYT) in Mexico. This project aims to develop instructional material and educational resources for training educational researchers located in a digital content repository, contributing to the reduction of the educational gap and learning problematic in Mexico and Latin-America, and for an equal access to educational resources available at the Internet. The main goal is to generate a body of open educational resources (OER) and mobile learning resources (ML) on educational research methodology issues which are free and licensed for use, reuse and distribution within the academic community in Spanish speaking countries and around the world.

The project allows CUDI main goals to help knowledge-sharing based on academic networks using the Internet 2 as a mean of communication and advanced services through a networking of diverse communities within Mexico, especially in education and at international level. All this, is based through an academic work between researchers and teachers from different Mexican higher education institutions, public and private, in the area of educational research methodology, where the processes of communities of practice are crystallized with open educational resources and mobile resources created and deposited in a digital repository open to everybody in the world through the WWW.

Among the specific project objectives are: a) to facilitate the use of technology for teacher training, to develop educational innovations to generate a sense of social consciousness and commitment for the solution of the educational problems, and to generate academic networks and knowledge exchange at national and international level using the Internet as a mean of communication; b) to develop a shared project that can enrich the knowledge of educational technology and the Internet as a research tool which can facilitate and support the access to open educational resources (OER) and mobile resources (MR) located in the WWW, to be used by faculty and researchers from Mexico and Latin America in their courses. All these objectives were accomplished through two main activities: 1. Through the interaction of higher education faculty and researchers, with the main goal to build a digital content repository of open educational resources and mobile resources; 2) and through the project findings based on its applications, studies and dissemination of knowledge in specialized journals and papers also in national and international congresses.

The Mexican higher education institutions which are participating and collaborating within the project are:

1. Tecnológico de Monterrey (ITESM)
2. Universidad de Montemorelos (UM)
3. Universidad de Guadalajara (UDG)
4. Universidad Autónoma de Yucatán (UADY)
5. Instituto Tecnológico de Sonora (ITSON)
6. Universidad Autónoma de Guadalajara (UAG)
7. Universidad Autónoma Metropolitana (UAM)

Research Objectives

a) Creation and hosting of a digital content repository of Open Educational Resources (OER) and Mobile Resources (MR) of educational research methodology and research training resources.
b) Documentation of the management process and creation of OER and MR as well as the hosting process of the content repository site for educational resources on educational research and research training, as well as the guidelines for its organization, accessibility and dissemination in Spanish speaking countries.
c) Implementation of the project with teachers and researchers to see how they use these resources and inquire among them their perception on the creation, use, reuse and sharing of open educational resources (OER) and mobile resources; through quantitative, qualitative or mixed studies.

Research Problem

The lack of open educational resources and mobile resources for educational research training and instruction in diverse areas of educational research methodology, the field of epistemology, theoretical and diverse pedagogical approaches, and on how to handle information (data collection and analysis) available on the Web; it makes necessary not only to study the current state of educational research from the perspective of the use of information and communications technologies (ICT), but also to work with the production and development of such materials and educational resources to be easily accessible and free to teachers, students, and researchers interested in the improvement and acquisition of this kind of knowledge and research resources in Mexico, Latin America and the world .

The central idea of the project is to develop and implement open educational resources and mobile resources for learning and training educational researchers. Therefore, there are three important elements to support the project: open educational resources, resources for mobile learning and training of educational researchers.

Research Questions

1. What are the main issues to consider for the production and design of open educational resources and mobile resources for educational research among teachers and researchers in Mexico and Latin-America?
2. How do teachers and researchers use free and open resources for educational research and researchers training?
3. Which are the main inputs of open educational resources and mobile learning resources for training of educational researchers?

Research Hypothesis

1. The main issues to consider for the production and design of open educational resources and mobile resources for educational research among teachers and researchers in Mexico and Latin-America come from many venues, such as: theoretical background, faculty professional experience, and the mission of each higher education institution (Colleges and Universities).
2. Teachers and researchers use the OER and MR in different ways, based on their theoretical perspectives, course objectives, research practices and institutional interests.

Literature Review (theoretical approach):

A. Open Educational Resources (OER). The concept of Open Educational Resources refers to a body of educational material which are free and available on the Internet and WWW (they can be in form of: text, video, audio, software, and multimedia, among others). They have free licenses for the production, distribution and use of these resources to benefit the global educational community, particularly for to be used by teachers, faculty and students from diverse educational levels.

The term was first used in July 2002 during a UNESCO workshop on open courses (open course ware) in developing countries (D'Antoni, 2008; Burgos Aguilar, 2008). Open educational resources are part of what has been named information society and knowledge society, where is a growing use of new forms of processing, distribution and use of information and knowledge based on new information and communication technologies (ICT).

B. Mobile Learning (MLearning). It is defined as a learning environment that is based on receiving or delivering electronic content (eLearning) with support of mobile technology (electronic devices) and is carried out for different contexts (mobility) which aims to support other means of education in order to achieve real learning. MLearning does not seeking to replace the distribution of e-learning methods, but adds an additional channel for learning. MLearning refers to environments which are intelligent, sensitive and responsive to the presence of people (Ruyter and Aarts, 2003), it is a type of instruction that is not limited by the learning environment, to the contrary, it complements and enriches the learning process where spontaneity, personalization, portability, convenience, adaptability, integration and availability are essential characteristics.

C. Training of Educational Researchers. The profile of an educational researcher is ambitious and includes knowledge, skills and attitudes, such as his or her extensive knowledge on educational practices and research methodologies, strategic thinking, scientific rigor and interdisciplinary expertice (Paul and Marfo, 2001, Eisenhart and DeHaan, 2005, Torres, 2006). The training of educational researchers involve a complex process because the nature of educational research itself (Berliner, 2002; Labaree, 2003); especially because the existing difficulties imposed by the context, for the multitude of institutional, social and political factors involved (Weiss, 2003), also, for the various conceptions of the process itself (Torres, 2006), and by the extensive, depth and specificity of the required curriculum (Paul and Marfo, 2001, Eisenhart and DeHaan, 2005; Torres, 2006).

Performing this process in a distance learning environment poses additional challenges, such as using technology as a mean, not an end, designing specific programs and not simply re-apply the traditional balancing cognitive and affective aspects, among others (Torres, 2005 ; Chivers, 2006 and Ramírez, 2008).

The register of researchers in Mexico shows numbers really low. The National System of Researchers (2007) reported that it had registered 14, 681 researchers in all areas in the entire country (a country with 105 million people). The Mexican Council for Educational Research reported 301 researchers from 60 partner public and private institutions in 26 states or province, 96% with postgraduate degree (COMIE, 2008).

Methodology

The research methodologies to be used along the project: multiple case studies and studies with mixed methods, in order to study the processes of joint construction of experiences, transfer processes, identification of the impact on user perceptions of innovation in educational projects based on the creation and use of open educational resources (OER) and mobile learning resources, technological appropriation and correlations of technological standards, as well as the collaborative construction raised through the project with support from Internet 2.

Project Results

The achievements and progress in the first stage of the project (January to August, 2010) were as follows:

1. It was built the project registration form: http://tinyurl.com/registro-proyecto
2. Creation of the faculty and researchers group project website: http://sites.google.com/site/oer4share/
3. Researchers project forum: http://foros.um.edu.mx/rea/index.php?board=14.0
4. Guidelines for subprojects: http://sites.google.com/site/oer4share/
5. Planning and development of the training workshop for the creation of REA and MR, April 20 (3-7 pm) and April 21 (9 am – 7 pm), 2010, in the city of Morelia, México. Application of an online survey of 30 questions to all participants to obtain project information: http://foros.um.edu.mx/rea/index.php?topic=37.msg74 # msg74
6. Tecnológico de Monterrey has developed three subprojects within the main project. a) Open Educational Resources (OER) and Mobile Resource in Educational Research Training, contributions given by Project Cudi-CONACYT (PhD student Rogelio Martinez). b) Macro study on the participation of the seven institutions Cudi-CONACYT project during the production process of REA (Leonardo Glasserman PhD student). c)

Construction of virtual networks in the generation of REA and Mobile Resources (PhD student Jorge Alfaro).

7. Set up of the content repository link: http://prod59ms.ruv.itesm.mx/catedrate/
8. Videotape: *"Reunión del grupo de investigadores con VC internet 2" (03-24-2010).* http://sesionvod.itesm.mx/acmcontent/8caa76e6-0b05-4435-8c65-99e7ddd2cddf/Unspecified_EGE_2010-03-24_03-13-PM.htm
9. Development and application (01-06-2010 to 30-08-2010) of a survey to teachers, faculty and researchers participants: http://www.surveymonkey.com/s/D668GJW
10. Development and application of a survey for OER and MR teacher users: http://foros.um.edu.mx/rea/index.php?topic=100.0

Note: Each participant institution has to create 6 OER and MR = a total of 42 OER/MR.

Conclusion

Open educational resources (OER) are material which helps to enrich and fortify the educational process. OER and MR, are also considered material and resources that give support and make strong the teaching process itself, they are also a medium where any teacher can develop competencies and processes of appropriation who allows him or her go beyond their previous knowledge.

Diverse challenges come out while you are developing learning communities. Like any research and applied project where intervene a group of persons, they face and experiment obstacles for accomplishing project objectives, these challenges need to be handle through a joint work with the effort of all the community members. The project described in this paper had many and diverse challenges and constraints in different ways (technically, procedural, and motivational), however any of these obstacle defeated the main goal of this educational project.

It is necessary to work on the development of a culture of collaboration for joint construction, and communities of practices, for future educational purposes, especially in the field of innovation and educational research. The fact that seven higher education institutions in Mexico worked together, putting all their forces to accomplish a common goal, and helped to develop this OER and MR educational project, it was by itself a real success.

Bibliographic references

Atkins, D., Brown, J.S., & Hammond, A. L (2007). *A review of the open educational resources (OER) movement: Achievements, challenges, and new opportunities*. San Francisco, CA: The Willian and Flora Hewlett Foundation.

Berliner, D.C. (2002). Educational research: The hardest science of all. E*ducational Researcher, 31* (8), 18. (15/8/ 2008) ProQuest Education Journals database. (Document ID: 255257571).

Burgos Aguilar, J. V. (2008). *Open Educational resources and their potential for k-12 education*. Monterrey, Nuevo León, México: Fotocopia. Tecnológico de Monterrey.

Chivers, G. (2006). The training of university lifelong learning professionals as researchers. *Journal of European Industrial Training, 30* (5), 330-348. (14/9/2008) ABI/INFORM Global database. (Document ID: 1074249111).

D´Antoni, S. (2008). Open Educational Resources: the Way Forward. Deliberations of an international Community of interest. UNESCO-IEEP. (20/8/2008) http://oerwiki.iiep-unesco.org/images/4/46/OER_Way_Forward.pdf

Eisenhart, M., y DeHaan, R.L. (2005). Doctoral Preparation of Scientifically Based Education *Researchers. Educational Researcher, 34*(4), 3-13. (14/9/2008) ProQuest Education Journals database. (Document ID: 850268931).

Fountain, R., & Mortera, F. (2007). *Rethinking distance education in North America: Canadian and Mexican perspectives on open access and online learning*. Quebec City, Canada: 11th Norh American Higher Education Conference (CONAHEC).

Labaree, D.F. (2003). The peculiar problems of preparing educational researchers. *Educational Researcher, 32* (4), 13-22. (15/8/2008) ProQuest Education Journals database. (Document ID: 356894161).

Paul, J. L., y Marfo, K. (2001). Preparation of educational researchers in philosophical foundations of inquiry. *Review of Educational Research, 71* (4), 525-547. (14/8/20089 Academic Research Library database. (Document ID: 121781188).

Ramírez, M. S. (2008). Formación de investigadores educativos a través de redes virtuales: El caso de la Cátedra de Investigación de Innovación en Tecnología y Educación del Tecnológico de Monterrey. *Memorias del Congreso Virtual Educa Zaragoza 2008.* (14/8/2008) http://www.ruv.itesm.mx/convenio/catedra/recursos/homedoc.htm

Ruyter, B. and Aarts, E. (2003). Ambient intelligence: First european symposium. Veldhoven. The Netherlands: *Proceedings EUSAI 2003.*

Torres, J. (2006). Los procesos de formación de los investigadores educativos: un acercamiento a su comprensión. *EDUCATIO Revista Regional de Investigación Educativa, 3,* 67-79. (15/8/2008) http://www.educatio.ugto.mx/home.html

Weiss, E. (2003). La investigación educativa en México: Usos y Coordinación. *Revista Mexicana de investigación educativa*, *8*(19), 847-898.

About the author

Dr. Fernando J. Mortera-Gutierrez

Full Time Professor, Tecnológico de Monterrey (ITESM), Graduate School of Education, Virtual University.

Presenter Qualifications: B.A. in Social Anthropology at ENAH, Mexico city; M.A. in Sociology (Socio-Demography) at FLACSO, Mexico City; Ph.D. in Educational Human Resource Development (adult and continuing education, human resources training, and distance education) at Texas A&M University, College Station, Texas. Currently, Full Time Professor at Instituto

Tecnológico y de Estudios Superiores de Monterrey (ITESM), Mexico City Campus, Graduate School of Education (EGE). Most Recent Presentation Experience: "*The use of Open Educational Resources (OERs) by Tecnologico de Monterrey faculty through its Knowledge Hub search engine initiative in Mexico and worldwide: Best Practices"*. TTIX, Teaching with Technology Idea Exchange Conference, Utah Valley University. Utah, United States of America. online: http://ttix.org/, 2009.

Av. Eugenio Garza Sada 2501,
64849 Monterrey, Nuevo Leon, Mexico
fmortera@itesm.mx, nandofer50@hotmail.com

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Open video tools to support the production of online collaborative audiovisual projects:

How to promote collective creation in e-learning

Adriana Ornellas,* Muriel Garreta Domingo, Antoni Marín,* Francesc Santanach Delisau,****

* IT, Multimedia and Telecommunications Department, Universitat Oberta de Catalunya (UOC).

** Office of Learning Technologies, Universitat Oberta de Catalunya (UOC).

Abstract

This paper analyses the use of open video editing tools to support the creation and production of online collaborative audiovisual projects for higher education. It focuses on the possibilities offered by these tools to promote collective creation in virtual environments.

Keywords

Open educational resources, open video tools, social software, collective creation, e-learning

Recommended citation:

Ornellas, A.; Garreta, M.; Marín, A. et al. (2010). Open video tools to support the production of online collaborative audiovisual projects: How to promote collective creation in e-learning. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.

[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/5063>

Introduction

Open educational resources (OER) (OECD, 2007) are becoming an increasingly feasible alternative to reshape the traditional e-learning scenario that is currently based on closed, proprietary and institutionalized systems, content and resources. At the same time, new forms of construction and representation of knowledge, based on free tools and social software, promote a change from an e-learning to a c-learning paradigm (Owen et al, 2006) in higher education institutions that currently emphasize individual learning.

In this paper we outline the backgrounds to the development of the teaching innovation project "*Collaborative editing of videos in online environments*" supported by the vice-chancellorship for research and innovation at the Universitat Oberta de Catalunya (UOC).

Firstly, we look at the possibilities that OER has brought about in terms of the construction, disseminating and sharing of knowledge freely over the Internet for the benefit of education and society, placing special emphasis on the use of open and collaborative tools to build new virtual learning environments for higher education.

Secondly, we present an analysis of the possibilities and functionalities offered by open video editing tools to create and produce online collaborative audiovisual projects.

Finally, we illustrate how these resources and tools are integrated into the framework of the Audiovisual Communication degree at UOC. This course explores a specific set of ICT skills (including searching and organising web content; management and development of virtual projects; and the rational and critical use of ICT) through the implementation of a group-based audiovisual project on project-based learning and computer-supported collaborative learning methodology.

Opportunities and Benefits of Open Educational Resources for E-learning in Higher Education

Traditionally, e-learning has been based on the Learning Management System (LMS) concept. The IMS Global Learning Consortium (2008), defines an LMS as a computer application that enables learning, the assignment of content to learners, and the reporting of learning outcomes. Therefore, an LMS is essentially a system that gives users access to a set of resources within a restricted space. This meeting point for users and resources is usually called a *course*. Resources refer to static content (Web pages, documents, and others) but also tools and programs (blogs, wikis, chats, forums, videoconferencing and more).

At an operational level, the richness of an LMS depends on how easy it can be used and run, and also on the variety of resources available to users. This second aspect is especially relevant when the following two factors have been taken into account: the ability to add and update resources and the support for various educational models. Generally, educational models are achieved by using and

combining different resources following a certain pedagogical approach. Depending on the subject, the pedagogical approach can be different too. In essence, the amount and diversity of resources available for students is a fundamental factor that has a significant impact on the quality of learning.

These resources are becoming increasingly diverse and complex. In recent years, there has been a growing tendency to use noneducational-designed resources as educational ones (e.g., blogs and wikis). Complex tools such as broadcasting and video conferencing via the Internet have become ever more common in e-learning, not to mention a growing list of services to be found in the Internet cloud, like Facebook, Twitter, Youtube etc.

In the meantime, the Internet has been transformed into a social and collaborative environment. Social networking and web 2.0 tools have changed the way of conceiving the web. What's more, the Internet has attained a human dimension. From a place to upload and share information, it has evolved into a place to encounter other people, where knowledge can be created and developed in collaboration. Social networks enable encounters, the establishment of various relationships, the opportunity to get to know others' interests and activities, and a way for people to keep in touch. Social software or Web 2.0 tools (Owen et al, 2006) allow users to develop knowledge together with new digital partners (Blanco, 2009).

From the beginning, the Internet has been an open environment, and this has determined to a great extent the way in which changes are implemented. Web 2.0 tools are open to everyone and everyone can use them. The business model of such tools relies on achieving a great number of users, proving their utility and becoming widely adopted. In fact, in most cases not only users are allowed to interact with the tool but software applications also. In other words, Web 2.0 tools provide mechanisms for their integration into other software. These mechanisms are called Application Programing Interface (API). An API is a set of services (usually Web services) that allow other applications to use the functionality of the tool.

Higher education covers practically every area of knowledge in society, business and science. Open resources and tools is bringing about dramatic changes in distance higher education and they also aim at covering a wide variety of needs that people have on the internet. Thus, they are extremely valuable and appropriate resources in e-learning in higher education. The fact that these resources have their own business model ensures their survival and evolution, especially if they are open source. However, to regard these tools as real OER, the challenge is to integrate them into the virtual classroom and to design the best pedagogical use of them in higher education.

The UOC virtual campus (Campus 5.0) provides mechanisms for the easy integration of these OER. The UOC virtual classrooms enable the incorporation of external web 2.0 tools. Each year, the vice-chancellorship for research and innovation promotes innovation projects as a way to include the above type of resources in the courses. This article presents the experience of using open source and Web 2.0 video platforms in the UOC classrooms.

When the Video Becomes Social

Focusing on language related to editing audiovisual processes we find many concepts which have been in use for many years and continue to remain as useful as ever. *Color correction* used to be made through analogue processes and nowadays is done digitally. Obviously, digital capabilities are

broader than analogue ones. But what we want to say when we talk about *colour correction* processes is more or less the same. *Shooting, lighting, editing or compositioning* are denominations of processes that, while the technology has changed, continue to refer to the same processes.

However, when we talk about video on the web there are many new concepts related to this emerging audiovisual reality. *Tag, metadata, embed, link, or RSS* are some of the terms in this new reality of video, just as in the past editors used the terms *cutting* o *focusing*. Video on the web constitutes an emergent reality that combines traditional and innovative editing forms with essentially new patterns of diffusion and publication. Audiovisual publication on the web has different characteristics from audiovisual TV broadcasting or from publication through optical supports.

We can say that audiovisual production in today's world is a collaborative work between producers and consumers (Casacuberta, 2002). Some years ago we were more inclined to think it as the work of a limited number of creators. It is clear that the nature of the Internet promotes this kind of collaboration. Consequently, it is only logical that an educational web should adopt this philosophy of collaboration. It can sometimes be difficult to see an audiovisual application as enabling open collaboration. Collective creation is something that occurs or that can occur in different phases of the working process. We can find collaborative ways for authoring or editing and also collaborative practices in audiovisual projects.

The doctoral thesis of Roig (2008), which focuses on cultural practices and collaborative forms of audiovisual production, highlights the importance of collaborative processes in video production. He studies emerging practices of creation and distribution of movies through the Internet and introduces another idea that is essential for our understanding of video resources. He places remix and appropriation processes at the heart of the video production process. Remixed videos are created in a collaborative way and are based on raw materials downloaded and reused by the authors.

The idea of remixing is one of the parameters that define the Web 2.0 environment. Applying the philosophy of Creative Commons,[1] copyright-free material is created and uploaded onto web sites. Later it can be downloaded, used and shared by other authors. Anyone can edit the original material to create their own project. In fact, remixing entails both the reuse of images in the editing process as the reuse of ideas. Let us look at some examples of this kind of video production. We can find many homemade videos emulating the movie *Star Wars* and the TV series *Lost* on the web. The acts of sharing videos and creating new products through remixing are key characteristics of video in Web 2.0.

To emphasize the social nature of video on the web, it is interesting to analyze two common features that are found in most video publishing portals, videoblogs and webTV. In these cases, the functionalities (embed, link, email, RSS,) are designed according to the philosophy of collective creation. Sharing audiovisual contents is an essential goal in this process and can be done in different ways, e.g. via email (by providing the URL of the clip to another user) or by embedding in websites, blogs or wikis. The philosophy of sharing video is applied through many procedures and resources. Also, many of these portals facilitate the publication of video clips on sites like Facebook, Twitter, Tuenti, Blogger or MySpace.

Open Video Editing Tools to Support Online Collaborative Audiovisual Projects: an Example in Context

Within the framework of bringing Spanish university degrees in line with the European Space for Higher Education, the Open University of Catalonia (UOC) has defined a transversal competence common to all degrees: «The use and application of ICT in the academic and professional environments». This competence is promoted in the course «ICT Competences» (ICTC), which is compulsory for all degrees and amounts to 6 ECTS credits. Students are recommended to take this module in the first semester to form part of their basic cross-sectional credits.

Based on project-based collaborative learning methodology, the ICTC course involves a continued and progressive process of acquisition of the following generic ICT skills necessary to study and to work in a virtual environment:

- Planning and management of a virtual project
- Net-based teamwork
- Search and retrieval of digital information
- Digital information analysis and processing
- Digital information presentation and diffusion
- Digital technology notions
- Online communication strategies
- Rational and critical use of ICT

To develop and teach the ICT skills described above, the course has relied on the methodology of project work as it allow students to initiate, develop and practice each of the skills in an integrated and interrelated way. For each degree, the topic of the virtual project and the tools to be used are defined according to the profile and the specific training needs of students in that particular area of knowledge.

The Audiovisual Communication degree at UOC trains students for professional practice in the main areas of communicative activity, analyzing both to the diversity of media and formats (digital, audiovisual, written) and the strategic goals (expressive, persuasive, informative). This academic program provides students with the skills required to design, plan, implement and evaluate communications projects. In this program, the virtual project is a collaborative video documentary about “Intellectual property in the new digital society and Creative Commons licenses”. The entire process of carrying out the collaborative audiovisual project consists of four stages as shown in Figure 1.

The different phases of the project are supported by various open and collaborative tools available in web 2.0. These tools support the collaborative tasks of scriptwriting, pre-production, editing and postproduction of the project. In the first stage of the project a social bookmarking resource is used as a too for teamwork that enables students to manage, store and share information searches (articles, resources, etc) with the other colleagues that will serve as reference for the virtual project. In the second phase, the collaborative process of writing the script of the project is

undertaken using office tools for remote collaborative work. In the third phase, an open video tool has been introduced to support the collaborative process of editing and postproduction (mixing clips , adding audio, transitions, effects, captions, etc). Finally, in the fourth and final phase, the different working groups broadcast their videos projects on the Internet on different video channels. e.g. YouTube etc.. Before the broadcast of the video, and in keeping with the theme of the project, the teams apply for Creative Commons licenses for their projects.

For the purposes of this paper we will focus on an analysis of the open tools for collaborative video editing used in the third phase of the project.

In the design phase of the ICTC course, teachers analyzed different, free, online video editing tools that support the collaborative tasks of composition and postproduction of the audiovisual project. The opensource video platform initially selected was JayCut.[2] JayCut's online video-editor funcionalities include the possibility to remix and trim videos, add audio, transitions, effects, captions and subtitles, automated transcoding and export to YouTube or Facebook. The online beta version of the editor also allowed multiple users to work collaboratively on a project through the creation of groups. However, some students working with the beta version of the video editor found that there was the loss of quality in compressing video files when they were published in the JayCut platform versus other platforms such as Youtube, or when downloading finished videos. However, the most significant problem was that JayCut was down for a period while it was retooled and afterwards the platform was unstable.

In the context of the innovation projects promoted by the UOC vice-chancellorship for research and innovation, a team of professors at the IT, Multimedia and Telecommunications Department, in collaboration with a team working on Educational Technology, carried out the project "*Collaborative editing videos in online environments"*. The aim of this project is to explore open source and web 2.0 video platforms that allow collaborative video production and choose the most optimal tool for integration into the Campus. During the benchmarking phase of the project, various platforms of video such as Pixorial, Motionbox, Jaycut and Kaltura were analyzed. Some of the main features sought in these tools were the functionality of collaborative creation and the mechanisms for integrating it into the Campus. Finally, the platform selected for integration was Kaltura[3] (Fig. 2).

Kaltura enables collaboration during the editing and composing processes between students that are members of a working team. Users have to create accounts and can upload raw video material. Once done, they can edit and compose their clips sharing ideas, knowledge and skills. When the project is finished, the result can be exported directly to social media applications such as YouTube, Facebook, MySpace or Twiter.

Furthermore, the application programming interface (API) of Kaltura enables other applications to record, upload and view videos; customize their appearance; use streaming capabilities; among other options. The use of such tools is free of charge and profit is derived from associated advertising or when users choose to pay for additional advanced and customizable services. With Kaltura, licenses can be paid for to increase disk space and bandwidth availability, and to obtain some extra functionalities. As many of these tools are also open source, it is possible to download them at no cost. So, they can be installed in another website or have their source code modified, thus contributing to the development of the community.

The integration of Kaltura in the UOC virtual campus is done through Wordpress,[4] an open-source content management system used primarily as a blog publishing application. The integration

of Kaltura by Wordpress facilitates the management of multiples users with the added feature of being able to organize content into categories (Fig. 3). Using blog categories, teachers can define the working groups and students who belong to each category have access to online video editing. Each blog post provides access to the Kaltura advanced video editor.

The viability of the being able to integrate the platform and the potential of Kaltura for supporting collaborative audiovisual production will be evaluated through a pilot test to take place in the semester beginning October 2010 in the context of the ICTC course.

Closing remarks

The rapid growth of OER provides new opportunities for teaching and learning in higher education. The OER concept strengthens traditional academic values of sharing and collaborative creation of knowledge. The concept of *openness* is based on the idea that knowledge should be disseminated and shared freely through the Internet for the benefit of society as a whole.

In the specific field of audiovisual production, the use of open resources and social software allow the redefinition of the concept and the relationship between production, distribution and audiovisual consumption. The many possibilities offered by open video resources for audiovisual creation and production are an exponent of a broader cultural movement that is characterized by providing greater autonomy to independent artists, as well as the interaction and participation of users in multiple and varied ways.

One of the best examples of collaborative audiovisual production projects in the open source movement is the pioneering computer-generated short film Elephant's Dream (2004), which was almost entirely produced using by a team of seven artists and animators from around the world using free software. The film has taken the philosophy of open source software into the cultural field, providing free access to films and the production process and enabling and promoting free distribution and free reworking of audiovisual production.

The commitment to the development of collaborative audiovisual projects using open resources and social software tools in higher education is a way of promoting the spirit of collaboration and open access to cultural creation. It should be one of our core objectives as critical and independent users of digital technology in contemporary society.

Figures

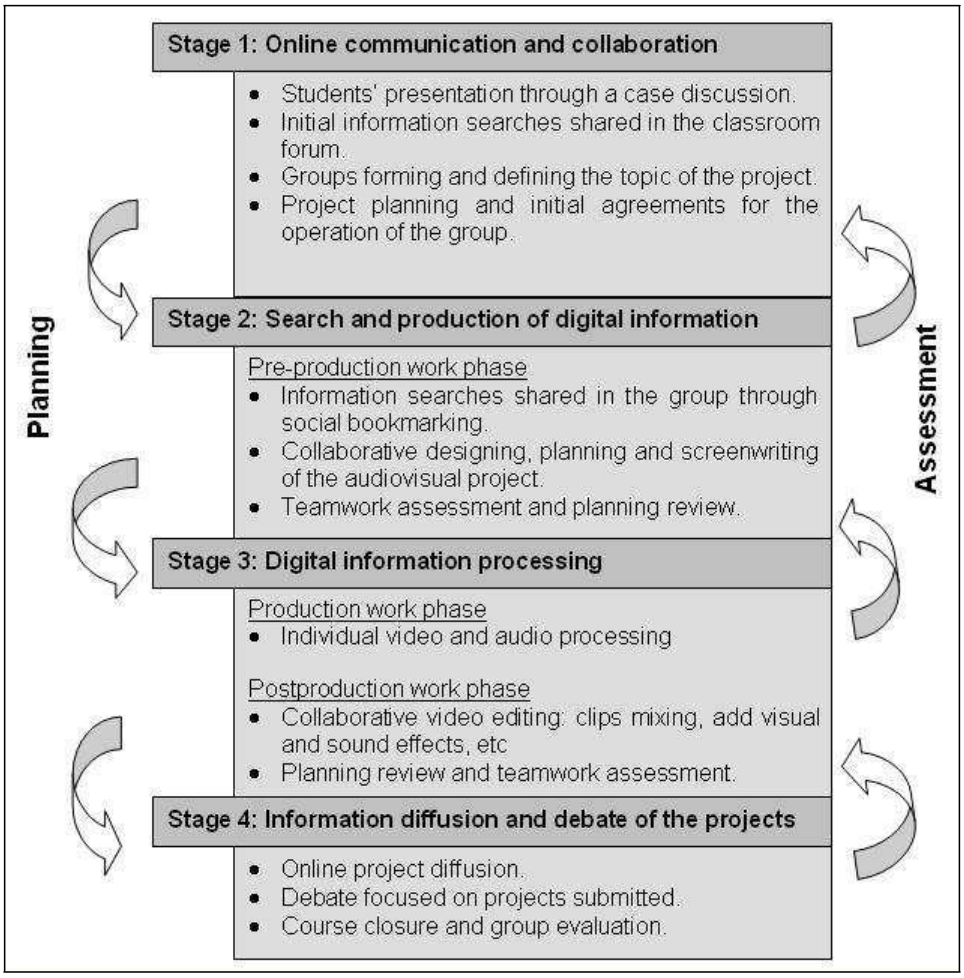

Figure 1 - Stages of the virtual project

Figure 2 - Kaltura's advanced video editor

Figure 3 - Kaltura integration in the UOC Campus by Wordpress

Notes

1. http://creativecommons.org
2. http://jaycut.com
3. http://corp.kaltura.com
4. http://wordpress.com

Bibliographic references

Blanco, S. (2009). *Del blog al microblog: el devenir del receptor en generador y emisor de contenidos en la Web 2.0*. Doctoral thesis. Universidad de Málaga.

Casacuberta, D. (2002). *Creación colectiva. En Internet el creador es el público*. Barcelona: Editorial Gedisa.

IMS Global Learning Consortium (2008). *IMS Common Cartridge Profile Version 1.0 Final Specification*. Retrieved from http://www.imsglobal.org/cc/index.html [Last accessed: 06/08/10].

OECD (2007). *Giving Knowledge for Free: the Emergence of Open Educational Resources.* Available from «http://www.oecd.org/dataoecd/35/7/38654317.pdf» [Last accessed: 02/02/10].

Owen, M.; Grant, L.; Sayers, S. and Facer, K. (2006). *Social software and learning*. Retrieved from «http://www.futurelab.org.uk/resources/documents/opening_education/Social_Software_report.pdf» [Last accessed: 08/04/10].

Roig, A. (2008). *Cap al cinema col.laboratiu: pràctiques culturals i formes de producció participatives*. Doctoral Thesis. Universitat Oberta de Catalunya. Retrieved from «http://www.tdx.cat/TDX-0331109-144409» [Last accessed: 12/08/10].

About the authors

Adriana Ornellas

IT, Multimedia and Telecommunications Department, Universitat Oberta de Catalunya (UOC).

Dr Adriana Ornellas, PhD in Pedagogy, is currently a lecturer at the ICT Department of the Universitat Oberta de Catalunya and associate professor at the Universitat de Barcelona. Her main research interests are focused on: emerging environments and technologies for learning in contemporary society; initial teacher training and professional development in ICT and new literacies and systems for inclusion in digital society. She has participated in several national and

international competitive research projects (ICT policies and practices in compulsory education; Ulearn: An European lifelong learning system on ICT in Education for Pioneer teacher; Uteacher: an European project focused on teachers professional profile in ICT for education).

IT, Multimedia and Telecommunications Department
Universitat Oberta de Catalunya (UOC)
Rambla de Poblenou, 156
08018, Barcelona, Spain
aornellas@uoc.edu

Muriel Garreta Domingo

Office of Learning Technologies, Universitat Oberta de Catalunya (UOC).

Muriel Garreta Domingo is a Senior Product Manager and User Experience Analyst at UOC. She holds a Master's in Human-Computer Interaction from Carnegie Mellon (USA), a post-graduate degree in multilinguism and ICT from Université Charles de Gaulle - Lille 3 (France) and a bachelor's degree in Journalism from Universitat Autònoma de Barcelona (Spain). As a member of the Centre for Learning Technologies, she is head of learning tools development with a wholistic and user-centered design approach. She manages a team of 10 people made up of computer scientists, psychologists, pedagogy experts, graphic designers and usability and accessibility experts.

Office of Learning Technologies
Universitat Oberta de Catalunya (UOC)
Av. Tibidabo 47
08035 Barcelona, Spain
murielgd@uoc.edu

Antoni Marín

IT, Multimedia and Telecommunications Department, Universitat Oberta de Catalunya (UOC).

Antoni Marín has a Master’s in Information and Knowledge Society and is currently a lecturer at the ICT Department of the Universitat Oberta de Catalunya. His main research interests are focused on new media, mainly focusing on audiovisual communication on the Internet. He is doing his PhD on hypervídeo.

IT, Multimedia and Telecommunications Department
Universitat Oberta de Catalunya (UOC)
Rambla de Poblenou, 156
08018, Barcelona, Spain
amarina@uoc.edu

Francesc Santanach Delisau
Office of Learning Technologies, Universitat Oberta de Catalunya (UOC).

Francesc Santanach Delisau has a Bachelors degree in Software Engineering from the Polytechnic University of Catalonia (UPC). He currently works as a Senior Product Manager and Software Architect at UOC. He is not only responsible for the design and technical architecture of the Campus Project (http://www.campusproject.org), but also for the development of the architecture for the UOC Virtual Campus. He also runs projects in the field of education content, e-learning tools and standards, such as SCORM, IMS QTI, videoconferencing, audio and video blogs, IMS LTI and OKI OSIDs. He has also been an author of learning materials and and a tutor for UOC.

Office of Learning Technologies
Universitat Oberta de Catalunya (UOC)
Av. Tibidabo 47
08035 Barcelona, Spain
fsantanach@uoc.edu

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Capturing and Organizing Prior Student Learning with the OCW Backpack

Brian Ouellette,* Elena Gitin, Justin Prost,*** Peter Smith******

* Vice President, KNEXT, Kaplan University Group

** Senior Research Analyst, Office of Institutional Effectiveness, Kaplan University

*** Director, Office of Institutional Effectiveness, Kaplan University

**** Senior Vice President, Academic Strategies and Development, Kaplan Higher Education

Abstract

The purpose of this paper is to present an approach for students to have non-traditional learning assessed for credit and introduce a tool that facilitates this process. The OCW Backpack system can connect self-learners with KNEXT assessment services to obtain college credit for prior learning. An ex post facto study based on historical data collected over the past two years at Kaplan University (KU) is presented to validate the portfolio assessment process. Cumulative GPA was compared for students who received experiential credit for learning derived from personal or professional experience with a matched sample of students with no experiential learning credits. The study found that students who received experiential credits perform better than the matched sample students on GPA. The findings validate the KU portfolio assessment process. Additionally, the results support the capability of the OCW Backpack to capture the critical information necessary to evaluate non-traditional learning for university credit.

Keywords

experiential learning, credit portability, portfolio, self-learners, OER, OCW/OCWC, non-traditional learning

---

Recommended citation:

Ouellette, Brian; Gitin, Elena; Prost, Justin et al. (2010). Capturing and Organizing Prior Student Learning with the OCW Backpack. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4845>

Introduction

The current paper presents an approach for students to have non-traditional learning assessed for credit and presents the infrastructure to do this. One piece of the infrastructure is a new tool for self-learners to build structure around their experiences and work with Open Course Ware (OCW) and Open Educational Resources (OER), called the OCW Backpack. Using a tool for maintaining and organizing learning can have maximum benefit when the tool supports the transport of prior learning into a university system. The transportability of learning is dependent on a method of assessing learning portfolios for credit in an educational institution. As such, a study is presented that evaluates Kaplan University's portfolio assessment process with an analysis comparing academic performance of students receiving credit through this process with students with no experiential credits.

OCW/OER

OCW and OER are both references to learning materials that have been digitized and made available for free on the Internet. Both concepts emerged around 2002 along with several initiatives to publish and make available college course material for use, remix, and redistribution under an open license such as a Creative Commons license. The most notable initiative is the Open Course Ware project launched by MIT in late 2002.

Over the next several years, global players picked up the cause of OER and OCW, driving the discussion and practice to new levels. The Hewlett Foundation supported multiple projects, committing their resources and reputation to incubate an environment of experimentation. And over the same period of time, international organizations, led by UNESCO, have created a space for the analysis and understanding of the OER movement as it evolves and develops.

The resulting environment, almost 10 years later, is beginning to yield truly "disruptive" change while opening up world class resources to millions of previously marginalized learners. Importantly, however, the emerging environment has changed the very questions we can ask about learning as we come to understand it as nothing less than a "new ecology of learning". As is often the case with profound change, people thought in a linear fashion when they initially considered OER, projecting forward the institution of education as it currently exists. In this view, OER and OCW would help current faculty, and current students. And it has done so, richly. But it has also changed the way we think about content, curriculum, and their relationship to both formal and informal learning.

The Open Course Ware Consortium (OCWC) is a collaboration of more than 200 higher education institutions and associated organizations from around the world creating a broad and deep body of open educational content arranged as courses. Remix and reuse of OCW courses is sometimes a challenge given their linear format, and considering the fact that in most cases not all

course materials is made freely available. Enter Connexions, an environment for collaboratively developing and freely sharing academic content that is modular and non-linear in format.

Originally intended to provide lecture outlines and other learning materials to fellow educators, the OCW/OER movement has generated the emergence of several other, unanticipated applications. College students migrate to open educational resources through OCWC or Connexions to support their learning from instructor-led college courses. Groups of learners and faculty combine forces to establish new organizations, such as Peer-to-Peer University (www.p2pu.org), an online community of open study groups for short university-level courses. And "self learners" – those who just want the knowledge – have emerged as the major users of OCW/OER. While OCW/OER resources don't typically come with instruction or assessment, many self-learners indicate they would like the opportunity to obtain college credit for the learning they achieve through the study of OCW/OER.

OCW Backpack

The OCW Backpack is a tool for self-learners to track their usage of Open Course Ware and other Open Educational Resources. Putting structure around otherwise unstructured learner behavior, the Backpack operates like a "mini LMS" for self-learners much like eCollege® or Blackboard® works for students enrolled in degree-seeking programs. Thinking in terms of what a typical student's backpack might include, the tool was constructed to provide the ability to include digital copies of course learning materials and course outlines, as well as course notes, and assignments completed by the student. Since the OCW Backpack is a digital web-based tool, our version of the "student backpack" may include deeper and broader functionality, including the ability to collaborate with other self-learners or the ability for a student to share portions of his or her profile through social networking platforms.

OCW Backpack users, as a core function, have the ability to "add" OCW courses to their electronic OCW Backpack. The Backpack includes search capability where users can locate courses or course materials by subject, by school, or by keyword supplied by the user. The base of information that is searchable includes all course information and course ware published via RSS – a commonly used data format or web feed used to dynamically provide users with regularly updated content. Currently, approximately 50 OCWC member institutions currently publish their OCW content via RSS.

The potential feature set for the organization of learning resources, outside of simple bookmarking and a rating system, is limitless in a Web 2.0 environment. The first version of the OCW Backpack includes a few additional features. Backpack users have the ability to add Learning Outcomes and notes in a "notebook" arranged in their Backpack by OCW courses. For notes or assignments created outside of the Backpack, i.e., in other software applications, the user has the ability to upload and attach multiple file formats, including any type of document or media file to a course in his/her Backpack.

Study Guides are an integral component to tracking the learning that results from the use of OCW/OER resources. A Study Guide is an arrangement of OCW courses and/or other open educational resources that together support a defined learning outcome or set of learning outcomes. Faculty users have the ability to create Suggested Study Guides and publish them through the OCW

Backpack site. Other users have the ability to search, browse and view Suggested Study Guides. If the user likes a particular Suggested Study Guide, he or she can adopt it as one's own. Users can have multiple Study Guides in their Backpack, and users have the ability to adopt Suggested Study Guides in their entirety, or modify a Suggested Study Guide to fit their unique needs.

Like with OCW courses, a rating system is applied to Suggested Study Guides by the user base thus making it easier for Backpack users to search and browse the base of Suggested Study Guides, which could eventually number in the tens of thousands. Searches may be performed by subject, by course, by faculty, or by keyword string. Using the rating system, the OCW Backpack site will publish the top rated Suggested Study Guides as well as top rated faculty based on the rating of Suggest Study Guides they create. Again, this function is dynamic and 100% driven by the Backpack user base.

Collaboration is a core component to any learning environment therefore we feel it important to include through the OCW Backpack the ability for faculty, students and self-learners to collaborate with each other. Collaboration over the Internet is nothing new, and there are thousands of existing methods for collaboration in production today. Adding the ability to collaborate through the OCW Backpack is not just adding one more channel for communication. Collaboration through the OCW Backpack is unique because users are connected only through commonality created virtually through content they store in their OCW Backpack, so long as the user makes this information public as part of one's profile. That is, users are only connected with other users who have the same OCW courses or Suggested Study Guides in their OCW Backpack.

As is the case in traditional classrooms, collaboration between individual students, and between students and faculty is intended to promote learning. While the intent here is also to promote learning, the fairly unstructured environment of the OCW/OER space is not conducive to "teaching" per se. Instead it is our hope that student and faculty users alike take advantage of the opportunity to collaborate with each other to freely and openly promote individual learning. Again, this is our effort to put some structure around an otherwise unstructured learning environment.

KNEXT

Since 2002 Kaplan University has, through portfolio assessment, awarded college credit for experiential learning. A portfolio is "a formal communication, presented by the student to the college, as part of a petition requesting credit or recognition for learning outside the college classroom" (Lamdin, 1997). In an effort to recognize optimal levels of previous learning, Kaplan Higher Education, in 2008 developed a new approach for evaluating experiential learning for college credit. The new approach, called KNEXT (a hybrid of Knowledge Extension), employs a proactive process for identifying, documenting, and supporting learning through portfolio development. One goal of the KNEXT approach was to create standards for evaluating all learning, including learning derived from non-traditional sources such as self-directed study of OCW courses and other OER materials.

Ideally, the assessment of experiential or non-traditional learning requires evaluators to look into a students' past, to observe a students' application of skills and knowledge, and to ask questions to help synthesize the students' learning, before determining if the learning is equivalent of college

level (Colvin, 2006). In most cases, this level of assessment is too time-consuming and therefore not possible. This is especially true for online environments, or where there is great desire to scale in volume. Here, evaluators must rely on the students' ability to write about their experience, what they learned, how they applied what they learned, and how their thinking and their behavior has changed as a result. Most importantly, "the portfolio must make its case by identifying learning clearly and succinctly, and it must provide sufficient supporting information and documentation so that faculty case use it, along or in combination with other evidence, as the basis for their evaluation" (Lamdin, 1997). A second goal of the KNEXT approach was to use a portfolio development course to instruct students in the proper preparation of an experiential portfolio that may be submitted to request college credit.

Kaplan University's portfolio development course is designed to provide students with the support they require to develop a comprehensive portfolio of experiential and non-traditional learning. In the course, students are taught about lifelong learning, and how to identify college-level learning. Students are also taught the differences between traditional classroom learning, experiential learning, and other forms of non-traditional learning. Assignments in the course help students examine what they already know, and from where they acquired this learning, i.e., on the job, from volunteerism, during travel, through self-study, etc. If students have already earned college credit, then they also examine the learning acquired through these traditional methods. Emphasis is placed on learning rather than on the method in which the learning took place. This process works well for documenting learning derived through the study of OCW/OER where learning is non-sponsored and self-directed. At the completion of the course, in addition to meeting course outcomes, students should have substantially completed a portfolio, including a Goal Statement(s), Expanded Resume, Learning Autobiography, Credit Request(s), and Supporting Documentation.

Students who develop learning portfolios and wish to have them assessed for Kaplan University credit use a proprietary online system called the Portfolio Development and Assessment System (PDAS) which was specifically developed by Kaplan for Kaplan University students. While the student user experience is fairly straightforward, a sophisticated set of workflows coupled with a feature-rich management interface allows Kaplan to manage a high volume of credit requests and evaluations through a global network of faculty and Subject Matter Expert assessors, while at the same time maintaining a high level of Quality Assurance. As part of the quality assurance process, faculty who teach the Kaplan University portfolio development course do not assess portfolios or determine whether or not credit should be granted through the portfolio assessment process.

The Kaplan University portfolio assessment process utilizes both Kaplan University faculty and faculty from other institutions as well as other Subject Matter Experts to assess portfolios. In the process, faculty assessors determine if the portfolio meets the minimum requirements and if the learning, as described and documented, is the equivalent of college-level learning and if the student should be awarded college credit for the learning. Kaplan University has adopted the Ten Standards for Assessing Learning developed by the Council on Adult and Experiential Learning (CAEL) which includes a provision that credit, or its equivalent, should be awarded only for learning, and not for experience (Fiddler, 2006).

The Kaplan University portfolio assessment process was developed with consideration for widely accepted standards and a commitment to quality assurance. Determining how well students receiving credit through this process do in their programs is critical for validating this specific

approach. Additionally, establishing the academic success of students receiving experiential credit from the assessment of learning portfolios provides strong evidence for the benefit of the OCW Backpack tool. The tool will ultimately allow students to organize and capture their learning using OER and OCW materials in a fashion consistent with an assessment system like KNEXT. The current study was designed to compare the academic performance of students receiving credit through KNEXT with students having no experiential credits in order to validate Kaplan University's portfolio assessment process for awarding experiential credit.

Methods

Sample

The study presents an ex post facto causal-comparative analysis of historical data collected over the past two years at Kaplan University (KU). Students who received experiential credit for learning derived from personal or professional experience were compared to a matched sample of students with no experiential credits. There were 240 KU students who enrolled and successfully completed an experiential learning portfolio development course. The students were from the Arts and Sciences, Business, Criminal Justice, and Information Technology programs. The students participating in the study were enrolled in one of four programs at Kaplan University as online students pursuing an Advanced Start Bachelors, Associate, or Bachelor degree (19% Advanced Start, 13% Associate, and 68% Bachelors students). Students who completed the course developed portfolios of experiential and open-source learning, and were subsequently awarded credit by submitting their portfolios for assessment by KNEXT.

The average number of earned credits for the students completing portfolio development course was 29.24, with a standard deviation of 18.27. The median number of earned credits was 27. Students had completed an additional number of courses at the time of analyses. Students completing the portfolio development course had an average of 42.43 (*SD* = 12.47) additional credits, median of 42. The average age of students awarded experiential learning credit was 41.7 (*SD* = 9.4). The sample included 51% female, 37% male, and 12% not identifying their gender. Marital status of the sample was 54% married, 34% single, and 12% not identified.

In order to conduct comparative analyses of student GPA, a matched sample (N=550) was randomly drawn from students in the same four programs. Additionally, the random sample was taken from students having completed at least two terms so the comparison group consisted of students at similar places in the programs. The average age of the comparison group was 33.3 (SD = 9.3). There were 65% female, 28% male, and 7% gender unidentified students in the comparison sample. The students were 33% married, 60% single, and 7% unidentified for the comparison group.

Design

An ex post facto causal-comparative research design was used evaluate three hypotheses. Research hypothesis one, do students who received experiential credits perform equal or better compared to the matched sample students? Research question two, are the number of experiential credits received by students related to their academic performance? Research question three, is the relationship between number of credits awarded and academic performance different for students pursuing an associate, advanced start bachelor, and bachelor degree? Academic performance of the students was defined as cumulative GPA for the current study. Experiential credits for students in the study were awarded based on the assessment of learning portfolios through KNEXT. The portfolio evaluation was done by faculty evaluators consisting of both internal and external subject matter experts recommended by the Dean (Associate Dean) of Faculty of their appropriate discipline.

The first hypothesis tested whether there was a significant difference in academic performance between students receiving experiential credit and the matched sample students. The test of this hypothesis was conducted using a one-way Analysis of Variance (ANOVA). The second hypothesis evaluated whether the amount of experiential credit awarded to a student was related to academic performance. The second hypothesis was tested through computing a correlation between GPA and the number of experiential credits received. The third hypothesis tested for whether or not the relationship between GPA and the number of credits awarded was consistent for associate, advanced start bachelor, and bachelor degree students by conducting a logistic regressions by degree type. In order to test the third hypothesis, the students receiving experiential credit were grouped based on a median split of the sample and the logistic regression was conducted to determine whether or not there was significant relationship between GPA and number of credits awarded, investigating the relationship by degree type. The analyses testing hypothesis two and three were conducted only for the sample of students that received experiential credits.

Results

A One-way ANOVA test was used to test the impact of receiving experiential credit on students' academic performance A significant difference in the average GPA was found between students receiving experiential credit and the matched sample comparison group, $F(1, 788) = 219.86$, $p < .001$. The average student cumulative GPA was higher for the portfolio students (3.57(SD=0.59)) compared to the matched sample students (2.43(SD=1.12)). A significant correlation was found between GPA and number of experiential credits, $r(238)=.21$, $p<.01$. Students with experiential credit were placed into one of two groups based the number of credits they had received using a median split. A separate logistic regression was computed for associate, advanced start bachelor, and bachelor students testing for the relationship between GPA and the likelihood of being one group versus the other. There was no significant relationship between GPA and group membership for associate and advanced start bachelor students. A significant relationship was found between GPA and group membership for bachelor degree students, with an odds ratio of 2.14. This indicates

that students with higher GPA are 2 times more likely to be in the group with more experiential credit.

Conclusion

Our findings demonstrate that students who receive credit for experiential learning through our KNEXT system are appropriately placed and successful in our academic programs. The comparison of students receiving experiential credit with the matched control sample showed that students receiving experiential credit had on average a significantly higher GPA. Furthermore, the results showed that students with more experiential credit had a significantly higher probability of a higher GPA, particularly for students pursuing a bachelor's degree. The findings of the study suggest that students receiving credit for experiential learning through assessment systems such as KNEXT can be more appropriately placed within a program and succeed in transitioning into an educational insttitution to complete a program. Establishing a course to teach students how to organize their experiential learning into a learning portfolio has been an important component of student success with the submission of prior learning for consideration of credit. The challenge most learners face in benefiting from a program such as KNEXT is in understanding how to organize and present their prior learning for evaluation.

The development of the OCW Backpack provides a resource for learners to organize their learning for evaluation. The results of this study provide a solid basis for the capability of the OCW Backpack to capture the critical information necessary to evaluate non-traditional learning for university credit, thus optimizing students' overall academic experience. Tools such as the OCW Backpack, when combined with programs of assessing experiential learning, allow self-learners the freedom to plan their own best trajectory for achieving their educational goals, in and out of the traditional educational environment.

Bibliographic references

Colvin, J. (2006). *Earn College Credit for What You Know* (4th Edition). Dubuque, Iowa: Kendall/Hunt Publishing Company.

Fiddler, M., Marienau, C., & Whitaker, U. (2006). *Assessing Learning: Standards, Principles, & Procedures* (2nd Edition). Dubuque, Iowa: Kendall/Hunt Publishing Company.

Lamdin, Lois S. (1997). *Earn College Credit for What You Know* (3rd Edition). Dubuque, Iowa: Kendall/Hunt Publishing Company.

About the authors

Brian Ouellette

Vice President, KNEXT, Kaplan University Group

Brian Ouellette is vice president for a new Kaplan University-sponsored learning recognition and portability program called KNEXT (Knowledge Extension) and is the former executive director of academic strategies and development for Kaplan Higher Education. Prior to joining Kaplan Mr. Ouellette served as chief operating officer for the Human Services Coalition of Miami. He also spent 15 years at Nova Southeastern University in Fort Lauderdale where he served as director of technology, director of operations, and lastly as chief operating officer and senior assistant dean. Mr. Ouellette has over 20 years experience building and managing educational ventures including academic programs and student services.

Kaplan University Group
6301 Kaplan University Avenue
Fort Lauderdale, Florida 33309
USA
bouellette@kaplan.edu

Elena Gitin

Senior Research Analyst, Office of Institutional Effectiveness, Kaplan University

Elena Gitin graduated from the Moscow Academy for Oil and Gas with degree in Engineering in 1992. She earned her Master of Science in Engineering and MBA from the University of Utah, David Eccles School of Business in 1996 and 2001 respectively. Prior to joining Kaplan University, Elena's work was primarily in the academic and research environment. For six years, she worked for the Harvard School of Public Health Biostatistics Department and collaborated with other research teams from Harvard School of Medicine on a range of studies. Her responsibilities included statistically analyzing data, performing literature reviews, and assisting in grant and proposal preparation for submissions to the National Institutes of Health (NIH).

Kaplan University
6301 Kaplan University Avenue
Fort Lauderdale, FL 33309
USA
egitin@kaplan.edu

Justin Prost
Director, Office of Institutional Effectiveness, Kaplan University

Justin Prost completed his B.A. in Psychology from the University of Illinois at Chicago in 1993. He studied cognitive developmental psychology at Arizona State University, earning his M.A. in 1997 and his Ph.D. in 2001. Justin has worked as a research consultant and instructor in university, medical, and military training institutions. Additionally, Justin was the Director of Research and Assessment for a K-12 school district in Arizona, prior to working with Kaplan. In 2009 Justin became the Director of the Office of Institutional Effectiveness for Kaplan University. In his role at Kaplan University, Justin directs institutional research projects for the university and the development of a course level assessment initiative for evaluating student learning in an outcomes-based educational system.

6301 Kaplan University Avenue
Fort Lauderdale, Florida 33309
USA
psmith@kaplan.edu

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

An Ontology for Open Rubric Exchange on the Web

Brian Panulla,* Megan Kohler**

***** Principal, Panulla Information Systems

******Instructional Designer, e-Learning Institute, The Pennsylvania State University

Abstract

While the Internet has given educators access to a steady supply of Open Educational Resources, the educational rubrics commonly shared on the Web are generally in the form of static, non-semantic presentational documents or in the proprietary data structures of commercial content and learning management systems.

With the advent of Semantic Web Standards, producers of online resources have a new framework to support the open exchange of software-readable datasets. Despite these advances, the state of the art of digital representation of rubrics as sharable documents has not progressed.

This paper proposes an ontological model for digital rubrics. This model is built upon the Semantic Web Standards of the World Wide Web Consortium (W3C), principally the Resource Description Framework (RDF) and Web Ontology Language (OWL).

Keywords

rubric, ontology, open educational resources, Semantic Web

Recommended citation:

Panulla, Brian; Kohler, Megan (2010). An Ontology for Open Rubric Exchange on the Web. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU.

[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/5222>

Benefits of Rubrics

Much attention has been paid in recent years to the effectiveness of rubrics in fostering a more level, efficient and scalable educational experience. Rubrics serve as "the criteria for a piece of work, or 'what counts'" (Goodrich, 1997) during the assessment or evaluation of a student work, activity, or artifact. They can be a powerful aid to educators in communicating their expectations to learners.

Traditional educational assessments, such as quizzes, seek to evaluate a student's retention of knowledge rather than a "student's ability to apply skills and knowledge to real-world problems." (Marzano). This effect becomes more pronounced in high enrolling courses regardless of the delivery method (online, blended, or face-to-face) due to difficulties of scaling up these methods.

Rubrics offer a unique opportunity to replace these traditional assessment methods with projects and creative assignments. These *authentic assessment* activities (Rocco) enable students to learn through direct application of concepts. Tierney & Simon found rubrics "especially useful in assessment *for* learning because they contain qualitative descriptions of performance criteria that work well within the process of formative evaluation." By understanding the benefits of rubrics from both the student and instructor perspective we can begin to examine the individual elements of rubrics and how we can best utilize them in education.

Assessments based on students' knowledge retention from lectures and course readings often provide limited guidance or focus on what information is most important. In this format nearly all of the information may appear to have a significant value depending on an individual perspective or interpretation. Rubrics have the ability to clarify the learning objectives and guide students toward meeting the predetermined objectives through meaningful activities.

Rubrics also enable instructors to more clearly communicate their expectations to students by identifying the criteria required to obtain a certain level of success. Andrade (2000) posited that we "often expect students to just *know* what makes a good essay, a good drawing, or a good science project, so we don't articulate our standards for them." By not establishing criteria or standards for an assignment, students are forced to push blindly forward seeking unidentified milestones that may not even exist until the first project is graded.

In a similar manner, rubrics also have the ability to normalize subjective assignments. If no criterion has been identified for students, they often associate or establish their own standards based on previous experiences. "In comparing criteria mentioned by students, I found that students with no experience with rubrics tended to mention fewer and more traditional criteria. Students who had used rubrics tended to mention the traditional criteria, plus a variety of other criteria—often the criteria from their rubrics." (Andrade, 2000) When presented with any type of evaluative task students strive to establish some type of construct to inform their creation process which may or may not align with the instructors intent. In a similar manner, students will have different perceptions of what type of criteria is required for a passing grade. Through the inclusion of rubrics, students are provided with a set of standardized goals, which enables them to focus on the creation of the project rather than trying to determine the instructor's intent.

Once a consistent and reliable set of criteria has been established, the students can then utilize the rubrics as a form of self-assessment. Students can learn to evaluate their work while referencing

the rubric. This enables them to identify the gaps or weak areas of their projects prior to submitting it for an instructor review, thereby instilling valuable self evaluation skills. Instructional rubrics provide students with more informative feedback about their strengths and areas in need of improvement than traditional forms of assessment do. (Andrade, 2000) The use of rubrics enable students to achieve the standards set forth by the instructor, in addition to learning how to review and revise their own work.

In addition to providing educational benefits for students, rubrics also have the ability to significantly impact an instructors ability to grade assessments. Once an instructor has established a scoring rubric, it can be duplicated and adapted to address variances in assignments. This allows assignments with similar attributes to share a base set of standards, yet allowing for the individual differences to be addressed. For scoring rubrics to fulfill their educational ideal, they must first be designed or modified to reflect greater consistency in their performance criteria descriptors. (Tierney & Simon) Rubrics can also serve as a standard measure across course sections, ensuring all instructors or Teaching Assistants assign grades based on a shared standard.

While a main purpose of rubrics is to set forth an established and standardized set of criteria to benefit students, rubrics also have the ability to significantly impact an instructors' effectiveness when teaching high-enrollment courses. Rubrics can assist instructors in the following ways:

Ensure a *consistent* grading scale across all course sections, enabling all instructors or Teaching Assistants to assign grades based on a shared standard.
Allow the instructor to *efficiently* review a student's work by select the appropriate level of accomplishment, while respecting the instructors limited time.
Reduce grading time by assigning the standardized criteria to students projects which enables the instructor to provide additional *customized* responses to the submissions
Provide *scalability* by decreasing grading time enabling instructors to take on a greater number of students with less of an impact on their teaching load.

Rubrics and the Internet

With all the benefits to the educational process provided by rubrics, it should come as no surprise that a wide variety of rubrics can be found on the Internet. Many educational institutions, from primary schools to universities, publish collections of rubrics created or used by their faculty.

This quantity, however, is not of equal quality: "The most accessible rubrics, particularly those available on the Internet, contain design flaws that not only affect their instructional usefulness, but also the validity of their results." (Tierney & Simon) In many cases, Internet rubrics provide only rough scoring guidelines, and lack the specificity of feedback to provide real value to the learning experience, thereby failing both the educator and the learner.

In addition, most available rubrics are in a *presentational format* – typically a visual representation meant for human consumption. Examples include:

Documents – Microsoft Word, Portable Document Format (PDF)
Spreadsheets – Microsoft Excel
Non-semantic Web pages – HyperText Markup Language (HTML)

While generally quite usable, presentational format rubrics are ill suited for inclusion as part of an interactive software system. Such systems will be unable to use these rubrics to mediate grading activities until it has been converted to the system's own internal format.

Software tools to facilitate creation of rubrics are also plentiful. A survey of these tools reveals that most produce rubrics in *proprietary semantic representations* that are not open and transferable between systems. These representations are different for each system and are used internally to manage the storage and retrieval of the data and metadata. On-line tools such as RubiStar (ALTEC, 2010) and the Rubric Machine (Warlick & The Landmark Project, 2010) are examples of this. While both systems are fairly easy to use and provide large libraries of existing rubrics, they provide only limited output formats for documents. Anyone wishing to transfer the rubrics they create with these tools to another system, such as an LMS, must re-create the rubric in the new system or transfer it in a presentational format (e.g. PDF, HTML). In addition, some of the more advanced systems, such as ANGEL Grading Rubrics (ANGEL Learning, 2010) and Rubrix (Discovery Software, 2010) charge significant licensing fees for their use, making a proprietary data model even less desirable.

What is needed is an open, non-proprietary way of describing rubrics for both machine and human use.

Enter The Semantic Web

In order to meet the requirement of an open representation for rubrics in software systems, we must have a means of describing the entities, components and relationships present in the education knowledge domain. This set of ideas forms the *conceptualization* of the domain. By explicitly describing this conceptualization in a formal way we create an *ontology*. (Gruber, 1993)

While many frameworks exist for specifying ontologies, two complementary frameworks have been by the World Wide Web Consortium (W3C) as Semantic Web Standards. These frameworks are the Resource Description Framework (RDF) and Web Ontology Language (OWL). OWL 2.0 (World Wide Web Consortium [W3C], 2009) represents the state of the art for the creation of open ontologies and is a superset of RDF (W3C "RDF Concepts and Abstract Syntax", 2004). Information described in OWL can be consumed and manipulated a large number of software packages and libraries.

By using OWL to describe our ontology we can also leverage the growing number of existing RDF and OWL vocabularies to describe aspects of our data model not central to the rubric domain. Some excellent examples of existing ontologies that complement our rubric ontology are:

> *Friend-Of-A-Friend (FOAF)* - a vocabulary for describing people, such as creators and users of rubrics (Brickley & Miller, 2010)
> *Dublin Core Metadata Initiative (DCMI)* - a popular system for describing metadata for digital assets (DCMI, 2010)
> *Creative Commons* - for denoting the rights granted by the creator of digital assets to their users (Creative Commons, 2010)

The ePortfolio Ontology (Wang, 2009) is another good example of a complementary ontology. It models the various entities in a student ePortfolio system, including a minimal *Rubric* entity. We

can use this *Rubric* as an integration point to allow systems built on that model to leverage rubrics created according to our ontology.

While a thorough introduction to OWL and RDF is beyond the scope of this paper, we will touch on some aspects of OWL and RDF in the next section when necessary to shed light on the rubric ontology implementation.

Overview of The Rubric Ontology

The key entities in the rubric ontology are: *Rubric*, *Criterion*, *Level*, and *Category*. Two more entities, *Scope* and *Scoring*, indicate the intended application of the rubric by users and software systems. Figure 1 shows a simple UML class diagram detailing the basic relationships between these key entities.

Rubric

The central entity of the rubric ontology is naturally the *Rubric*. A review of the literature around use of rubrics has identified at least three distinct subtypes of rubrics:

> *Analytic* – analytic rubrics break down the assessment or evaluation of a work into discrete criteria. These criteria are generally tied back to the learning objectives of the unit or course. (Rocco) Each criterion is further broken down into levels of achievement, from minimal to exemplary.
> *Holistic* – Holistic rubrics are used to assess "the whole of a process, performance, or product" (Rocco). This type of rubric is used when criteria overlap or are otherwise hard to isolate.
> *Primary Trait* – Similar to the analytic rubric, the primary trait rubric "describes in detail what is required for performance" (Rocco). Rather than breaking down to discrete levels, a free-form evaluation or assessment is made for each criterion. A variant, the *scoring guide rubric*, is found in several sources, including (Stevens and Levi)

Analytic rubrics are by far the most common subtype in online rubric repositories. They also appear to be the most regular form of rubric in structure. The only significant variation found was whether the number of levels per criterion was uniform (making the rubric a regular grid or table) or variable (some criteria possessing a finer or rougher gradation of scoring).

In contrast, holistic rubrics varied widely in appearance. Some seemed to be nearly identical to analytic rubrics, differing only in their wording and intended use (Rocco), while others were very different. (Bargannier, Mertler).

Criterion

The main building block of the analytic and primary trait rubrics is the *Criterion* (plural *Criteria*). Each *Criterion* represents a focused "part of the task". (Stevens and Levi). In the grid form of the analytic rubric, each row of the grid corresponds to a criterion. While we chose Criterion as the canonical name for this element, it is called a *dimension* in at least one source (Stevens and Levi). In our opinion this is merely a symbolic variation and not a semantic difference between conceptualizations.

Level

The *Level* is the main component of the *Rubric class* in a holistic rubric, and of *Criteria* in analytic rubrics. The set of *Levels* should prescribe the range of assessment outcomes, from a low achievement (e.g. "poor" or "incomplete") to high achievement (e.g. "exemplary"). The columns of a tabular analytic rubric generally correspond with the *Level* entities. Similarly, the rows of a holistic rubric will generally map to *Levels*.

Category

Categories are simple containers to aggregate multiple sequenced *Criteria*. We generally found categories in large or complex analytic rubrics. *Categories* can also play a useful role in software user interfaces based on rubrics. The Faculty Self-Assessment Tool from Penn State (Panulla, Rocco and McQuiggan, 2008) places the Criteria within a given Category in the same section of an accordion control (See Figure 2).

Scope

The *Scope* of a rubric is meant to indicate what the rubric's creator intended to assess or evaluate. The current ontology defines four distinct scopes:

> *Individual* – used by a teacher or educator to assess or evaluate the work of a single individual learner.
> *Team* – used by a teacher or educator to assess or evaluate the work of a group or team. Team rubrics are commonly found in *Problem-Based Learning (PBL)* environments.
> *Peer* – used by one individual learner to evaluate or assess the work of another individual learner. Peer rubrics are also common in PBL environments; teammate evaluations may play a role in an overall course participation grade.
> *Self* – used by an individual to assess his or her own learning or development.

Specifying the intended Scope of a rubric can provide two powerful advantages:

Search systems may filter results from a database of rubrics, eliminating those created for a different purpose than the one desired.

Software systems may use the Scope to identify how it should present the rubric to the user in different contexts. For example, a secure online Peer-Review system with knowledge of course group assignments may allow students to securely and privately evaluate the other members of their team via a rubric, while preventing other students from seeing or affecting those evaluations.

Scoring

The *Scoring* attribute of a rubric allows creators to create both *scored* and *unscored* rubrics. While *scored* rubrics are likely to be the norm, educators sometimes find it desirable to assess a student's learning progress without having it directly impact their grade. It is expected that software systems displaying *unscored* rubrics should still provide qualitative feedback to the learner.

Artificial Entities

As with any computerized representation of an information model, there are several entities introduced into the rubric ontology by the idiosyncrasies of underlying technology.

It can be difficult to maintain closed, explicitly ordered lists of items in the present version of OWL. While the RDF Schema specification (W3C "RDF Vocabulary Description Language", 2004) does define several Collection classes for aggregation, these classes do not provide semantics for restricting their contents to given classes of entities.

To get around this problem and strictly model lists of Criteria and Levels we have defined two additional entities: CriteriaList and LevelList, based off the RDF List Collection.

Future Goals

Holistic Rubrics

The model of holistic rubrics is somewhat incomplete. While a holistic rubric may be modeled superficially using the existing entities in the ontology, a more thorough explanation of the use and intent of holistic rubrics may ultimately lead to a different data model.

Improved List Modeling

The use of RDF Lists in OWL ontologies results in the ontology being validated as OWL-Full (W3C, 2009). Reasoning over OWL Full ontologies cannot be guaranteed to be finite or even efficient. Consequently, it is a best practice to avoided models that push into the OWL-Full realm. It may be possible to replace the RDF Lists-derived classes in the rubric ontology with an alternate model that allows validation as OWL DL without a significant loss of compatibility or semantic expressiveness.

Implementations

At present, three systems are under development at Pennsylvania State University that can create and/or consume rubrics described according to this ontology:

> The Faculty Self-Assessment tool (Panulla, Rocco and McQuiggan, 2008) was the prototype application in which many of the ideas captured in the current version of the ontology were developed.
>
> The Assignment Studio Rubric module for Drupal (Bailey and Ollendyke, 2009) is used at Penn State University's College of Arts and Architecture to manage course activities in several resident and hybrid courses. An updated version of this module for Drupal 7 that incorporates this rubric ontology is currently in the design phase.

A Rubric Builder Rich Internet Application (RIA) is currently under development for Spring 2011. The Builder provides a rich, easy to use interface that captures many of the best practices of rubric design and guides the user to produce better rubrics

Figures and Tables

Property	Description
title	Title of rubric
description	Free-text description of intended use.
hasScope	See Scope and Scoring below.
hasScoring	See Scope and Scoring below.
hasCriteria	Set of criteria/categories (mainly Analytic Rubrics).

Table 1: Properties of Rubric class

Property	Description
title	Title of criterion
description	Free-text description of meaning of criterion.
weight	Weighting factor for scored rubrics
hasLevels	Set of levels (mainly Analytic Rubrics).

Table 2: Properties of *Criterion* class

Property	Description
benchmark	Text describing characteristics of this degree of achievement. Can have one or more per level.
quality	A qualitative description of this degree of achievement. Used for column headers in tabular rubrics
score	The points awarded for achieving this level.
feedback	Pre-defined feedback text to be relayed to the learner; may include guidance and suggestions for improvement or development.

Table 3: Properties of *Level* class

Property	Description
title	Title of category.
hasCriteria	Set of criteria/categories (mainly Analytic Rubrics).

Table 4: Properties of *Category* class

Class	Description
CriteriaList	Contains Criterion and Category instances in explicit order. Category instances contain an additional CriteriaList, resulting in a tree structure of Categories and Criteria.
LevelList	Contains Level instances in explicit order.

Class	Description
CriteriaList	Contains Criterion and Category instances in explicit order. Category instances contain an additional CriteriaList, resulting in a tree structure of Categories and Criteria.
LevelList	Contains Level instances in explicit order.

Table 5: List classes

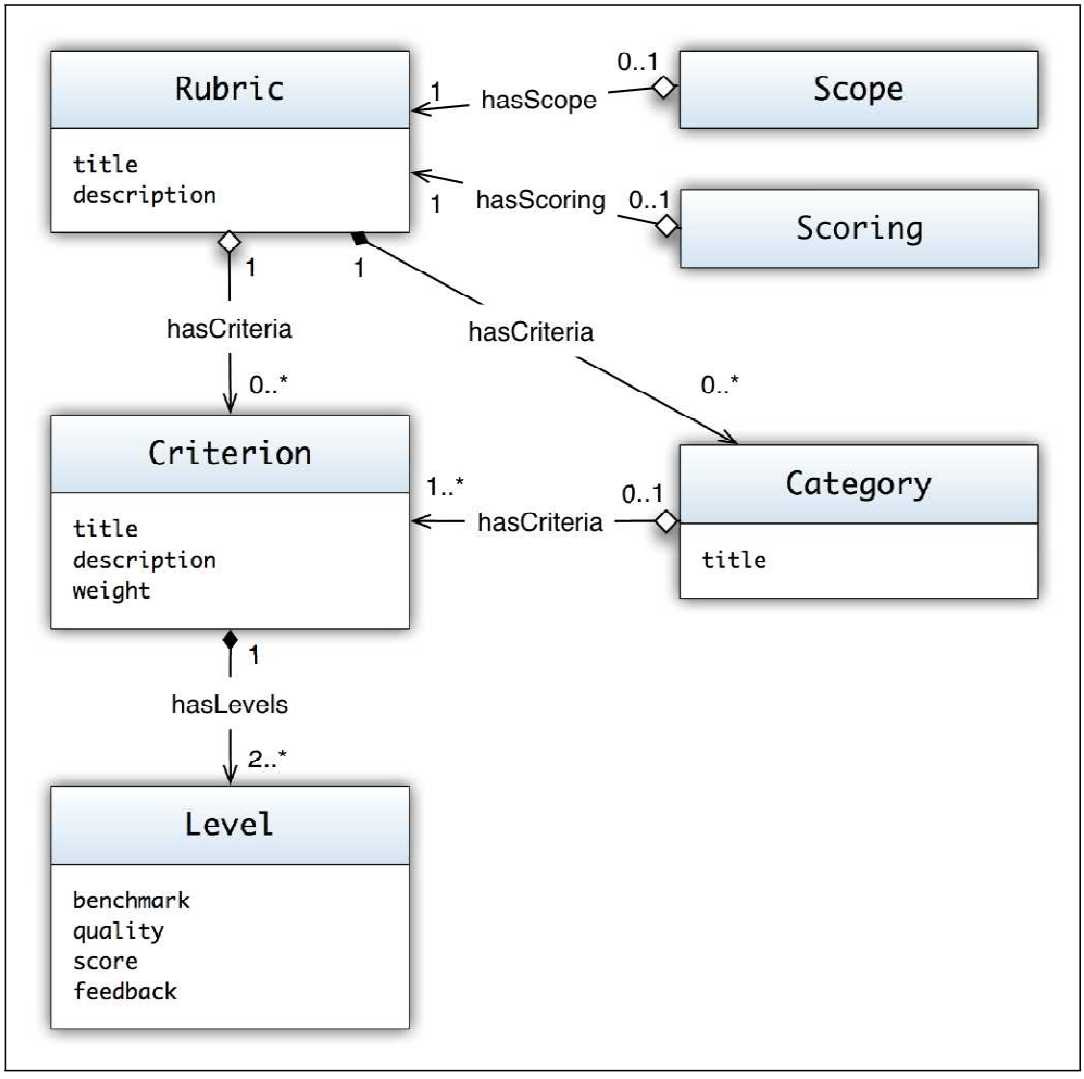

Fig. 1 – Simplified Rubric UML model

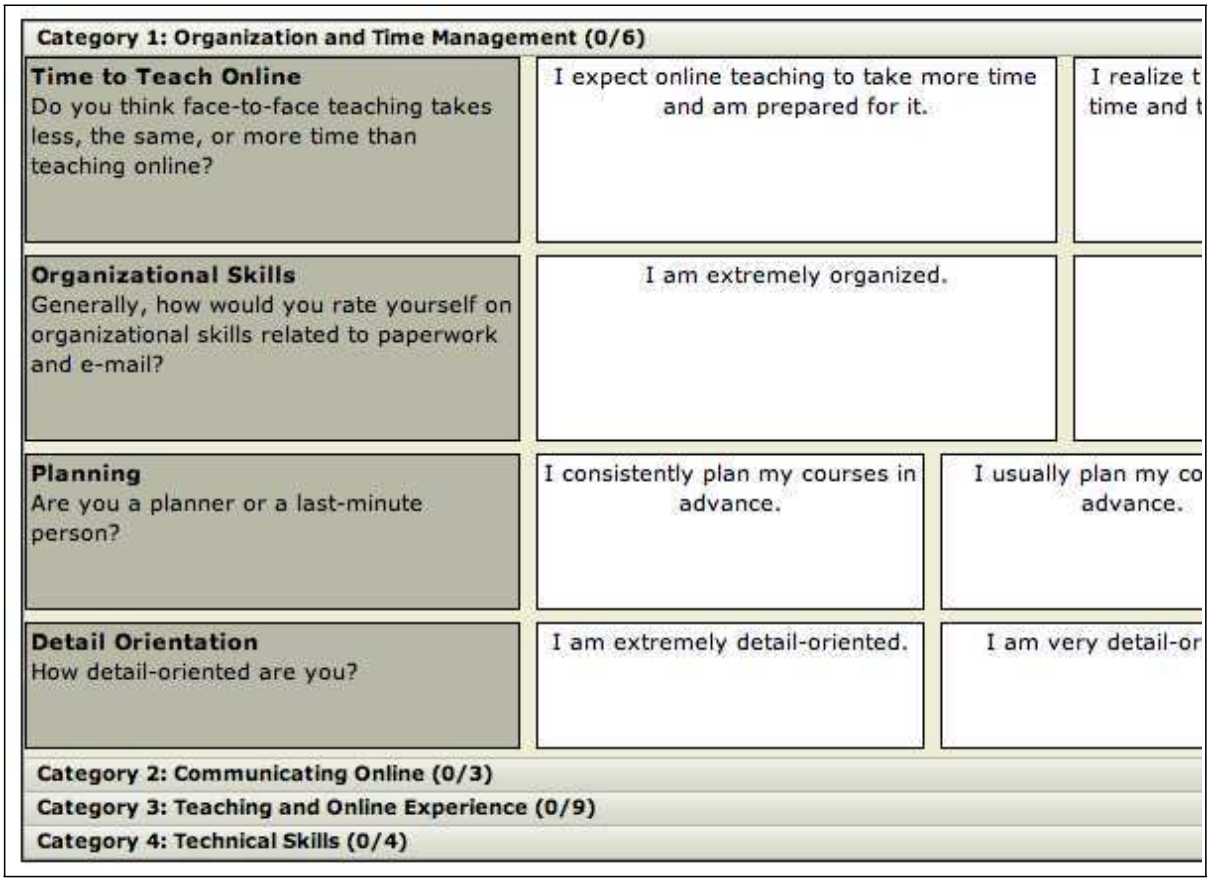

Figure 2: Categories as UI navigational elements

Bibliographic references

Andrade, H. G. (2000). Using rubrics to promote thinking and learning. *Educational Leadership* 57 (5): 13–18.

ALTEC. (2010). *RubiStar.* Retrieved September 10, 2010, from http://rubistar.4teachers.org/

ANGEL Learning. (2010). *Grading Rubrics.* Retrieved September 10, 2010, from http://www.angellearning.com/products/lms/rubrics.html

Bailey, K and B. Ollendyke. *Rubric module for Drupal*. Retrieved September 10, 2010 from http://drupal.org/project/rubric

Brickley, D. and Miller, L. (2010). FOAF Vocabulary Specification 0.98. Retrieved from http://xmlns.com/foaf/spec/

Creative Commons. (2010). *Describing Copyright in RDF.* Retrieved September 10, 2010, from http://creativecommons.org/ns

DCMI. (2010) *Dublin Core Metadata Initiative.* Retrieved from http://dublincore.org/schemas/rdfs/

Discovery Software. (2010). *Rubrix.* Retrieved September 10, 2010, from http://rubrix.com/

Goodrich, H. (1997). Understanding rubrics. *Educational Leadership* 54 (4): 14–17.

Gruber, T. (1993). A translation approach to portable ontology specifications. *Knowledge Acquisition*, 5(2), 199-220.

Marzano, R., D. Pickering, and J. McTighe (1993). *Assessing Student Outcomes: Performance Assessment Using the Dimensions of Learning Model.* Alexandria, VA: ASCD.

Panulla, B. J., S. A. Rocco, and C. McQuiggan (2008). *Faculty Self-Assessment: Preparing for Online Teaching.* Retrieved September 10, 2010 from https://weblearning.psu.edu/FacultySelfAssessment/

Rocco, S. A. (2007). Assessment and evaluation in the online environment. **New Directions in Adult and Continuing Education, 119, 75-86**.

Stevens, D. D., and Levi, A. J. (2005). *Introduction to Rubrics.* Sterling, Virginia: Stylus.

Tierney, R., and Simon, M. (2004). What's still wrong with rubrics: focusing on the consistency of performance criteria across scale levels. Practical Assessment, Research & Evaluation, 9(2).

Warlick, D. & The Landmark Project. (2010). *The Rubric Machine.* Retrieved September 10, 2010, from http://landmark-project.com/rubric_builder/

Wang, S. (2009) E-Portfolios for Integrated Reflection. *Issues in Informing Science and Information Technology*. Volume 6, 2009. Retrieved from http://iisit.org/Vol6/IISITv6p449-460Wang630.pdf

World Wide Web Consortium. (2004). *Resource Description Framework (RDF): Concepts and Abstract Syntax.* Retrieved from http://www.w3.org/TR/rdf-concepts/

World Wide Web Consortium. (2004). *RDF Vocabulary Description Language 1.0: RDF Schema.* Retrieved from http://www.w3.org/TR/rdf-schema/

World Wide Web Consortium. (2009). *OWL 2 Web Ontology Language Document Overview.* Retrieved from http://www.w3.org/TR/2009/REC-owl2-overview-20091027/

About the authors

Brian Panulla

Principal, Panulla Information Systems

Brian Panulla has worked to build a better Web in higher education since 1994, primarily as professional staff at Pennsylvania State University. He holds a B.S. in Mathematical Science from Penn State. His current areas of interest include distributed intelligent systems, Rich Internet Applications, information visualization and sonification, and resource-oriented information systems. He currently resides in Portland, Oregon USA.

Panulla Information Systems
4521 NE 27th Avenue
Portland, OR 97211 USA
bpanulla@gmail.com

Megan Kohler

Instructional Designer, e-Learning Institute**,** The Pennsylvania State University

Megan Kohler brings a lifelong love of the arts to her role as Instructional Designer for the e-Learning Institute in the College of Arts and Architecture at Pennsylvania State University. She holds a B.A. in Theater and Communication Studies and an M.S. in Instructional Technology from Bloomsburg University. Her principle responsibilities within the Institute include project management and assisting faculty in the analysis, design, development, and implementation of online and blended courses.

The Pennsylvania State University
12 Borland Building
University Park, PA USA
msm26@psu.edu

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/
Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

Educational innovation in large groups

Design of an experimental study implemented at the Polytechnic University of Madrid

Rodrigo Pardo , Teresa González Aja, Elena Merino Merino
Members of the Educational Innovation Group 'Areté'

Abstract
The present paper shows de design of an experimental study conducted with large groups using educational innovation methodologies at the Polytechnic University of Madrid. Concretely, we have chosen the course titled "History and Politics of Sports" that belongs to the Physical Activity and Sport Science Degree. The selection of this course is because the syllabus is basically theoretical and there are four large groups of freshmen students who do not have previous experiences in a teaching-learning process based on educational innovation. It is hope that the results of this research can be extrapolated to other courses with similar characteristics.

Keywords
educational innovation, large groups, study design, university

Recommended citation:
Pardo, Rodrigo; González Ajá, Teresa; Merino Merino, Elena (2010). Educational innovation in large groups. Design of an experimental study implemented at the Polytechnic University of Madrid. In *Open Ed 2010 Proceedings* (pp. XX-XXX). Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/5421>

Introduction

During the academic year 2009/2010 began the implementation of the Physical Activity and Sport Science Degree with the methodological implications of educational innovation that requires the adaptation to the European Higher Education Area. At the Faculty of Physical Activity and Sport Science there is a special interest in this process since the academic year 2004/2005 some teachers started to teach pilot courses implementing active methodologies with small groups showing a satisfactory success.

Since the launch of the new degree, these methodologies have begun to be applied to large groups[1] in various courses and it has been identified the need to evaluate the implementation and the effectiveness of them.

Therefore, during the academic year 2010/2011 has been chosen the compulsory course "History and Politics of Sports" -which is taught in the first year- to develop an experimental study designed to show how educational and innovative techniques are effective for knowledge acquisition and development of specific skills with university students. Additionally, the course chosen is mainly theoretical, which makes the results easier to extrapolate to other courses with similar characteristics not only in Physical Activity and Sport Science Degree but also in other specialties.

It should also be noticed that students are freshmen who were registered in this course during the first semester. This fact has a particular relevance because it allows to introduce the students from the beginning of their university education to a working method which will be developed throughout the degree.

Objectives

The objectives of this study are:

1. To improve the reception and orientation process of new students.
2. To improve mentoring assistance.
3. To adapt teaching materials for new courses.
4. To improve teaching-learning process through Information and Communications Technology (ICT) resources in large groups.

As regards to the specific objectives, they are:

1. To evaluate what techniques are more effective to promote learning and specific skills development of students.
2. To develop reliable assessment tools for evaluating the impact of the different techniques applied.
3. To introduce freshmen students in the active teaching-learning process that they will received throughout the degree.

4. To provide the teacher a basic manual with the most effectives techniques for using educational innovation in large groups.

Sample

Participants in this study were students enrolled during the academic year 2010/2011 at the graduate course "History and Politics of Sports", a compulsory and predominantly theoretical course of 6 ECTS (European Credit Transfer System).

In total there are involved 343 students, of which 39 are repeating students from the previous year. Participants were randomly divided using their last names in four groups of around 70-80 students each.

The fact that the majority of the sample was freshmen students provided a privileged sample because they still have no experience in cooperative learning in the university and therefore it can be more clearly evaluated the impact of such methodologies in the teaching-learning process.

On the other hand, the professor who teaches the course has over 30 years of teaching experience and has extensive training in educational innovation. In fact, she has previously implemented similar experiences in small groups.

Finally, regarding ethical concerns, participants agreed to participate in the study by signing a consent form that was distributed in class during the first day.

Educational innovation techniques used in the study

As already mentioned, the course chosen for this study is mainly theoretical in nature, so it was decided to provide 60% of lectures and the other 40% using active methods of cooperative learning. Specifically, we will use the following techniques:

> *Puzzle/Jigsaw:* groups of 5 people. The syllabus is divided into 5 parts and given to each member of the group that has to do a comprehensive reading and become an "expert" of the content given. After that there, is a meeting of the experts of each subject who debate about the topic given. Subsequently, each expert returns to his/her original group and explains the content, so all the students are informed of the 5 contents of the syllabus (Sharan, 1980).
>
> *Forum:* is done with the whole class. It is necessary to establish a coordinator and a secretary. This technique complements a previous activity (in our case a film). During the forum different topics are presented and also the rules to participate in the forum (García Hoz, 1972).
>
> *Public interview:* groups of 5 people. The group works on the subject given to prepare different questions for an interview by a qualified person who comes as guest speaker to class. The day of the interview a leader of each team will become the interviewer and the rest of the class take notes of the answers (García Hoz, 1972).

Carousel: in groups of 3 people. A topic is proposed and each group has to develop it with a presentation (in our case a poster). The work of each group is assessed by the teacher and the other class groups (Prieto Navarro et al. 2008).

Research group: in groups of 5 people. The teacher introduces the topic and gives the students a specific literature about it. The groups has to prepare a class work providing the information prepared and specifying how they worked, the division of tasks, what sources have they used, where they found them, how they organized data, etc. (Prieto Navarro et al. 2008)

In addition, Table 1 shows the random distribution of the four large groups of class according to the following variables: attendance, use of ICT and group stability. The aim of this distribution is to facilitate further comparison of results and discussion.

Phases of the study

The study will be implemented in five phases:

A. Initial phase:

We will conduct an initial assessment to the students in order to verify their prior knowledge and skills, allowing us to create heterogeneous cooperative learning groups.

B. Course teaching:

The syllabus has seven topics, which will be evaluated at the end of each one. To achieve the objectives of this study, it will be used different techniques as has been exposed above. We are currently in this phase of the study.

C. Final activity:

A final activity will be conducted in the historical sport locations of Madrid, where each group will explain a work previously demanded by the teacher. In this activity, students will have to show the knowledge and the skill level gained during the course.

D. Final assessment:

At this stage it will be evaluated the knowledge and the specific skills acquired by the students throughout the semester. The instruments of assessment and the evaluation criteria are identical for all four groups of students.

Data collection of instruments

The data collection instruments used in this study are:

Observations:

- Video: each session of class is video recorded so students get used to the camera allowing the use of these recordings as non-participant observations. Later, there will be a viewing of the videotapes to establish the time of teacher and students participation, level of interaction, etc.
- Field notes: during each session a researcher is present in class taking notes of what is happening without interfering in any moment in the development of the session in order to triangulate the data obtained from the videotapes.

Interviews:

- With the students: semi-structured interviews will be conducted with one member from each working group chosen randomly once they have completed the evaluation of the course. The purpose is to know their opinion about the different techniques used during the course. It is scheduled to conduct a total of 60 interviews.
- With the teacher: at the end of each session, the researcher who has attended to class conducts a brief interview with the teacher as a "class diary" for their points of view about how was the session or if the objectives were reached as it were planned.

Pre-post tests:

- Test PAPI (Personality and Preference Inventory) is a validated test and single assessment, which evaluates the behavior and working style of each group members. The objective of this test, among other things, is to know if there is any change in the participants in relation to their workgroup.
- Test of knowledge: in the first session were given a test with questions related to the course syllabus. These questions are planned to appear in the final exam of the course.

Final exam: students will face a final exam for the course (with open-answer questions and test questions) that will determine whether there is any change in the level of knowledge acquired in the course.

Conclusion

Due to the preliminary stage of the study, we cannot show any results. However, after the first month of course we can say that the development of the study is satisfactory and the level of involvement of students is high. It is hope that once we analyze the data collected we can offer valuable and practical information that can be useful for university teaching.

Tables

Group 1	Group 2	Group 3	Group 4
Take attendance	Take attendance	Not take attendance	Not take attendance
Stable working groups	Change of group in each technique	Stable working groups	Change of group in each technique
Frequently use of ICT[2]	Not frequently use of ICT	Not frequently use of ICT	Frequently use of ICT

Table 1. Characteristics of each large group

Notes

1. We refer to courses where enrollment is around 300 students, divided into groups of 70-80 people.
2. Principally we have used Moodle through the Virtual Platform of the University (www.upm.es/politecnica_virtual).

Bibliographic references

Agencia Nacional de Evaluación de la Calidad y Acreditación. *Libro Blanco: Título de grado en ciencias de la actividad física y del deporte*. Madrid.

García Hoz, V. (1972). *Técnicas de trabajo cooperativo en la enseñanza universitaria*. Madrid: Instituto de Ciencias de la Educación (UCM).

Johnson, D. & Johnson, R. (1983). *Learning together and alone*. New Jersey: Prentice Hall.

Johnson, D. & Johnson, R. (1984). *Circles of learning*. Washington, DC: Association for Supervision and Curriculum Development.

López, J. (2006). *Las competencias básicas del currículo en la LOE.* Conference proceedings of the V Congreso Internacional "Educación y Sociedad", Granada, 30 november, 1 y 2 december.

López López, E. (2002). Los modelos de innovación educativa. *Formación de profesores de educación secundaria* (pp. 621-636). Madrid: ICE - Universidad Complutense.

Marín Ibáñez, R. & López Herrerías, J.Á. (1989). *Sistematización e innovación educativas* (3ª ed.). Madrid: UNED.

Prieto Navarro, L., Blanco Blanco, Á., Morales Vallejo, P. & Torre Puente, J.C. (2008). *La enseñanza universitaria centrada en el aprendizaje: estrategias útiles para el profesorado*. Barcelona: Octaedro.

Sharan, S. (1980). Cooperative learning in small groups: recents methods and effects of achievement, attitudes and ethnic relations. *Review of Educational Research, 2* (50), 241-271.

Tójar, J.C. & Matas Terrón, A. (2005). El proceso de innovación educativa en la formación permanente del profesor universitario: un estudio multicaso. *Revista Española de Pedagogía, 232*, 511-528.

About the authors

Rodrigo Pardo

Educational Innovation Group ‘Areté’
Universidad Politécnica de Madrid

Rodrigo Pardo has an European PhD in Physical Activity and Sport Sciences from the Polytechnic University of Madrid. His research field focuses primarily on the use of sport as a means of values transmision with youth and the use of active methodologies in education.

Facultad de Ciencias de la Actividad Física y del Deporte – INEF
Universidad Politécnica de Madrid
Av. Martín Fierro 7, 28040 Madrid
España
rodrigo.pardo.garcia@gmail.co

Teresa González Aja

Educational Innovation Group ‘Areté’
Universidad Politécnica de Madrid

Teresa González Aja is Professor in sport history at the Polytechnic University of Madrid. At present, she is Director of the Department of Social Sciences and Physical Activities and Sports, and the Director of the Educational Innovation Group ‘Areté’. She has developed several researches focused on educational innovation

Facultad de Ciencias de la Actividad Física y del Deporte – INEF
Universidad Politécnica de Madrid
Av. Martín Fierro 7, 28040 Madrid
España
teresa.glez.aja@upm.es

Elena Merino Merino

Members of the Educational Innovation Group ‘Areté’
Universidad Politécnica de Madrid

Elena Merino Merino is Professor at the Camilo José Cela University of Madrid and she is conducting a doctoral research focused on educational innovation in university studies. She has participated in several researches focused on educational innovation.

Facultad de Ciencias de la Actividad Física y del Deporte – INEF

Universidad Politécnica de Madrid
Av. Martín Fierro 7, 28040 Madrid
España
elenamerino3@gmail.com

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Building a Manifesto for OER sustainability: UK experiences

Chris Pegler
Senior Lecturer, Institute of Educational Technology (The Open University)

Abstract
Evidence of sustainability, or the potential to achieve this, is increasingly a pre-requisite for OER activity, whether imposed by funders, by institutions requiring a 'business case' for OER, or practitioners themselves - academics, educational technologists and librarians, concerned about how to justify engagement with a unfamiliar, and unproven practices, in today's climate of limited resource. However, it is not clear what is meant by 'sustainability' in relation to OER, what will be needed to achieve or demonstrate this, nor who the expectation of sustainability relates to. This paper draws on experiences of UK OER projects to identify aspirations that those involved in delivering OER activity have for OER sustainability – what a 'manifesto' for OER sustainability beyond project funding, based on OER use, might look like.

Keywords
Open Educational Resources, OER, sustainability, OER projects, UK OER, embedding OER practice, reuse

Recommended citation:
Pegler, Chris (2010). Building a Manifesto for OER sustainability: UK experiences. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/5141>

Background

Sustainability is a term increasingly used in within education and across public and commercial projects more widely. Reuse, the more effective spreading of the costs of creating a resource by using it on several occasions, or recycling within different contexts, is a societal trend which is often linked with the pursuit of sustainability. The assumption that we have finite resources, and must conserve and reuse to extend the potential of these resources is particularly pertinent in times of budgetary constraint.

This paper draws on literature about reuse of digital online resources, particularly learning objects, and also recent reporting of experiences by several of the UK OER Phase 1 JISC/HEA funded projects (www.jisc.ac.uk/oer). Open educational resources (OER) have been described as 'learning objects with open licenses' (Wiley, 2009). One way of viewing OER is as the logical next step in the progress towards sustainable creation, sharing and use of learning and teaching resources.

Why a manifesto?

The title for this paper is influenced by a workshop event held by the national Support Centre for Open Resources in Education (SCORE) which aimed to capture and share experience and views from29 Phase 1 UK OER programme projects (www.jisc.ac.uk/oer), following the end of the projects' funding at end of April 2010. The event took place on 13 May and wider political events – the hotly contested UK general election – influenced the workshop title. Manifestos, 'wish lists' for the next term, seemed an appropriate hook for this event, as the projects involved in the Pilot/Phase 1 of the UK OER programme (which attracted £5.6m funding) were by this stage aware that an additional £4m funding would be available for future OER projects, with significant restrictions on funding and activity guided by principles of sustainability (JISC, 2010).

Emphasis on sustainability

Evidence of sustainability, or the potential to achieve this, is increasingly a pre-requisite for engaging in OER activity, whether imposed by funders (e.g. in the UK by JISC and the Higher Educational Academy (HEA) in their UK OER projects), by institutions requiring a 'business case', or practitioners themselves - academics, educational technologists and librarians, concerned about how to stretch limited resources and select between multitudinous sources and find the time and motivation to share. It frequently not clear which definition of sustainability should be adopted and

pursued, or which interpretations are being overlooked. This paper explores the consequences of this tension between sustainability 'agendas' and identifies 12 aspirations based on practice.

Planning, or providing evidence, for sustainability in OER activity within the timeframe of a funded project is not easy. It is relatively straightforward to appreciate the funders' viewpoint, in being unwilling to maintain a high level of investment in a tight economic climate without prospect of 'sustainability' or self-sufficiency in sight (Parry, 2009). However, practitioners, students, institutions, communities, repositories and support services have differing expectations around sustainability, and differing motivations driving their engagement with OER. The requirement for 'sustainability' of supply is also different from the requirements for sustainability in demand (use)(Wiley, 2007). Although much OER activity is based around short-term projects (12 months for the UK OER projects), business models which could deliver sustainability take time to implement (e.g. Schewer, 2009). The UK Open University's OpenLearn (http://openlearn.open.ac.uk) is now achieving sustainability in terms of supply after nearly four years in operation (McAndrew and Lane, 2010), but is not yet achieving sustained embedded engagement with reuse as part of its mainstream institutional learning and teaching activity). A multi-layered view of sustainability emerges, addressing a variety of stakeholder objectives, which can be supported by examples from recent OER activity in the UK (Pegler, 2010)

What does *un*sustainability look like?

Pegler (2010) has suggested that aiming to achieve giant panda conservation through captive breeding (supply) alone compares to unsustainability in approaches to OER activity. Both can succeed *as projects*, address short-term targets and meet production requirements, as long as funding permits. However, for both sustainability concerns places value on maintaining and increasing activity in the future, with reproduction 'in the wild' and not only under project conditions. The habitat (ecology) which pandas would ideally occupy no longer exists. They can survive and thrive if external effort is directed towards maintaining and protecting them, but not otherwise.

When we anticipate sustainability in OER activity, we are assuming that the ecology of learning and teaching will support these projects in the future without additional project resources, that they will flourish 'in the wild', reproducing and growing (in size and variety) without significant additional project support. Since an OER is not a living organism, it relies upon users to replicate and develop. For sustainable OER initiatives to exist they need to demonstrate sufficient value to users that the user community, rather than the project funders, will sustain the project. Activity beyond, rather than within, the funded project will determine whether it is sustainable in the medium and longer term. However the requirements of project activity aimed at addressing funders' standards of sustainability, for example that no new resources are created (a requirement for the UK OER Phase 1 projects), can influence the likely reusability of the resource, and affect its appeal to future users.

Whose definition of sustainability?

What sustainability will look like, and why it is desirable will differ depending on the viewpoint of the stakeholder. The UK OER projects collectively represented OER activity at individual, institutional and subject centre (discipline consortium) level involving over 80 English higher education institutions (HEIs). Several of the projects by the end of the year were able to offer examples of effective embedding and sustainable OER supply (e.g. UNICYCLE at Leeds Metropolitan University (Thomson, 2010) and U-Now at Nottingham University (Beggan, 2010). While working within the confines of an externally directed project programme, these initiatives can supply recent experience of working within the UK higher education sector, engaged in OER activity directly with practitioners, institutions, funders and each other.

Their views have informed a 12-point initial manifesto for sustainability in OER, which offers general considerations, while also recognising institutional, disciplinary and project differences in approach and requirements. For example, the Medicine, Dentistry and Veterinary Medicine (MEDEV) project identified additional hurdles for supply *and* use to overcome which are particular to disciplines where real patients, or animals may feature in learning and teaching resources. This creates considerations regarding licensing and tracking over the long term, particularly where there is potential for best practice advice to also change (Quentin-Baxter and Hardy, 2010). In addition to anxiety about currency of advice supplied, OER activity within the MEDEV subject community OOER project (http://www.medev.ac.uk/ourwork/oer) uncovered ethical concerns about reusing resources containing patient input, images or information. Although already offered for one type of educational use, versioning as OER raised questions of whether patients would be happy for the content to be repurposed under an open license within different, unpredictable, contexts. Quentin-Baxter suggests that we may need a 'consent commons' license to anticipate and address patient's preferences.

Acknowledging these specific differences, the draft manifesto (available for comment in Cloudworks (www.cloudworks.ac.uk) 'OER and Sustainability' cloudscape) identifies considerable common ground, and shared experience from which to build. The twelve points précised below arise from experiences of UK OER projects and illustrate important considerations they share about OER sustainability.

OER and sustainability: A twelve point Manifesto

1. **Recognise the effort and time required to move to sustainable OER**

   Why? Although the efficiencies and other benefits to offset investment can be shown as part of an *in theory* business case for sustaining OER, the activity is unlikely to be self-sustaining *in practice* within the short term.

   For projects in particular, there is only so much that can be realistically achieved in terms of sustainability within short-term projects. Moves towards sustainable **supply** of OER are

already in place within some institutions (Leeds Metroplitan University's UNICYCLE project offers a good example of embedded practice (Thompson, 2010)). Changes towards sustainable **use** will take longer to evidence and achieve. This is the next, longer, ecological stage in OER activity.

2. **Wide exposure of staff to OER (building awareness of supply) is important.**
   Why?Many established staff may never actively engage with OER, we should not expect all practitioners to embrace it. However, this leaves a majority who *could be* convinced to change practice if the incentive was clearly illustrated. One of the most effective ways projects found of converting potential users of OER to enthusiastic users was to show educators OER relevant to *their* practice. There are many examples within the UK OER programme of 'eureka' moments when previously indifferent staff realised that using OER can significantly save *their* time. 'Opening up the VLE' is an important first step to enabling this at the institutional level.

3. **Staff development – ideally accredited by HEA - is key, especially for new academic staff.**
   Why? Leeds Metropolitan University estimates that for most teaching innovations 20% of staff may be impossible to change, up to 50% may try things and could adopt, and 30% are open to change (Thompson, 2010). These proportions may be different for more research-focused institutions, but new academics form a large proportion of the most reachable group (activity within an intensive research-led university, reported by Tom Browne of OpenExeter reinforces this view (http://as.**exeter**.ac.uk/support/educationenhancementprojects/openexeter/))
   Existing teaching practice does not prepare staff for making or using OER. Both can be addressed through accredited training for new teaching staff – activity which is explicitly supported within the UK OER Phase 2 call (JISC, 2010).
   Within any training, whether of new or existing staff, there should be emphasis on making the experience of using OER creative and original. One way this can be achieved is by emphasising the importance of learning design, rather than content creation. Academics need to be confident that they can place their stamp on resources which have originated elsewhere. This may be through repurposing or remixing (Leslie, 2010), but re-contextualisation is a skill whichis not easily acquired (Brosnan, 2006), it needs to be demonstrated and taught.

4. **Sector-wide sharing needs to be encouraged and if possible incentivised.**
   Why? There appears to be a genuine 'multiplier' effect where resource sharing occurs across institutions and through communities. But for much of the OER activity the benefits are ahead of us – through use. Knowing that you can share (e.g. that there are no rights implications or permissions to sort first) opens up opportunities to share. This has impact not only on effective use of costly resources, but also on quality and clarity in resources that we use.
   We need a strong challenge to the current academic model of creating content as the default model. While awareness of the inefficiencies in this can be addressed through development of new staff (see 3) – it also needs to reach more experienced practitioners. Prizes and publicity for the best resources could help provide reward and recognition. The HUMBOX project (www.humbox.ac.uk/) offers an example of how reviews by identified reviewers can assist evaluation and engender trust, raising the profile of creators and users of OER.

5. **Evidence of effectiveness in use would be massively helpful.**
   Why? We don't yet have sufficient convincing sector wide examples of effective use of OER to draw on when making the case for its effectiveness, or seeking to demonstrate the value of OER. Examples are starting to emerge, and evidence from projects such as OpenLearn of usefulness with informal learners and registered students alike are encouraging. But project data can be difficult to access and interpret. Collection and wider dissemination of existing case examples, which support generalisation from projects to other contexts, would be helpful, and research into current and emerging practice remains necessary. Evidence of 'added value'from OER use, of student satisfaction and the impact on learning and teaching practice are particularly sought, ideally recording different types of benefits, for different stakeholders, assessing their value.
   Examples discussed included early evidence from the FETLAR project (http://www.fetlar.bham.ac.uk/) at Liverpool John Moores that OER can help meet the needs of students from un-conventional backgrounds. In a separate group outreach work with learners new to higher education, using OpenLearnOER has been demonstrated as effective preparation for gaining the confidence to enter university (Kohkhar, 2010).

6. **Usable tools (e.g. for dissemination and deposit) to maximise benefit for minimal effort.**
   Why? Do we need to explain?

7. **The move to OER should be widely recognised as good for UK HE**
   Why? Enthusiasm for OER from the highest level within Hefce and the JISC has been received and is welcome (e.g. Read, 2010), particularly welcome is the idea that moving from closed to open content can be viewed as a moral obligation for educators and their institutions. However, engagement in OER is not only about altruism, but also an endorsement of making practice public, which in turn will strengthen education. This should, and may in time, be seen as comparable to the academic imperative to publish research?

8. **Policies and practices which offer clear rewards for 'open' behaviour?**
   Why? Academics can be rewarded directly by the institution for engaging with OER, as part of a wider strategy by the institution to encourage recognition of OERwithin educational practice as inherently rewarding.Thomson (2010) provides an example of embedding OER into policy in this way. Academics at Leeds Metropolitan University can select OER activity as one of their six performance targets, part of the normal annual staff appraisal and development process. At Oxford, the Open Spires experience (Highton and Robinson, 2010) demonstrates how academics can significantly value opportunities to disseminate ideas, and place high value on the opportunity that OER activity offers for recognition of their expertise beyond the institution. Discussions are now underway with the HEA to recognise OER activity as evidence of excellence in teaching for National Teaching Fellowship awards. This move would in turn be likely to influence institutional Teaching Fellowship schemes.

9. **Institutions need to 'turn over stones' even when they fear what lurks beneath**
   Why? This phrase originated from MEDEV experiences, but reflects that of other projects. One barrier to adopting and progressing OER is unwillingness to face the prospect of unpleasantness

(e.g. discovering evidence of copyright infringement). The perception may be worse than the reality, but the fear of facing these concerns is holding back more than OER. It holds back any sharing of resources beyond the students within a face-to-face class context.

Many practitioners do not know how to remedy difficulties that they discover under their 'stones', and lack the time/resource to make the necessary changes. They need advice and help to avoid stressful litigation (e.g. Newman, 2010)

10. **Confidence in our own resources, even when these are 'dirty' (not pristine or polished).**

A reluctance to share can originate from concerns about the quality of the teaching material. Is it good enough? Beggan (2010)has observed, based on the uNow project (http://unow.nottingham.ac.uk), that there may be a higher quality standards – more anxiety about quality – when academic creators are assessing the suitability of their resources for OER then when they are developing resources for teaching. He points out that higher quality standards may be applied to OER to be given away for free, than for resources to be used with 'paying students'.

Standards for OER are helpful to users, but these need to span many levels and recognise multiple uses. Raw dirty 'real' learning resources are valuable, particularly where repurposing is permitted. Perfectionism is a barrier, placing undue emphasis on the content rather than its learning potential

11. **Identify and acknowledge the important risks – and prepare for them**

Why? OER activity is not risk-free in terms of litigation risk. We need to identify and address the potential for litigation and manage that risk through appropriate policies. The OOER toolkits (www.medev.ac.uk/ourwork/oer) offer a structured approach to addressing risks. Their area (medicine) is one with particular risks that suggests the need for development of a 'Consent Commons' and additional tracking requirements. But there will be some risk for all discipline areas and appropriate risk management policies need to be identified and used to overcome these.

12. **Prepare for other creators of OER content**

Why? If we expand so that students, or others without OER grounding, can contribute OER, how will they know 'our' rules for OER, and will they be willing to follow them? How can we prepare new users who may not be educators or have been actively involved in projects? Sharing OER needs to extend to purposeful sharing of experiences and expertise, which anticipates future OER activity.

Represented at this workship were the following institutions/projects (full details available at www.jisc.ac.uk/oer: BERLiN, Nottingham University, CETIS, University of Bolton, FETLAR and Liverpool John Moores, GENIE CETL, University of Leicester, JORUM, University of Manchester, Leeds University, OOER, MEDEV Subject Centre and University of Newcastle, OTTER, University of Leicester, SCORE, The Open University, UNICYCLE, Leeds Metropolitan University, University of Bradford, University of Cambridge and University of Central Lancashire.

Bibliographic references

Beggan, A (2010). Enhancing and expanding Nottingham's existing Open Educational Repository to progress the vision of sustainable OERs. Andy Beggan, (BERLiN, Building exchanges for research and learning in Nottingham, University of Nottingham). Presentation at SCORE consultation workshop 'OER challenges and opportunities', 10 March 2010, Birmingham.

Brosnan, K. D. B. (2006). Initial Participation in a learning-object exchange network: a practice theoretic perspective. PhD Thesis. Lancaster University, UK.

Highton, M. and Robinson, P. (2010), Final Report: OpenSpires: OpenContent at Oxford University, http://openspires.oucs.ox.ac.uk/report/index.html (accessed 11 Oct 2010).

JISC (2008). Grant 14/08: HEFCE/Academy/JISC Open Educational Resources Programme: Call for Projects. http://www.jisc.ac.uk/fundingopportunities/funding_calls/2008/12/grant1408.aspx (accessed 15 May 2010).

JISC (2010). Grant 06/10: Higher Education Academy/JISC Open Educational Resources Programme Phase 2: Call for Projects, http://www.jisc.ac.uk/fundingopportunities/funding_calls/2010/04/grant0610.aspx (accessed 15 May 2010).

Kohkhar, B (2010). Talking about Outreach work and OER, Presentation at Making 'Open' the easiest option: OER and sustainability, SCORE consultation event, 13 May 2010, Leeds. http://www.slideshare.net/SCORE/billy-khokhar (accessed 11 Oct 2010)

Leslie, S (2010). Presentation, The Open Educator as DJ - Towards a Practice of Educational Remix, http://cloudworks.ac.uk/cloudscape/view/2140 (accessed 11 Oct 2010)

McAndrew, P and Lane, A. (2010). The impact of OpenLearn: making The Open University more 'Open', ALT-N, Issue 18, 15 January 2010

Newman, M. (2010). Hang on, that slide looks very familiar… Times Higher, 13 May 2010 http://www.timeshighereducation.co.uk/story.asp?sectioncode=26&storycode=411550&c=2 (accessed 11 Oct 2010).

Parry, M (2009). Utah State U.'s OpenCourseWare Closes Because of Budget Woes, in The Chronicle of Higher Education, 3 September 2009. http://chronicle.com/blogPost/Utah-State-Us-OpenCourseWare/7913/(accessed 15 May 2010).

Pegler (2010). How can we achieve sustainability in OER? 'The Leeds Manifesto' (draft) http://www8.open.ac.uk/score/oer-and-sustainability-leeds-manifesto-draft (accessed 15 May 2010).

Quentin-Baxter, M and Hardy, S (2010). Sustainable policies, sustainable resources and predictions for sustainable re-use: lessons from the OOER project. Presentation at Making 'Open' the easiest option: OER and sustainability, SCORE consultation event, 13 May 2010, Leeds.

Read, M (2010). OER and the open agenda, Keynote at OER10, University of Cambridge, 22-24 March 2010 http://www.ucel.ac.uk/oer10/abstracts/keynote_1.html.

Schewer, R (2009). Sustainability in OER projects, Online discussion in Clouldworks, 3 March 2009 http://cloudworks.ac.uk/cloud/view/879 (accessed 15 May 2010).

Thomson, S (2010). Unicycle OER Project: A sustainable model for OER implementation at Leeds Metropolitan University, Presentation at OER10, University of Cambridge, 22-24 March 2010 http://www.ucel.ac.uk/oer10/presentations/OER1030.pdf (accessed 15 May 2010).

Wiley D A (2009). Segment 1: Providing, Supporting and Producing OERs, Pre-conference dialogue with Downes, S., Open Education Conference 2009: Crossing the Chasm. Vancouver

Art Gallery, http://sites.wiki.ubc.ca/opened09/index.php/Wiley_Downes_Dialogue, Accessed 11 October 2010.

Wiley, D (2007). On the Sustainability of Open Educational Resource Initiatives in Higher Education, Paper commissioned by the OECD's Centre for Educational Research and Innovation (CERI) for the project on Open Educational Resources. http://www.oecd.org/dataoecd/33/9/38645447.pdf (accessed 15 May 2010).

About the author

Chris Pegler

Senior Lecturer, Institute of Educational Technology (The Open University)

Chris Pegler has developed and led several online courses which used and reused learning objects. She is a National Teaching Fellow with broad interests in e-learning and specifically research/practice in reuse of online resources. From 2009-10 she was Academic Director of the national Support Centre for Open Resources in Education (SCORE) and since 2006 she has led/co-led the Open University's 400-strong e-learning community. Chris co-edits (with Prof Allison Littlejohn) the Routledge Connecting with e-Learning book series, within which she co-authored *Preparing for Blended e-Learning* (Littlejohn and Pegler, 2007) and The *Educational Potential of ePortfolios* (Stefani, Mason and Pegler, 2007).

Institute of Educational Technology,
The Open University,
Walton Hall,
Milton Keynes
MK 7 6AA (UK)
c.a.pegler@open.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

OER in Portugal as agent of curriculum innovation and technological change

Inducing practices of "new" teaching standards

Paulo Manuel de Matos Pereira
Caramulo's School.

Abstract
This research project aimed the following goal: promote the creation, use and disclosure of OER in a Group of Schools, involving schools and teachers from different learning levels, expecting to test and validate the use of OER, in a learning-teaching model towards curricular innovation. Defining as a starting point different subjects and teachers from distinct academic areas, we have implemented a set of activities leading to the creation of OER supported, when possible, in FLOSS tools. We adopted an action research methodology with a dual purpose: to act within a community of teachers and students, while increasing at the same time their knowledge, as well as the researcher's. The activity was developed cooperatively in order to process a certain reality of the teaching-learning process, through practical/reflective action towards it and inducing its implementation by others in the Portuguese School System, based on the production and sharing OER.

Keywords
curricular innovation, educational-research, technological innovation, Open Education Resources, Portuguese schools

---

Recommended citation:
Pereira, P. (2010). OER in Portugal as agent of curriculum innovation and technological change, Inducing practices of "new" teaching standards. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].< http://hdl.handle.net/10609/4990

Introduction

This research project was pioneer in Portugal in introducing and maximizing the use of Open Educational Resources (OER) in a comprehensive manner, while introducing at the same time the concept and principles of OER in the Portuguese education system. It aimed a change in educational practices and a change of mindset in the closed and very traditional national education system. It acted towards answering the following question: why not promote the creation, use and disclosure of OER in a Group of Schools, involving different schools and teachers and from different learning levels? We´ve acted in the way to transform theclassroom into a "laboratory" for teachers' professional development, where investigation was seen as a model of lifelong learning, increasing and improving digital literacy. It also aimed leading teachers to become interested in teaching pedagogical aspects and, at the same time, motivating them to integrate research into their traditional teaching practices, getting at the same time practical and immediate results, while introducing Information and Communication Technologies (ICT) in the act of teaching with and for the students. The use of an action- research methodology to solve problems allowed educational practices experimentation in contexts of real classroom, and it has facilitated collaboration, knowledge exchange, cooperation and immediate feedback to the teachers involved. Thus, it transformed the classroom into a privileged place where changes happened and where technological and curricular innovations were geared towards the improvement of education's quality, as well as the quality of learning and it also increased the use of technology through OER. So it went with the goal of an amendment/change of a learning paradigm, towards another one more engaged with the technological innovations, the social principles and sustainability of OER.

Starting point

Throughout my teaching practice I have noticed with some surprise teachers' resistances to update their knowledge, to integrate information and communication technologies into classroom and, above all, to share their own knowledge, information and resources, not only inside their own schools but, most of all, outside their school's boundaries. We observe that, at most, some resources are shared between teachers from the same department or subject, but it is rarely done in a focused and organized way and almost never, in a systematic sharing out of school boundaries and in an open/free way possible to be used by any person or learner. Moreover, in recent years we've seen an intensive technological equipping in hardware resources of our schools, with the growth of Internet and digital culture, application-oriented teaching and learning. However, little came translated into the classroom in functional activities and practices carried out by teachers and in the act of teaching. As an example, we have the ambitious measures of the so called Education Technological Plan, which is being implemented in Portuguese public schools and on all levels of education, but unfortunately, very little seems to have changed the state of education in Portugal

and, more specifically, the teaching and learning experiences. It was based on these conceptual considerations, the reasons attached to them and the need to innovate in education, that we arrived at problem- situations on the basis of this research and that we can summarize the following points.

- The reduced number of digital educational resources produced by teachers or by teachers and/with their students;
- The lack of a "sharing spirit", for spreading and opening of created materials
- Little interest/motivation in the creation of educational resources in digital format;
- Lack of a digital culture associated with the creation and sharing of educational resources and the use of information technology and communication in the classroom.

Aims and goals

The purpose of this research was the creation of a Community of thinking Educators, creative and proactive in Open Educational Resources (OER), for children aged between 6 and 15 years old, from primary to basic education, demonstrating the feasibility of adopting the principles of Open Education, first, in Caramulo's Group of Schools and subsequently, serving as a leading example, in the national educational system and capable of implementation in other schools. Moreover, and as a consequence, we set out a responsible and productive growing use of information technologies and communication technologies and Web2.0 in the classroom.This work had as main objectives:

- The widespread use of Open Educational Resources, incorporated into the Learning Pedagogical Model of Primary and Basic Education Schools (from 6 to 16 years old);
- The creation of a local Education Community of Teachers and Students, which promotes the collaborative development of Open Educational Resources (OER) and make them available freely on the format of learning objects and learning materials, centering on a group of schools;
- Contribute to a wider use of educational materials production tools and communication tools (privileging FLOSS) using Web2.0 features, specific to each type of class and content to produce.

Motivations and operationalization

At a time when technology is permanently deployed in society and in schools becomes a reality more and more present each day, there is no way we can alienate ourselves from it. With projects more or less daring and effective, the computer and digital education came, in fact, into school and into day-to-day for both teachers and students. The rapid development and the constant uprising of new technologies, with potential use areas in the classroom, new processes and new methods of knowledge creation, is leading to a rapid obsolescence of knowledge, what emphasizes the need and establishes the challenge of changing educational paradigms, *"education and job training for a lifetime, to the new paradigm of lifelong learning"* (Forsyth, 1996). There is

thus a need to seek out new models and new strategies for both teaching and learning, in order to be able to meet the demands of an emerging "new education" and "a new knowledge society" in cyclic evolution and change, where each cycle gives birth the new cycles, new strategies and new learning tools. This is the context of the Information and Communication Society, constantly changing, requiring teachers to rethink and renew their teaching practices and where Open Educational Resources arise as a paradigm of excellence.

Let us also add that education cannot be seen as a purely technical activity and disconnected from reality and social, moral and political problems. Quite the opposite, the act of teaching and educating should be seen as committed and connected with moral and social values, leading teachers and educators to question themselves and their educational practices and how do they provide the knowledge that they produce. It thus becomes necessary to amend the teacher's figure, the student's and even the teaching and learning process. Submerging in Carr and Kemmis's critical-social conception (1988) and complementing with the ideas of Schön (1992) about reflection in action, we believe that education and the act of teaching, must move towards reflecting on educational practice and in adopting a critical position correlated with the social and with the act of learning. Undoubtedly, our goal was a change in the teaching and learning practices, implying therefore questioning in a critical way, the relationships between education and society, becoming each teacher a researcher of its own teaching and learning process. We intended that this questioning act, critical and socially correlated, would lead teachers to innovate, improve, to learn by questioning, to understand the educational contexts in which they move, having, as its ultimate end, the increasing quality of education on its all.

We developed an investigation at the school and from the school, conducted by teachers and with the teachers, involving students, aiming to clear the problem-situations of their own classroom, from each student and each school. Not forgetting the correlation between the social, the moral and educational, and in response to the arguments above, it became logical for us the use of Open Educational Resources, supported by free software and/or open source software to achieve our goals and in response to our motivations. With the digital creation of Open Educational Resources (OER), we establish the classroom as a "laboratory" for teachers professional development, accomplishing this way that investigation, rather than seen just as a methodology for solving problems, it was also seen and accepted as a training model, enhancing and improving digital literacy, in short, making teachers to become more interested in the pedagogical aspects of teaching and motivating themselves to integrate research into teaching, while, at the same time, integrating it in a practical way and with immediate results. Furthermore, when sustained this practice with the use of free software, not only we promoted the principles of sharing and shared creation, but we also responded to school's difficulties in acquiring proprietary software for the specific needs of each discipline. This way, the school ceased to be so dependent on its economic conditions, and at the same time, promoted in its teachers and students, the principles of shared creation, developing a social function co-responsible in the act of creating in a "free way" and with free tools, threads and knowledge structures that are now available to any learner, virtually anywhere in the world via the school's Moodle platform: http://aminhaescola.net/moodle.

Furthermore, using an action-research methodology project, for all its features and the importance given by it to self and shared creation, and to the improvement of teaching practices, it was applied to the group of Caramulo's schools and to the entire school community claiming by acting that it may establish itself as a "learning paradigm", possible to adoption by other groups of

schools along the country. Based on the objectives set for this project, the use of an action-research methodology seemed to us to be the most appropriate, since its emphasis its place on solving educational problems - the scope and core of this research - with direct and active intervention of the researcher. Let's add that it was extremely important its contribution to the practical knowledge and personal understanding of the researcher as well as all of those involved in the research project, being they teachers or students, and it is even compatible with the condition of the researcher as teacher on this group of schools and soon, too, directly involved in research.

It was also quite appealing, because it allowed practice trials and experimentation in real classroom contexts, while at the same time it facilitated collaboration, knowledge exchange, cooperation and immediate feedback to the collaborating teachers. Since this is a method that, by definition, is directly linked to innovation with an effective potential to put into practice a conceptual critical model of curriculum innovation, together with the creation and use and disclosure of OER, immediately transformed the classroom into a privileged place where the changes happened and where the technological and curricular innovations were geared towards the education quality and improvement, as well as the learning quality. Therefore, it went towards the amendment/change of a learning paradigm, towards a more concerted one with technological innovations and social changes that we experienced then in our schools and where the OER became both agents and products of an educational innovation project.

This social innovation, this change in teaching ways and learning, this change in mindset through OER, has led to a greater personal and professional satisfaction, to an improvement of academic programs and academic knowledge, to a greater diversification of school strategies and activities, contributing to knowledge sharing, overall and socially open, leading to more prepared and better students learning in a "motivated educational", interested success and recognized by all stakeholders as capital gain both in a personal, social and moral ways.

As stated Morais et al (1989), "if teachers, key players in this process, remain anchored to the methods they learned during their training and do not adapt to new realities, then the school's future will be the same as the school's present and its past."

It is therefore towards a school of the future, different and innovative, questioning and socially and morally concerned that we move, we believe, we struggle and we strive to achieve…

Conclusions

Given the national context, we believe that Open Educational Resources can be an important tool for the universal knowledge dissemination, from public and private universities, but more important than that and according to the objectives of this project, in the different grades of basic and primary education. We must start acting earlier, in earlier ages and preparing these children to an open and shared society, giving them the social and moral tools they need to carry out the use, disclosure and dissemination of OER throughout their learning process.

As researchers, teachers and partners in developing this research we had the capacity to innovate, to concern and differentiate pedagogies, the ability to reflect on and change our teaching practices, always aiming on providing more innovative and learning methods to our students. Acting on the ground and with key stakeholders - teachers and consequently their students - had to

intervene and positively transform a particular school in a different reality: more reflective, performing, innovative and empowering of different learning experiences, which not only sought practical improvements, but also, and essentially established themselves as agents of change and critical self-critical, ultimately changing their own environment and being themselves changed in the process. Thus, through the change and learning from the consequences of the change itself, we develop in ourselves an involvement in research and in a dynamic movement of knowledge construction. The success of the use and development of Open Educational Resources in this group of schools enabled previewing clearly and demonstrated that one's approach might be to create an infrastructure that supports collaborative development and publication of open content in national schools. At a time when so much is said of ICT skills and where their mainstreaming in the teaching-learning and school curricula have so clear objectives on education systems almost everywhere in Europe - as we note in the principles of the Lisbon Strategy, in the Portuguese Great Plan Options 2007 and the National Strategic Reference Framework 2007-2013 - we think we have demonstrated that this could be one of the many paths to be followed in a performing and innovative way, a provider of new knowledge and tools to help technological modernization of education and schools in Portugal, with an effective and active integration of ICT in teaching and learning, in fact of interacting with the main actors of the system, making them at the same time, researchers, learners and generators foreground.

OER has also established itself as a way to break with traditionalist conceptualizations of teaching, based on the teachers figure as knowledge holder. I would add that, in our opinion, this could be a practical and functional way to maximize teachers and students digital skills, in a process intended to be performing, reflective, personal and collectively shared, making the school what it should be: a source of knowledge accessible to all, freely and free. We can say that is now universally accepted the idea that, for a society in permanent change, we can only accept a permanent change in school too. And it also serves to note that when trying to find new models and new methods of learning at the threshold of the XXI century, ICT will play an increasingly active role, possibly being our earlier students themselves, and our teachers to be engines and poles of analysis so that new opportunities are created and new and guidelines could and must be found.

Moreover, it was a joint reflection of all the involved that the philosophical concepts of openness, sharing, dialoguing and shared creation that are the essence of the concept of Open Educational Resources, are not only an educational challenge but also a moral and social one. With OER there are emerging a set of unlimited collaboration possibilities, attitudes and ways of being/acting both in schools as well in life, just not only for teachers, but, above all, for learners. What matters above all is to educate for citizenship, with human moral values and with the best they have to offer to the world. We cannot forget that our "today students" are the man of tomorrow, and they may carry inside them the seeds to transform knowledge and the way it is spread and shared. They can and they must make the difference.

We finish transcribing part of the "Cape Town Declaration", which summarizes clearly and enlightening, the principles we believe in and that carried us along our journey:

> "We are on the cusp of a global revolution in teaching and learning. Educators worldwide are developing a vast pool of educational resources on the Internet, open and free for all to use. These educators are creating a world where each and every person on earth can **access** and **contribute** to the sum of all **human**

> **knowledge**. They are also planting the seeds of a new pedagogy where educators and learners create, shape and evolve knowledge together, deepening their skills and understanding as they go.
>
> This emerging open education movement combines the established tradition of sharing good ideas with fellow educators and the collaborative, interactive culture of the Internet. It is built on the belief that **everyone** should have the freedom to use, customize, improve and redistribute educational resources without constraint. Educators, learners and others who share this belief are gathering together as part of a worldwide effort to make education both more accessible and more effective."[1]

So, let's not wait until they are in Universities… let's act when we really make the difference, when children are still constructing their personality and their moral and social values. That was our goal, our challenge and the challenge we leave here to other educators around the world.

Notes

1. http://www.capetowndeclaration.org/read-the-declaration (verified in September 14, 2010).

Bibliographic references

Carr, W & Kemmis, S. (1988). *Teoría crítica de la enseñanza. La investigacíon accíon en la formación del profesorado.* Barcelona: Martinez Roca.

Hylén, J. (2005). Open Educational Resources: Opportunities and Challenges. OECD's Centre for Educational Research and Innovation, in: http://www.oecd.org/dataoecd/5/47/37351085.pdf (15th July 2010).

Morais et al. (1989). *Teoria (s) e Prática (s) em Ensino das Ciências.* Departamento de Educação, Faculdade de Ciências da Universidade de Lisboa, 1989.

Schön, D. A. (1992). La formación de profesionales reflexivos. Hacia un nuevo modelo de la enseñanza y del aprendizage en las profesiones. Barcelona: Paidós/MEC.

Cape Town Open Education Declaration http://www.capetowndeclaration.org/read-the-declaration (in 15th August 2010).

CETIS Briefing Paper (2008). *Open Educational Resources –Opportunities and Challenges for Higher Education, em:* http://wiki.cetis.ac.uk/images/0/0b/OER_Briefing_Paper.pdf (in 15th March 2010).

About the author

Paulo Manuel de Matos Pereira

Caramulo's School.

Born in Angola on 8th September 1971, I've studied in Rhodesia, actual Zimbabwe. At the age of six I came to Portugal where I started my academic studies in a small village. True my academic life I've been engaged in many different projects, from Music groups to students Associations and other social movements. I graduated as an English and Portuguese teacher in 1994. I've been teaching these subjects since then – for sixteen years now. But soon I started integrating and experimenting technologies in classroom and always been a curious and a self learner on these matters, doing my own research, going to different conferences and events ICT related. Yet not fulfilled I engaged a Master Degree In Multimedia in Education at Aveiro's University and developed a leading project with teachers and students from different school levels, on the disclosure, use and implementation of OER in a group of schools.

Largo da Igreja nº 50
3465-190 Vilar de Besteiros
Portugal
oluappereira@gmail.com

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

OER as a Model for Enhanced Teaching and Learning

Lisa Petrides, PhD,* Cynthia Jimes, PhD, Clare Middleton-Detzner, MPP,*** Holly Howell, MA******

* President, Institute for the Study of Knowledge Management in Education

** Director of Research, Institute for the Study of Knowledge Management in Education

*** Research Associate, Institute for the Study of Knowledge Management in Education

****Research Assistant, Institute for the Study of Knowledge Management in Education

Abstract

This article presents preliminary findings from a research study conducted by the Institute for the Study of Knowledge Management in Education on the role of open educational resources (OER) in transforming pedagogy. Based on a study of art and humanities teachers participating in an OER training network, the study reveals how exposure to OER resources and tools support collaboration among teachers, as well as new conversations about teaching practices. These findings have implications for engaging teachers in adopting new OER use practices, and for how OER can be integrated as a model for innovation in teaching and in resource development.

Keywords

Open Educational Resources, OER, teacher professional development, knowledge sharing, collaboration, social networking tools, Ning, teaching and learning, pedagogy

---

Recommended citation:

Petrides, L.; Jimes, C.; Middleton-Detzner, C. et al. (2010). OER as a Model for Enhanced Teaching and Learning. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.

[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/4995>

Introduction

A growing body of literature in the field of education offers insights into the ways that open educational resources (OER)—defined as freely available resources with non-restrictive licensing—create accessibility and cost benefits for teachers, learners and the institutions of which they are a part (Bateman, 2006; Allen, 2008; Seidel, 2009). In an effort to lend to the sustainability of OER and support communities of users who are able to engage in OER materials, much of this literature has also focused on identifying the structures and process that support OER creation, findability and reuse (Stephenson, 2006; Petrides et al., 2008; Petrides & Jimes, 2008). Less prevalent in this scholarship are empirical studies on the role that OER plays in teaching and learning, and as a transformative force in education.

This article presents key findings from research by the Institute for the Study of Knowledge Management in Education (ISKME) that examines the use of OER in transforming pedagogy. The point of departure for the study is that OER, as digital and dynamic resources, have the potential to enhance teaching and learning practices by facilitating communities of teachers who collaborate, share, discuss, critique, use, reuse and continuously improve educational content and practice (Petrides & Jimes, 2006; Frydenberg & Matkin, 2007; Geser, 2007; Petrides et al., 2008; Casserly & Smith, 2009). Additionally, the study draws on conceptualizations of school change and reform presented by education scholars including Grubb and Tredway (2010). Grubb and Tredway argue for the importance of more participatory, teacher-generated professional development in assessing and improving teaching practice—wherein teachers make meaning for themselves and each other as they participate in interactive problem solving about teaching practice. Through analysis of data collected on teachers participating in an OER training network, this article explores the role that OER—as a potential support teacher knowledge sharing and engagement—plays in teacher professional development, meaning making and interactive problem solving about teaching practice.

Methodology

Since 2005, ISKME has conducted research on the impact that engagement with OER has on teaching and learning. The findings presented in this article are based on a segment of this data, collected over 12 months, on a group of art and humanities teachers participating in a comprehensive OER training network from March 2009 to March 2010. The network included a program of training on OER access, use and implementation in the classroom, as well as on using collaborative technical infrastructure to support teacher knowledge sharing and access to OER materials. The technical infrastructure included an OER Ning, where teachers could share, discuss and post information about resources and resource use in their classrooms; a resource platform, OER Commons, where teachers could find resources, rate, review, and share knowledge about use of resources; and a Wiki, where teachers could create new OER individually or in groups.

The primary object of study for the research included the Ning activities of 136 teacher participants in the OER training network. Ning discussion threads were analyzed to assess types and frequency of interactions, types of knowledge being shared through the Ning, including indications of participants' experiences developing and integrating OER into their work. Content analysis was also conducted of all artifacts created on the Ning to assess the types and formats of materials and information being shared, such as blog posts, discussion threads, events, photos, and videos. Additional data were collected through participant observation on the Ning by a researcher who posted discussion forum questions to assess participants' challenges faced in engaging with OER and stories of how they were or had been using of OER.

Sixth months after teachers had been introduced to OER through the training network, ISKME administered follow up surveys and conducted interviews with a subset of the teacher participants. The aim of the survey was to assess teachers' use of and experiences with OER, and how their engagement with OER impacted their teaching practices and perceptions of their role as teachers. A total of eighteen teachers responded to the web-based survey, which was administered through email to teachers who had participated in the networks' OER training workshops and training webinars. Interviews were further conducted with eight participating teachers, selected due to high level of engagement in the project—as teacher leaders who demonstrated and shared knowledge about OER use to other teachers in their schools. The interviews sought to add depth to the survey and Ning data, specifically in terms of assessing how engagement with OER supports new teaching and learning practices and perceptions.

Findings

The sections below provide preliminary evidence that reveals how participation in the OER training network—with access to, training on and technology for OER resources—supported teacher knowledge sharing, collaboration and access to adaptable resources to meet classroom needs. It is important to note that this study does not attempt to provide a comprehensive assessment of the impact of OER on teaching and learning; instead it aims to explore some of the ways a particular group of teachers—that is, those participating in the OER training network from March 2009 to March 2010—discussed, shared, and collaborated around open educational resources toward enhanced teaching and learning.

Teacher Knowledge Sharing

Analysis of the OER Ning associated with the OER training network revealed a community of 136 participants engaging around learning resources, ideas about use of those resources, challenges and successes in their teaching practices, and other teaching or professional development-related issues. In total, the OER Ning community posted 349 teaching and learning artifacts, a breakdown of which is provided in Figure 1.

Further analysis of the above artifacts to determine their content themes revealed that Ning participants shared ideas about learning resources (33 percent of artifacts), teaching challenges and teaching ideas and approaches (30 percent combined), and other issues related to teaching and to teacher professional development, such as policy issues related to teaching (11 percent) and teaching events and opportunities (10 percent), outlined in Figure 2.

Examples from the artifact analysis that illustrate the above themes—and specifically the teaching challenges and teaching ideas and approaches themes—include a posting where a participant posted a question on the discussion forum asking how to help students overcome shyness in class. Six other Ning participants described their own methods, with one participant responding with a link to a game that had been successful in working with timid students. Another participant posted a discussion question about how to address waste management in the classroom, and three participants responded with similar concerns or suggestions for tackling the issue. One participant responded by thanking other participants and relating how she planned to implement one of the suggestions discussed. One of the most active discussion postings (with 10 postings total) centered on the challenges of assessing students' assignments for art class, without judging or stifling their creativity. Teachers shared their own approaches to assessing the arts in the discussion thread, and posted relevant documents or links to resources.

Collaborative Learning

The analysis of artifacts on the Ning also revealed evidence of emergent, concrete collaborations around projects between participants. For example, one participant posted a discussion thread titled "Creativity Challenge" in an attempt to instigate a group to share each others' art and stay innovative. Five participants responded with interest in joining or to thank the original poster. Another participant posted possible collaborative project idea between teachers, and a participant responded looking for art history collaborators for a different project.

The interviews underscored these findings. Six out of the eight participants interviewed mentioned actual or potential collaborative activities resulting from their engagement with OER. Specifically, participants discussed the potential for and actual collaboration among teachers, across disciplines and beyond their school networks. One-half of the participants discussed OER in the context of connecting to others, networking or addressing isolation. According to the interviews, current education priorities and cuts in programs have created a greater need for an alternative community for teaching artists outside of the school setting. Some viewed OER as a way to address this need. Three participants provided examples of how OER enhanced or could enhance their possibilities for multidisciplinary work.

The interview data also indicated that OER has the potential to drive an evolution in the roles of teachers and their students. Four of the participants indicated that OER helps teachers become learners by exposing them to new tools, resources, and skills, and two suggested that the possibility of teachers and students working together to create content that enables students to take more responsibility for their own learning

Access to Sharable, Adaptable Resources

Analysis of the interview and survey data further revealed that OER served as a mechanism for participating teachers to gain greater exposure to lessons, best practices and new ideas to adapt and incorporate into their teaching. Specifically, two survey participants on an open-ended survey question reported the benefit of OER to be the availability of lessons that can be copied and edited to fit teachers' needs. Impacts of OER discussed in interviews included opening up the definition of resources and increased documentation of teaching practices tied to OER use. One interview participant spoke of sharing OER content with others and framed it as a way of supporting the production of nimble resources that would help drive higher level school reform.

Analysis of survey data to assess participants' frequency of engagement with OER revealed that most participants had engaged with OER at least once during the six-month period following their initial training on OER. As revealed in Figure 3, 66 percent (12) of survey participants reported that they had used OER, with a combined total of 33 percent (6) using OER weekly or monthly, another 33 percent (6) using OER approximately 1-3 times, and 33 percent (6) not having used OER.

Nine of the survey participants further indicated that they had incorporated and used OER in several ways as part of their teaching process (the remaining nine survey participants did not answer this survey question). As shown in Figure 4, preparing for lessons and sharing with colleagues surfaced as the most frequently mentioned uses of OER (both at 67 percent). The survey also indicated that to a lesser extent (22 percent), teachers incorporated OER into presentations for students; none of the teachers indicated that they require or encourage students to use OER as part of their school work.

Furthermore, when integrating OER into their teaching practices, the greatest percentage of survey participants remixed OER content by combining it with their own or other's educational materials. Specifically, when asked about how OER materials were reused by teachers, 67 percent (6) indicated that they had remixed OER, 33 percent (3) indicated that they used OER content "as is", and twenty-two percent (2) reported that they had edited OER to meet their local classroom needs. Figure 5 details this breakdown.

Conclusions and Implications

The analysis revealed that teachers' engagement with OER has the potential to support enhanced teacher collaboration and curriculum development activities as well as information sharing about resources, practices, and teaching challenges. Participation in the OER training network and engagement with OER not only reduced teacher isolation, but also helped expand teachers' roles and to become more active innovators as they shared and learned from one another. OER—as resources that lend themselves to collaboration, knowledge sharing about practices, adaptation and reuse—support conversations and practices that may not traditionally be available through professional development.

The findings have implications for engaging teachers in adopting new curriculum development practices—including documenting teaching practices tied to OER use and having students use OER as part of their school work. The findings also have implications for how OER can be integrated as a

model for innovation in teaching—particularly in terms of the design and implementation of professional development and training models. The findings indicate the importance of identifying and assessing ways to inspire teachers—beyond an initial group of OER leaders or champions—to form OER communities around personal teaching challenges and pedagogical approaches for collaborative problem solving. In light of the innovations and knowledge sharing that resulted through the network of teachers engaged around OER, continuing this model of teacher collaboration and supporting teachers through professional development becomes central.

Acknowledgements

This research study has been supported with funding from the Ford Foundation. Special thanks go to Rudy Rubio, Research Assistant at ISKME, for his editorial support on this paper.

Tables

Category	Percent (n)
Photos	46% (161)
Discussion forum postings (questions or responses)	41% (142)
Blog postings	6% (20)
Events	5% (16)
Videos	3% (10)

Table 1. Artifacts posted on the Ning by participants, over a 12-month period (N=349)

Category	Percent (n)
Teaching and learning resources	33% (53)
Teaching challenges	15% (25)
Teaching ideas and approaches	15% (24)
Personal information (background, teaching experience, and other information)	14% (23)
Policy issues related to teaching	11% (18)
Upcoming event or opportunity related to teaching role	10% (17)
Teaching tools	1% (2)

Table 2. Themes of artifact postings on the Ning (N=162)

Level of engagement	**Percent (n)**
Daily or almost daily	0% (0)
Once or twice a week	22% (4)
Once or twice a month	11% (2)
Approximately 1-3 times	33% (6)
Never	33% (6)

Table 3. Level of engagement with open educational resources (N=18)

Ways OER is integrated in practice (Participants select all that apply)	**Percent (n)**
Use OER to prepare for lessons	67% (6)
Share OER with colleagues	67% (6)
Incorporate OER into presentations for students	22% (2)
Have students use OER as part of school work	0% (0)

Table 4. Ways that OER is integrated into teaching practices (N=9)

Forms of localization (Participants select all that apply)	**Percent (n)**
Remix OER by combining with own or other educational materials	67% (6)
Use OER "as is"	33% (3)
Edit OER to meet my needs	22% (2)

Table 5. Ways that OER is localized to meet teaching needs (N=9)

Bibliographic references

Allen, N. (2008). Course Correction: How Digital Textbooks Are Off Track and How to Set Them Straight. Chicago: Student PIRGs. http://www.maketextbooksaffordable.org/newsroom.asp?id2=44596.

Bateman, P. (2006). 'The AVU, Open Educational Resources Architecture for Higher Education in Africa', available at: http://www.oecd.org/edu/oer

Casserly, C. and Smith, M. (2009). Revolutionizing Education through Innovation: Can Openness Transform Teaching and Learning? In Toru Iiyoshi and M. S. Vijay Kumar (Eds.), *Opening up Education: The Collective Advancement of Education Through Open Technology, Open Content, and Open Knowledge* (pp. 261-276). http://mitpress.mit.edu/books/chapters/0262033712pref1.pdf.

Frydenberg, J. and Matkin, G. (2007). Open Textbooks: Why? What? How? When? The William and Flora Hewlett Foundation open textbook conference proceedings, August 22-23, 2007. Newport Beach, CA. http://www.google.com/search?client=safari&rls=en-us&q=open+textbooks+ hewlett&ie=UTF-8&oe=UTF-8.

Geser, Guntram, Ed. (2007), Open Educational Practices and Resources: Roadmap 2012, available at: http://www.olcos.org/cms/upload/docs/olcos_roadmap.pdf

Grubb, Norton W. and Tredway, L. (2010). *Leading from the Inside Out: Expanded Roles for Teachers in Equitable Schools*. Boulder: Paradigm Publishers.

Petrides, L. and Jimes, C. (2006). "Open Educational Resources: Toward a New Educational Paradigm." *iJournal Insight into Student Services, 14 (October).* http://www.ijournal.us/issue_14/ij_14_04_articleframe_Petrides_Jimes.html.

Petrides, L. and Jimes, C. (2008). "Creating, Doing, and Sustaining OER: Lessons from Six Open Educational Resource Projects", available at: http://wiki.oercommons.org/mediawiki/index.php/OER_Case_Study_White_Paper.

Petrides, L., Nguyen, L., Jimes, C. and Karaglani, A. (2008). "Open Educational Resources: Inquiring into Author Use and Reuse." *International Journal of Technology Enhanced Education, 1 (1/2), 98-117*.

Seidel, K. (2009). "Online Textbooks Deliver Timely, Real World Content," *Educause Review, 44 (1).* http://www.educause.edu/EDUCAUSE+Review/EDUCAUSEReviewMagazineVolume44/Online eTextbooksDeliverTimelyRe/163576.

Stephenson, R. (2006), Open Source/Open Course Learning: Lessons for Educators from Free and Open Source Software, available at: http://www.innovateonline.info/index.php?view=article&id=345.

About the authors

Lisa Petrides, PhD

President, Institute for the Study of Knowledge Management in Education.

Lisa Petrides is president and founder of the Institute for the Study of Knowledge Management in Education (ISKME), an independent non-profit educational research institute located in Half Moon Bay, CA. Her research seeks to inform and improve the ways in which those in formal and informal education foster the creation and sharing of information, apply it to well-defined problems, and create knowledge-driven environments focused on improved learning and organizational success. Petrides also leads OER Commons (www.oercommons.org), an open source teaching and learning network that supports and facilitates the creation, sharing, and modification of open educational resources. Her research and teaching interests include information science, decision-making, and issues of access and equity in education. She received a Ph.D. in Education from Stanford University and an MBA from Sonoma State University, and was a postdoctoral fellow in Educational Policy Research Division at Educational Testing Service.

Institute for the Study of Knowledge Management in Education
323 Harvard Avenue
Half Moon Bay, CA 94019, United States
lisa@iskme.org

Cynthia Jimes, PhD

Director of Research, Institute for the Study of Knowledge Management in Education.

Cynthia Jimes is director of research at the Institute for the Study of Knowledge Management in Education (ISKME), where she examines the role of collaborative problem solving networks in supporting new processes for teaching and learning, as well as for open innovation toward improved educational outcomes. Prior to joining ISKME, Jimes worked as an education data specialist at GreatSchools.net and focused on providing parents with data to inform their school choice and school improvement efforts. While living in Sweden and the Netherlands from 1995 to 2004, she worked in both the private and public sectors, holding positions in knowledge management and consulting, teaching high school and college, and obtaining her Ph.D. in information science from Uppsala University (Sweden).

Institute for the Study of Knowledge Management in Education
323 Harvard Avenue
Half Moon Bay, CA 94019, United States
cynthia@iskme.org

Clare Middleton-Detzner, MPP

Research Associate, Institute for the Study of Knowledge Management in Education.

Clare Middleton-Detzner received her Master's degree in Public Policy from the Hubert H. Humphrey Institute of Public Affairs at the University of Minnesota. Before joining ISKME, Clare was a Research Associate with the Humphrey Institute's Public and Nonprofit Leadership Center, where her academic research focused on cross-sector collaboration and nonprofit management, governance and accountability, and policy implementation. Clare brings several years experience in fundraising, development and nonprofit program management. Clare received her B.A. in Sociology from Mills College in Oakland, CA.

Institute for the Study of Knowledge Management in Education
323 Harvard Avenue
Half Moon Bay, CA 94019, United States
clare@iskme.org

Holly Howell, MA
Research Assistant, Institute for the Study of Knowledge Management in Education.

Holly Howell received her Master's degree in International and Comparative Education from Stanford University. Her research focused on teacher quality in community based education in Afghanistan. Before attending Stanford, Holly worked with the Basic and Girls' Education and Economic Development Units at CARE, a large international organization based in Atlanta, GA. Her work there included facilitating knowledge sharing between and among field office staff and headquarters staff. Holly received her B.A. in International Studies from Emory University in Atlanta, GA.

Institute for the Study of Knowledge Management in Education
323 Harvard Avenue
Half Moon Bay, CA 94019, United States
holly@iskme.org

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

EduFeedr: following and supporting learners in open blog-based courses

Hans Põldoja
Institute of Informatics, Tallinn University.

Abstract
In recent years several educators have organized open courses where participants reflect on their personal blogs. With a large number of participants it becomes a challenge to follow all the course discussions. In this paper we present the EduFeedr system that is specifically designed for following and supporting student activities in blog-based courses.

Keywords
massive open online courses, personal learning environments, research-based design, web syndication

---

Recommended citation:
Põldoja, H. (2010). EduFeedr: following and supporting learners in open blog-based courses. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/4861>

Introduction

The open education movement has been largely focused on the openly available educational content. This work has resulted in several OpenCourseWare initiatives and open educational resource repositories. However, learning is a social process and open content is not the only way to change the educational system towards openness. In addition to open content we need open learning environments and teaching practices.

In recent years several educators have made their courses available with an open enrollment. One of the first examples was Introduction to Open Education course that was organized by David Wiley in fall 2007 (OpenContent Wiki, 2007). Course syllabus and weekly assignments were published on a wiki page. The participants were expected to write blog posts based on the weekly readings and assignments. Anybody was able to join the course simply by editing the course wiki and adding their name and blog address. This course received positive feedback from the participants (Fini et al, 2008) and acted as a model for later open courses.

In spring term 2008 the author of this paper was a co-facilitator on a similar course in University of Art and Design Helsinki. On that course the facilitators used a course blog in addition to wiki pages in Wikiversity (Leinonen et al, 2009). Wiki served as a course outline while more detailed guidelines about weekly assignments were posted to the course blog. Following all the participants and managing the learning environment was quite a challenge since more than 70 people signed up for the course. Simple tasks like setting up a blogroll and subscribing the RSS feeds required a lot of manual work. Also the participants found it complicated to follow a large number of blogs. In later courses the author has used online feed readers (e.g. Pageflakes, Netvibes) to create shared pages that contain blog posts and comments from all participant blogs. However, these solutions do not scale well with a large number of participants.

A number of people who enroll to the course may grow rapidly if the course receives attention in the blogosphere. One of the most well known open courses, Connectivism and Connective Knowledge 2008, attracted about 2200 participants (Downes, 2010). The participants of the course started to call the course massive open online course (MOOC) (Siemens, 2008).

In this paper we present the EduFeedr system that is specifically designed for following and supporting student activities in blog-based courses (EduFeedr, 2010). This article will start by presenting the challenges that we are facing when aggregating course activities from learner blogs. The paper will continue by outlining some of the related works. The fourth section is about the design methodology that was used in the project. The fifth section describes the current implementation of EduFeedr. Finally we will discuss the planned evaluation of the system and future work.

1. Design challenges

There are several aspects that make it difficult to follow student activities in massive open online courses. The number of participants is not only large but it is also constantly changing. People continue to join the course after it has started and many participants do not complete the course. Therefore it is complicated to have an up-to-date list of active participants.

It is common, that course activities take place not only in blogs but also in other Web 2.0 environments (Twitter, Delicious, etc.). Learning resources may be also published in several locations depending on the type of resource (presentations in SlideShare, videos in YouTube, etc). This information could be aggregated if participants have agreed on the course tag that they will use in other systems.

Feed readers display only updates from active users. In a course setting it is also important to notice, when some participants haven't posted anything for a while. Getting comments and feedback may motivate them to continue with the course. Current feed readers do not take into use the social network data that comes from links and comments between the blogs.

There is no centralized way to see all the comments that a person has made in other blogs. It is common that commenting other participants' blog posts is one of the assessment criteria in the courses where learners use blogs. Also it might be difficult to identify who has written the comment, because people do not have to log in to write comments.

Finally, the information in this kind of learning environment may disappear quickly. We have learned that some people make their blogs private after they have completed the course. In order to aggregate the blog posts they should be available in the RSS feed. These feeds contain only most recent blog posts. In a similar way Twitter shows only most recent tweets when they are searched by a hashtag.

In EduFeedr project we are trying to address these challenges by developing an online feed reader that could be used for enrolling to the course and following the course activities that take place in a distributed learning environment.

2. Related works

The use of technological tools in massive open online courses has been studied by Fini (2008). He analyzed learners' attitudes towards the tools that were used in the Connectivism and Connective Knowledge 2008 course. This course had a quite diverse learning environment where Moodle, Google Groups, Twitter and several other tools were used in addition to blogs. According to this study a shared feed reader Pageflakes was considered the least useful tool.

Stephen Downes has developed a gRSShopper newsletter software that is used in the Connectivism and Connective Knowledge course and his other open courses (Downes, 2010). The participants have to submit addresses of their blogs and the system will aggregate all the blog posts that contain the course tag. The facilitator will send out a daily newsletter that contains summaries of selected blog posts and Twitter tweets with the course hashtag.

There have been attempts to add blog aggregation to institutional learning management systems (LMS's). One of these is BAM that is integrated with Webfuse LMS (Jones, 2009). A newer version named BIM is a blog aggregation module for Moodle (Jones, 2010).

P2PU has customized Drupal content management system to provide open courses on a centralized platform (P2PU, 2010). However, their courses have typically a limited number of participants and they do not have to deal with hundreds of people in a same course.

3. Design methodology

The design process of EduFeedr is based on the research-based design methodology (Leinonen et al., 2008). We have used this methodology in earlier projects (Leinonen et al. 2010) and it has proven to be a flexible and lightweight methodology. The research-based design process is divided into four iterative stages, which may take place partly in parallel: (1) contextual inquiry, (2) participatory design, (3) product design, and (4) software prototype as hypothesis.

The aim of contextual inquiry phase is to define the context and preliminary design challenges. In the case of EduFeedr the context is open online courses where all participants use their personal blogs. The design challenge is to present the learning activities that take place in blogs and other Web 2.0 environments in a compendious and user-friendly way. In the contextual inquiry phase the authors of EduFeedr organized 4 blog-based courses where they used various online feed readers to aggregate blog posts. The main limitations of current feed readers came out during these courses.

The second phase of research-based design is a participatory design. Participatory design approach emphasizes the importance of involving all the stakeholders from the early phases of the design process. The main method that we used in this phase was scenario-based design (Carroll, 2000). The designers wrote six scenarios that described how teachers and students used an educationally enhanced feed reader named EduFeedr. These scenarios included (1) first experience with EduFeedr, (2) posting a response to the assignment on the student blog, (3) exploring the connections between student blogs, (4) setting up course feeds, (5) archiving course posts and comments, and (6) using the offline client.

These scenarios were initially presented in the Open Education course organized by Mozilla Foundation, ccLearn and Peer 2 Peer University. A set of questions was prepared about each scenario and it was possible to comment the scenarios in a wiki. Later two participatory design sessions were organized with people who have been teaching in blog-based courses. In these sessions the participants read the scenarios and we had a structured discussion based on the questions about each scenario. The participants agreed with most of the scenarios but they were quite critical about some details. For example it came out that they do not expect that most of their students will start adding tags to their blog posts.

Currently we are between the third and the fourth phase of research-based design. The aim of a product design phase is to define the use cases and basic interaction with the system. Two main methods that we have used in this phase are user stories (Cohn, 2004) and paper prototyping (Snyder, 2003). Each user stories describes one feature or requirement in two or three simple sentences. User stories are published in the software development environment Trac where it is possible to discuss and revise them.

The final phase of research-based design is software prototype as hypothesis. Our hypothesis with EduFeedr is that distributed learning environments need a central component that will collect, combine and present the learning activities that take place in learners' personal learning environments. Early prototypes were tested internally using data from old courses. The first public prototype of EduFeedr was made available in September 2010.

4. Description of EduFeedr

Currently we have implemented the basic features of EduFeedr that include setting up the course, enrolling to the course, aggregating blog posts and comments, and visualizing the progress and social network.

EduFeedr is designed so that only facilitator needs a user account in the system to set up the course. Anybody can view the aggregated blog posts and comments without logging in. When setting up the course it is important to specify the location of the course blog where all the assignments will be published.

Participants can enroll to the course by filling up a simple form with their name, e-mail and blog address. In the current implementation we support only blogs that run on Blogger or WordPress. We have this limitation because the system must also detect the location of the comments feed. It is possible to specify a deadline for the enrollment. After that time only the facilitator can add people to the course.

Each course is divided into six sections: (1) course feed, (2) course info, (3) participants, (4) assignments, (5) progress, and (6) social network. The first section is a Course feed that displays 10 most recent blog posts and comments from the course (see Figure 1). The facilitator can hide those posts and comments that are not related with the course.

In the participants page it is possible to see a list of participants who have enrolled to the course. If people prefer to use their own feed reader for following the course they can download OPML files that contain all the blog post feeds and all the comment feeds. The facilitator can also download a vCard file with e-mails of all participants. This file can be imported to the address book. EduFeedr provides also an HTML code that contains blogroll with all the participants. This can be copied to a widget in the blog sidebar.

In the assignments page the facilitator has to specify these blog posts in the course blog that contain assignments. When participants write their responses to the assignments their blog posts should contain a link to the assignment in the course blog. Based on these links we can display a progress diagram that shows how many assignments the participants have completed. An example progress diagram is on Figure 2. From the progress diagram it is possible to access individual blog posts. It means that it is possible to read the course blogs without leaving EduFeedr. Only comments have to be written in participants' blogs.

The last section has a social network diagram that shows connections between the participants. A connection is made when one links or comments another participants' blog post. The comments are connected with the course participants based on the URL that was submitted in the comment metadata. The social network data can be also downloaded in tab separated format. This can be used in external visualization services such as ManyEyes by IBM.

Technically EduFeedr is built as a plug-in for Elgg social networking engine. We decided to use Elgg because we have previous experience with the platform (Sillaots & Laanpere, 2009). EduFeedr works as a frontend, that displays aggregated course data from local database. Aggregating the blog posts and comments is handled by a separate web service component named EduSuckr. We have also used various open source libraries such as SimplePie, JSViz and NuSOAP. The source code of EduFeedr is available under the GNU General Public License v2.

5. Conclusions and future work

This paper described a work that is still in progress. We have recently launched the public beta version of EduFeedr. In autumn term 2010 EduFeedr will be evaluated in several courses in Tallinn University and Estonian Wikiversity. The first one of these courses has already started. The aim of this evaluation is to find out how learners use EduFeedr and which problems occur. In addition to these courses we are planning to organize usability testing with a small group of users using think aloud protocol.

Our current courses have typically only 20–30 participants. In the development phase we used data from the course that started with 70 participants. Testing EduFeedr on a truly massive open course would be an interesting challenge.

We are going to continue the development of new features after fixing the found defects and analyzing the user feedback from the first courses. Some plans for future developments include (1) aggregating recent content from various Web 2.0 services that are used in courses (Twitter, Delicious, SlideShare, etc.), (2) providing visualization widgets that could be embedded in external web sites and (3) archiving the course posts and comments.

6. Acknowledgements

This research was funded by Estonian Science Foundation grant 7663 and Estonian Ministry of Education and Research targeted research grant No. 0130159s08.

Figures

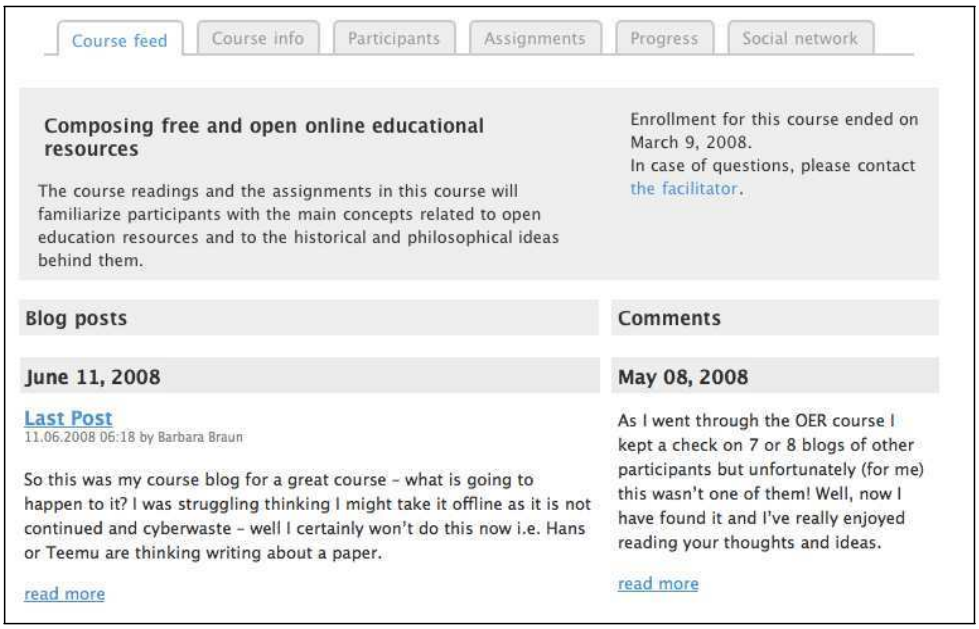

Figure 1. Course feed displays recent blog posts and comments

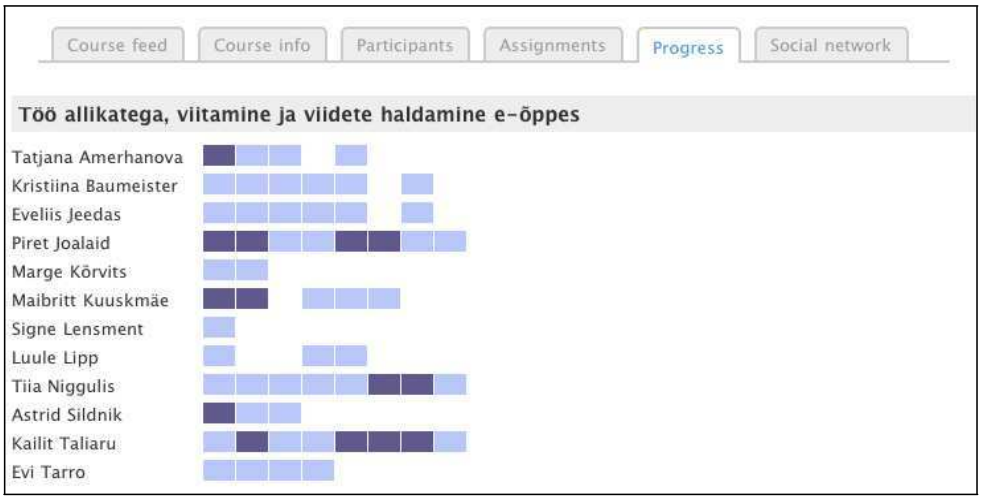

Figure 2. Progress page displays participants' progress

Bibliographic references

Carroll, J.M. (2000). *Making Use: Scenario-Based Design of Human-Computer Interactions.* Massachusetts: The MIT Press.

Cohn, M. (2004). *User Stories Applied: For Agile Software Development.* Boston: Addison-Wesley.

Downes, S. (2010). New Technology Supporting Informal Learning. *Journal of Emerging Technologies in Web Intelligence, 2*(1), 27–33.

EduFeedr. (2010). Retrieved from http://www.edufeedr.net/

Fini, A., Formiconi, A., Giorni, A, Pirruccello, N.S., Spadavecchia, E., & Zibordi, E. (2008). IntroOpenEd 2007: an experience on Open Education by a virtual community of teachers. *Journal of e-Learning and Knowledge Society, 4*(1), 231–239.

Fini, A. (2010). The Technological Dimension of a Massive Open Online Course: The Case of the CCK08 Course Tools. *International Review of Research in Open and Distance Learning, 10*(5).

Jones, D., Luck, J. (2009). Blog Aggregation Management: Reducing the Aggravation of Managing Student Blogging. In G. Siemens, & C. Fulford. (Eds.). *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2009* (pp. 398–406). Chesapeake, VA: AACE.

Jones, D. (2010). BIM – Feed Aggregation Management and Marking. Retrieved from http://davidtjones.wordpress.com/research/bam-blog-aggregation-management/

Leinonen, T., Toikkanen, T, & Silfvast, K. (2008). Software as Hypothesis: Research-Based Design Methodology. In *Proceedings of Participatory Design Conference 2008, Indiana University, Oct 1–4 2008.*

Leinonen, T., Vadén, T., & Suoranta, J. (2009). Learning in and with an open wiki project: Wikiversity's potential in global capacity building. *First Monday, 14*(2). Retrieved from http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/art icle/view/2252/2093

Leinonen, T., Purma, J., Põldoja, H., & Toikkanen, T. (2010). Information Architecture and Design Solutions Scaffolding Authoring of Open Educational Resources. *IEEE Transactions on Learning Technologies. 3*(2), 116–128.

OpenContent Wiki. (2007). Intro Open Ed Syllabus. Retrieved from http://www.opencontent.org/wiki/index.php?title=Intro_Open_Ed_Syllabus

P2PU (2010). P2PU. Retrieved from http://p2pu.org/

Siemens, G. (2008). MOOC or Mega-Connectivism Course. Retrieved from http://ltc.umanitoba.ca/connectivism/?p=53

Sillaots, M., Laanpere, M. (2009). Building the Next-Generation Educational Portal for Estonian Schools. In *The European School 2.0: The Seventh Open Classroom Conference, Porto 15.–17. October 2009*. Porto: EDEN.

Snyder, C. (2003). *Paper Prototyping: The Fast and Easy Way to Design and Refine User Interfaces.* San Francisco: Morgan Kaufmann.

About the author

Hans Põldoja
Institute of Informatics, Tallinn University

Hans Põldoja is a designer and a research associate in the Institute of Informatics at the Tallinn University (Estonia) and a doctoral candidate in the Media Lab Helsinki at the Aalto University School of Art and Design (Finland). His main research interest is the conceptual design of open and personal learning environments. His most noteworthy project is the open educational resources authoring and sharing community LeMill. Hans blogs at www.hanspoldoja.net.

Institute of Informatics, Tallinn University
Narva mnt 25, 10120 Tallinn, Estonia
hans.poldoja@tlu.ee

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Open Educational Resources for Development of University Courses

Griff Richards,* Stewart Marshall**
* School of Interactive Arts and Technology, Simon Fraser University (Canada)
** Open Campus, University of the West Indies (Barbados)

Abstract
Open Education Resources are educational materials purposely made available for free use by others. They offer tremendous potential for reducing costs and increasing access to education especially in the developing world. This paper discusses issues of quality, localization, adaptation and integration that need to be addressed in order to make OER adoption a successful strategy.

Keywords
Open Educational Resources (OER), curriculum development, barriers, sharing

---

Recommended citation:
Richards, Griff; Marshall, Stewart (2010). Open Educational Resources for Development of University Courses. In *Open Ed 2010 Proceedings* Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy]. <http://hdl.handle.net/10609/4846>

Introduction to Open Education Resources

Open Education Resources (OER) are web-based educational materials that have purposely been made freely available for the re-use by others. Whether for informal or formal learning, they offer an alternative to developing new course materials or purchasing content from a publishing house. UNESCO (2002) noted the potential benefit of OER for expansion of education in the developing world. If materials could be freely shared, then there would be less expense in curriculum development for new courses. Over 200 educational organizations have signed the Cape Town Open Education Declaration (Open Society Institute, 2007) a manifesto to remove barriers to education through the sharing of OER. In principle, users of "open" educational resources are free to use, adopt, modify and re-publish the materials to suit their own purpose. Creators of materials may assign specific rights to the reuse of their OER and usually do so through a Creative Commons License (Lessig, 2010). The most common license provisions require acknowledgement of the source, but allow free non-commercial use.

The OER approach is growing in academic journals. For example, Athabasca University Press publishes the International Review of Research into Open and Distance Learning as a free online electronic journal. An annual grant helps cover the editing costs, and Athabasca absorbs the overhead of the electronic infrastructure. Now in its tenth year, IRRODL has become one of the most widely read and cited journals in the field of Distance Education. Although the journal is distributed for free, it maintains a rigorous academic review standard using the Open Journal System – open source software that itself is free to use.

AUPress has also produced a free series of academic books Issues in Distance Learning (Anderson, 2008) that have rapidly achieved high levels of readership. Free distribution makes academic content that has largely been produced through government research grants by publicly funded academics available to a much larger audience than traditional distribution channels. Once again, the benefit of this openness is particularly felt in developing countries.

In a traditional publishing model, the market provides a financial incentive to produce and update quality texts, ancillary materials such as study guides, images and examination banks, and to invest in their marketing and distribution. These costs are passed along to the students and become a major part of the cost of education. Unfortunately few students in the developing world can afford commercial textbooks. Free materials provide an alternative, and the growing cost of texts has already inspired collaborations between Rice University's Connexions and the Community College Consortium for Open Educational Resources (CCCOER) to produce open textbooks (Baker, Thiersten et al, 2009). In addition to the economic incentives, open textbooks can be made available for digital distribution – thus they could be openly vetted and adapted by faculty to ensure accuracy of content and enable selection of material relevant and appropriate for the target audience. While the benefits seem obvious, many questions arise about the economic sustainability of the OER approach.

While a growing number of projects and consortia are forming to share educational media resources, individuals are also contributing to the growing pool of open resources. Informal learning has been flooded by the thousands of ten-minute videos that have been posted on repository sites

like Youtube.com. These “how-to” vignettes cover most every topic from piano jazz to calculus. Whatever the motivations of the producers, their continued growth whether measured in available videos or number of viewers is probably the strongest indicator that there is a sustainable market for open education and that schools, colleges and universities no longer have a monopoly on the distribution of knowledge.

The UWI-AU Pilot Workshop

Despite their apparent popularity, a number of pragmatic issues such as availability, quality, format, and copyright surround the use of OER in academic settings. In 2010 the University of the West Indies Open Campus, and Athabasca University conducted a pilot workshop to see if Open Education Resources could actually be used to construct university level curricula. UWI was interested in increasing its distance education offerings throughout the sixteen Caribbean countries it supports and a masters program in Instructional Design could provide the skilled designers to produce the new courses. Coincidently, Athabasca’s Centre for Distance Education was also interested in expanding programming to offer an online graduate program in Instructional Design. A Cooperative venture using Open Education Resource would greatly advance the interests of both organizations and the use of OER had the potential to reduce costs of development.

Workshop preparation: Draft outlines from each university’s program proposals were compared to identify six common modules of interest. The next step was to have research assistants conduct an internet search to identify available materials. Then, the workshop brought curriculum development leaders from each university together in Barbados for during the first week of May. Their goal was to come to a consensus on the format of the module specifications, to select appropriate resources, and to report on the feasibility of the approach.

The search for available resources was conducted over a week in April. Each module was assigned to a research assistant, and they were provided with the module topics and a list of known OER repositories. They were also allowed to search using Google. Both research assistants had previous training on evaluation of on-line earning objects using the Learning Object Review Instrument (Nesbit, Belfer and Vargo, 2002). The LORI evaluation criteria were slightly modified to meet the needs of the project, and an on-line SurveyMonkey form was used as a quick database to enter relevant resources. Results and observations of the researchers were posted on the project wiki at http://uwi-au.wikispaces.com/.

The search results showed that finding relevant OERs was not an easy task. Many of the repositories turned out to be project sites that pointed to other repositories. Many of the repositories had poor meta-data or poor search mechanisms. Google search proved much more efficient in locating objects than approaching repositories directly or going through federation gateways such as GLOBE (www.globe-info.org). As copyright ownership and usage permission were often unclear, particularly when a site obviously embedded content from a third party, the advanced search function on Google proved advantageous as it allowed filtering for materials that had a Creative Commons license. Objects that were found varied greatly in target audience, format, content quality, and size. Few met the SCORM concept of a learning object as a complete unit of instruction; most were text documents, web pages, images or videos. The OER world is very much “buyer beware”:

you get what you pay for, but the price is patience. Eventually, eight to ten OER were recommended for each of the six target modules.

The workshop: Curriculum specialists from AU attended the weeklong workshop along with a group of instructional designers and media producers from UWI. The first task for Monday (day one) was to settle on a specification template that could be used for all modules. Fortunately a developer from UWI had brought along a template that all agreed would be sufficient for the task. The research assistants called in by Skype and gave a one hour summary of the work they had done, highlighting the reasons why the recommended resources had been selected.

The group was then divided into three teams of three or four people each, the project leads from both AU and UWI were also assigned to groups but ended up spending most of their time moving from group to group to advise on the process. Each team was assigned two of the modules and progress reports were made at the end of each day with a final review of the products and accomplishments on Friday morning (day 5).

Each team had five tasks:

1. Review the draft program proposal to specify learning outcomes for each module
2. Provide a draft treatment for learning activities that might best produce the outcomes.
3. Review the recommended learning objects to decide if they were appropriate for the revised outcomes.
4. Identify new OER and supplementary (commercial or institutionally developed) resources that could be used in meeting the objectives
5. Document the module specifications using the agreed upon template.

Workshop outcomes

Each team was able to complete the module specifications using Open Education Resources. In many cases they were surprised that some OER had been made available by the same authors who had successful commercial resources.

Discussion:

OER in the area of Instructional Design do provide a feasible alternative to purchase of commercial materials or to the development of new curriculum resources. The range of available resources will probably vary with the content area. OER can be used directly, they can be re-purposed to meet local needs, or they can provide models for developing new resources more appropriate for the target audience.

Many resources offered as OER have unclear copyright information – this is particularly true of web sites and documents that borrow heavily from other web sites without documenting the copyrights associated with the embedded materials. OER with unclear copyright or licensing information were unusable by the workshop participants.

Despite the amount of effort that has poured into learning object repositories, Google seemed to be a more efficient search tool, particularly since the advanced feature allowed the user to specify materials with CC licensing.

Because OER originate in so many different contexts, they have no standard format, complexity or length. Although there are meta-data standards such as the IEEE, these standards are not well adhered to and meta-data is often missing or incomplete. OER originating in multi-party collaborations may fare better in this regard – projects like the Commonwealth of Learning's WikiEducator (www.wikieducator.org) or the CCOTP open textbook projects found they had to establish templates and guidelines early in the production process, so more uniformity of OER can

be expected from these sources. Organizations anticipating large curriculum development projects might profit best from establishing collaboration guidelines early in the project to avoid results that can not be easily assembled into courses.

OER currently focus on content; little or no meta-data is available on the embedded learning activity or implicit learning strategy in the OER. More attention needs to be paid to approaches like Dalziel's (2003) Learning Activity Management System where the focus is on reuse of the pedagogic strategy rather than re-use of the embedded content.

While OER may be free, considerable effort may be required to find suitable material and edit them into a smooth learning package. Instead, OER users may find the integration resembles a circus ringmaster who provides context and cues the appropriate resources as required. The ringmaster will need to remind the learner on how to re-enter the main learning package after viewing the OER.

The OER may contain material that is not the most appropriate for achieving the learning objectives of the course in its unique context. Thus, there may well be a need for adaptation and localization of the material, e.g., replacing US or Canadian examples with Caribbean examples, the incorporation of new learning scenarios, changing language structures.

It may also be necessary to use supplementary resources. Note that it is possible that some of these supplementary resources could be commercial, but care must be taken how these are used so as not to affect the CC license of the course material and the possibility of it being added to the bank of OER. So the listing of a course text book as recommended reading would be fair usage, but the incorporation of parts of the commercial text book without copyright permission would not.

Most OER repositories do not collect user reports on the quality of the resources provided, Although Youtube.com does provide a five-star rating, the criteria for the rating are proprietary and influenced heavily by core users. Popularity does not always reflect quality or suitability for an intended audience. These decisions have to be made by the course designer as they review OER.

OER do little to address technical problems of use of web information. An organization that embeds third party resources into their lessons needs to have contingency plans against the sudden disappearance of selected resources. The best strategy is to cache the selected OER to an internal server, and advise the owner with a request for copyright permission to mirror the resource for a certain period of time. Organizations unable to cache the selected resource need to have a contingency plan involving alternate resources should the primary OER suddenly disappear or have its CC license revoked by the owner.

Copyright law and enforcement varies around the world. When in doubt institutions should exercise caution when embedding materials from web sites located in jurisdictions where copyright is unheeded because the original owner of the material may choose to have their copyright enforced in the institution's home country where the law is less forgiving.

Conclusion

OER is about sharing. Institutions that embed OER material in the courseware have a moral obligation to share back derivative works. If an organization that embarks on an OER strategy can not find suitable materials, they should create them and share them back to the community. OER is

built on trust. To ensure a sustainable OER environment continues, institutions should encourage the widest possible distribution of their adaptations of OER and other educational resources they possess.

As much as academic freedom needs to prevail, adhering to some practical standards for the authoring of OER materials greatly enhances their potential re-use. Connexions and the Open Textbook Project provide good examples of how the creation of common resources eventually led them to reduce chaos by agreeing to standard software tools and templates for creating pages, conventions for naming elements and files, and standards for managing and reviewing workflow (Baker et al, 2009). Connexions provides a set of guidelines for would be authors at http://cnx.org/help/authoring/authorguide. Similarly, clear declarations of copyright and permissions need to be attached to the objects through Creative Commons Licensing. The final hurdle is better metadata including object descriptions so that OERs can be easily found by search engines. Such constraints are simply the beginning of making content shareable and it may be easier to set such standards in a small community of sharing colleges than to attempt to attain global agreement.

If OER grows to be a widespread practice, then incentives other than royalties may be needed to attract future contributors. Institutional OER sharing policy may need to be negotiated during renewal of faculty employment or when hiring contract writers. As course content becomes uniform and ubiquitous, institutions will have to distinguish themselves and compete based on other services they provide learners rather than the quality of the content in their courses.

Acknowledgements

This work was funded in part by a grant from Canada's Department of Foreign Affairs and International Trade to the University of the West Indies. The authors acknowledge the contributions of the workshop participants from Athabasca University and the University of the West Indies.

Bibliographic references

Anderson, T. (2008). The Theory and Practice of Online Learning (Second edition). Edmonton, AU Press. Retrieved 12 September 2010 from http://www.aupress.ca/index.php/books/120146/

Baker, J., Thierstein, J. Fletcher, K., Kaur, M., & Emmons, J. (2009). Open Textbook Proof-of-Concept via Connexions. IRRODL 10(5): Special Issue: Openness and the Future of Higher Education. Retrieved 23 August 2010 from http://www.irrodl.org/index.php/irrodl/article/view/633

Dalziel, J. (2003) Implementing learning design: The Learning Activity Management System (LAMS). Unpublished white paper. Retrieved August 25, 2010 from http://www.lamsinternational.com/documents/ASCILITE2003.Dalziel.Final.pdf

Lessig, L. (2010) TEDxNYED presents Lawrence Lessig. (video clip). Retrieved 20 April 2010 from http://www.youtube.com/watch?v=FhTUzNKpfio&feature=channel.

Nesbit, J., Belfer, K. & Vargo, J. (2002). A Convergent Participation Model for Evaluation of Learning Objects. CJLT 28(3). Retrieved 23 Aug 2010 from http://www.cjlt.ca/index.php/cjlt/article/view/110

Open Society Institute (2007). Cape Town Open Education Declaration: Unlocking the promise of open educational resources. Retrieved 23 August 2010 from http://www.capetowndeclaration.org/

Wiley, D. & Hilton, J. (2009). Openness, dynamic specialization and the disaggregated future of higher education. International Review of Research in Open and Distance Learning, 10(5) 1-17. Retrieved 10 March 2010 from http://www.irrodl.org/index.php/irrodl/article/view/768/1415.

UNESCO (2002). Forum on the impact of Open Courseware for higher education in developing countries final report. Retrieved from http://unesdoc.unesco.org/images/0012/001285/128515e.pdf.

About the authors

Griff Richards

School of Interactive Arts and Technology, Simon Fraser University

Griff Richards had been at the forefront of e-learning in Canada for thirty years. A pioneer of interactive video and web based learning, he developed federated architectures for learning object repositories and ontologies for describing learning interactions. He recently established a virtual high school for francophones in British Columbia. An Adjunct Professor in the School of Interactive Arts and Technology at Simon Fraser University, he teaches Instructional Design for Distance Learning in the Master of Distance education Program at Athabasca University.

School of Interactive Arts and Technology
Simon Fraser University
Surrey, British Columbia
Canada
griff@sfu.ca

Stewart Marshall

Open Campus, University of the West Indies

Stewart Marshall is Director of Special Initiatives and UNESCO Chair in Educational Technologies at The University of the West Indies Open Campus, Cave Hill, Barbados. He is the Managing Editor of the open access, online *International Journal of Education and Development using Information and Communication Technology (IJEDICT)* - http://ijedict.dec.uwi.edu/.

Open Campus
University of the West Indies
Cave Hill
Barbados
stewart.marshall@open.uwi.edu

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Barriers and Motivators for Using Open Educational Resources in Schools

Thomas Richter,* Ulf Daniel Ehlers**

* Researcher, Faculty of Economics and Business Administration, University of Duisburg-Essen.

** Professor for Technology Enhanced Learning, University of Augsburg.

Abstract

In an explorative study, we investigated on German schoolteachers how they use, reuse, produce and manage Open Educational Resources. The main questions in this research have been, what their motivators and barriers are in their use of Open Educational Resources, what others can learn from their Open Educational Practices, and what we can do to raise the dissemination level of OER in schools.

Keywords

Open Educational Resources, Open Educational Practices, Barriers, Motivators

---

Recommended citation:

Richter, T.; Ehlers, U. D. (2010). Barriers and Motivators for Using Open Educational Resources in Schools. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.

[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/4868>

1. Introduction

Open Educational Resources, as it is used here are educational resources, publicly accessible through the Internet, that freely can be used within non-profit but also within profit oriented educational scenarios (Hewlett, 2005). Great amounts of Open Educational Resources (OER) are available for download in the Internet. The UNESCO recognizes OER as having the potential to help level out the educational challenges of 'developing countries' but also bear a risk of "educational neo-colonialism", because most of them originate in western countries and bear western style education values (Daniel 2010). Large repositories of OER have been built, such as those from Merlot,[1] MIT[2] or Connexions[3]. Still, new resources often are produced instead of reusing and adapting existing OER. A basic condition for a successful dissemination of OER is building trust into those learning resources being fully capable to support high-quality education. Research, particularly in the European framework shows, that OER still are not used in the level, as they could be. (OLCOS, 2006)

The European Union project OPAL,[4] emphasizing the shift from focusing on resources to focusing on practices focus, advances the view that the key to a higher dissemination-level of OER is not the accessibility itself, but much more understanding and overcoming the gaps preventing the use of OER. Trust in OER as first-rate choice and not second-rate quality has been identified as one key factor for better acceptance of OER in educational organizations. Therefore, the project focuses on the various stakeholders in educational scenarios, supporting potential users by making available a portfolio of good Open Educational Practices, which are defined as the use, reuse, management and production of OER with the intention to improve quality and innovation in educational scenarios (Conole et al, 2010).

For this paper, we have conducted an explorative study covering schoolteachers in Germany, with the aim, to also understand their specific situation. We wanted to reveal their motivators for their exposure to OER but also and particularly their barriers, which are to be overcome. First of all, we briefly will explain the German school system. We invited teachers from different school forms to participate in group-discussions, focusing issues on their usage, management and production of OER. The results of the group discussions will be presented after a discussion of the setting and limitations of the study. Afterwards we will deduce conclusions on how teachers can be supported in their Open Educational Practices.

2. The German Educational System

The German education system foresees 10 years of compulsory education, with a primary level of 4 years and a secondary level of 6. For secondary education a selective three-type school system exists: 'Hauptschule', 'Realschule' and Gymnasium.

With the 'Berufsschule', an additional school type is available. In the traditional German professional education, teenagers can undergo an apprenticeship in a self-chosen profession, which usually take three years. The specialized education is organized in the so-called dual system: The

apprentices first of all learn on the job, by working in a company. There, they learn the specific practical knowledge the company can teach. Complementary, the apprentices visit a professional school where the theoretical background to the profession is taught.

3. The Explorative Study – Setting and Limitations

In our explorative study, we have determined the views and experiences of teachers from four school types to get a deeper understanding of their successes and failures (problems) regarding their use of OER. For each investigated school form, we asked related teachers to participate in informally organized group discussions as experts. We investigated the school forms 'Grundschule' (3 teachers), 'Hauptschule' (5 teachers), 'Gymnasium' (4 teachers) and 'Berufsschule' (4 teachers).

At least one teacher of each group taught an IT related subject and / or was responsible for the IT infrastructure of his / her school. The other teachers taught various combinations of subjects (In Germany, one teacher usually at least teaches two different subjects), such as, history, religion, languages, nature sciences, and economics.

The discussions took place within a private atmosphere in restaurants / cafes. The time frame for the group discussions was not predefined. Actually, the discussions lasted between 1,5 and 3,5 hours (depending on the available time and the interest of the participants).

The results of the explorative study are neither representative for the investigated school forms, the schools themselves, the region, or for the country. However, some interesting hints particularly on existing problems in the exposure to OER have been revealed.

4. Discussion Topics and Outcomes

Beside general issues regarding OER and in analogy to the upper definition of Open Educational Practices (Conole et al, 2010), the discussion covered the topics 'administration', 'production', and 'usage' of OER. The topic 'administration' finally played an inferior role, because least of the teachers had been responsible for such a question. Instead, the specific support / encouragement through each school's administration became a topic of discussion.

4.1 General Questions / Definitions

What in your Mind are Open Educational Resources (OER)?

The term OER itself broadly was unknown to the teachers. Just the IT responsible teachers in each of the groups 'Professional School' and 'high school' knew about the term. However, the German term 'freie Bildungsressourcen' (free educational resources) was known. As the teachers explained, it describes a similar concept, but the focus related to 'open' applied more to accessibility than to the more legal concept in OER. Free educational resources, in the view of the teachers, are learning resources that can be found in the Internet and (from a practical perspective of fitting) used for educational processes. Most of the teachers already performed Internet-research for inspiring or reusable educational material. There in fact was awareness that proper citation might be needed for lawful acting. Nevertheless, before the Internet, teachers were used to distribute copied books (mostly single pages) in their educational practice, and so, most considered sparing the citation being a peccadillo. The High school group was of a different opinion, particularly because learning the correct way of citation explicitly is a matter of their educational content.

After all teachers briefly had been informed about the correct legal situation of intellectual property rights in Germany, for this discussions, we commonly decided to 'enhance' the definition of OER from those resources that are explicitly (by license) declared as 'open' to all available and usable Internet-based, learning resources.

Open Educational Practices – OEP (definition)

According to the definition of Conole et al (2010), for the discussions, as Open Educational Practices, we defined '*all the 'practices' around the creation, use and management of OER*'.

What is your educational scenario like? Which technology do you use within your classes?

Class sizes of 25 to 30 learners are common and therefore, the common teaching form is a frontal teaching scenario. Interactive education, in which learners directly participate in a dialogue with the teachers often is related to printed / copied materials, which as a discussion base previously have been distributed to the learners. Particularly in the high school, additionally group work and presentation of the results also are used as learning methods.

In the frontal teaching situations, teachers mainly use the blackboard or if available, an overhead projector: Classes rarely are equipped with a local beamer, so that the direct use of digital learning material comes along with having to reserve the needed technology and must be understood as exception. Therefore, teachers usually have to transform the found digital material into analogous overhead-projector-slides or distribute printed papers to the learners.

Within computer classes, digital learning materials are broadcasted to the learners' desktops. Besides one interactive high school project, where computer classes of two high schools also

synchronously cooperate with each other by using messenger and forum discussions, the communication between teachers and learners is performed purely analogously. An Internet-based Learning platform (Moodle-based) only is available in the investigated 'Gymnasium'. The 'Berufsschule' and also the 'Grundschule' have not yet implemented a Moodle-based learning platform, but it is in progress. The teachers from the Gymnasium reported that even though it is available, most teachers in their school yet do not use the LMS or e-Learning for their classes. Some teachers use the Moodle-platform for after preparation and group (home-)works, but rarely for communication issues.

4.2 Usage and Adaptation of OER

Have you already used publicly available learning materials from the Internet within your own courses? In which way is material from the Internet useful for your preparation of classes? What kind of materials do you preferably use?

In the discussion groups, all but one teacher said already having used educational materials from the Internet to enrich (explicitly stated) their classes. Particularly, when recent incidents (such as 9/11, Iraq war, or the financial crisis) are to be explained or discussed in the school, Internet materials are considered being much more useful as e.g., print media: In unity, all teachers considered not only the variety of information to a certain topic as being much wider, but they also stated that research and access of related material became much easier. As a main benefit of Internet-based learning resources all teachers considered the topicality of information. Particularly because of the Internet-users' participation in quickly producing and spreading individual information via YouTube (User Generated Content), it today is possible to provide the learners with a broad variety of perspectives (or a tailor made one) considering a single topic. All teachers stated to mainly research for pictures and movies as examples to present to the learners. Just in case that a new topic (such as a recent political incident) is to be included into the almost 'traditional' lessons, also text-based documents (e.g., to research for political backgrounds) from the Internet are used).

How (concretely) do you search for, decide the use of, and adapt OER? What have been your successes? Where did you experience problems?

A minority of the teachers quoted exclusively focusing their research well known and recommended German repositories. Particularly the older teachers never visited computer classes, themselves and still feel unconfident using computers and the Internet. The majority of the teachers reported, first of all, looking in such German and recommended repositories for suitable contents by using keywords in German language. The adaptable results in German language were considered often being very poor. If the search in those repositories is not successful, the younger teachers who seemed being more proficient in using computers and the Internet, use search engines such as Google for an advanced research (in both languages, German and English). For those teachers being proficient

enough to use the Internet, the accessibility of learning resources was not considered being a larger challenge.

The decision, if a resource is trustable in the meaning of correctness, particularly regarding to the contents and the political background, has been considered being much more challenging. All groups stated that there often are doubts on the sincerity / validity of the researched documents. Particularly in cases of recent incidents, the user-generated content always could be fake information. The teachers quoted, often not using the found material because they are afraid giving wrong information or hidden political incorrect statements further to the learners. The teachers missed a seal of quality that shows them, that they do not need to worry. They clearly described a dilemma situation: On the one hand, there is a need for recent information, but on the other hand, it cannot be confirmed within such short time frames. Anyways, not seeing a suitable compromise themselves, they explicitly wish someone might find a solution.

From a more technological perspective, it often is unclear, if the found educational material is secure to download because of 'digital vermin' that could harm the school's infrastructure.

Also as extremely tough the teachers assessed the adaptation process itself: Not only lacks of opportunities to technically realize an adaptation process (because of the documents' formats) often lead to a rewriting process, but also a lack of experience, what exactly should be changed in which scenario. Particularly, when learning resources originally have been produced for another cultural context, they often include, e.g., politically difficult statements or do not fit to the own didactical approach. Revealing such adaptation needs is a far too complicated task and so, the teachers always feel like sailing close to the wind. This is a main reason why they often reduce their use of OER to simple pictures and smallest learning objects.

In all schools but the high school, the teachers complained that contents often are just available in English language. Particularly for the younger classes, contents must be translated to German. In some single cases, the language gap also led the (older) teachers to their limits of capability.

As more annoying than the language gap itself, the teachers considered pictures with informational contents, such as diagrams when offered in non-changeable formats (bitmap, PDF, JPEG). Such pictures can only be used one-on-one or as patterns (templates). Therefore, the time saving advantage of the Internet-resources is lost, particularly since such pictures anyways rarely completely cover the exact needs and therefore have to be adapted. Such experiences often lead to frustration, and the reaction in a lot of single cases is rather copying 'boring' print-media from books than looking for and using OER.

4.3 Management of OER, Policies

Do your school administrations or the federal government support the use of OER? Are there related policies within your institutions?

All teachers of all schools agreed that any kind of support or encouraging sides the school administrations or federal governments are very weak. In fact, they complained, that more and more actions explicitly or indirectly are required sides the teachers, but they have to take the full responsibility and no help or incentives are provided in return.

Related to the contents, be it open or restricted educational resources, broader assistance has neither been provided by the schools' administrations, nor by the government. A major argument sides the government not to make recommendations was the autonomy of the schools and teachers that had to be preserved. As long as content decisions just extended (and didn't change) the curricula, teachers have been encouraged to be creative. In the curricula, in a lot of cases, certain schoolbooks and novels are 'recommended' for the classes, so that anyways, concrete contents often are pre-selected (in printed form). As help, the government later on offered an Internet-portal called 'Lehrer-Online'[5] (Teachers-Online). 'Lehrer Online' provided recommendations and articles for teachers, a forum and later on, also small repositories for suitable educational resources that freely could be used. Teachers, themselves, produced most of the resources in this repository (User Generated Content). After having used (and acknowledged) those in their own classes, they (can) share their contents with other teachers. The quality, therefore, is considered being suitable but the dissemination of the resources are limited to registered users. The variety of available resources still is low, even when following the hints to further, external but recommended German repositories. As additional service, the portal 'Lehrer Online' offers online and offline (physical) seminars and workshops where the teacher's needs and possible solutions to problems are discussed.

Different to the others, the teachers of the 'Berufsschule' experience serious problems to find adequate learning resources in the Internet. The provided support is considered being poor or even not available at all as well through the chambers of crafts as also through the chambers of industry and commerce. Additionally, in some professions, the chambers of crafts have regionally typical requirements on certain processes and designs. Besides in the IT-related professions, the teachers of the group 'Berufsschule' rarely use open educational resources, e-Learning or even computers. Since the chambers started providing e-Learning material for Master students (The German Master Craftsman) particularly the situation of lacking contents is slightly changing now. However, the necessary equipment also is missing.

4.4 Production of OER, User Generated Content

As already stated in section 4.3, some teachers produce contents by themselves and, as far as they are able doing so, share it with others. Such self-produced contents are e.g., published in the repositories of 'Lehrer Online'. Often, in a lack of knowledge, the Creative Common License (or others) is not attached because the teachers purpose to upload their resources anyways is sharing contents and supporting their colleagues. Learner generated content rarely is made available for the public. If such contents are being uploaded to a server, it mostly happens just inside the school infrastructures, e.g., for further use within internal school projects. Also, some teachers and older learners have own websites where they upload their learning resources and / or essays, but this is the minority.

5. Summary of the Results and Recommendations

Almost all invited teachers from used the Internet as a source to gather available educational resources. Although there is no explicit demand or quota for using OER at schools, the lack of funds drives teachers to use free learning resources.

The available Learning Management Systems in the investigated schools are based on the open platform 'Moodle'. Benefits of digital learning resources, related to print media, particularly are seen in the fast availability of information on recent incidences.

The teachers mainly used pictures and movies from the Internet illustrating or spicing up their lectures. Pictures with informative character (containing text elements) should not be stored in an unchangeable format: From the perspective of the teachers, as soon as they are to be adapted such are almost worthless.

Regarding the adaptation processes, support is needed: Adapting learning resources from foreign contexts to the own one simply is too complicated for the teachers. This includes as well the decision process on adaptation needs as also the following changing and validation processes.

Regarding licensing, a clear lack of information and / or sensibility has been revealed: The teachers were not fully aware of the difference between open and available resources. They rarely use the CCL (or any other license) themselves, but consider their own provided resources already are open by publishing them in the Internet. Therefore, they do not take the legal situation too serious.

A broader support by the German government and school administrations urgently is needed not only for using OER, but also for using digital media in general. Particularly the necessary equipment is missing. The teachers basically are willed to contribute their self-produced learning resources to the community, but need a suitable supportive platform, which is simple to use even for beginners and automatically attaches the necessary license type.

It often is unclear if material, found in the Internet is trustable and if it maybe includes hidden threads that could bring the teachers into troubles. Also the suitability of certain resources for learners of different ages often is unclear. The teachers see problems in the use of OER without an ensured reliability / quality of open contents. This issue would have to be solved as soon as possible.

Although e-Learning and IT now is used since more than a decade within German classes, the teachers in the discussion groups still feel like pioneers when using ICT for classes that are not directly related to information technology. Particularly when situations are tough, they often feel abandoned. A certain (commonly accepted) culture of practice could enormously help the teachers to reach the necessary level of confidence. Such a culture of practice is considered being needed in order to be successful in the use of ICT and particularly OER.

Fazit

Using expert group discussions as a method for an explorative study provided fruitful results. Particularly, because the experts themselves profited from the discussion outcomes in form of learning about the other expert's experiences, they showed themselves very involved.

For the study, it can be concluded that the OER movement is welcome and needed by schoolteachers in Germany. Teachers already use and produce OER and would like to raise their level of contribution, but feel a strong need for assistance regarding the technological realization and for a certain culture of practice in order to legitimate their efforts.

As reported by the teachers, the usage of OER often collapses because of missing changeability of available documents, a lack of trust regarding the correctness of included information and missing support regarding adaptation processes. In contrast, the pure availability of learning resources, for most teachers has not been considered being a problem: Besides the professional school, all other groups considered the amount of available learning resources being rather overwhelming (because often unstructured or undefined) than too small.

The teachers showed a lack of understanding regarding the legal background of OER.

Figures

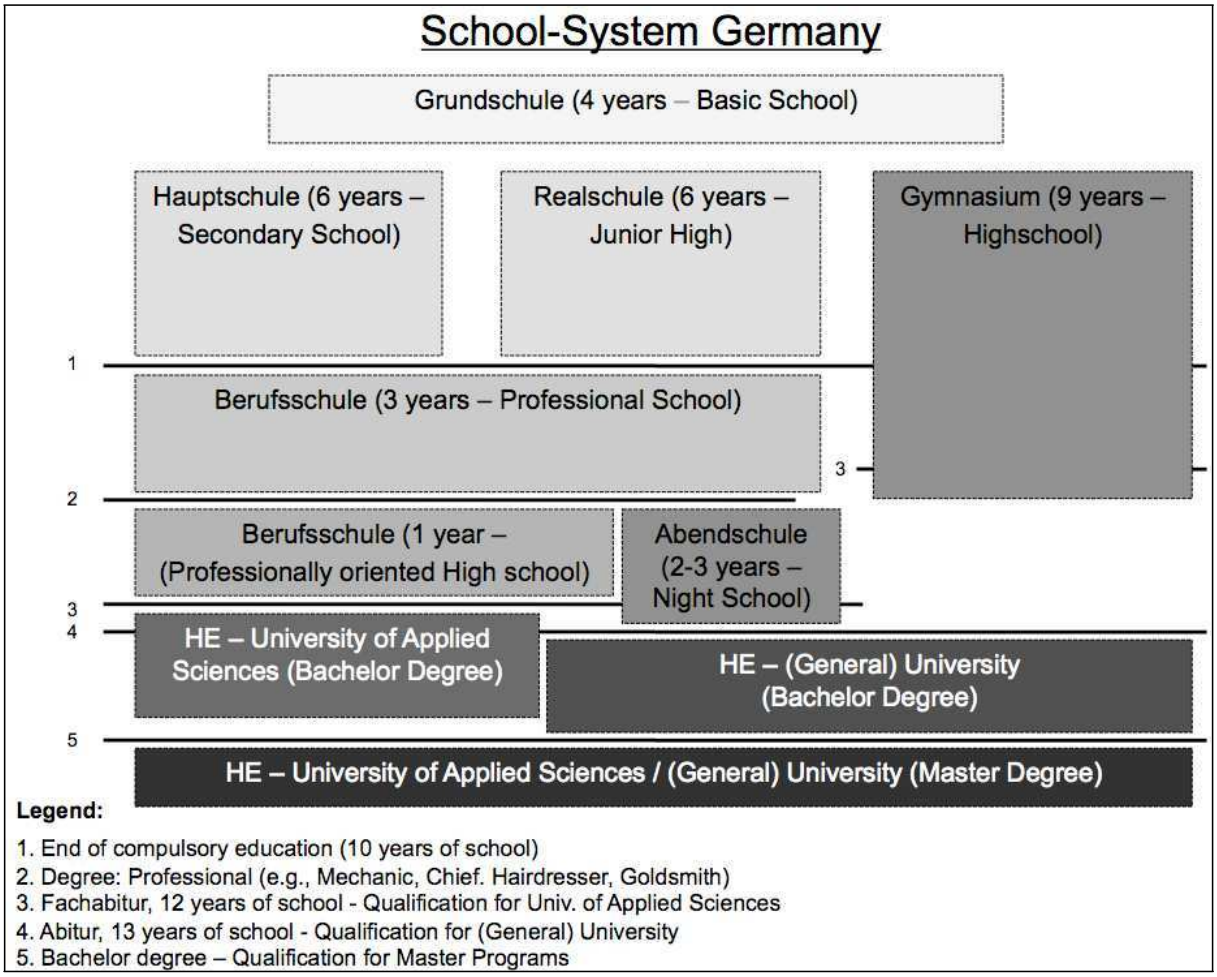

Figure 1: The German Educational System

Notes

1. http://man.merlot.org/research/MAN%20at%20eLA.html
2. http://ocw.mit.edu/index.htm
3. http://cnx.org/
4. http://open-quality.org/
5. http://www.lehrer-online.de/

Bibliographic references

Conole, G., Ehlers, U.D., Mundin, P., Santos, A.I., Connelly, T., Richter, T., Koskinen, T., Kairamo, A.-K., Nozes, J., & Carneiro, R. (2010). Quality and Innovation in Open Educational Practice. In: *Proceedings of the EDEN 2010 Annual Conference*, Valencia.

Daniel, John (2010). Commonwealth of Learning: Welcome & Introductory Remarks. Retrieved September 12, 2010, from http://www.col.org/resources/speeches/2010presentation/Pages/2010-04-28.aspx

Hewlett Foundation (2005). Open Educational Resources Initiative Overview. William and Flora Hewlett Foundation. Retrieved September 12, 2010, from http://www.hewlett.org/uploads/files/HewlettFoundationOER.pdf

OLCOS, Open eLearning Content Observatory Services (2006). Project Handout. Retrieved September 13, 2010, from http://www.olcos.org/cms/upload/docs/Handout_OLCOS.pdf

About the authors

Thomas Richter

Researcher, Faculty of Economics and Business Administration, University of Duisburg-Essen.

Dipl. Inf. Thomas Richter, M.Sc.: After 12 years of production work and practically educating apprentices in the professions 'cook' and 'pastry cook' in Germany, he studied Information Technology (Diploma FH), Technical Journalism and Business Information System (M.Sc.). After his first degree, he worked self-employed as IT-Consultant and author for e-Learning content. 2007 he spent 1 year of research at the KGIT in Seoul, South Korea. Since 2008, he works at the University of Duisburg-Essen. Field of research: e-Learning, Open Educational Resources, Empirical Educational Research, Culture, Learning Culture, Intercultural Learning Scenarios, Student's attitudes in learning processes.

Faculty of Economics and Business Administration
Department: Information Systems for Production and Operations Management
University of Duisburg-Essen
Universitätsstrasse 9, D-45141 Essen, Germany
thomas.richter@icb.uni-due.de

Ulf Daniel Ehlers

Professor for Technology Enhanced Learning, University of Augsburg.

Prof. Dr. Ulf-Daniel Ehlers is professor for technology enhanced learning at the University Augsburg, Germany. Prior he was associated Professor in the Graduate School for Management and Technology of the University of Maryland, USA and a Director of a research group on e-learning at

University of Duisburg-Essen, Germany. He has studied English, Social Sciences and Educational Sciences at the University of Bielefeld where he finished his Ph.D. on “Quality in E-Learning” in 2003. In his habilitation at the University of Duisburg-Essen he developed a model for quality culture in educational organisations. **Ulf is** an internationally recognized researcher and innovator in the area of E-Learning, and is the Vice-president of the *European Foundation for Quality in E-Learning*, and President of the largest German Speaking Association for Media in Science (GMW).

University of Augsburg
Universitätsstr. 2, 86159 Augsburg, Germany
ulf.ehlers@googlemail.com

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

What do academic libraries have to do with Open Educational Resources?

Theme: Long term sustainability of open education projects first steps to start up

R. John Robertson
CETIS (Centre for Educational Technology and Interoperability Standards), Centre for Academic Practice and Learning Enhancement, University of Strathclyde

Abstract
This paper will discuss the possible roles of academic libraries in promoting, supporting, and sustaining institutional Open Educational Resource initiatives. It will note areas in which libraries or librarians have skills and knowledge that intersect with some of the needs of academic staff and students as they use and release OERs. It will also present the results of a brief survey of the views of some OER initiatives on the current and potential role of academic libraries.

Keywords
OER, libraries, UKOER, open education, universities

Recommended citation:
Roberston, R. John (2010). What do academic libraries have to do with Open Educational Resources? Theme: Long term sustainability of open education projects. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4847>

Introduction

Open Education and Open Educational Resource (OER) initiatives looking at the release and use of open educational content are related efforts at different stages of maturity which are attempting to find operating models that will allow them to be both sustainable and scalable. There are a number of possible models which could be developed some, but not all, of which assume a role for universities and related academic institutions. This paper will focus on the current and possible roles of academic libraries in support of the release and use of OERs. As such it assumes some ongoing role for institutions in OER and Open Education initiatives. There are related possibilities for other types of libraries but they are outside the immediate scope of the paper.

Last year JISC and the Higher Education Academy ran the United Kingdom Open Educational Resources programme a major pilot programme to explore different approaches to embedding of the release of OERs and this year a second programme is underway. In the context of my role providing support and guidance to these programmes I have wondered about the possible role of libraries in embedding and sustaining some of the efforts around OERs, what follows is an exploration of possible points of contact between OER initiatives and academic libraries, some very brief illustrations of these connections from the UKOER programme, an initial discussion of the results of survey about this topic, and some thoughts on the possible future development of such connections. Substantive parts of this publication have previously been released on my blog for comment (Robertson, 2010).

Institutions, openness and change

The growth of the Open Access movement is transforming how institutions view, manage, publish, and access their research outputs – irrespective of any local commitment to Open Access. Funding bodies often now that require publications based on publicly funded work are made openly available (University of Nottingham, 2010); often this requirement is fulfilled through the use of an institutional repository. Institutions are also exploring the value of making their research more visible and investigating what other benefits or possibilities arise through managing and making available their research outputs.

In a similar manner the growth of freely available learning materials from institutions around the world is, like Open Access, an opportunity, a challenge, and a potential catalyst for institutional change. It offers the institution an opportunity to showcase their courses to potential students, enhance the reputation and visibility of the university among its peers and the general public, be seen to providing value for any public funding they receive by making knowledge more accessible, and promote a more flexible pattern of learning for enrolled students. They also, however, present challenges as the process of providing OERs is not straightforward and it accelerates the shift from understanding a university as a place where one goes to receive knowledge to understanding a

university as a context for a community of learning in which students construct knowledge and a context for a student experience in which good facilities, pedagogy, and accreditation combine. If a student can access resources from many universities to support their learning, the quality of what a single institution adds to that content is crucial.

Despite occasional protestations that self-archiving should be the norm, academic libraries play a vital role in the Open Access movement and often provide skills, training, advocacy and may manage the required infrastructure. They are playing a role in challenging pricing models for electronic resources and helping explore alternative models of publication through Open Access journals. This is not to say that Open Access is fully mature, nor to say that libraries have whole heartedly embraced it, but rather to make the point that libraries have played a significant role in helping Open Access move from a niche activity carried out by sections of the physics community to a more mainstream and institutionally embedded approach to scholarly publication. Libraries are also beginning to play a role in the emerging world of Open Data and Open Science, but their involvement in the OER movement has thus far been limited, as has their involvement more generally in the management of learning materials.

Open educational resources and libraries

With a primary focus on research materials and textbooks, Libraries often don't have very much to do with the management of teaching materials as such. They may hold syllabi, and past exam papers and may offer materials supporting information literacy and research skills, but they often play a lesser role in the management of lecture notes, presentations, or formative assessment materials. Such materials are often held only by the lecturer, tutor, or department providing the course. Where they are available digitally they are often in virtual learning environments to which the library may not have access. Furthermore learning materials, where they are available, may be poorly integrated into the user's view of library resources (Tony Hirst, 2009). There may be plenty of legitimate historical reasons for this divide but as the range of digitally available materials increases, and in particular as the range and number of OERs increase libraries have an opportunity to capitalise on their already important role in the student's studies, the academic's professional development, and institution's public portfolio.

There are signs that librarians are beginning to engage with the Open Educational movement, most notably an ACRL Forum on the issue at a recent ALA Midwinter. In summarizing the panel's views, Belliston (2009) states:

> "Librarians can help by contributing their own OERs to the commons; screening for, indexing, and archiving quality OERs; using OERs in their own teaching; and participating in discussions leading toward responsible intellectual property policies and useful standards."

This summary highlights some of the key ways in which librarians can begin to be involved, but, perhaps, fails to consider how librarians can engage in the wider issues around the creation of OERs and their use. It interacts with Open Education in a way that parallels (to a degree) how librarians

interact with Open Access, without considering the different challenges educational resources offer and without yet considering the active role librarians can play in the initial description, management, and distribution of OERs, as well as in supporting their use. For example, In CETIS's engagement with many of the institutional projects in Open Educational Resources programme we observed that many are engaging with their university libraries, not only to seek advice about resource description and the application of metadata standards but also to consider the long term role institutional repositories might play in managing these assets and the possible role of the library in the OER production workflow (an observation reflected to some degree by the survey results which follow).

How could libraries support OERs?

Although many academics in the releasing OERs have thus far had success making their learning materials available informally on personal websites or through tools like SlideShare or YouTube, the process is more complex for an institution – especially if it is considering how it might maximise the return on its investment in openness (whether that return be in terms of publicity, goodwill, efficiency, or an improved student experience). It is also not without cost: for example, both MIT and Oxford have taken the approach of developing production workflows around a centralised unit which is responsible for branding and checking rights (and *may* be considering how to offset this cost Parry, 2010).

Whichever way an institution chooses to approach sharing resources, the general failure of a Learning Object economy points to the need to develop less complex, more scalable and sustainable approaches to sharing OERs (Downes, 2002). Approaches to sharing and processes use need to be informed by an understanding of resource description and metadata standards as they apply to the specific tools intended to disseminate the resources – whether that be a proprietary application (iTunesU), a generic search engine, a repository, or some combination of the above. Libraries can fill in parts of this picture – though library advice needs to be tempered with the context of learning materials and current working practices.

As the ACRL panel also outlines OERs become additional resources that subject librarians can reference in supporting students; they are also, however, a new form of resource which students need appropriate information literacy skills to assess (skills such as assessing the quality of the material, its origin, currency, and fit with the student's current learning patterns) and they introduce (or will introduce) a new set of discovery tools for students and staff to be familiar with (such as Jorum – a national learning object repository in the United Kingdom, or aggregator services like OERCommons or DiscoverEd).

To review what has been discussed so far, it is suggested that libraries can offer advice to institutions, academic staff, and students as they engage with OERs in the following areas:

Metadata and resource description
Information management and resource dissemination
Digital or Information literacy (finding and evaluating OERs)
Subject-based guides to finding resources
Managing Intellectual Property Rights and promoting appropriate open licensing

Having set out these possible points of contact between libraries and OER initiatives, it is worth considering the example of digital literacy in some more detail, before outlining briefly the results of a survey.

Digital Literacy

One of the ways in which libraries might be involved with OERs (and more widely in Open Education) would be through extending some of the work they already often do in the provision of information literacy classes to encompass supporting students in selecting and evaluating OERs. This isn't to suggest a new thing called 'OER Literacy' but rather to place the discovery and use of OERs within an existing framework – as the skills needed to find and use OERs draw on a number of recognised skills relating to information literacy, to study skills, and the promotion of self-regulated learning.

The digital literacy skills required for OERs include:

1. Evaluating the resource
    1.1. Where does the resource come from?
    1.2. Who produced it?
    1.3. Does it have use appropriate sources?
    1.4. How current is it?
    1.5. Is it coherent/ self-contained?
    1.6. What cultural context does it assume?
    1.7. What legal jurisdiction does it assume?
    1.8. Is it specific to any given accreditation process?
2. What can I do with resource?
    2.1. Are there any licence restrictions?
    2.2. Is the resource format suitable for adaptation?
3. Resources assumed to use the resource
    3.1. Does it require access to particular digital resources (course readings)?
    3.2. Does it require access to particular software
    3.3. Does it require access to particular tools/ infrastructure?
4. Type of interaction assumed by the resource
    4.1. Does it assume any particular type of interaction (group work?)
    4.2. Does it assume any form of online interaction/ community?
    4.3. Does it assume expert assistance?
    4.4. How does it fit with my patterns of learning?

Some of this information addresses the types of question which heavyweight elearning metadata standards tried to capture and to universally abstract into metadata. Even when implemented properly, the actual use of such standards is often erratic – however, all the careful reflection that went into creating such standards does highlight that there is a need to ask that type of question of a

resource when we go to use it. The burden of understanding is though, not in cataloguing and metadata but rather in the digital literacy skills of the student or lecturer.

It should be noted that there are other skillsets involved as well - OER require more than information literacy to use. Discovering, selecting, and using OERs should, on some level, also consider with the design of materials and required study skills. These 'literacies' are probably covered by study skills courses offered by teaching and learning support services. Consequently supporting the use of OERs becomes an area in which libraries and teaching and learning centres collaborate in supporting students and academic staff (On a related note, the Solstice Centre for Excellence in Teaching and Learning at Edge Hill University has developed an Open Content Literacy Framework for those seeking to release OERs based on the work of the ReForm project: http://www.edgehill.ac.uk/solstice/docs/OpenContentLiteracy.pdf

Investigating library involvement

I've proposed that academic libraries have a role to play in embedding sustainable OER initiatives and I'm planning to explore this more fully in the coming year but, as part of developing this paper and in collaboration with Open.Michigan, I carried out a brief survey this summer targeted at OER projects and initiatives. The anonymised data is available: https://spreadsheets.google.com/ccc?key=0AuN3UUVNPUJ1dEdkY0k0dU9kRG9PMHpLYTBsUGtoRnc&hl=en

Audience

The survey was designed for those involved in OER initiatives and it initially went out to a number of specific email lists, but was subsequently tweeted more widely. One consequence of this was that as time progressed there was a marked increase in the number of incomplete responses; at the time of data analysis there were 37 incompletes for 36 complete (incomplete results excluded from the results that follow) .

The responses were predominantly from the United Kingdom (13) and United States (12) but as illustrated in Figure 1 a broader geographic coverage was achieved. The organisations involved were predominantly from higher education (86%) and included four university libraries. The full range of organisations is shown in Figure 2. The Educational Initiatives noted are Higher Education Academy Subject Centres. The responses from both an Open Access publisher and Company developing software connected to OERs highlight that any discussion of OER initiatives will need to consider a wide range of participants who are contributing to the process of embedding.

53% of respondents were based in libraries and were librarians; there were no responses from non-librarians in libraries or librarians not in libraries. Given the dissemination channels this survey went through this was a higher number of librarians than expected.

In considering the respondents involvement in OER initiatives there was also a good range of types of involvement. Figure 3 shows the results (respondents could choose multiple answers; three

skipped this question). Just under 2/5 of the respondents were involved in project-based OER initiatives (nine of whom were from the UKOER programme), so the results reflect a wider view than purely project-based attitudes.

Viewpoints

The survey considered four further questions to gather information about respondents views; a set of three questions addressing the degree of involvement of libraries and librarians and a more complex grid of potential or actual types of involvement.

In considering how involved libraries are in the release of OERs (Figure 4 below) there is a broad distribution of involvement from leading initiatives to probably not being aware of them. The neutral answer was chosen by the most respondents (10; supporting OER as institutional effort but especially not involved) but 12 respondents indicated active library partnership of some form (and 12 indicated little library support). Allowing for the 2 skips this is a little more than a third of respondents with active library involvement in the release of OERs.

Figure 5 considers the library's role in the use of OERs and Figure 6 considers the role of individual librarians in the use of OERs. Both sets of results are dominated by support for OERs in so much as for other digital resources and in both cases this answer was chosen by around half the respondents. This raises an interesting question – is it enough to support the use of OERs in the same way as other resources or do users need OER specific support – the discussion of digital literacy above has suggested that they might need additional support but the results of this survey suggest this isn't (yet?) happening in practice. One difference between the results for libraries and those for librarians are the secondary choices – there is a lack of engagement with OERs recorded in the library results but more engagement recorded for individual librarians. These results may indicate that the view proposed earlier that libraries don't have much to do with the management of teaching materials has some validity. It also indicates a degree of involvement by individual librarians that could indicate some 'early adopters' and the beginning of a wider involvement in supporting OERs or it may reflect a niche interest – hopefully the former.

The final survey question (aside from comments and feedback) was a grid asking respondents to comment on a number of potential ways in which libraries might be involved in OER initiatives. It asked respondents to identify which of these areas they were working in, which they thought libraries could be involved in, and which they knew of actual library involvement in. As illustrated in Figure 7 the proportions of the results a pattern that might be expected from the previous answers – with much less actual library involvement than possible involvement or areas of work by the responding OER initiative. It should be noted the format (chosen to reduce repetition) caused some confusion- respondents treated the actual and possible columns as mutually exclusive. Looking at the results for possible library involvement there is a clear expectation that libraries could support tagging and metadata, identify and index quality OERs, and more generally support discovery and use of OERs by academic staff and students. Figure 8 is an overview of just the responses about actual library involvement. For any given activity the identified involvement ranges from 2 out of 32 to 10 out of 32 responses. There was most library involvement in the provision of IPR guidance, and least involvement in identifying and indexing quality OERs and in providing guidance about metadata. The lack of library involvement in these two areas fits to an extent with the survey

participants being established OER projects who would have had to put in place ways to address these issues prior to any library involvement. The wider question about a library role in helping with IPR is perhaps a question of sustainability rather than necessity, and may depend on the exisiting university provision for such matters.

Conclusion

There are indentified points of contact between libraries and OER initiatives and ways in which they could collaborate to better support academic staff and students. This paper has sought to sketch out some ideas and report on a preliminary survey exploring the views and practice of OER initiatives in this area. It is clearly only the first stages of any investigation into the roles of libraries and there are some critical questions, outside the scope of this study, around the compatibility of teaching and library cultures and the differences in how teaching materials are found and used that would need to shape that future work. The survey results as they stand, however, demonstrate that there is some library involvement in OER initiatives and common areas of interest that a greater role for libraries is one route that could be explored in making OER initiatives more sustainable.

Figures

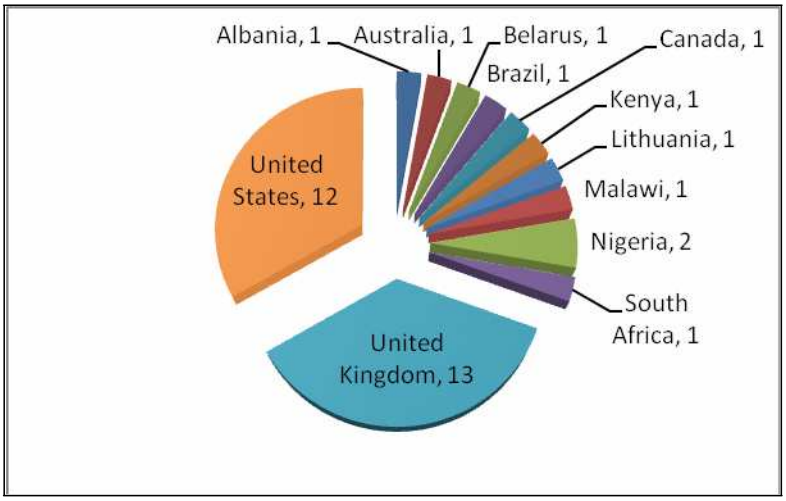

Figure 1 Survey respondents by country

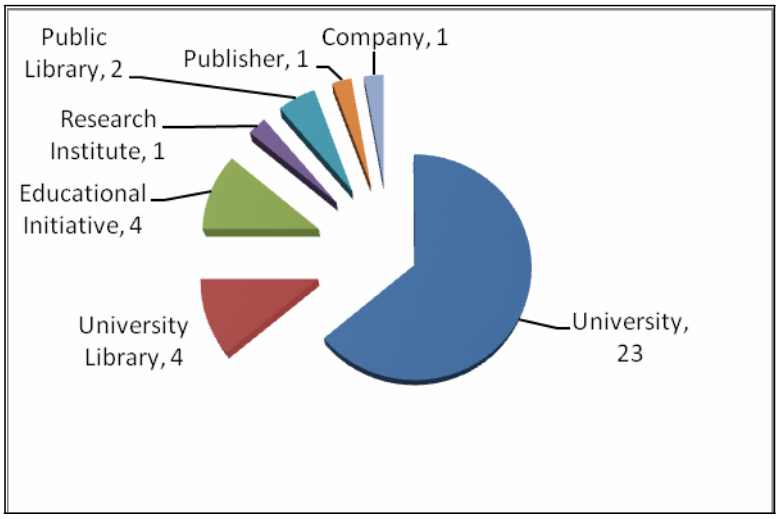

Figure 2 Survey respondents by organisation type

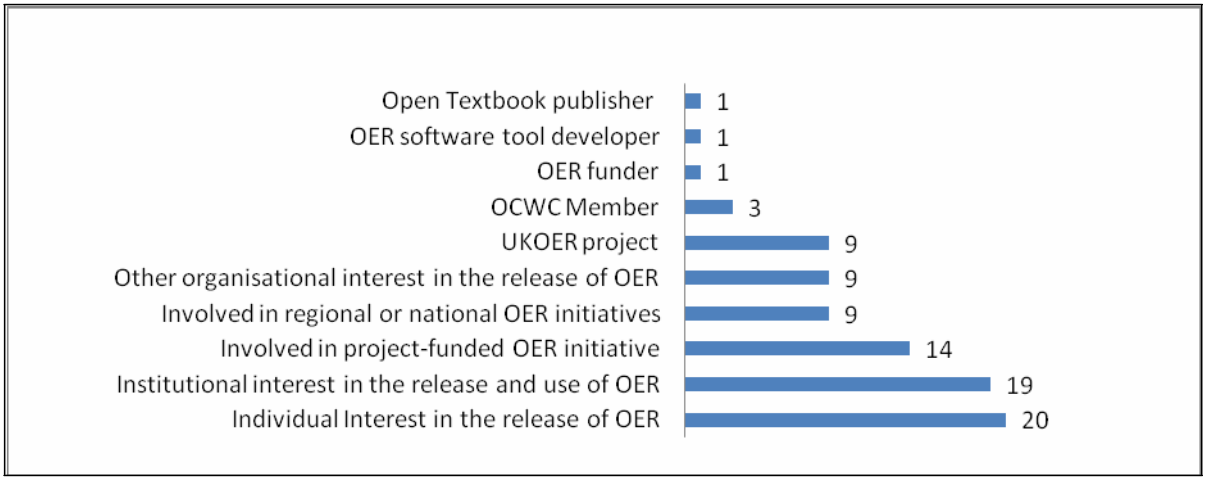

Figure 3 Types of Involvement in OER Initiatives

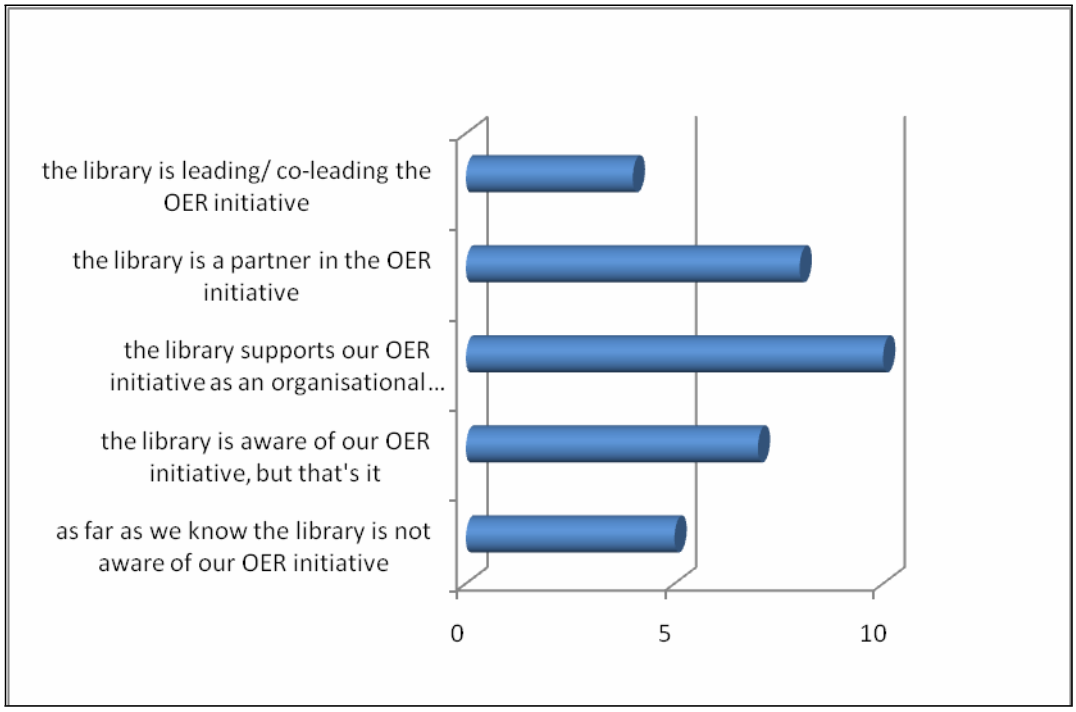

Figure 4 involvement of the library in OER release

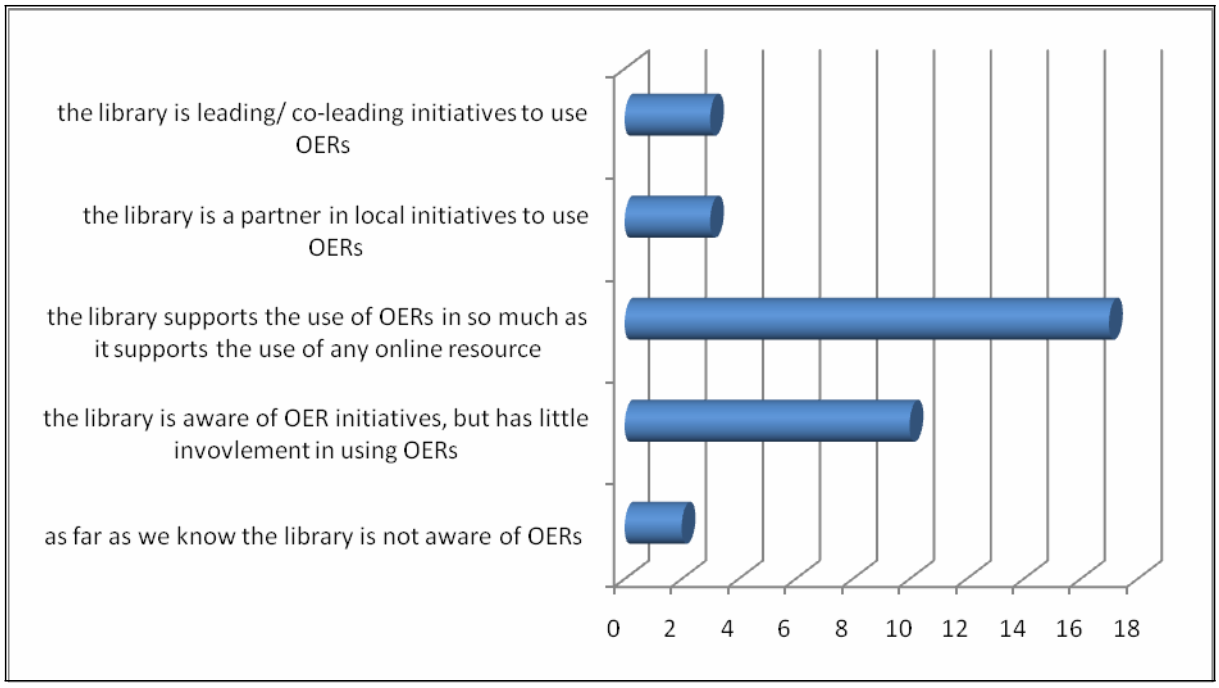

Figure 5 Involvement of the library in OER use

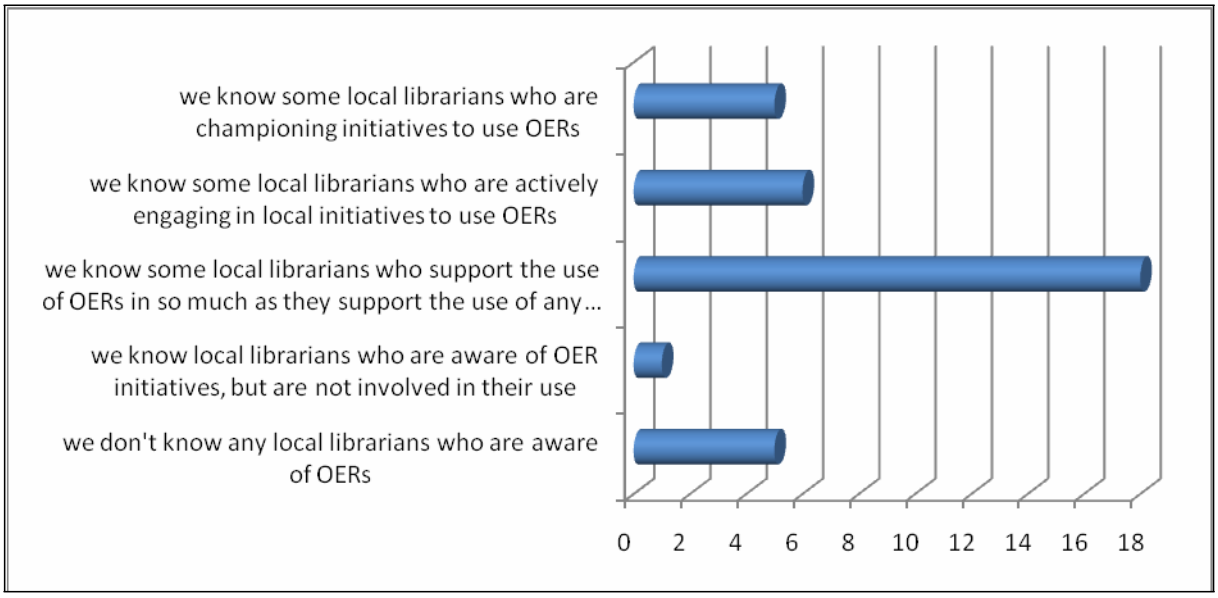

Figure 6 Involvement of individual librarians in the use of OERs

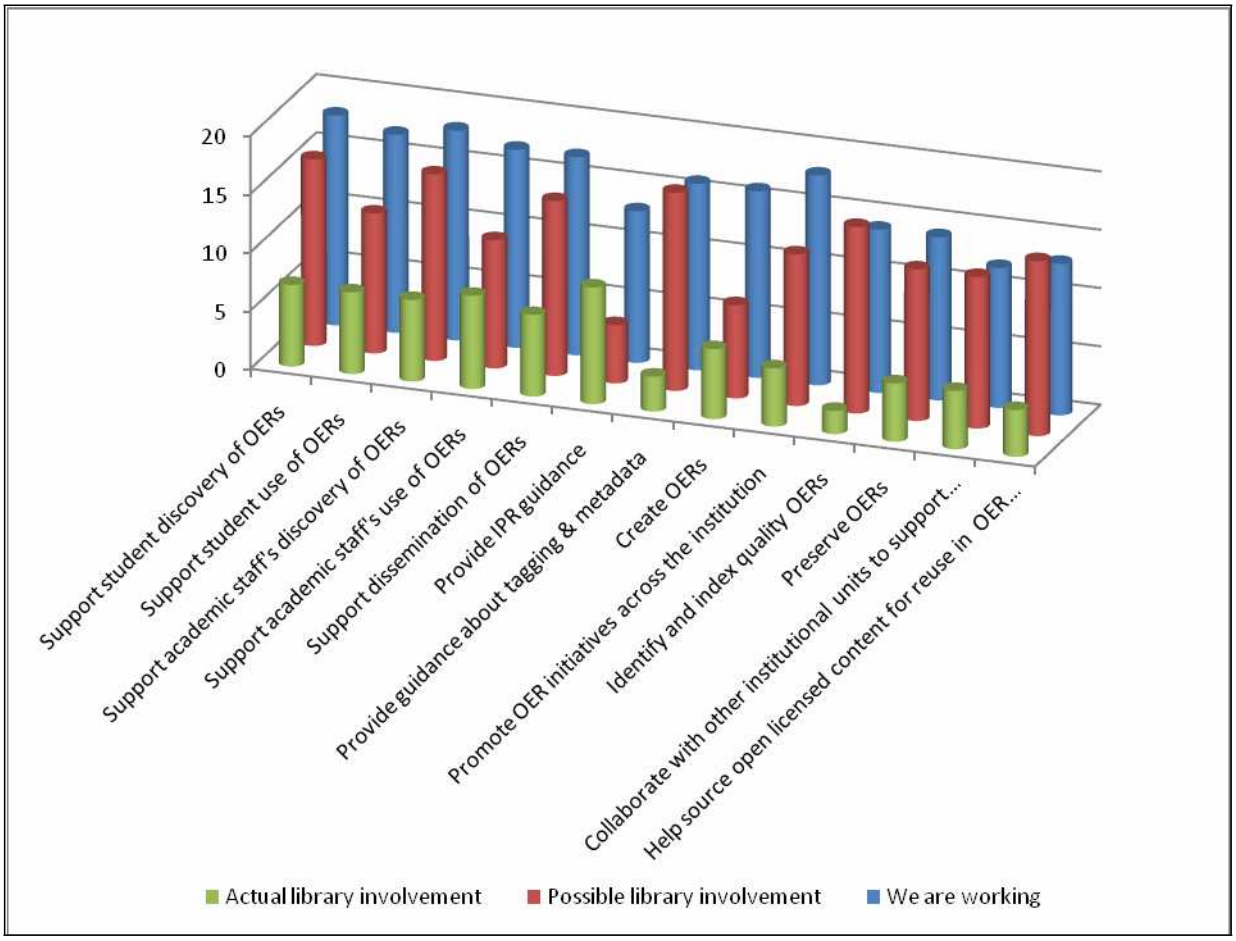

Figure 7 Library roles

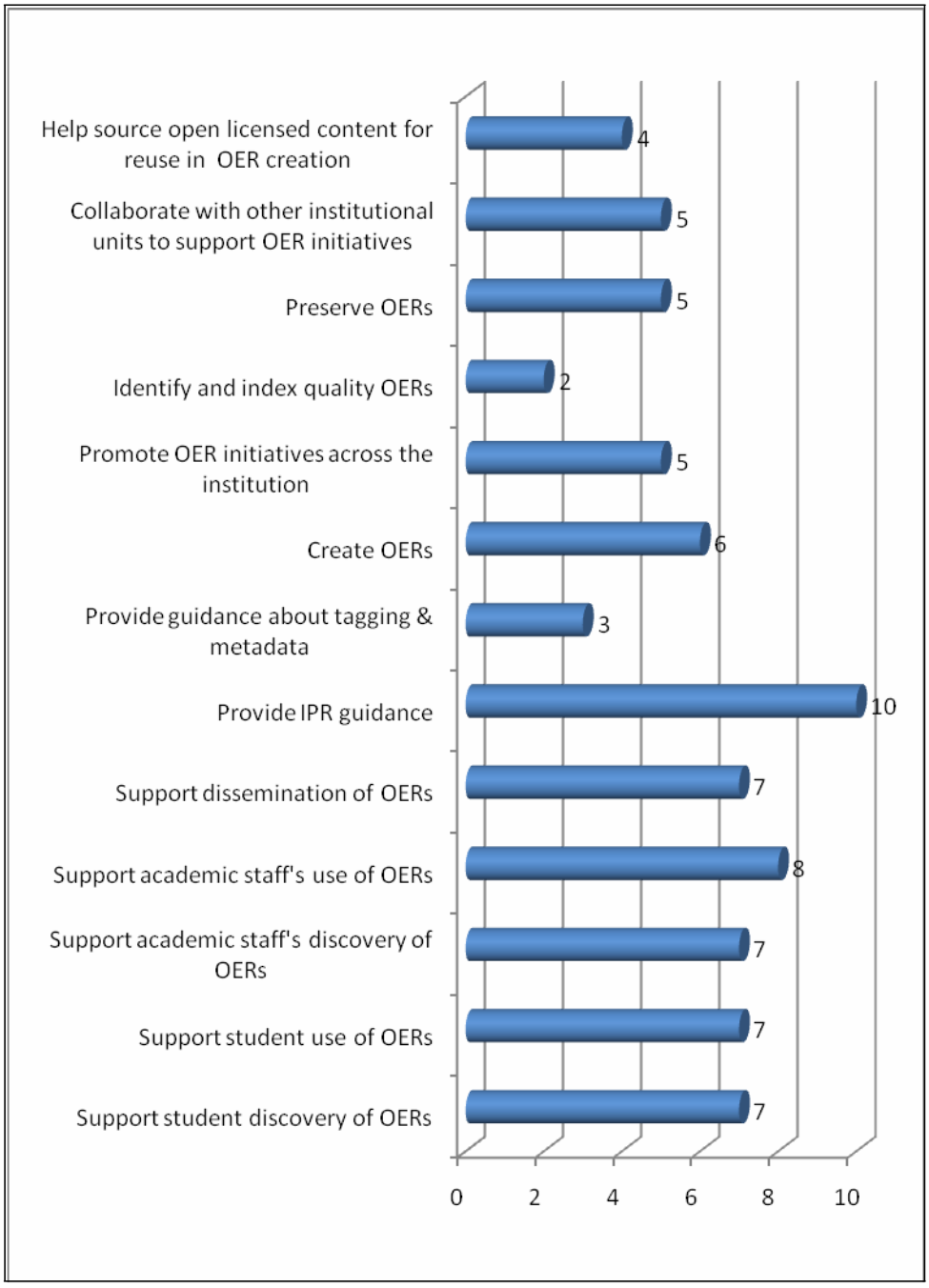

Figure 8 Actual library involvement

Bibliographic references

Belliston, C. Jeffrey. Open Educational Resources: Creating the instruction commons C&RL News, May 2009 Vol. 70, No. 5 http://tinyurl.com/yhoezak

Downes, Stephen. (2002) The Learning Object Economy http://www.slideshare.net/Downes/the-learning-object-economy

Hirst, Tony. (2009) ouseful.info, the blog 'Open Educational Resources and the Library Website' August 10th 2009 http://tinyurl.com/yfkzq8g

Parry, Marc. (2010) "MIT Looks to Make Money Online, but Not With an OpenCourseWare Paywall" *The Chronicle of Higher Education* http://chronicle.com/blogPost/MIT-Looks-to-Make-Money/26958/

Robertson, R. John. (2010) Libraries, Institutions, and Open Educational Resources: Possible Connections? http://blogs.cetis.ac.uk/johnr/2010/03/17/librariesandoers/

Robertson, R. John. (2010) OER Literacies? http://blogs.cetis.ac.uk/johnr/2010/03/18/oer-literacies/

University of Nottingham. (2010) Sherpa Juliet – Research Funders Open Access Policies http://www.sherpa.ac.uk/juliet/

About the author

R. John Robertson

CETIS (Centre for Educational Technology and Interoperability Standards), Centre for Academic Practice and Learning Enhancement, University of Strathclyde

John works for CETIS (Centre for Educational Technology and Interoperability Standards) - one of the Innovation Support Centres funded by JISC (Joint Information Systems Committee) to: represent Further and Higher Education in the development of relevant standards and specifications, nurture relevant developer communities and innovation, and provide guidance and support for JISC development programmes. John currently supports JISC's work in Open Educational Resources. A librarian by training, his professional background is in development and support projects around the management of digital assets, repositories, digital libraries, and metadata; he also has an ongoing interest in the role of community and personal formation in education.

University of Strathclyde
50 George Street
G1 1QE
United Kingdom
robert.robertson@strath.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/
Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

The FaceUOC Project
An Open Social Learning experience by the Open University of Catalonia

Ana Mª Rodera,* Gemma Aguado, Eva Patricia Gil,*** Julià Minguillón****

***** Research training grantholder, PhD in Society of Information and Knowledge, UOC

****** Research technician, Area of Educational Technology, UOC

******* Area of Educational Technology, UOC

******** IT, Multimedia and Communications, UOC

Abstract

The possibilities and expansion of the use of Web 2.0 has opened up a world of possibilities in online learning. In spite of the integration of these tools in education major changes are required in the educational design of instructional processes.

This paper presents an educational experience conducted by the Open University of Catalonia using the social network Facebook for the purpose of testing a learning model that uses a participation and collaboration methodology among users based on the use of open educational resources.

- The aim of the experience is to test an Open Social Learning (OSL) model, understood to be a virtual learning environment open to the Internet community, based on the use of open resources and on a methodology focused on the participation and collaboration of users in the construction of knowledge.

- The topic chosen for this experience in Facebook was 2.0 Journeys: online tools and resources. The objective of this 5 weeks course was to provide students with resources for managing the various textual, photographic, audiovisual and multimedia materials resulting from a journey.

The FaceUOC Project: An Open Social Learning experience by the Open University of Catalonia, Ana Mª Rodera, Gemma Aguado, Eva Patricia Gil et al. ©

- The most important changes in the design and development of a course based on OSL are the role of the teacher, the role of the student, the type of content and the methodology:

- The teacher mixes with the participants, guiding them and offering the benefit of his/her experience and knowledge.

- Students learn through their participation and collaboration with a mixed group of users.

- The content is open and editable under different types of license that specify the level of accessibility.

- The methodology of the course was based on the creation of a learning community able to self-manage its learning process. For this a facilitator was needed and also a central activity was established for people to participate and contribute in the community.

- We used an ethnographic methodology and also questionnaires to students in order to acquire results regarding the quality of this type of learning experience.

- Some of the data obtained raised questions to consider for future designs of educational situations based on OSL:

- Difficulties in breaking the facilitator-centred structure

- Change in the time required to adapt to the system and to achieve the objectives

- Lack of commitment with free courses

- The trend to return to traditional ways of learning

- Accreditation

- This experience has taught all of us that education can happen any time and in any place but not in any way.

Keywords
e-learning, higher education, Open Social Learning, social networks, Facebook action

---

Recommended citation:
Rodera, Ana Mª; Aguado, Gemma; Gil, Eva Patricia et al.(2010). The FaceUOC Project: An Open Social Learning experience by the Open University of Catalonia. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4848>

---

1. Introduction

This paper presents the results from the analysis of an Open Social Learning experience carried out by the Open University of Catalonia (UOC) on a social network. Based on the formulation of our study approach, focusing on discovering how to use Facebook as an educational platform that favours the development of subjects for university studies, our educational offer was based on a flexible, unguided and collaborative instructional design aimed at promoting an expanded knowledge.

To analyse the experience, qualitative and quantitative information has been gathered, on one hand using an ethnographic methodology, from contributions carried out during the development of the learning action on the social network forum and on another, using an on-line questionnaire regarding the perceptions of participants once the experience had concluded.

The conclusions and prospective provide a series of recommendations to be considered when developing future educational experiences for these types of virtual-social-informal contexts.

2. Open Social Learning

Since the proliferation of 2.0 tools there has been a significant increase in the number of learning actions aimed at the social construction of knowledge (Siemens, 2004), through the participation, interaction and use of the collective intelligence (Surowiecki, 2004) of internet users, particularly on social networks, leading to the appearance of the "Open Social Learning (OSL)" concept. Its progressive exaltation has caused a great stir in the foundations of learning theories, creating a debate as to the suitability of open social applications for teaching and learning.

Facebook is a "third place" for learning (Oldenburg, 1989), in other words, a space that favours social relations and is therefore not a regulated or controlled environment. Taking into account that between 70% and 90% (Cross, 2009) of learning by people occurs in informal environments, Facebook could be considered a potential link for distributed production of knowledge on the network, proving that humans are becoming more and more capable of learning autonomously, outside the institutions traditionally related to formal learning (Arina, 2008). In this sense, e-learning 2.0 is social, it promotes dynamic, personal and self-managed learning. Downes (2008) has identified three aspects of this approach: the reaction to the commercialisation of learning, the DIY (do-it-yourself) attitude and thinking and learning for oneself. Other theories close to the OSL concept are edupunk (Lamb, 2009) and edupop (Quintana and Vidal, 2008).

Learning can occur at any time and in any place, but not in any way. It must be subject to criteria that assure its quality. This maxim is the essence of expanded education and is also consolidated as the basis on which the experience described below has been built.

3. The experience

A 5-week learning experience was designed, on the subject: “2.0 Journeys: on-line tools and resources”, using two Facebook groups as learning spaces, one in Spanish and one in Catalan. The common objective was to provide the student with a set of useful tools and resources for managing the textual, photographic, audiovisual and multimedia materials resulting from the journey.

The courses were provided for free, could be freely accessed and had a subject matter related to the experiences of 2.0 internet users, using educational content with a Creative Commons B (CC BY) attribution licence and were open to all Facebook users.

The teaching methodology was completely open, developed based on opening and facilitating forums, opened either by the lecturer or by the students, on different subjects, relating to the content of the course that arose during discussion. Therefore, participants were encourage to take the role of “information managers", “reporters” and “journalists”, becoming chroniclers of their own journey and generating messages and products of a huge variety and wealth.

Certification for the course was carried out in two ways. On one hand, a gift was sent on Facebook to all of the course participants, created based on one of the platform’s applications and on the other, through a personal email informing of the person's participation in the pilot educational programme developed by the UOC on Facebook.

4. Analysis

In order to assess the experience, 3 types of data were used. First of all the quantitative data obtained from the participation on the course. Secondly the evaluative data obtained from the ethnographic study and thirdly that obtained from the end evaluation questionnaire completed by the participants. Following are the results obtained from the different data gathered.

4.1. Quantitative participation data

A total of 89 pre-enrolments were received, all of which were accepted, with 52 participants on the Spanish course and 37 on the Catalan course, figures which were considered more than reasonable for a pilot experience.

With regard to the participation on the forums, the average participation by students on forums created by the lecturer was 8.9, whilst the average on all of the forums was 7.7. It is worth mentioning that the forums created by the lecturer received, on average, more comments and participants than the forums created by the students. Generally there were more comments and participants on the first forums, given that they were open for longer.

4.2. Ethnographic study

The first step in the ethnographic analysis of the experience consisted in the preparation of observation categories for exhaustively gathering the events relevant to the course. The categories created were the content of the different forums, the motive for contributing and the social learning or peer-to-peer.

In the case of content, this included aspects such as the emotional tone of the contribution, whether personal information was given or information relating to the forum subject, questions asked, etc. With regard to the reason for participating, this included questions such as the suitability of the contribution to the forums' subject, contributions due to a prior contribution by the lecturer or a student, discussions, contributions to express an emotion, etc. Finally, the social learning or peer-to-peer included categories such as the posing of queries or questions, the resolution of queries by other students, exchange of opinions, critical comments and opinions, etc.

In general, the content provided on the forums was informative. Despite being an open space, contributions unrelated to the course subject were not made. With regard to the emotional tone of the content, overall this was neutral, as what was communicated on the forums was information regarding the course's actual objectives.

In light of the analysis made, it is clear that the main reason for contributions from students was to respond to the subject opened by the lecturer. Even on a forum created by a student, half way through the lecturer intervened and subsequent contributions by students were in response to the lecturer.

In the contributions by students, explicit and implicit elements that denote peer-to-peer (P2P) learning were observed, either: to achieve objectives proposed based on queries resolved between various students, to provide links to help explain something or to inform about something relating to the forum subject, to contribute new information relating to the subject under discussion, or to display critical opinions of some webs 2.0.

5. Results of the end questionnaire

Following are some of the data obtained from the end questionnaire completed by participants on the Facebook course.

45% of participants on the course felt that the semi-direct methodology adopted for the experience, where the lecturer acts as guide/advisor during the teaching-learning process based on contributions to the different discussion forums, facilitated the acquisition and understanding of the actual course content.

This relatively open methodology is positively valued by 73% of those interviewed, who also point out the opportunity that it gives to favouring participation (90%). 48% of participants on the Spanish course who completed the questionnaire confirmed that the dynamics are optimal for developing educational experiences online on social networks.

91% of participants on the Spanish course stated that on one hand the activities promoted on the forums were relevant to achieving the end objectives of the course and on the other, that these activities were entertaining. Only 55% of those on the Catalan course however, mentioned the

relevancy of the activities to the established objectives and 56% qualified the proposed tasks as entertaining.

50% of the survey participants mentioned that whenever they asked for help, either from their colleagues or from the course lecturer, they were given it. Also, 61% say they responded to requests for help posed by other colleagues.

91% of the students on the Spanish course and 66% of the students on the Catalan course say that they learned from reading the messages from other course participants and from their participation on open discussion forums.

With regard to the role of lecturer, 63% of participants state that it was useful or very useful and that he/she motivated them. The help provided by the lecturer was extremely useful according to 89% of the survey. 93% of those interviewed thought that the role of lecturer or expert is essential when approaching these educational initiatives on open learning environments.

The Facebook application completely favoured participation according to 70% of the students. It is worth noting that 10% of participants completely disagreed with this statement. The use of Facebook as a learning platform is considered relevant or very relevant by 64% of those interviewed, with participants on both courses noting the ease of access from the individual profile established on the tool and the motivation towards learning resulting from the intrinsic characteristics of the actual tool.

39% of participants interviewed have completely changed their point of view as to how to use Facebook, noting the emergence of the use of this social network for learning purposes. This percentage contrasts with 15% of participants that have altered their opinion in this regard and who continue to use Facebook with the aim of principally promoting their social relations.

Finally, the participants commented that their expectations were met in 53% of cases and the average grade awarded the course is between 8 and 10 on behalf of 80% of participants. The most notable aspects are: subject matter, materials and colleagues, materials and activities. The least valued aspect mentioned was the Facebook environment for educational purposes and the methodology.

6. Conclusions and prospective

Based on the interpretation of the data obtained from the questionnaire sent to the participants on both courses and of the ethnographic analysis, we have established the following series of conclusions and recommendations to guide the design of future teaching-learning actions making use of the social network, Facebook.

> A minimum technological alphabetisation is required by the agents involved in the teaching-learning proposal. A questionnaire prior to carrying out the “course”, that enables the level of knowledge and command of the social network tools to be used to be verified, would be enormously useful.
>
> The 2.0 platform must be at the service of the learning action, in other words, its educational value must prevail over its merely technological value. The aim is to educate using 2.0 technology.

The use of a more open methodology than normal would create a certain sensation in some participants of feeling lost. Therefore, in the instructional design process we should favour the gradual disappearance of a more guiding educational model towards a more participative one.

The teaching-learning activities will aim to promote the application of the learning acquired in the most entertaining [1] way possible. What's more, the so-called learning based on experience or "learning by doing" will be promoted, giving a special leading role to cooperative work and to the personalisation of the learning products.

The selection of one or more experts in the subject matter to be developed is a fundamental element for assuring the success of our educational experience. These experts will not act as lecturers but as guides or facilitators of the acquisition of learning.

The free character of the educational proposal developed on the social networks forces the following in participants: their intrinsic motivation, promotion of their commitment and of their loyalty, their personal involvement, their willingness to learn, their desire to help and share knowledge and their active participation with the aim of obtaining optimum results and educational experience.

The materials available must be of quality, be up-to-date and available on the network under criteria of a Creative Commons licence that permits its (re)use and re-elaboration freely and for free.

It is essential that the educational action designed should establish a flexible schedule, taking into consideration the time, personal and professional limitations of the participants.

An initial period of familiarisation with the course, its methodology, its participants, its operation, the platform and with the proposed objectives must be established.

The choice of Facebook as a platform for promoting knowledge presents a series of limitations that must also be considered in the instructional design.

It is important to end by pointing out the limiting character of the study described in this paper, whose intention is no more than a qualitative approach to the new modes of informal learning on the new social networks, with no erroneous objective of extracting generalised conclusions. However, some key questions have been noted that enable the design of new experiences and studies that delve more in-depth into the concept of open social learning.

Figures

Spanish course	Catalan course
52 enrolments	37 enrolments
6 forums opened by the lecturer	6 forums opened by the lecturer
3 forums openend by the students	1 forum openend by the students
Total enrolments 89	

Fig 1. Data regarding participants and forums on the UOC's Facebook courses

Bibliographic references

Arina, T. (2008). *Serendipity 2.0. Missing the third place of learning*. Available at http://www.slideshare.net/infe/serendipity-20-missing-third-places-of-learning

Cross, J. (2006). *Informal Learning: Rediscovering the Natural Pathways That Inspire Innovation and Performance*. San Francisco: Pfeiffer.

Downes, S. (2008). *Introducing edupunk.* Available at http://www.downes.ca/cgi-bin/page.cgi?post=44760

Groom, J.(2008): *Edupunk*. . Available at http://edupunk.org/

Oldenburg, R.(1989). *The great good place.* New York: Paragon House

Quintana, E. and Vidal, D. (2008). *Manifiesto Edupop*. Avaliable at http://www.nodosele.com/blog/2008/07/30/edupop-manifesto/

Siemens, G. (2004) Connectivism. *A learning theory for de Digital Age*. Available at http://www.elearnspace.org/Articles/connectivism.htm

Surowiecki, J. (2004). *The Wisdom of Crowds*. New York: Anchor Books.

About the authors

Ana Mª Rodera

Research training grantholder
PhD in Society of Information and Knowledge, UOC

Graduate of Educational Psychology and holder of a teaching diploma, specialising in Physical Education. Diploma in Higher Education on the Physical Education and Sport programme: education and professional development. Master's degree in Application of New Technologies in Education. Research interest focusing on teaching- learning processes provided using web 2.0.

Universitat Oberta de Catalunya
Roc Boronat 117 (MediaTIC)
arodera@uoc.edu

Gemma Aguado

Research technician
Area of Educational Technology, UOC

Graduate of Educational Psychology and holder of a teaching diploma, specialising in Physical Education. Diploma in Higher Education on the Physical Education and Sport programme: education and professional development. Master's degree in Application of New Technologies in Education. Research interest focusing on teaching- learning processes provided using web 2.0.

Universitat Oberta de Catalunya
Avinguda Tibidabo 39-43 (Tibidabo 2)
gaguado@uoc.edu

Eva Patricia Gil

Area of Educational Technology, UOC

Graduated in Psychology from the Universitat Autònoma de Barcelona at 1996. She obtained her PhD in Social Psychology at the same university in 2004. From 2001, she have been teaching at the Universitat Oberta de Catalunya and works also as a senior researcher at the UOC's Learning Technologies Office, where she lead research and innovation projects in the area of User Experience.

Universitat Oberta de Catalunya
Avinguda Tibidabo 45-47 (Tibidabo 3)
egilrod@uoc.edu

Julià Minguillón
IT, Multimedia and Communications, UOC

PhD in Computer Science from the Universitat Autònoma de Barcelona and professor of Computer Studies at multimedia and Telecommunications Department of the Universitat Oberta de Catalunya. Academic Director of the UNESCO Chair in e-Learning of the UOC. His research interests include analysis of the use of open repositories of learning objects for formal, non formal and informal.

Universitat Oberta de Catalunya
Rambla Poblenou, 156 (Edifici 22@)
jminguillona@uoc.edu

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

The role of mentoring in facilitating the process of repurposing OER

Andreia Inamorato dos Santos,* Alexandra Okada*
***Research Associates at OLnet (The Open University)

Abstract
This paper presents the initial data analysis of a research that is work in progress. It discusses the role of mentoring and peer support in facilitating the process of repurposing open educational resources (OER). It also reports on the lessons so far learned from the analysis of two distinct but related case studies on working with learners to use and disseminate OER.

Keywords
OER, open educational resources, OER reuse, mentoring, peer mentoring, e-mentoring, collaborative learning, repurposing OER, adapting open content, teaching with OER

Recommended citation:
Santos, Andreia Inamorato dos; Okada, Alexandra (2010). The role of mentoring in facilitating the process of repurposing OER. In *Open Ed 2010 Proceedings* . Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].<http://hdl.handle.net/10609/5121>

1. Introduction

This paper presents the initial data analysis of a research that is work in progress. It discusses the role of mentoring and peer support in facilitating the process of repurposing open educational resources (OER). It also reports on the lessons so far learned from the analysis of two distinct but related case studies on working with learners to use and disseminate OER.

The first case study is based on the 2009 presentation of the distance learning Masters' course of the Institute of Educational Technology of the Open University UK (from now on OU) entitled "Technology Enhanced Learning: Practices and Debates". In this course the registered students were guided through the repurposing of content within the OER repository of the OU, OpenLearn, as part of their course activities. The aim was to provide the students with substantial information about and knowledge of finding, using and repurposing OER.

The second case study relates to the activities of the online community COLEARN, an initiative of the Knowledge Media Institute of the OU which started in 2006. COLEARN is an online community hosted within the OpenLearn platform, bringing together researchers and practitioners from Brazil, Portugal and Spain mostly. The aim of COLEARN is to offer a community-supported environment in which research and ideas about the use of collaborative technologies for learning can be shared. All the activities in COLEARN are available to the world as OER, as well as all the resources shared the by participants.

Mentoring in these two cases happen in different ways. In the first case we term it 'formal mentoring' because the mentoring is part of the course activities of registered students in the course. The students are guided step by step on how to find OER, assess its relevance and how to make use of web 2.0 technologies to modify the content to fit specific purposes. In particular, they are prompted to use an *in situ editing* tool offered by OpenLearn to modify and re-publish content. The mentoring in this case is offered through the task design of the course material and through the tutoring available.

In the case of COLEARN, the mentoring process happens through peer and tutor support from the community to the community. This is why we term it 'informal mentoring', although at a times the user performing the mentor's role is a tutor of another learning setting (e.g. a tutor associated with a higher education institution). By means of pre-booked learning sessions (e.g. brainstorming sessions based on a web-videoconference tool such as Flashmeeting[1]), workshops and discussion forums the participants of this community get substantial support and guidance on how to use OER and technologies that facilitate OER repurposing.

By analysing the activities of the mentors and participants in the two case studies, we aim to explore how both forms of mentoring seem to address the needs of the practitioners/students in terms of learning how to work with OER.

2. Formal & Informal Mentoring and Learning Using OER

In recent years several researches have been focusing on adult education, continued professional development and lifelong learning. They have been raising important issues around the use of technology to support informal, non-formal or self-directed learning. However, most work on development and evaluation of online tools has been done in higher education, mainly in formal education contexts and there is still not enough evidence of how to use technology effectively outside this context (Thorpe, 1999). How could technology be used to facilitate online informal learning? What is the role of mentoring in this context? With the emergence of communities of practice and social networks, one of the greatest challenges is to understand what factors influence informal learning and participation of active learners in these voluntary contexts Gray (2004).

Some scholars (Livingstone, 2001; McGivney, 1999, Jeffs and Smith, 1990) define informal learning as any activity outside the pre-established curricula which involves the pursuit of understanding knowledge or skill whose content and process are determined by the learners, individuals or groups who choose to engage in it. Jeffs and Smith (1990) emphasize that while formal education is curriculum-driven, informal education is largely driven by conversation. Leadbeater (2000) points out the importance of informal learning going beyond the traditional education, by focusing on developing skills, not only literacy, numeracy, creativity and collaborative work; but also the ability and yearning to carry on learning. Different contexts should be used to apply knowledge in order to solve problems and add value to people's lives; and in this sense, we included also online environments.

Eraut (2000:12), however, argues that it is not easy to investigate non-formal learning because the outcomes are difficult to detect, people are unaccustomed to talking about their learning and it is hard for them recognize non-formal learning contexts. In order to understand the levels of intention implicit and explicit in the process of learning, he describes a typology of non-formal learning based on three categories: implicit learning, reactive learning and deliberative learning.

> *Implicit learning* refers to "the acquisition of knowledge independently of conscious attempts to learn and the absence of explicit knowledge about what was learned' (Reber 1993 quoted by Eraut 2000: 12);
>
> *Reactive learning* refers to spontaneous and unplanned situations where the learning is explicit and occurs in response to current situations;
>
> *Deliberative learning* is when the level of intentionality is more explicit, and learning is more reflective, systematic and planned.

Mentoring is considered an important strategy in informal learning scenarios that combine the traditional mentoring with collaborative communities of practice. This type of mentoring is often called 'e-mentoring', but for the purpose of this paper we refer to it as simply *mentoring*. Mentoring is rapidly becoming a learning method of choice, especially in virtual learning environments and social networks. With time becoming a scarce commodity, mentoring through diverse interfaces such as e-mail, Internet chat rooms, electronic bulletin boards, graphical environments for mapping information, web videoconferencing or instant messaging systems provide opportunities for virtual

meetings when face-to-face sessions may not be possible (Rothwell, Jackson, Knight, & Lindholm, 2005).

Brown and Lent (2005) highlight that mentors can be academics, professionals, older peers, or volunteers from the community who can provide guidance and support during the process of learning. Rothwell, Jackson, Knight, & Lindholm (2005) point out the following list of the roles a mentor must perform in an effective mentoring relationship:

> Facilitating and fostering the development of skills through teaching, counselling, and guidance;
>
> Offering technical support and suggestions of diverse sources of relevant information;
>
> Coaching via comments, support, encouragement, and even criticism about the skills, talents, behaviour, and career;
>
> Counselling with advice on how to confront difficult situations, ways to advance, and approaches to improving skills.

3. Case study 1: *In situ* editing in OpenLearn

In this paper we look at the week 10b of the 2009 presentation of the Open University master's course 'Technology Enhanced Learning: practices and debates' (course code H800). This course is a compulsory 60-point course in the masters in open and distance education program (MAODE) of the Open University, and is offered over a period of 9 months. In week 10b of the course the students were introduced to the concept of open educational resources. They were asked to explore the websites of a given three OER initiatives worldwide, and also to perform some editing in existing courses offered in the LabSpace of the Open University OER initiative, *OpenLearn* (labspace.open.ac.uk). There were about 100 students registered in this course in 2009, who were divided into seven different tutor groups[2]. So far we have analysed the data of three out of the six tutor groups who were carried out in the 2009 presentation of the course. These correspond to an average of 20 students out of 100.

The *in situ* editing activity took place in the LabSpace environment of the OpenLearn. This is an experimental area in which users and learners can 'play' with the resources available in the website, and modify them live in the Moodle environment of OpenLearn by using the *in situ* editing tool.

The students were asked to repurpose a section of a course of their own choice in the LabSpace. The tutors of each tutor group opened a discussion forum in which, according to the task design of the activity, the learners were expected to discuss their experiences in repurposing the content. It is in these discussions forums that we carried out our analysis, aiming to identify how mentoring takes place.

Overall, 2 trends were identified in the forum messages:

> The learners considered the experience of repurposing daunting but worthwhile;
>
> The learners found it challenging to get used to the idea of repurposing someone else's work, particularly when it was already considered high-quality learning material;

Examples of how these trends appear on the forum messages follow below:

> […] The idea of redesigning something offered by OU is a little daunting, even if they do have publishing/editing control. I'll probably limit myself to some key skills modules where I can do less damage.
>
> H800 learner A

> Hi A,
>
> You cannot actually do any damage because you work on a copy of the original.
> Regards, B.

And in response learner C writes:

> Hi A and B,
>
> You may not do damage to the original but it is still daunting all the same. I think most of us have respect for other people's text and feel quite shy to meddle with it. Perhaps a younger generation will feel less inhibited?
>
> C
>
> H800 learner C

The examples above illustrate the concern and fear of repurposing of most students in the three tutor groups analysed. What interests us the most for the purpose of this paper, however, is how the students mentor each other in this repurposing process and what role the tutor plays in it.

In all three tutor groups the tutors did not take part in most of the discussions and very occasionally came in with a comment. The learners themselves mostly did the mentoring, in a process that is commonly known as 'peer-mentoring'. The actual course material also had some guidance to learners on how to repurpose material in the LabSpace using the *in situ* editing tool, and presented screen shots step by step, so the need for the tutors' intervention was reduced to a minimum.

The mentoring was initially considered 'formal' because it was expected to be a task performed mostly by the tutor (alongside the guidance of the course material), and the H800 course is a course that provides accreditation in a formal learning environment. However, as the course goes by, it appears that the guidance provided by the course material on how to repurpose using the *in situ* editing tool and by the 'web guide' of the website were enough to allow the learners to do the work themselves, and afterwards discuss their successes and frustrations. The role of the tutor in mentoring was therefore automatically reduced to a minimum. As a result, one may suggest that, in the context of this case study: a) formal mentoring becomes informal in the sense that it comes mostly from peer-to-peer and happens out of a *discussion forum etiquette* in which learners respond

to and encourage each other in the learning process; b) web guidance such as videos and 'how to sections', alongside step-by-step written guides and screen shots seem to be essential elements in making the repurposing process happen. The learners, however, also support each other in the use of the *in situ* editing tool and of other websites that they consider relevant for the task, by means of messages exchange in the discussion forum of the course.

Out of the four roles of mentors described by Rothwell, Jackson, Knight, & Lindholm (2005) presented in section two of this paper, the students perform the four of them: facilitating, technical support, coaching and counselling.

4. Case study 2: COLEARN – Collaborative Open Learning Community

The second case study relates to the activities of the online community COLEARN (Collaborative Open Learning Community), an initiative of the Knowledge Media Institute of the OU which started in 2006. COLEARN is an online community hosted within the OpenLearn platform, bringing together researchers and practitioners from Brazil, Portugal and Spain mostly, whose interests focus on exploring knowledge media tools to facilitate collaborative informal learning The aim of COLEARN is to offer a community-supported environment in which research and ideas about the use of collaborative technologies for learning can be shared. All the activities in COLEARN are available to the world as OER, as well as all the resources shared the by participants.

Based in several universities located in different countries, COLEARN community members often use FlashMeeting (a web video conference tool; Scott, Tomadaki & Quick, 2007) to meet online, learn together and create new educational resources. Their discussions are focused on diverse open learning issues such as game based environments, knowledge media and social software. Compendium Knowledge Maps are created on diverse topics, for instance, e-democracy, thinking skills and information literacy. Community members also use Compendium (a software tool for representing and connecting ideas, concepts, arguments, websites and documents; Buckingham Shum and Okada, 2007)to map learning material, share references, add new information from the web and include their own comments. Some of their Compendium maps show web videoconferences and their reflections about what they are studying and doing with the resources.

The period of data collection in this study took place from July 2007 to July 2010. During three years this open learning community with 1243 members published 87 maps in Compendium and 53 web conferences in FlashMeeting.

Compendium <http://www.compendiuminstitute.org> can be used as a learning tool to link, interpret and annotate any other resource on the web. OpenLearn users can navigate, download, edit and re-upload maps.

FlashMeeting (fm-openlearn.open.ac.uk) is a web video conferencing tool (Scott, Tomadaki & Quick, 2007), where OpenLearn users can book an online meeting and select the time, date, duration and number of attendees. The application generates a URL, which can then be sent to the

meeting attendees. By clicking on the link, they gain access to the videoconference. The meeting can be edited and its URL can be shared within the community or on the Internet. The number of attendees varies from 2 to 13 people, but the number of users in the COLEARN community and outside who replayed the event is higher. The most popular events in COLEARN are the seminar "Integrating Knowledge Media Technologies in Moodle" with 815 replays and the "Discussion of Knowledge Mapping" with 779 replays.

4.1 Mentoring in the informal learning context of the COLEARN Community

After analysing the maps and discussion forums based on the three categories of informal learning described by Eraut (2000), and the four roles that mentors perform (Rothwell, Jackson, Knight, & Lindholm 2005), both presented in section 2 of this paper, three main categories emerged from the data collected: i) organising learning references; ii) planning learning goals; and iii) developing systematic reflections.

4.1.1 Organising learning references

Figure 4 shows a reference map to support a discussion in FlashMeeting. Some participants interested in games and learning, guided by two experts who provided assistance during the process, selected twenty five references using Compendium and classified in articles (9), websites (5), research (3), blogs(4), events(2) and books(2). They shared the map below in the OpenLearn Community COLEARN and booked a FlashMeeting to discuss the uses of Games for Learning.
The assistance provided by these two experts included:

Technical support for using Compendium and FlashMeeting;
Guidance for searching significant references on the web (papers and interesting links);

Suggestions to present the content in a clear structure for everybody to collaborate.

4.1.2 Planning learning goals

Figure 5 presents the replay of a FlashMeeting discussion in which participants developed a brainstorm about information literacy guided by a facilitator. The facilitator was a lecturer who engaged participants to discuss the meaning of information literacy in FlashMeeting. Each participant wrote a keyword related to Information literacy, and the group then started to organise connections developing a mind map in the FlashMeeting whiteboard (called FlashBoard). This mind map of relevant topics was very useful for sharing ideas, and also topics of interests in order to identify their interests for next discussions and possible learning goals.
The coaching process developed by the facilitator included:

Asking participants to share their initial understanding
Encouraging participants to make connection between their own ideas and their colleagues.
Supporting participants to reflect about their connections and inviting them to make questions and comments.

4.1.3 Developing systematic reflections and critical thinking

Figure 6 below shows a Concept Map created in Compendium by a tutor whose image (jpg file) was shared in the FlashMeeting. This concept map presents fifteen keywords about e-democracy. This map was used by the tutor to discuss the subject and to engage participants in systematic reflections and critical thinking. When learners structure relevant knowledge through concept maps during the discussion, they may recall and apply what they understood easily. The graphical representations also help them create new connections with new concepts.

The debate promoted by the tutor to develop systematic reflections and critical thinking skills included:

Inviting participants to extend the map with new questions and comments
Giving feedback about their questions and comments
Encouraging participants to give further contributions by downloading, editing and sharing the map.

In this case there is formal mentoring in an informal context. The tutor, by directing the learners to a website based on OER and by using the tools available in this website, is tapping on a form mentoring of which the use of technology goes beyond the resources supported by his institution. It is the availability of open learning environments and free web resources and tools that seem to make it possible for formal mentoring to move away from institutional boundaries.

5. Conclusion

Mentoring takes place in a variety of ways and is performed by different subjects in the context of using and repurposing OER. First, one needs to consider the technological environment in which the OER is offered. In both case studies presented the use and reuse of OER took place in the LabSpace of the OpenLearn, which is the OER initiative of the Open University UK, and is considered a 'informal learning environment' because there is no accreditation attached to any of the courses offered in the website.

The first case study is an OER repurposing experience carried out in a formal learning situation because it was an activity of a masters' degree course offered by the University. The second case study presented three learning situations which were carried out as informal learning situations but the mentoring happened in a much more formal way. In this instance at all the three learning

situations the mentors assumed a leadership role in guiding the participants through the learning task.

What the data of these case studies suggest is that there are no boundaries for what is considered formal and informal mentoring, or for 'who' should be performing the mentoring. In the first case study there was informal mentoring in a formal learning situation whereas in the second case study there was formal mentoring taking place in an informal learning environment.

Mentoring in the first case study happened in a 'peer-mentoring' style. Peer mentoring is often a learning technique supported by constructivist teaching approaches, such as collaborative learning. The H800 course was designed to encourage collaborative learning, so the informal mentoring taking place seems to be in line with the teaching approach.

In the context of the second case study, an interesting aspect of repurposing of OER is that *repurposing* was not the main goal, unlike case study 1. The repurposed content was an indirect product of a learning activity that was based on open tools and content. The content produced and repurposed as a result of the learning activity taking place in the environment were open to public access because they were hosted within an OER environment, the LabSpace. This shows how OER can be repurposed and used even when the goal is not necessarily the one of creating resources. Repurposing OER in the context of an informal learning environment such as the LabSpace means that there is an intrinsic informal ecology in the OER environment itself that turns out to be systematically organised by the formal mentoring taking place within it. This formal mentoring aids the use of the learning resources in the environment by different cohorts of learners and interested parties.

By analysing the activities of the mentors and participants in the two case studies, this papers starts to explore how both forms of mentoring (formal and informal) seem to address the needs of the practitioners/students in terms of using OER and learning how to repurpose them. We argue that these two forms of mentoring, although different in principle, seemed to have convergent outcomes.

The process of analysing data in case study research is iterative. We aim to continue this research by applying the case study method more systematically in the analysis of the data (Yin, 2009), therefore focusing on the methodological aspects of this research. We also plan to refine our research questions on the role of mentoring in both formal and informal learning situations, informed by the outcomes of our initial analysis.

Figures

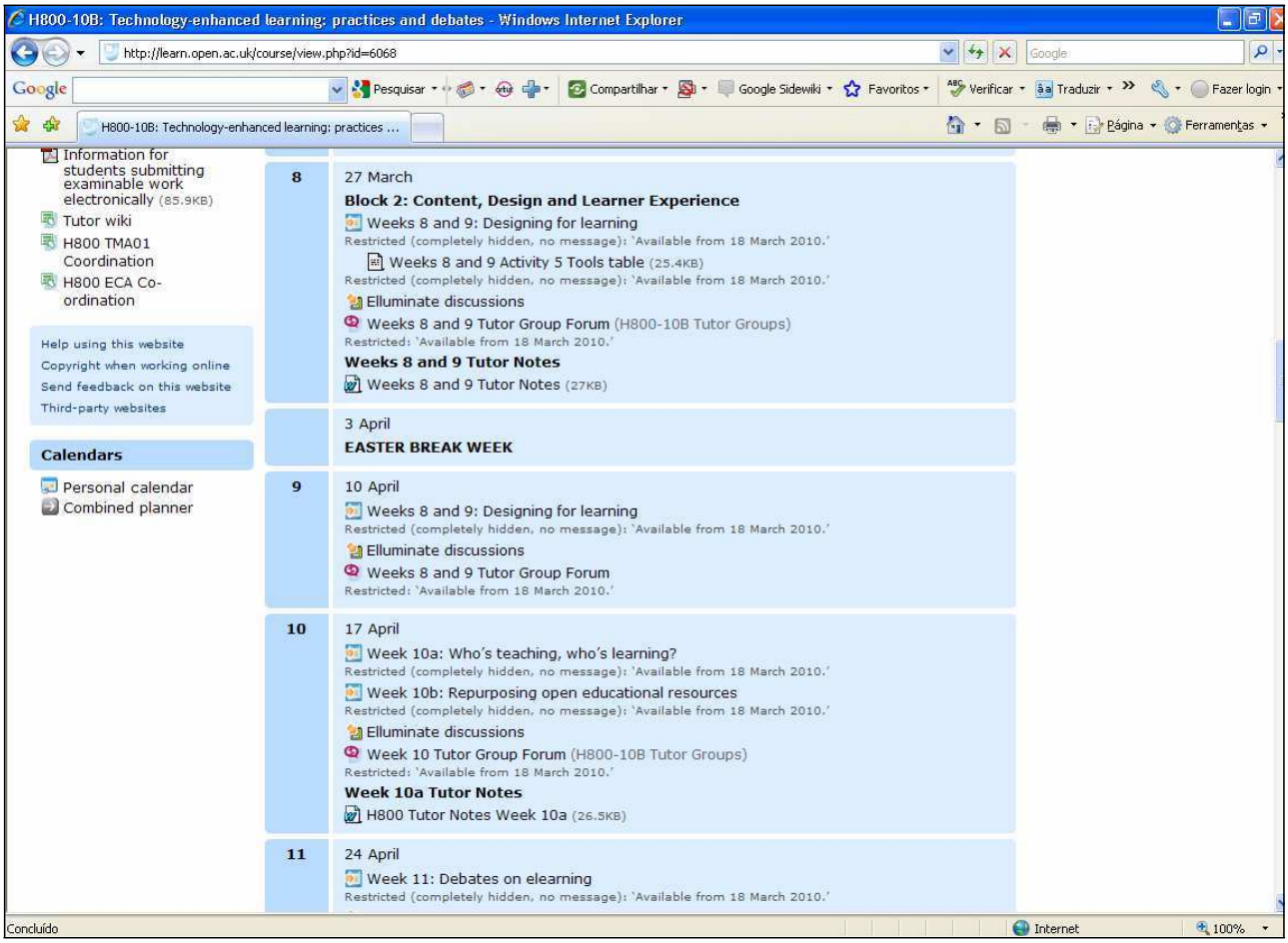

Figure 1. H800 course homepage

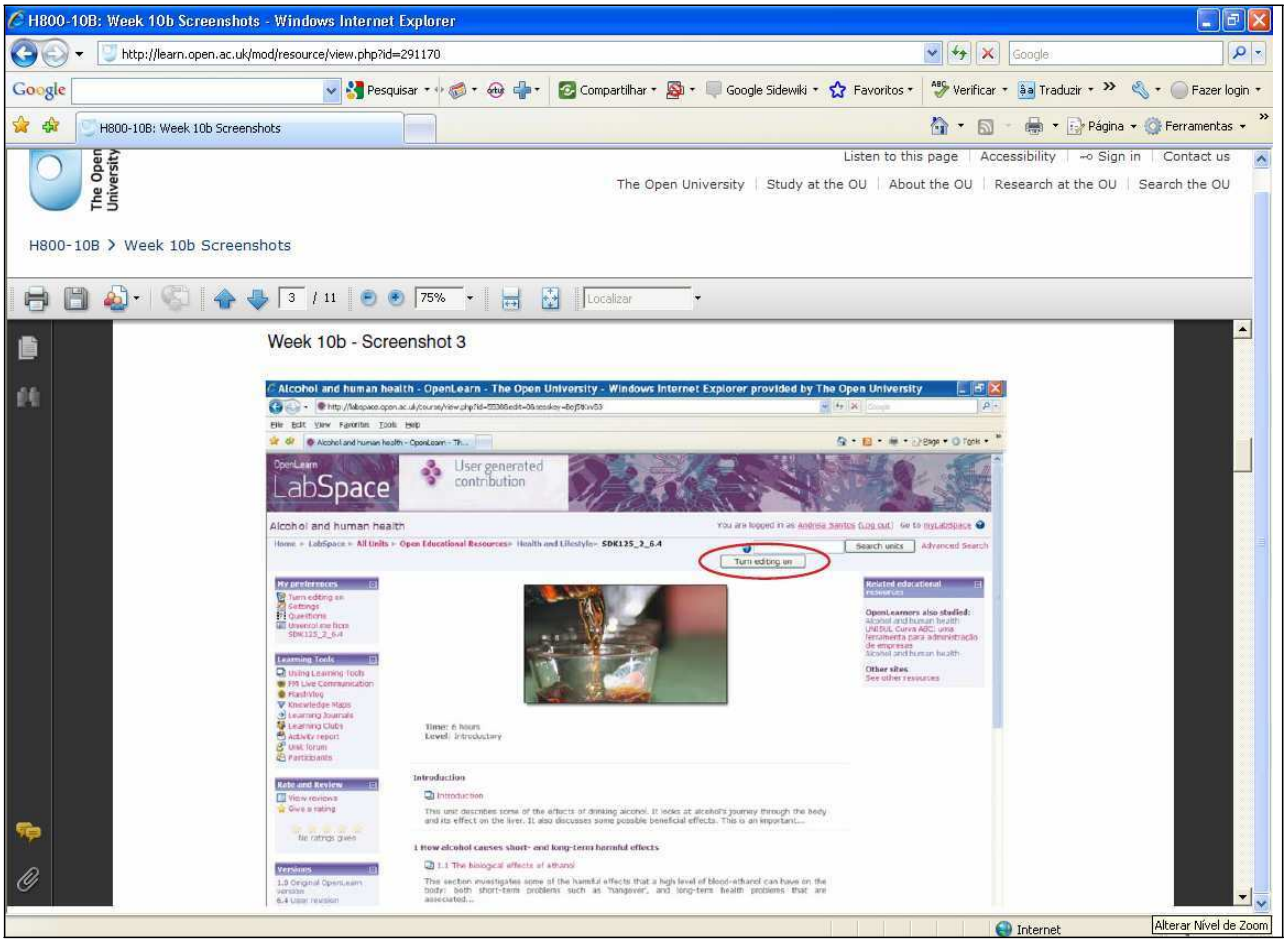

Figure 2: *In situ* editing tool based in the Labspace

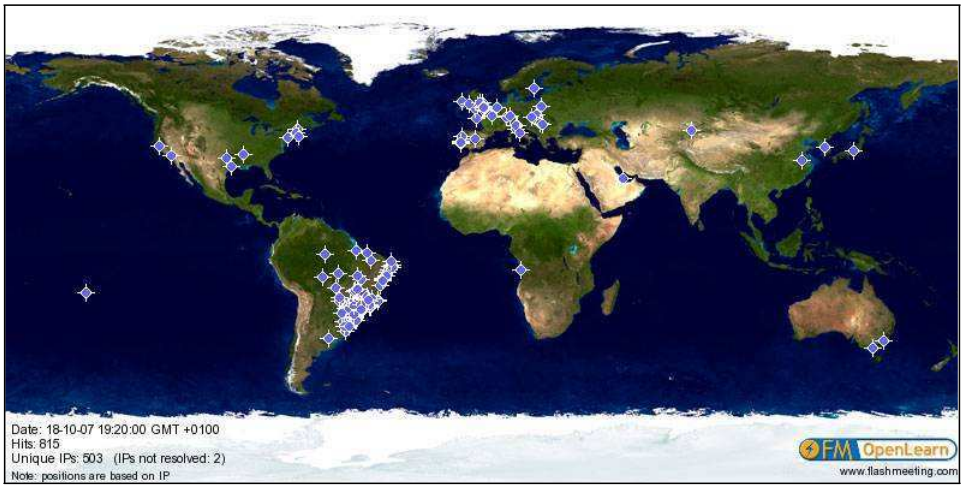

Figure 3: Visualisation of COLEARN users in the World

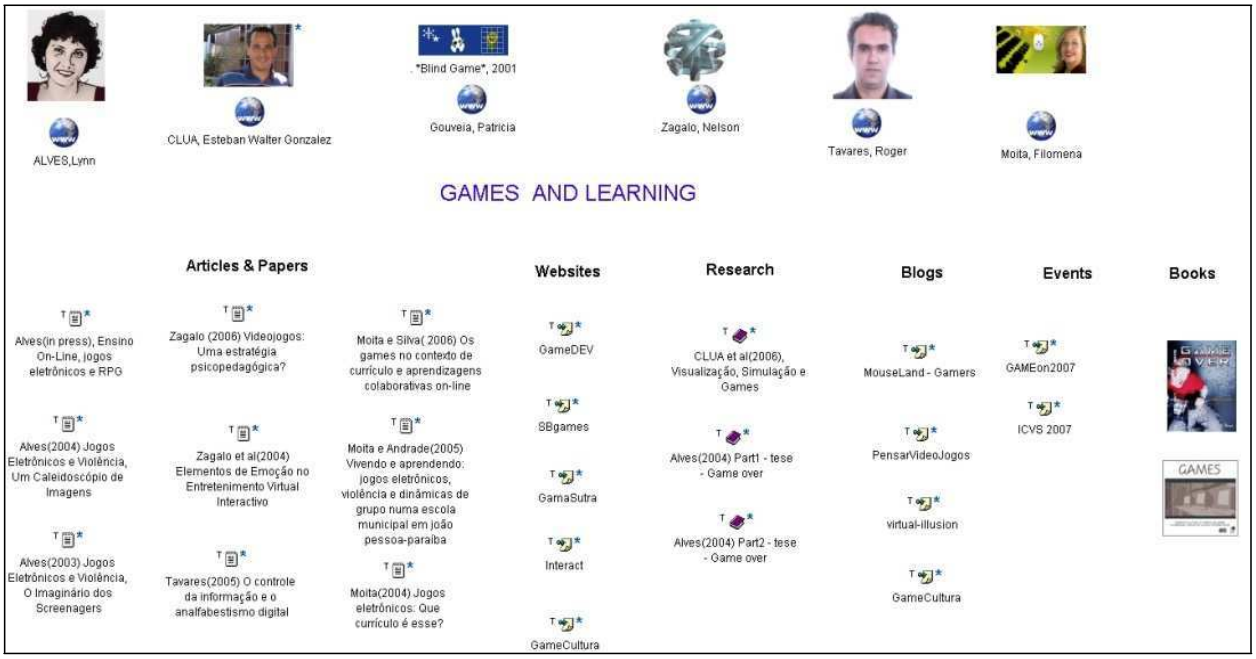

Figure 4: Compendium Map about games and learning

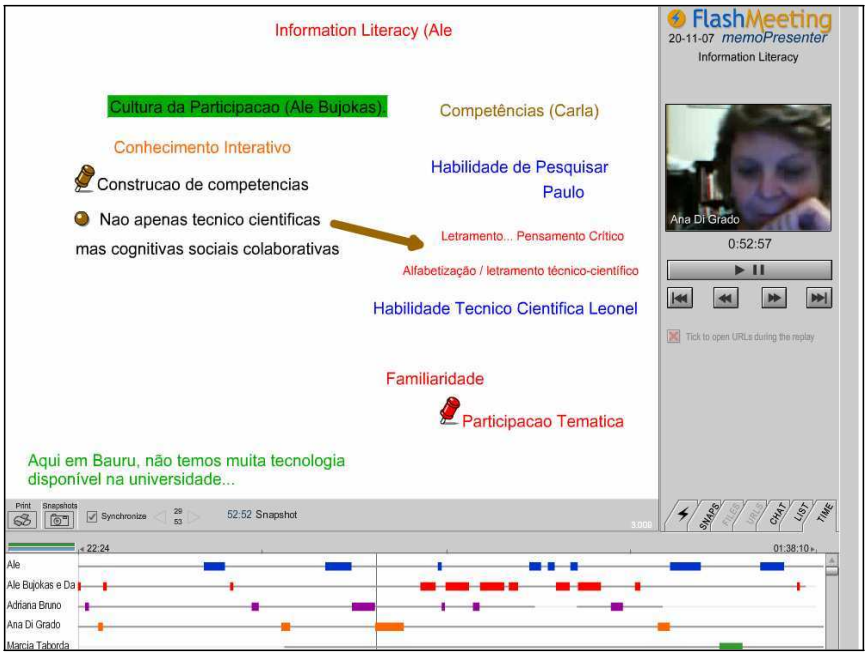

Figure 5. FlashMeeting about Information Literacy

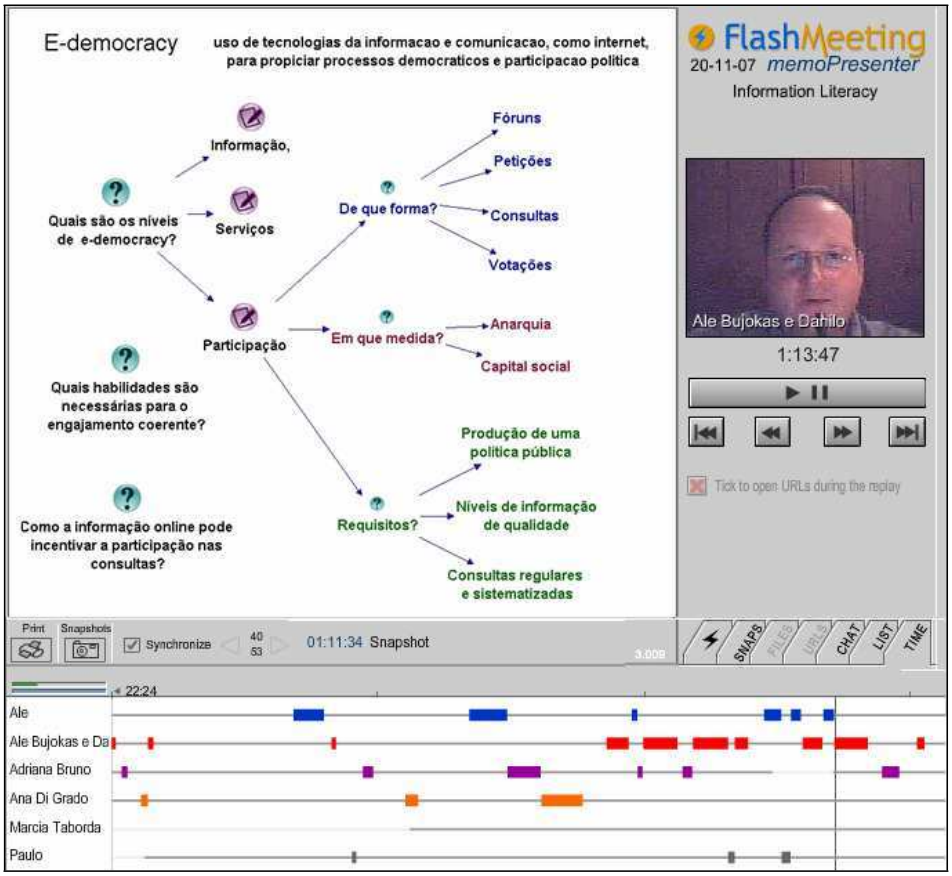

Figure 6: FlashMeeting about Information Literacy map created in Compendium

Notes

1. Flashmeeting, also known as FM, is a web-videoconference system developed by the Open University, which will be mentioned in further sections of this paper.
2. At the Open University, a tutor group is a group a learners of no more than 25 learners, in which a specialist tutor is assigned to facilitate the discussion forums and the learning process overall.

Bibliographic references

ANDERSON, T. (2007). Reducing the Loneliness of Distant Learner Using Social Software. Open and Distance Learning Conference. Retrieved on January, 17, 2007 from < http://www2.open.ac.uk/r06/conference/TerryAndersonKeynoteCambridge2007.pdf >

BUCKINGHAN-SHUM, S. AND OKADA, A. (2007) Knowledge Mapping for Open Sensemaking Communities. In: Proceedings of OpenLearn 2007: researching open content in education, pp 27-31 October 2007. Milton Keynes, UK

EISENSTADT, M., AND VINCENT, T. (1998.) The Knowledge Web: Learning and Collaborating on the Net. London: Kogan Page.

ERAUT, M. (2000) 'Non-formal learning, implicit learning and tacit knowledge in professional work' in F. Coffield The Necessity of Informal Learning, Bristol: The Policy Press.

GRAY B. (2004) Informal Learning in an Online Community of Practice Journal Of Distance Education Revue de L'éducation à Distance Spring/Printemps 2004 VOL. 19, No 1, 20-35

JEFFS, T. AND SMITH, M. (1990) (eds.) Using Informal Education, Buckingham: Open University Press.

JONASSEN,D.; BEISSNER,K. AND YACCI,M. (1993) Structural Knowledge: Techniques for Representing, Conveying, and Acquiring Structural Knowledge. Lawrence Erlbaum Assoc Inc

LEADBEATER, C. (2000) Living on Thin Air. The new economy, London: Penguin.

LIVINGSTONE, D. W. (2001): Adults' Informal Learning: Definitions, findings, Gaps and Future Research. Toronto: NALL Working Paper 21/2001. Retrieved on January, 17, 2007 from http://www.oise.utoronto.ca/depts/sese/csew/nall/res/21adultsifnormallearning.htm

MCGIVNEY, V. (1999) Informal Learning in the Community, Leicester: NIACE

NONAKA, I., TAKEUCHI, H. (1995), The Knowledge-Creating Company, Oxford University Press, New York, NY

OKADA, A.; BUCKINGHAM SHUM,S & SHERBORNE,T(2008). KnowledgeCartography: softwaretoolsandmappingtechniques, London:Springer

OKADA, A. ; TOMADAKI, E.; BUCKINGHAM SHUM,S. AND SCOTT, P.(2007) Combining Knowledge Mapping and Videoconferencing. In: Proceedings of Open Education Conference: Localizing and Learning. Utah, USA

ROGERS, E. M. (1995). Diffusion of Innovations. New York, NY, Free Press.

SALWEN, M. B. & STACKS., D. W. (Eds.) (1997). An Integrated Approach to CommunicationTheory and Research. Mahwah, JF, Erlbaum.

SCOTT, P.J.; TOMADAKI, E. and QUICK, K. (2007) The Shape of Live Online Meetings. International Journal of Technology, Knowledge and Society, Vol 3

THORPE, M. (1999). New technology and lifelong learning. Retrieved January 11, 2007 from http://www.openuniversity.edu/lifelong-learning/papers/

YIN, R. K. (2009) Case study research – design and methods (4th edition). London: Sage

WILLINSKY J. (2006) The access principle: the case for open access to research and scholarship. Cambridge: MIT Press

About the authors

Andreia Inamorato dos Santos

Research Associate at OLnet (The Open University)

Institute of Educational Technology
The Open University
Walton Hall
Milton Keynes
MK7 6AA
United Kingdom
a.i.santos@open.ac.uk

Alexandra Okada

Research Associate at OLnet (The Open University)

Knowledge Media Institute
The Open University
Walton Hall
Milton Keynes
MK7 6AA
United Kingdom
a.l.p.okada@open.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/
Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

Production of OER, a Quest for Efficiency

Robert Schuwer,* Tina Wilson, Willem van Valkenburg,*** Andy Lane****
*Open Universiteit (Netherlands), ** Open Universiteit (United Kingdom), ***Delft University of Technology (Netherlands)

Abstract
In most initiatives to publish Open Educational Resources (OER), the production of OER is the activity with the highest costs. Based on literature and personal experiences a list of relevant characteristics of production processes for OER are determined. Three cases are compared with each other on these characteristics. Most influence on costs are human costs and the type of OER created.

Keywords
OER, production

Recommended citation:
Schuwer, Robert; Wilson, Tina; Van Valkenburg, Willem et al. (2010). Production of OER, a Quest for Efficiency. In *Open Ed 2010*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/5103>

1. Introduction

In most initiatives to publish Open Educational Resources (OER), the production of OER is the activity with the highest costs. Having an efficient production process therefore is an important precondition for a sustainable offering of OER. Several approaches exist, each dependent on the context in which production takes place.

In this paper, the relevant properties of such production processes were identified from the available literature. Three specific approaches are elaborated upon and compared against the identified properties. Some generic conclusions are then drawn about which of the characteristic properties of the processes are identified as being most important for determining the most efficient production process for OER publication.

2. .The playing fields

In this section, three initiatives will be described each having a different production process for OER.

2.1. Open Universiteit (the Netherlands)

In 2006, the Open Universiteit started with its experiment OpenER. The goal was to lower existing thresholds to academic course materials for non-traditional groups (i.e. employed and unemployed people) and thereby achieve higher participation in higher education (Schuwer and Mulder, 2009). To this end, 25 courses were created with a study load of about 25 hours each. The initial idea was to derive courses for OpenER from existing regular courses. For each of the schools, this meant identifying an appropriate course, selecting a complete subject within this course, and creating the material (self-contained, creation of an introductory text, providing a self test). During the course of the experiment, several courses were developed "from scratch" especially meant for this experiment. In figure 1, the production process is depicted.

For each regular course at the Open Universiteit, it is registered which persons and organisations have IP rights on elements of the course. This was very helpful for the IP expert for the OER that was derived from a regular course, making the process of IP clearing efficient.

Most authors of the courses were experienced in creating courses and using the e-tools. The QA was organised by the author (in most cases peer review by a colleague). Support came from

Communication, the project leader and the IP expert. The process to create the OER was neither standardized nor automated. Each author had its own way of working. Only in the last phase, with the conversion of the course materials to the website, a more or less standard process was followed. This included some conversion because the platform used for the OER was different from that for regular courses (eduCommons vs. Blackboard).

The types of OER created included textual sources (in most cases, published as pdf- and rtf-document), videos and several interactive elements (among which a serious game).

The OER is published under a Creative Commons Attribution-Non Commercial-Share Alike license. So rework and reuse is permitted by consumers of the website, but the reworked course cannot be published in the OER repository of the Open Universiteit.

2.2. Open University UK

The Open University in the UK (OUUK), a distance learning university, caters for annual student numbers of just over 200,000 (http://www.open.ac.uk/). A proportion of these materials (in excess of 15,000 study hours) are accessible worldwide mainly through its Open Content Initiative (OpenLearn), which was launched in October 2006. OpenLearn was, in part, developed to provide equal access to education and support the University's social inclusion agenda.

OpenLearn operates in an environment based on the Moodle course management system (OUUK Moodle is a development of core Moodle and has bespoke features[1]). It hosts twin Websites; a LearningSpace aimed at learners and a LabSpace aimed at educators. Units of material on OpenLearn are taken from the original Supported Open Learning version of a course. In the OpenLearn context the materials called 'study units' are standalone without the organised tutorials and formal assessment typically found in the original course. OpenLearn provides similar facilities to the OUUK's student facing Moodle based Virtual Learning Environment (VLE) but in an open and accessible environment, which differs in some aspects from the delivery of regular courses.

Originally developed for distance learners the material is already suitable for self-study. OER study units vary between one and fifty hours of study time (Lane et al, 2010). More information is available about OpenLearn (Downes, 2006/2007; McAndrew, et al., 2009) and the OER in the LearningSpace (openlearn.open.ac.uk) and LabSpace (labspace.open.ac.uk/) subject areas'.

2.2.1 The OpenLearn transformation process

OpenLearn's preferred format for OER development, upload and download at launch was through an OUXML structured content schema, though other transformation formats were soon introduced.

The OpenLearn transformation process was supported by a large team initially, to meet ambitious targets of publishing 13,500 study hours by April 2008. The OpenLearn team included academics; technical, media, copyright and project support staff many with experience of standard educational material production for student use. In order to meet these targets, a new set of related methods, processes, procedures and documentation were devised, revised and updated.

A key factor in developing OER is the need to determine whether the source material is deemed suitable for transfer. Issues and suggested criteria for judging the suitability of course material for

OER delivery is discussed by Wilson (2007), while a number of models of transformation were proposed at the beginning of the initiative (Lane, 2006 and Lane, 2007) and reviewed later (Lane et al, 2010). The majority of the OER in OpenLearn are transformed under what Lane terms the 'Integrity model', were essentially all of the material in the subsequent OER is recognisably similar to the material being studied by students on the originating course.

Connolly et al. (2007) discuss the process of transformation under the 'Integrity model' using a flowchart (Connolly, 2007). An overview of the key stages is listed below (Figure 2) and serves as a reminder that the transformation process involves much more than the use of XML.

These more people centric characteristics are important in the development of OER and indicate that the technology alone does not support the transformation of material into OER.

2.3. Delft University of Technology

Delft University of Technology is a traditional brick-and-mortar university in The Netherlands. The university only offers engineering education in Bachelor and Master for Dutch and more and more international students. The university has 17,000 students.

In 2007 the university started with their OpenCourseWare project. In October 2007 their ocw.tudelft.nl website was launched with 14 courses. 2,5 years later they have 40 courses online.
The reason to launch an OpenCourseWare website were divers from marketing to exposure for a specific department.

Starting point is that the existing content used in the Digital Learning Environment for the regular students is good enough for the rest of the world. So all the courses are based on their regular course.

2.3.1. The Process

To publish a new OCW-course we first create a copy the current Blackboard course to a new one. Then the instructor and mostly his teaching assistants modify the course to satisfy the guidelines of OpenCourseWare:

Quality of the resources
The materials will be put in the window of the university, so we have to be sure it is high quality material

Completeness
After removing the resources that are not suited for publication, there must be enough resources left to be recognized as course.

Copyright
Only resources that are cleared for copyright will be published.

Suitability for self-study
The regular courses have an instructor and classes that will lead the students through the material. An OCW-course doesn't have this, so we need to add some instructions for the learner to guide him through the material.

When this process is fulfilled and the bureau OpenER and the instructor have agreed to publish the course, a script transfers the Blackboard course to our OpenCourseWare website. Some small modifications have to be done to get the course ready.

The course will then be checked by some peer instructors before it will be publically available on ocw.tudelft.nl.

3. Properties of production processes for OER

Open Educational Resources describes digitalized materials offered freely and openly for use and re-use in teaching, learning and research (UNESCO, 2002). OER includes educational materials and course materials in particular.

There are several production processes to create OER. To gather more information about these processes, 61 cases on (OPAL, 2010) were analysed. Table 1 shows the different processes found in these cases.

In some cases, more than one of the above processes was mentioned by the authors/contributors. Therefore, the numbers add up to > 61.

Each of these processes has components or characteristics that influence the efficiency and costs of the process. Because production of OER normally has some activities that differ from the production of regular courses, it is not enough to just consider production of the latter category. Some of these additional activities are:

> For publishing under an open license, IP clearance must be carefully carried out. In most cases, for regular courses this IP clearance is partially done.
> Teachers and institutions tend to give more attention to Quality Assurance (QA) when they know their materials will be published as open content ("the whole world will be my audience").

Based on (Wikiversity, 2010), (Wikieducator, 2010) and experiences with the three cases described, a list of characteristics of production processes for OER (in random order) is retrieved. Table 2 presents this list and provides an analysis of the three cases on each characteristic.

The characteristics are not independent of each other. For example, the organisation of QA **could be** influenced by the possibility of consumers adding their content to the OER repository, leading to another cost effect. These possible relationships make it difficult to point to the characteristics with the most effect on production costs.

In the case of OER production for OpenLearn, it approximately costs €3600 on average per study hour to produce the original teaching material, it then cost about €360 on average to transform and publish making a 10 hour study unit cost about €3600 to publish, but this average hides a wide range and there were a few pretty expensive ones (either because of IP costs or media costs) that probably did cost up to 3 times that. In the end no accurate costing was done. The figures are arrived at by dividing aggregate figures for spend on production over two years by the number of study units and the hours published with the former a very broad figure where some costs may be best taken out for comparison. Study units tended to be more expensive as a result of IP costs or media costs.

This observation is in line with the experiences on Opener OU. There is a wide range in which the costs lie. The average cost per unit is lower than at OpenLearn. The main reason for this difference seems to be that each course at Opener OU only has one or two formats to which it is published. For each unit at OpenLearn, several different formats exist, each having its own conversion problems.

The costs per 1 ECTS course vary a lot between the three cases. For the OU and the OUUK, there is a wide deviation of the average costs, caused by a few expensive courses. The actual size of the study unit also makes a difference. For example a 50 hour study unit could be the least expensive per hour to transform if the bulk of the unit is formed of text and the study time is influenced more by the number of activities learners have to do rather than the number of words that need to be read. The development costs include costs for the actual production of the course (including author costs, costs for creating interactive elements, costs for QA) for Opener OU and Delft Opener (not applicable in the case of OUUK OpenLearn), costs for IP clearing, costs for conversion of the materials to the OER publishing environment and costs for creating any additional interactive elements. Other costs like management of the IT environment or costs of specific software are not included.

4. Conclusion

Our research revealed a list of characteristics that influences the cost of the production process for an open course. Comparing three cases, there were considerable differences between the costs per ECTS. Within each case, the variation between different courses was also great. The main cost factors in course production are the human costs, which is perhaps unsurprising since this is the case for all media production. Material costs are small compared to the costs of human stakeholders and are therefore not included in the analysis. Ability for consumers to add to the repository of open courses, does not lead to more costs for QA at OUUK. Characteristics having the most influence are (not surprising):

The part of the process that is automated. The more is automated, the less costs.
The size of the supporting staff
The type of OER created. The more interactive and multimedia elements, the higher the costs. However, the use of these technologies makes these course materials more accessible for a wider variety of learners.

Our experiences in this research are to be investigated more deeply to find out more characteristics and the interrelation between them. As an example, course production is a primary activity for a university. When you are able to have the OER-derivative developed as a natural "product aside", the extra costs for development will probably be the lowest, compared to other ways of producing OER. Also, models for centralised versus distributed production are worth investigating more deeply.

Figures and Tables

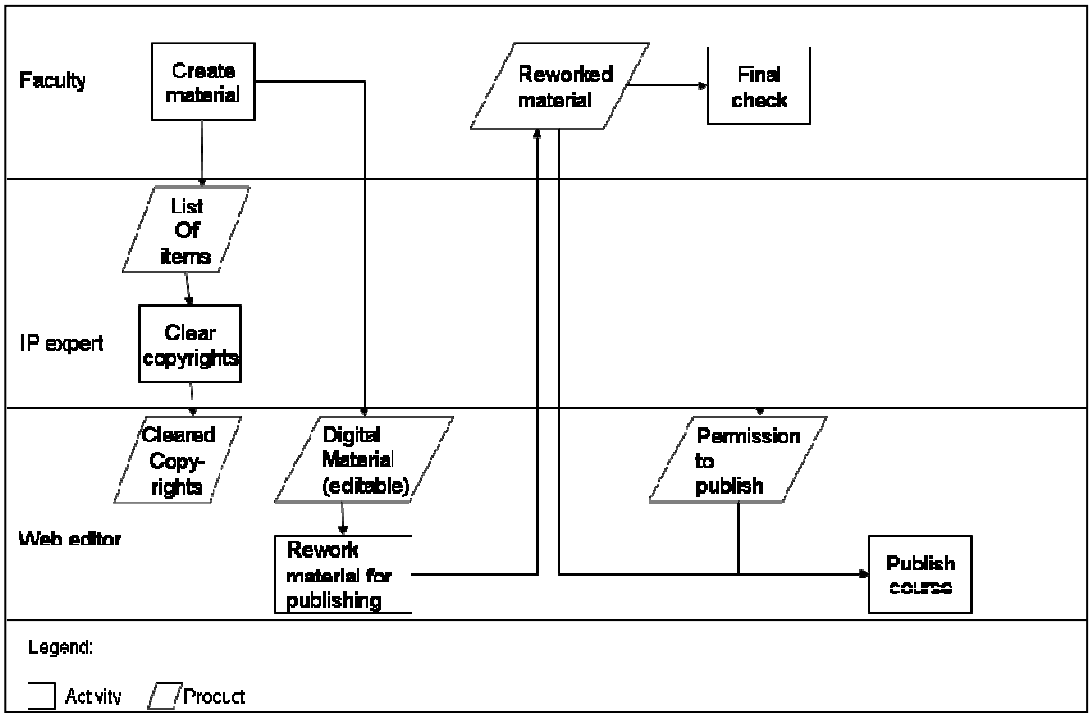

Figure 1. Production process of OER at Open Universiteit

1. Identify material for transformation from a Central Academic Unit and decide on the appropriate topic area within OpenLearn.
2. Central Academic Unit complete a pro forma
3. Electronic copies of the original materials are sourced
4.a Copyright issues with third party material are considered (Lane, 2007)
4.b Ownership of the material is considered
5. Usage of the proposed material in Professional Development courses is considered
6. The material then undergoes an initial review by an OpenLearn Academic.
7. After the initial review has drawn up a specification for how the material should be transformed, the materials are handed over to the media sub-team for XML tagging, editing and conversion into an OER.
8. A final review (of the pre-release OER) is undertaken by the OpenLearn academic and Faculty academics. The OER is checked against the original material and the specification on the initial review form.
9. When the final review is complete the media sub team publish the OER.

Figure 2. Key stages of the 'Integrity Model'

Production process	#	Remarks
Derived from existing regular "closed" course materials	31	Sometimes as part of the mainstream process and sometimes using a workflow additional to the mainstream process
Additional "raw" materials from existing "closed" courses, but relatively easy to produce	7	E.g. videocasts or podcasts of classes
Course materials produced especially for an OER repository	7	In most cases additional to the first mentioned scenario.
Other models	2	Including user generated materials
Not described/not applicable	22	Not applicable: mostly because the case was about creating a portal to access existing (open) learning materials or to create communities around existing open learning materials

Table 1

Characteristic	Analysis
Availability of existing (raw) materials	Only in Delft existing materials were available. This had a positive effect on the time spent by each author, leading to a less expensive process. The bureau OpenER does a quick scan of the existing Blackboard course in one to two hours. The result is a list of issues the instructors have to solve.
Availability of registration of IP for existing learning materials	In all three cases such registration was available. At the OU, the fraction of IP clearance costs was low (about 5% of the costs). Because of this registration, some authors were aware of copyrighted materials and replaced these parts by openly available materials (e.g. pictures), which reduced the amount of work done by the IP expert. In some cases (at the OUUK) alternatives were found, proportions of the original content were cleared or in some cases all of the 3rd party content was cleared. Costs of clearance were lower than budgeted for and in many cases lower than for original student use. There has been a 97% clearance rate with only a few outright refusals and a few where cost of clearance was deemed prohibitive. In Delft there is no payment for any included materials to externals. If IP-material was included, it was left out or replaced with CC-content.
Organisation of Quality Assurance: QA activities are (partly) performed by consumers	At the OU, QA by peer review is part of the regular course production. The QA awareness of each author is on a high level, so the percentage of "first time right" course materials is high (especially when the open course is derived from a regular closed course).

instead of by the institution QA can be undertaken by an institution in terms of internal peer review QA can be undertaken by an institution in terms of external examiners feedback	At the OUUK QA by peer review and external examiners is part of regular course production. For open publication on Openlearn there are further, simpler reviews mainly of technical integrity of the transformation. At Delft, before a new course on OCW is released, the course is peer-reviewed by others. Currently, Delft is in the process of formalizing this.
Experience of course authors (both in writing and in using appropriate tools)	At the OUUK OpenLearn Academics with the support of faculty staff transformed the materials in terms of the content. Conversion of format from one medium to another was conducted by the OpenLearn media team supported by the technical team. In Delft the experience of the authors varied. The time it takes to get a course online varies. There are two variables: the experience of the teacher and the complexity of the course. The complexity of the course is not related to the number of ECTS-points.
Size and activities of the supporting staff department	At the OUUK, this team was large initially, as many courses needed to be converted into OER in a relatively short period, and many conversion formats that were used for publishing the courses. Subsequent to start up funding, OpenLearn had much lower production targets and all study units were transformed under the 'integrity model' (expensive experiments disappeared) while production processes and technologies for student use and open use have been and are being harmonised such that publication is an embedded part of standard course development.
The degree to which the process is standardized or automated	Although the degree of automation of the process at OUUK is high, this does not lead to lower costs for units compared to Opener OU. This can be explained by the observation that still a lot of person centric activities are needed that can hardly be automated. In Delft, the first courses were converted manually. This took between 8 and 16 hours per course. After automation of this activity, per course less than an hour is needed.
Consumers are able to add new content to the OER repository	This is only possible at the OUUK. When users publish their own content in the LabSpace the costs to the OUUK are only in supporting the platform and possibly providing training. There are no direct production costs unless the OUUK is publishing into the LabSpace itself. So far mainly pdfs of complete teaching texts have been added to the LabSpace which are very cost effective in terms of hours if not usability by users. In general, the effect of this criterion on the cost effectiveness and efficiency is complex. On the one hand, part of creation and maintenance is done by external stakeholders without costs. On the other hand, extra activities might be necessary to guarantee the materials will adhere to QA standards

	of the institution.
A whole course can be divided in separate OER units	In some cases, whole courses of material (from the OUUK itself and from other universities (in the OpenLearn LabSpace) were separated into different study units (for OpenLearn). The separate study units could spread across different topic areas indicating the interdisciplinary nature of the original course. Academics initially found it difficult to make the whole course into separate stand alone units.
Type of OER created Text Audio and / or video Interactive elements	It is not surprising that the least expensive course is a text-based course without any interactive elements or video, derived from a regular course. The more interactive elements were added, the more expensive the course became.
The publishing platform for OER	There is a negative effect on the costs when the publishing platform differs from the platform used for regular courses because of the transformations of the course materials. Automating this task (as was done by Delft) lowers this effect. The characteristics of the platforms themselves are not taken into consideration in this comparison.

Table 2

Notes

The work discussed in this paper is supported by a number of projects:

OpenLearn was supported by a grant from the William and Flora Hewlett Foundation.
OpenER was supported by grants from the Directorate Learning and Working, established by the Dutch Ministry of Education, Culture and Science and the Ministry of Social Affairs and the William and Flora Hewlett Foundation.

1. OpenLearn (OUUK) has recently relaunched OpenLearn in a new front end based on Drupal (www.open.ac.uk/openlearn/) which includes aggregated short form content from different sources.

Bibliographic references

Connolly, T., Ferreira, G.M.d.S, Wilson, T. (2007). "Re-purposing for open education: evolving roles, responsibilities and processes", 4th International Conference in Open and Distance Learning. Forms of Democracy in Education: Open Access and Distance Education, 23–25 November 2007, Athens, Greece, 2007.

Connolly T. (2007). Production flowchart. Available from http://kn.open.ac.uk/public/document.cfm?docid=9971)

Accessed 14/08/2010

Downes, S. (2006/2007). Places to Go: OpenLearn. Innovate journal of online education 3 (2). http://innovateonline.info/?view=article&id=432 (accessed February 6, 2008). [Editor's note: Access to this article requires free registration to the INNOVATE journal of online education.]

Lane, A (2006). From Pillar to Post: exploring the issues involved in re-purposing distance learning materials for use as Open Educational Resources. Retrieved 30/08/07 from http://kn.open.ac.uk/public/document.cfm?docid=9724

Lane, A. (2007). "From Pillar to Post 2: taking the high road", OpenLearn Working Papers, Milton Keynes, 2007. http://kn.open.ac.uk/public/document.cfm?docid=10216

Lane, A., Connolly, T., Ferreira, G., McAndrew, P., Wilson, T. (2010). Reworking and Remixing Open Educational Resources. Cases 'n' Places Global Cases in Educational and Performance Technology. A volume in the series: Educational Design and Technology in the Knowledge Society. Series Editor(s): Stewart Marshall, The University of the West Indies and Wanjira Kinuthia, Georgia State University. Available from http://www.infoagepub.com/products/Cases-n-Places.

McAndrew, P.; Santos, A.; Lane, A.; Godwin, S.; Okada, A.; Wilson, T.; Connolly, T.; Ferreira, G.; Buckingham Shum, S.; Bretts, J. and Webb, R. (2009). OpenLearn Research Report 2006-2008. Milton Keynes: The Open University. ISBN 9780749229252. Available online at http://oro.open.ac.uk/17513/2/Research_forWeb.pdf

Schuwer, R., Mulder, F. (2009). *OpenER, a Dutch Initiative in Open Educational Resources.* Open Learning: The Journal of Open and Distance Learning, 24:1, 67 — 76

Wilson, T. (2007). "Transformation for an open education repository: Issues associated with IT and Computing distance learning course materials", Proceedings of the International conference, Information Technologies: Theory, Practice, Innovations, 6th and 7th Dec 2007, Alytus College, Alytus, Lithuania, 2007, pp. 143-147.

UNESCO (2002). *Open and Distance Learning. Trends, Policy and Strategy Considerations*. Paris, UNESCO.

Websites (all accessed 18 August 2010)

(OPAL, 2010) http://cloudworks.ac.uk/cloudscape/view/2085

(Wikiversity, 2010) http://en.wikiversity.org/wiki/Open_educational_resources#Open:_Consumer.2Fproducer_relationship, (WikiEducator, 2010) http://wikieducator.org/Open_Educational_Content

About the authors

Robert Schuwer
Open Universiteit (Netherlands)

P.O. Box 2960,
6401 DL Heerlen,
Netherlands.
Robert.Schuwer@ou.nl

Tina Wilson
Open Universiteit (United Kingdom)

Walton Hall Milton
Keynes England,
MK7 6AA
Martina.Wilson@open.ac.uk

Willem van Valkenburg
Delft University of Technology (Netherlands)

Landbergstraat 15,
2628 CE Delft Netherlands
W.F.vanValkenburg@tudelft.nl

Andy Lane
Open Universiteit (United Kingdom)

Walton Hall Milton
Keynes England, MK7
6AA
A.B.Lane@open.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/
Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

Structuring OER Using Learning Trajectories

Robert Schuwer, Fred de Vries

Open Universiteit (Netherlands)

Abstract

The Wikiwijs program in the Netherlands is experimenting in structuring a repository with digital learning materials by labelling these materials with the learning goals and subjects handled by it. This makes it possible to create an interdependent arrangement of learning materials as building blocks for a curriculum. Such arrangements are called learning trajectories. A datamodel is presented in which the entities involved and their relationships are depicted. A first implementation of this is realized and published in September 2010.

Keywords

OER, curriculum, learning trajectory, Wikiwijs

Recommended citation:

Schuwer, Robert; Vries, Fred de(2010). Structuring OER Using Learning Trajectories. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/5104>

1. Introduction and problem statement

In the Netherlands the government has formulated learning goals to be reached for Primary and Secondary education. Secondary education in the Netherlands has three levels, each level divided in two sublevels (the first 2 or 3 years and the second two or three years). At the end of the second sublevel each student has the option to take a national exam in order to graduate. For Secondary education, the learning goals are formulated for each subject, level and sublevel.

The learning goals are formulated on a high level. This level is too high to be workable for a teacher or a group of teachers who want to develop learning materials aiming at covering the whole or part of the learning goals. It is at this point that commercial publishers bring in a lot of experience in developing curriculum plans (applying the high level learning goals of the government) and realizing this in a teaching method. Teachers who are using these methods can be certain that their students have covered all subjects of the curriculum sufficiently both in all aspects as in depth. Therefore, commercial textbooks are **the** guide for the majority of teachers in the Netherlands. The disadvantage is that these methods are in most cases not tailored to specific target groups (e.g. children with dyslexia) and specific situations (e.g. a school with a high percentage of allochtonous children). Furthermore, actual events are not covered, because most of the teaching methods are fixed in non-digital textbooks that last for several years. These disadvantages are only partly solved by the publishers with their offering of access to digital learning materials, in addition to the printed textbooks.

Most teachers developing learning materials take the commercial textbook as a starting point. Where they consider the method not sufficient for their needs, they will replace a small part of the method with their own materials. Some examples of situations that are considered "not sufficient" are:

not enough learning materials to practise tuned to the specific group of students,
not topical enough,
not matching the didactics the teacher wants to use (e.g. group learning).

A possible answer on these problems is to structure a set of learning materials according to **learning trajectories**. In (Strijker, 2010), the following description of a learning trajectory can be found:

> *A learning trajectory is a rationalized composition of learning objectives and subjects, leading to a specific learning goal.*

In this paper the Wikiwijs approach is sketched. Wikiwijs has to become the place on the internet where all teachers in the Netherlands, ranging from Primary education to Higher education, can (co)develop, share, rework and use digital learning materials, published under an open license.

Wikiwijs will not offer functionalities to use these learning materials in the context of a class (for which Electronic Learning Environments and Learning management Systems are used). The main reason for this is that most schools already use these systems.

The Dutch Educational System is described as the context of the use of Wikiwijs and in particular the learning trajectories. Then the approach in Wikiwijs will be layed out and compared with the design of a curriculum. Finally we will present the current implementation of the learning trajectories in Wikiwijs and the future plans.

2. The Dutch Educational System

The Dutch Educational System consists of several streams. Figure 1 gives an overview of the main streams in the Dutch Educational System.

Children move through this system from bottom to top. After Primary Education, the level of education increases from left to right (and, of course, from bottom to top). The arrows indicate possible transitions between levels after completing a lower level. In some cases, this requires extra work of the student (a homologation phase). It is always possible to move from right to left when the current level of education turns out to be too difficult.

Some tracks have a subdivision, like the Lower-secondary general level. This is divided in two tracks, one preparing for the Upper-secondary general and one preparing for the Preparatory scientific education.

The government finances all levels. In Secondary Education, parents pay some fee, meant for extra costs for e.g. lockers, travelling or other special activities. After Secondary education, every student can obtain a grant from the government (approximately €200 per month).

The government prescribes the final attainment level of the curriculum in Primary and Secondary education. These descriptions are formulated in very broad learning goals. Schools are responsible for the way they construct their lesson plans and the contents used. At the end of Secondary education, all children are to sit a national exam to earn their certificate. In this way, it is also checked if schools succeed in the way they interpreted the learning goals. Commercial publishers play an important role in this interpretation. Their school textbooks more or less guarantees a school that the curriculum is completely covered.

3. Developments on learning trajectories in the Netherlands

Different institutes in the Netherlands are developing and experimenting with learning trajectories for several years now. In most of these experiments, the Dutch Institute for Curriculum Development (Stichting Leerplanontwikkeling (SLO)) is involved. On their website (SLO, 2010) several examples of learning trajectories can be found. Many experiments and developments have taken place in the field of Arithmetic and Mathematic for Primary and Secondary education. An

important role in that field is for the Freudenthal Institute for Science and Mathematics Education (Freudenthal, 2010). Most developments in the field of Modern Foreign Languages are based on the European Reference Framework for Modern Languages (COE, 2010). In Secondary education, all children are taught Dutch, English, German and French, which explains the early interest in developments and experiments in this area. Furthermore, there is substantial interest in learning trajectories crossing the boundaries of subject fields to support a project based style of teaching in which several disciplines are taught in interaction around a specific problem statement. Another "hot issue" are learning trajectories crossing the boundaries between Primary and Secondary education, to support a smooth transition between those two sectors.

A recent development on the level of intermediate vocational training is the switch from discipline-oriented education to competence-based education. This development has led to different ways of describing the levels of attainment of knowledge and competences and therefore different learning trajectories.

All these experiments have led to examples of learning trajectories, differing in depth, ways of visualization or choice of subjects (subject oriented or time-oriented (e.g. a learning trajectory for a field for 2 months)). The challenge for Wikiwijs is to come up with a form of support suited to all subject areas and all levels of education. The approach chosen is described in the next chapter.

4. Approach within Wikiwijs

Within Wikiwijs, we distinguish several target groups for the functionalities of creating and maintaining learning trajectories:

1. Users who create their own learning trajectories from scratch
2. Users who will adapt available open learning trajectories by adding or replacing learning materials connected to the learning trajectory
3. Users who will look for alternatives for a small part of their commercial textbooks (where a commercial teaching method can be considered a learning trajectory).

We expect that the first target group will not consist of individual teachers, because of the complexity of the subject and the ample time most teachers have. Instead, expert organisations like the Freudenthal Institute for Science and Mathematics Education will develop examples of learning trajectories and make them available in Wikiwijs.

As was formulated in the introduction, the set of learning goals given by the Ministry of Education for a given curriculum are too broad for a teacher to enable his own learning trajectory, tailor made for a specific situation. Therefore, the **minimum requirement** for supporting these activities within Wikiwijs is to offer decompositions of the set of learning goals into more concrete learning goals. To be able for a teacher to judge if a learning goal is sufficiently covered, the **topics** that are used in achieving the learning goals need also to be visible. In figure 2 the datamodel that describes the situation is depicted.

The datamodel can be explained as follows. For each **curriculum**, determined by a **field of education** and the **level of education** (e.g. primary education, lower secondary vocational), **learning goals** are formulated by the Ministry of Education. These learning goals are decomposed

in a set of **learning objectives**. Also, a set of **subjects** is determined that has to be covered during the course of the curriculum. This leads to a set of **topics**, where each learning goal is connected to a set of subjects. This part of the datamodel is context-free. The rest of the entities of this datamodel is influenced by the context in which the learning takes place. A **learning trajectory** covers a set of topics. **Learning units** (the learning materials) also cover a set of topics. Learning units can be connected to a learning trajectory. These topics are also covered by, commercial teaching **methods (textbooks)**. The latter gives a teacher the freedom to look for alternative learning units for a small part (chapter or paragraph) of the method being used.

In this model, providing the set of subjects, the set of learning goals and the connection between those two sets in topics, are the minimum requirements to be able to create and work with learning trajectories. These three sets should be as value-free as possible to be useful for and accepted by teachers, using all the different didactical approaches offered in the Netherlands. Therefore, the entity **Learning objective interaction** is not used (yet?) into Wikiwijs. The current standpoint is that determining the interaction between learning objectives (e.g. the order in which they are meant to be taught) can depend on the didactical approach applied to the field of subject and is therefore not value-free.

For the current version of Wikiwijs, the SLO has developed these sets, implemented them into two vocabularies of learning objectives and subjects and a relationship-vocabulary 'Topic' that connects the subjects to the learning objectives. The sets are the metadata that will be connected to the learning materials and the learning trajectories. These vocabularies are developed for Arithmetic in Primary education, Mathematics in Lower-secondary general education and Dutch Language in Primary and Secondary education.

Collections of learning resources, that fit the national curricula, which are prescribed for a whole country can be prepared in such a way that all available resources, one way or another, exclusively or alternatively, can be placed into a course. Courses are considered the building blocks of a curriculum.

An example of this is the National Education Data Model as is it maintained in the US (see NEDM, 2010). This model gives a detailed description of the way curricula are being organized in which a course is the vehicle bringing together subjects that are to be taught in a curriculum. In situations where curricula are being defined in a prescriptive manner, this is a viable approach to organize learning on a national and institutional level. At the same time, it can hinder innovative approaches by teachers, who do not want to follow the 'standardized' curriculum in all instances.

Comparing to the datamodel of NEDM and of learning trajectories as modelled in Wikiwijs some clear differences can be distinguished:

> In the NEDM datamodel, an important entity is **Course**. Courses in that view are the building blocks for a curriculum. In the datamodel, the definition of Course (Postsecondary or Elementary Secondary) is: *The organization of subject matter and related learning experiences provided for the instruction of students on a regular or systematic basis, usually for a predetermined period of time (e.g., a semester or two-week workshop) to an individual or group of students (e.g., a class).* Some of the attributes are *Available Credit, Course Attendance Requirement, Session Name* (*The name of the session during the school year in which coursework was completed (e.g., Fall Semester*)). These attributes indicate that **Course** has partly organizational entities, specific for an institution. Because of the scope of Wikiwijs (not targeted to individual institutions, but to the whole educational field of the Netherlands), this level is not applicable

The entity **Learning trajectory** is not present in the NEDM datamodel. One could argue that this entity could be equivalent to Course. This is not the case however, because in NEDM Course is placed on a level between subjects and program curriculum, where in Wikiwijs the subjects are leading for a learning trajectory.
The entity **Method** is not present in the NEDM datamodel. This entity is specific for the Dutch situation, creating a valuable starting point for a search to alternative learning materials as replacement for a small part of a teaching method.
Entities like **Agency**, **Lesson plan** and **Instructional Day plan** in the NEDM model represents organizational aspects of a curriculum. Because Wikiwijs is not supporting the educational support as is provided by Electronic Learning Environments and Learning Management Systems, these entities are not present in the Wikiwijs datamodel.

As mentioned, the three vocabularies of metadata are a minimum requirement to be able to create and alter learning trajectories. A learning trajectory however has more attributes that have to be formulated to make these trajectories useful for teachers. In the introduction, a learning trajectory was described as a "rationalized composition". In Strijker (2010), the following elements are summed up as being part of this rationalization:

Vision: Why are they learning? Goals:
For what are they learning? Activities:
How are they learning? Grouping: With whom are they learning? Role of the teacher
Learning materials and sources
Type of Location
Time (both throughput time as actual learning time)
Assessment

These elements have to be described when a learning trajectory is created. Currently, this is described by the creator of a learning trajectory in a document, attached to the learning trajectory.

5. Implementation and future plans

In the autumn of 2010, the first implementation of Wikiwijs with support for learning trajectories is published. For users, it is possible to

create learning trajectories from scratch (although we expect this will rarely be used by individual teachers because of the complexity of this activity),
label learning materials using the vocabularies to determine their position in a learning trajectory
change existing learning trajectories by either add extra activities or replace learning materials added to the learning trajectory with other sources (especially for Science and Mathematics Education).

Furthermore, some repositories with learning materials are implementing the vocabularies and are labelling their learning materials with the values of these vocabularies. For support, background documents are provided, giving more information about learning trajectories and how to use them.

We plan to monitor the usage of these functions in the coming months to decide in which direction development will continue. The vocabularies for the other 39 subjects areas will be developed in the coming years.

Although we apply the position, not to offer functionalities typically of an Electronic Learning Environment or a Learning Management System, users already mentioned that using a learning trajectory is closely connected to registering the progress and learning results of individual learners. We will therefore look into connecting "hooks" onto learning trajectories so the progress students make in their learning trajectories can be captured and followed up electronically.

Figures

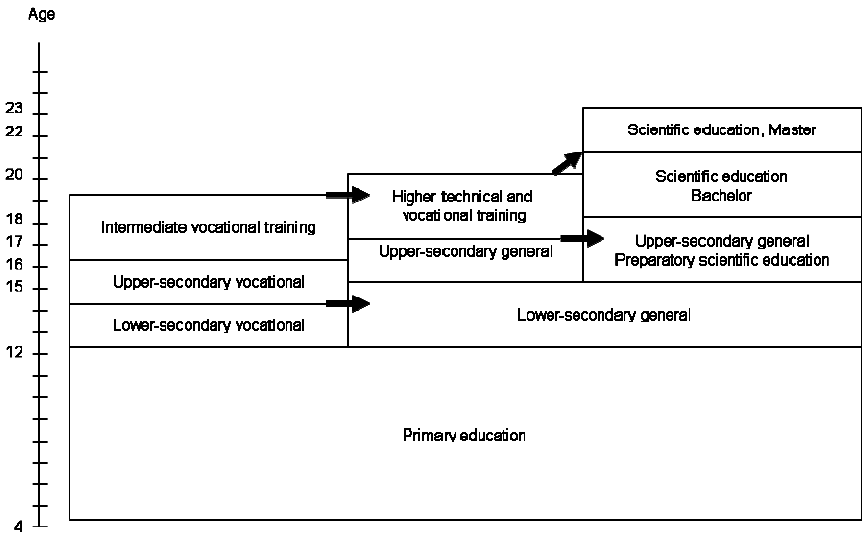

Figure 1. Main tracks of the Dutch Educational System

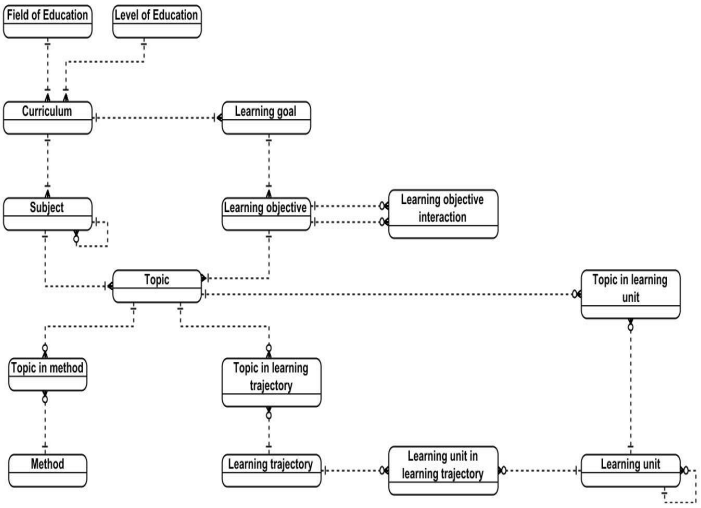

Figure 2. Datamodel for support for learning trajectories in Wikiwijs

Bibliographic references

Strijker, A. (2010). *Leerlijnen en vocabulaires in de praktijk* (Learning trajectories and vocabularies in practice) (in Dutch). Stichting Leerplanontwikkeling (SLO), Enschede.

Websites (visited 15-09-2010)
COE: http://www.coe.int/t/dg4/linguistic/cadre_en.asp
Freudenthal Institute for Science and Mathematics Education: http://www.fi.uu.nl
NEDM: http://nces.sifinfo.org/datamodel/
SLO: http://www.slo.nl

About the authors

Robert Schuwer
Open Universiteit (Netherlands)

P.O. Box 2960
6401 DL Heerlen
Netherlands.
Robert.Schuwer@ou.nl

Fred de Vries
Open Universiteit (Netherlands)

P.O. Box 2960
6401 DL Heerlen
Netherlands.
Fred.deVries@ou.nl

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/
Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

Foundation Funded OER vs. Tax Payer Funded OER – A Tale of Two Mandates

Paul Stacey
Director Communications, Stakeholder & Academic Relations, BCcampus.

Abstract
Compare and contrast foundation funded OER with taxpayer funded OER in terms of global vs. local goals, licensing options, use cases, and outcomes.

Keywords
sustainability, public funding, foundation funding, business models, strategies, adoption, mandates, goals, use cases, license continuum, OER framework

---

Recommended citation:
Stacey, P. (2010). Foundation Funded OER vs. Tax Payer Funded OER - A Tale of Two Mandates. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/5241>

Introduction

Most well known OER initiatives such as MIT's OpenCourseWare or Rice University's Connexions have been funded by foundations such as Hewlett, Mellon, and Gates. Foundation funding has been an essential component of establishing the OER field. However, foundation funding cannot be relied on for ongoing development and operations. Many OER initiatives are struggling to establish and transition to a future independent of foundation funding. A common and critical challenge is planning for and ensuring sustainability. (Baraniuk, 2008)

OER have now been in development and use since 2002. On the technology adoption lifecycle curve (Rogers, 1983) we'd say OER have come through the innovation phase, are striving for adoption, and aspire to cross into early majority.

To the extent that OER are a disruptive innovation we can also consider Geoffrey Moore's variation of this model that depicts a chasm between the early adoption and early majority phase. Many disruptive technology innovations do not successfully cross the chasm and simply disappear (Moore, 1991). Will this be the fate of OER?

OER need sustainable business models and most importantly sustaining funding. One way to think about OER funding is to map it to a traditional start-up financing cycle of investment as represented in Figure 2.

The cycle of investment starts with seed funding provided by what the field refers to as friends, family and fools (FFF). Seed funding is usually a small amount required to kick start the effort. In the context of OER seed funding is the money put up by the institutions and organizations starting OER initiatives. As the development progresses a second round of funding is often sought in the form of angel investment. Angel investors typically invest their own capital to finance a ventures need. Angel investment is high risk. A large percentage of angel investments are lost completely when early stage ventures fail in the "valley of death". Foundations have played the angel investment role for OER. Angel investment is high risk and short term. Angel capital fills the gap between friends and family and third stage funding where venture capital, banks, or initial public offering kick in.

Venture capital, bank, or IPO private investments are unlikely options for OER but the sustained funding need is real. A variety of funding models for OER have been proposed including:

Endowment
Membership
Donations
Conversion
Contributor-pay
Sponsorship
Institutional
Governmental
Partnerships and exchanges

(Downes, 2007)

In a public post secondary institution context traditional sources of funding are:

public grant funding from taxes
individual donations
organizational donations
advertising
fees for products or services

(Lane, 2008)

One strategy for sustaining OER developments as they transition from early innovation to mainstream is for government and tax-payer public funding to take over from the early stage funding foundations have provided.

This paper examines some of the factors affecting the growth and sustainability of OER. It compares and contrasts foundation and government publicly funded OER initiatives in terms of global vs. local goals, licensing options, use cases, and outcomes. Emerging from this comparison are strategies and tactics that position OER for public funding, ongoing adoption, and a long-term sustainable future.

Foundation Funded OER

The OER movement has been dominated by foundation funding. The Hewlett Foundation, the Mellon Foundation, the Ford Foundation, and more recently the Bill and Melinda Gates Foundation have been priming the OER pump with grants.

These foundations each have distinct identities and philanthropic mandates that shape the programs and conditions by which OER funding is provided. Funding awards are not provided in a no-strings-attached fashion. Foundation grants are awarded to initiatives that support the goals of the foundation.

If OER are going to transition to public funding its worth looking at foundation mandates and goals and thinking about the extent to which they match up with public funder mandates and goals.

The Hewlett Foundation based in Menlo Park CA makes grants to solve social and environmental problems in the United States and around the world. The Hewlett Foundation was the first to support OER, has provided large grants on an ongoing basis, and continues to play an active role. Of all foundations Hewlett is by far the most influential and largest investor in the OER field.

Hewlett has funded most of the major, well-known OER initiatives including:

MIT OpenCourseware
Rice University Connexions
United Kingdom Open University's OpenLearn
Carnegie Mellon University Open Learning Initiative
Commonwealth of Learning
Teachers Without Borders
Yale University
Monterey Institute for Technology and Education
Institute for the Study of Knowledge Management in Education
and many others

The Hewlett Foundation's OER goal is to: "Equalize access to knowledge for teachers and students around the globe through Open Educational Resources" (Hewlett, 2010).

The Mellon Foundation's mandate and goals are largely around supporting higher education and the humanities including research libraries, centres for advanced study, art museums and art conservation, and the performing arts. (Mellon, 2004 pp. 9)

The Mellon Foundation's role in open education has primarily been through awarding grants for initiatives that benefit teaching and learning through the collaborative development of open-source software. From an OER perspective Mellon's focus has been on mass digitization of content in libraries and building archives and sharing content across institutions rather than supporting initiatives to develop open course content. But Mellon has partnered with other foundations to co-invest in large OER initiatives such as MIT's OCW.

The Ford Foundation's goals are to strengthen democratic values, reduce poverty and injustice, promote international cooperation, and advance human achievement. (Ford, 2010)The Ford Foundation has supported OER as part of the Partnership of Higher Education in Africa and IKSME's OER ArtsCollab which is engaging teachers, learners, and practitioners in the collaborative development and use of OER in the arts and social justice.

The Bill & Melinda Gates Foundation makes grants in global development, global health and the United States. The Gates Foundation is supporting OER as a disruptive innovation. The Foundation's Technology in Post Secondary Success background paper states; "We will make investments to test whether community-developed and openly distributed course materials, platforms and technologies can effectively disrupt traditional teaching methods and increase student engagement." (Gates, 2010a)

In Oct. 2009 Gates made a $5.3 million investment in the Washington State Student Completion Initiative. (Gates, 2010b) Of that total $1.8 million is going to the Washington State Board for Community & Technical Colleges for an Open Course Library initiative developing 81 high enrolment courses as OER.

In the OER context foundations like Hewlett, Mellon, Ford and Gates are angel investors supporting OER initiatives at a scale and with a volume of financing significantly beyond the start-up seed funding of OER initiators. Most foundations have global and humanitarian mandates and goals.

Foundation Funded OER Initiative Goals

We've looked at the goals of foundations lets now look at specific foundation funded OER initiatives and see to what extent their goals match those of their funding foundation.

MIT OCW Goals

Advance education around the world by publishing MIT courses as a public good for the benefit of all. (Hockfield, 2010)

Rice University Connexions

Connexions has two primary goals:

1. to convey the interconnected nature of knowledge across disciplines, courses, and curricula
2. to move away from solitary authoring, publishing, and learning process to one based on connecting people into global learning communities that share knowledge.

(Baraniuk, 2008, pp. 233)

United Kingdom Open University's OpenLearn

To make some of The Open University's distance learning materials freely accessible in an international web-based open content environment and, in so doing, to advance open content delivery method technologies by:

deploying leading-edge learning management tools for learner support
encouraging the creation of non-formal collaborative learning communities
enhance international research-based knowledge about modern pedagogies for higher education

(Lane, 2008, pp. 156)

Carnegie Mellon University Open Learning Initiative

The OLI initiative is a research-based approach to OER. The fundamental goal of OLI is to develop Web-based learning environments that are the complete enactment of instruction. This includes developing better resources and practices, cycles of evaluation and improvement, and advancing fundamental understanding of learning. (Thille, 2008, pp. 167)

A second major goal of the OLI is to provide access to high quality postsecondary courses (similar to those taught at Carnegie Mellon) to learners who cannot attend such institutions. (Thille, 2008 pp. 175) To support this OLI's website provides free online courses and course materials that enact instruction for an entire course.

Yale University

Open Yale Courses provides free and open access to recorded lectures of a selection of introductory courses taught by faculty at Yale University. The aim of the project is to expand access to educational materials for all who wish to learn. Registration is not required and no course credit is available.

(Yale, 2010)

Goals like "advance education around the world", "publish courses as a public good" "connect people into global learning communities" and "expand access for all who wish to learn" align well with Foundation goals. But do they align well with government publicly funded education goals?

Publicly Funded OER

Government public funding of OER has not been as widely featured in the OER field as foundation funded OER initiatives. The authors own BCcampus initiative in Canada is one example, but a quick scan of the most highly cited OER initiatives shows just how dominating foundation OER

have been. During the drafting of this paper the author contacted several leaders in the OER field and asked them to identify OER initiatives that are funded by public taxpayer dollars at the state, province or national level. The initiatives that emerged in response are:

BCcampus OER (Canada)
Southern Regional Education Board SCORE (United States)
AEShareNet & edna (Australia)
OERNZ (New Zealand)
JISC JOURM & OER (United Kingdom)
Wikiwijs (Netherlands)
OPAL (European Union)
Open High School of Utah (United States)
Utah State Wide OCW (United States)

For comparative purposes the author has chosen initiatives focused on higher education open content as opposed to open educational practices, open source software, or other aspects of the field.

Lets look at the goals of publicly funded OER initiatives.

BCcampus OER

Funded through an annual Online Program Development Fund provided by the Ministry of Advanced Education the BCcampus OER goals are to increase credential opportunities available to students throughout the province by funding multi-institutional partnerships for the development of shared credit-based post-secondary online courses, programs, and resources.

BCcampus OER goals translate into three metrics:

partnerships
credentials
sharing & reuse

(BCcampus, 2010)

Southern Regional Education Board SCORE

Funded by the Southern Regional Education Board the goals of SCORE are to improve teaching and learning and achieve cost savings through a multistate K-12 and higher education initiative to share digital learning course content among colleges, universities and schools in SREB states. SCORE:

establishes school and college relationships to create, license and provide high-quality content.
provides cost-effective learning resources for K-20 by sharing development costs among states and commercial companies.
reduces duplication of effort.
increases faculty and student productivity.
adheres to e-learning standards.

(SREB, 2010)

AEShareNet & edna

AEShareNet is a collaborative system in Australia established by the Australian Ministers of Education and Training to streamline the licensing of intellectual property so that Australian

learning materials are developed, shared, and adapted efficiently. It plays an intermediary role between developers and users and in particular facilitates the transfer of educational resources between educational institutions. Its goal s to provide a process and online system that is streamlined, avoids duplication and increases efficiency. (OECD CERI, 2006 pp. 3-4) AEShareNet and other licensed educational resources are distributed through edna's repository.

OERNZ

Funded by the Tertiary Education Commission, the objective of the New Zealand Open Educational Resources project is to develop courseware that will be freely available to all tertiary education institutions in New Zealand. Reduction in the duplication of investment is a primary goal, but without risking the pluralism of ideas and innovation that underpin a vibrant education sector. (New Zealand OER, 2010)

JISC JORUM & OER

The United Kingdom's Joint Information Systems Committee (JISC) funded the JORUM initiative which put in place a repository for content United Kingdom higher education institutions wished to share. More recently JISC launched an OER content initiative to support the open release of existing learning resources for free use and repurposing worldwide. JISC OER will use JORUM as one of the vehicles for sharing.

The goals of JORUM are to enable the sharing, reuse and repurposing of learning and teaching resources through an online, repository service that supports policy, practice and productivity in learning and teaching in the United Kingdom and beyond. (JORUM, 2010)

The goals of JISC's OER program are to explore the sustainability of long-term open resources release via the adoption of appropriate business models. Supporting actions may include modifications to institutional policies and processes, with the aim of making open resources release an expected part of the educational resources creation cycle. JISC's OER program is expected to build the capacity of the sector for sustainable OER release, generate better understanding of OER reuse, and make OER easier to find and use. (JISC OER, 2010)

Wikiwijs

The Netherlands wikiwijs OER initiative goals include:

stimulating development and use of OER
creating options for specialized and customized education
increasing quality of education through more flexible and up-to-date materials
improving access to both open and 'closed' digital learning materials
reducing time to find and find resources that are quality and fit curriculum
increasing teacher involvement in development and use of OER

(Schuwer, 2010)

Goals like "increasing credential opportunities available to students throughout the province", "establish school and college relationships" "develop courseware freely available to tertiary institutions in New Zealand" and "expand access to both open and closed digital learning resources" align well with government public funding goals.

Government publicly funded OER have local goals that serve citizen education access and credential needs.

OER Licensing

One way OER goals are being achieved is through use of licenses. Figure 3 shows an OER licensing continuum. At the far left of the continuum is full copyright all rights reserved. At the far right end of the continuum is public domain no rights reserved. Licensing options are increasingly open as you move from left to right along the continuum.

Foundation funded OER do not involve license options. Instead a single Creative Commons license is used with the majority of initiatives going with Attribution or Attribution Non-Commercial Share Alike.

In contrast publicly funded OER often involve license options along an open continuum. The authors own BCcampus OER initiative gives developers of OER a choice between local sharing within the province of BC through a BC Commons license or global sharing using Creative Commons. JISC's JORUM initiative has followed a similar path and Australia's AEShareNet uses an even more refined approach.

Recent publicly funded OER initiatives such as JISC's OER and Netherlands Wikiwijs are being more explicit about dictating use of Creative Commons. But they still reference and acknowledge a need to support more closed resources. Lack of knowledge and fears around intellectual property, copyright infringement, quality and competitive advantage are still barriers to mainstream adoption and use of Creative Commons only.

It's interesting to note that no OER initiatives are fully open. None are placing resources directly into the public domain.

OER Use Cases & Outcomes

Foundation OER initiatives mentioned in this paper primarily see OER as an act of publishing content and a form of public philanthropy. Use cases include:

> marketing promotion of the institutions formal for-credit offerings (Wiley, 2010)
> informal non-credit autonomous self-paced study (Lerman, 2008 p. 216)
> academic planning for students enrolled at institution (Lerman, 2008 p. 222)
> international distribution and translation, especially in developing countries (Lerman, 2008 pp 215 & 224)
> assembly of OER into print-on-demand textbooks (Baraniuk, 2009, p. 2)

Foundation funded OER are typically housed on a destination web site or use custom built software resulting in controlled access and use. Most resources are not optimized for online delivery

independent of the OER site. Despite the OER license used by many of these initiatives downloads are often not editable or modifiable given their fixed file formats such as .pdf .

Foundation funded OER initiatives are often more oriented to informal non-credit learning for students than to teachers. MIT is explicit in stating OCW, is not an MIT education, does not grant degrees or certificates, and does not provide access to MIT faculty. Initiatives like Carnegie Mellon's OLI require instructors to ask permission for an account and even then use of the OLI OER must be done through Carnegie Mellon's OLI technology rather than the instructor's own institutions applications. As part of its sustainability strategy Carnegie Mellon's OLI use by instructors even has fees.

The primary use case of publicly funded OER is for formal credit-based academic offerings rather than informal study by students. Publicly funded OER are often a form of curriculum development providing faculty with resources to use in their courses or in development of new for-credit offerings.

Publicly funded OER are typically housed in a repository which provides an access and distribution role but not usually a creation or course delivery role. OER are uploaded, searched for, and previewed on the repository but usually downloaded for use independent of the repository through an institutions own learning management system or other educational technology.

Conclusion

Comparing and contrasting foundation with government publicly funded OER initiatives reveals commonalities, differences, and a diversity of approaches.

OER goals/mandates, licenses, and use cases can be strategically situated within an overarching OER framework (Stacey 2006) as represented in Figure 5.

This framework can be used to define and refine strategy and tactics associated with any OER initiative. It can also be used as a basis for comparing and contrasting OER initiatives. As an example the following table highlights differences between the BCcampus OER initiative and MIT's OCW initiative.

As shown in this table the publicly funded BCcampus OER initiative has focused on developing new online learning resources through system partnerships and collaboration. The content produced is primarily intended for faculty use in formal for-credit education offerings delivered via their institutions learning management system. The primary mandate for open sharing within the jurisdiction of the public funder is enabled through a BC Commons open license and global participation supported as a choice of the developer through a Creative Commons license.

In contrast the foundation funded MIT OCW OER initiative has focused on publishing a single prestigious institution's existing lectures, course notes, and learning activities associated with campus-based classroom activity. These resources are freely provided as a public good for use primarily in informal non-credit learning. The foundation funded OER meets global philanthropic goals by mandating a single Creative Commons license but requires users to access the OER through MIT's technologies.

Emerging from the comparisons made in this paper the following strategies and tactics position OER for public funding, ongoing adoption, and a long-term sustainable future:

ensure OER initiative goals fulfil public funder education access and credential needs first before serving global needs

establish OER development initiatives as multi-institutional partnerships with each institution using the developed resource in for-credit offerings right from the start

use OER development as a means of generating collaborations between institutions

offer a range of OER licensing options along the open continuum

provide cost efficiencies and reduction of duplication by aggregating and distributing quality OER as a service

ensure OER have a form factor that is modifiable

support download and autonomous use of OER by institutions using their own technology especially learning management systems

look for ways to make OER creation and use part of regular operational academic practice

Figures

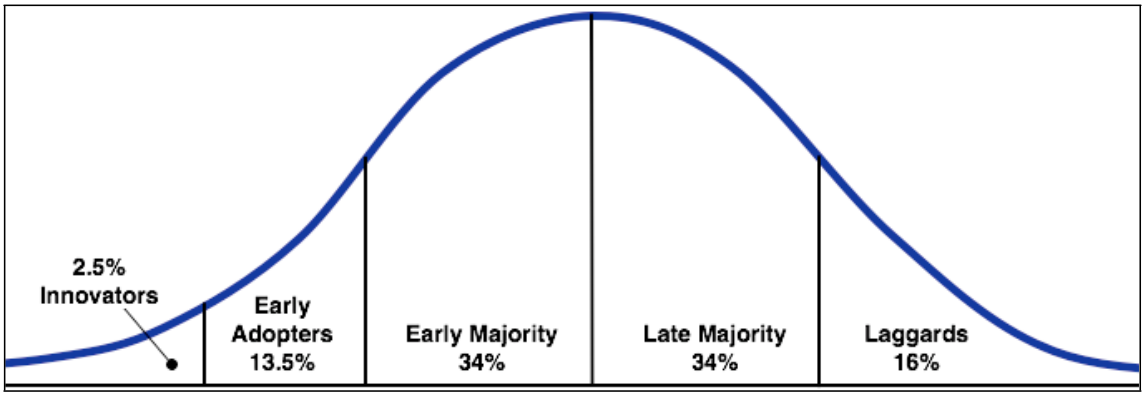

Figure 1 - Technology Adoption Life Cycle
(Source: http://en.wikipedia.org/wiki/Technology_adoption_lifecycle)

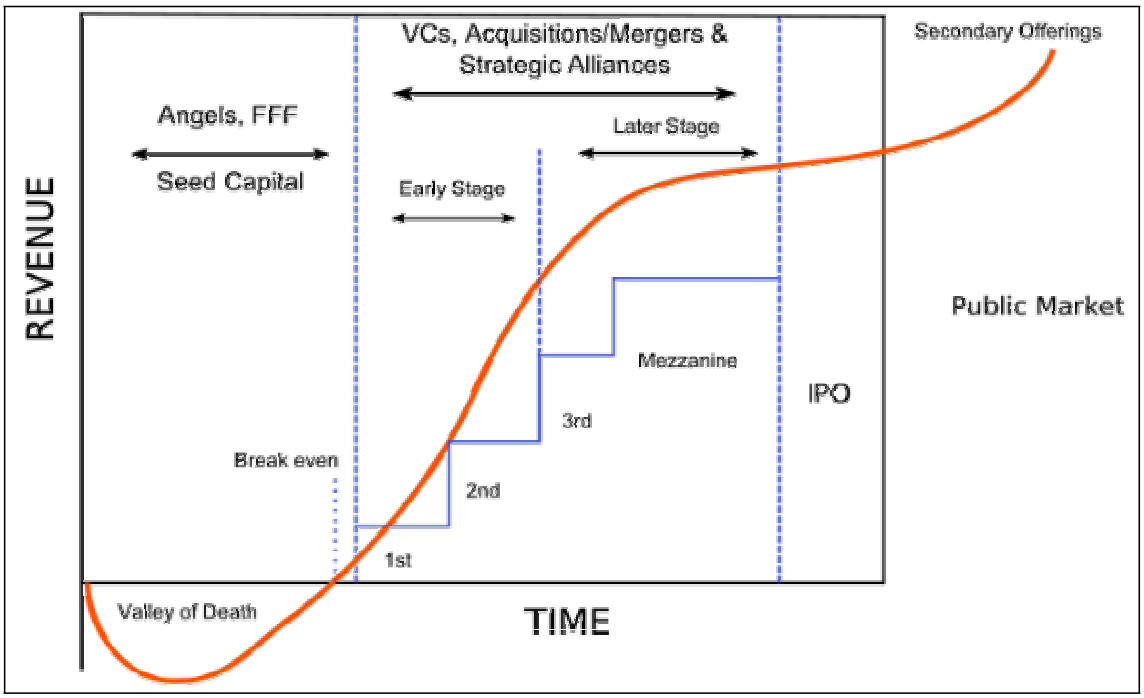

Figure 2 - Financing Cycle
(Source: http://en.wikipedia.org/wiki/Seed_funding)

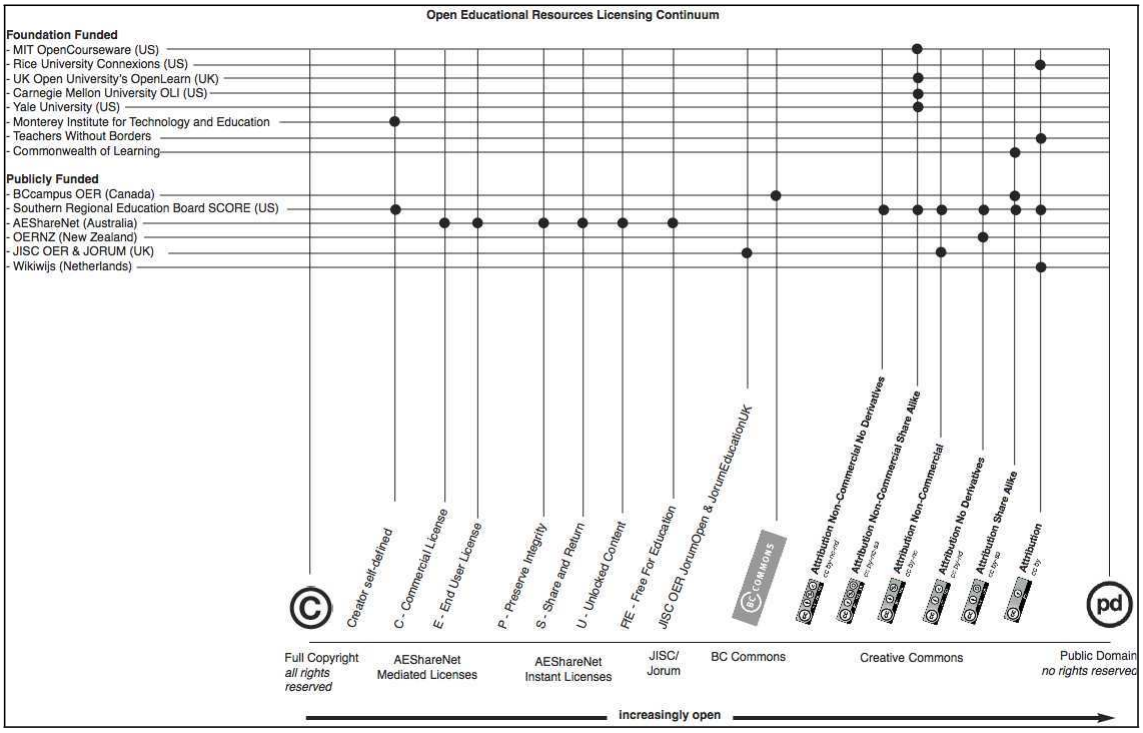

Figure 3 - OER Licensing Continuum

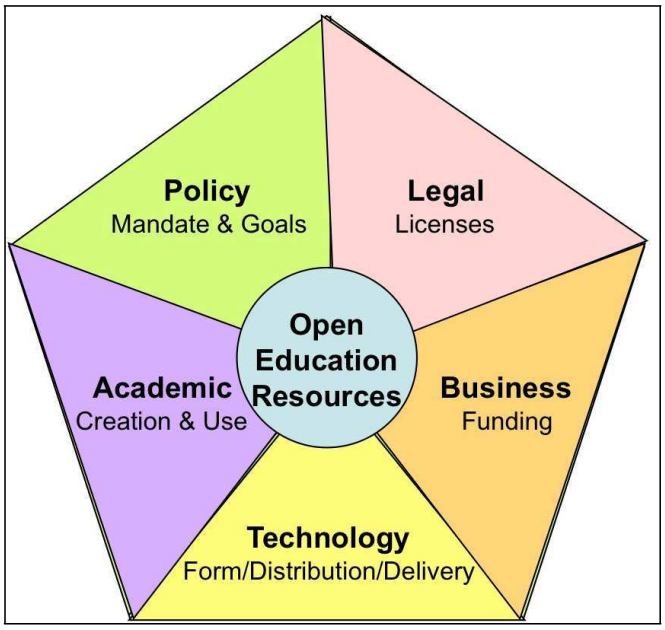

Figure 4: OER Framework

BCcampus OER	OER Framework	MIT OCW
Publicly funded	**Business** Funding	Foundation funded
License options: Creative Commons BC Commons	**Legal** Licenses	No license options: Creative Commons
Local	**Policy** Mandate & Goals	Global
Multi-institutional Develop new Teacher focus Formal (for credit)	**Academic** Creation Use	Solo Publish existing Student focus Informal (non-credit)
Digital for online delivery System wide repository Use your own tech LMS	**Technology** Form Distribution Delivery	Digitize lectures/class notes MIT OCW site MIT OCW site

Figure 5 - Differences between the BCcampus OER initiative and MIT's OCW initiative

Bibliographic references

Baraniuk, Richard G. (2008). Challenges and Opportunities for the Open Education Movement: A Connexions Case Study. In T. Iiyoshi and M. S. V. Kumar (Eds.)
Opening Up Education: The Collective Advancement of Education through Open Technology, Open Content, and Open Knowledge, pp. 232. Cambridge, MA: MIT Press.

Baraniuk, R. G. (2009). *How Open is Open Education?* In Domus, March 2009. Retrieved August 31, 2009 from http://dsp.rice.edu/~richb/OER-IP-Domus-mar09.pdf

BCcampus OER (2010). *Online Program Development Fund*. Retrieved August 31, 2010 from http://www.bccampus.ca/online-program-development-fund-opdf-/

Downes, S. (2007). *Models for Sustainable Open Educational Resources*. Interdisciplinary Journal of Knowledge and Learning Objects. Volume 3, pp. 29-44.

Ford (2010). *Ford Foundation Mission*. Retrieved August 31, 2010 from http://www.fordfoundation.org/about-us/mission

Gates (2010a). *Technology in Postsecondary Success Background Paper*. Retrieved August 18, 2010 from http://www.gatesfoundation.org/united-states/Pages/united-states-education-strategy.aspx

Gates (2010b). *Washington State Community and Technical Colleges Launch the Washington State Student Completion Initiative Press Release*. Retrieved August 18, 2010 from http://www.gatesfoundation.org/press-releases/Pages/grant-to-launch-washington-state-student-completion-initiative-091014.aspx

Hewlett (2010). *Hewlett Foundation Education Program Goals*. Retrieved August 6, 2010 from http://www.hewlett.org/programs/education-program

Hockfield, S. (2010). *OCW President's Message*. Retrieved August 31, 2010 from http://ocw.mit.edu/about/presidents-message/

JORUM (2010). *Jorum Purpose*. Retrieved August 31, 2010 from http://www.jorum.ac.uk/termsofservice.html

JISC OER (2010). *Open Educational Resources Programme*. Retrieved August 31, 2010 from http://www.jisc.ac.uk/oer

Lane, A. (2008). *Reflections on sustaining Open Educational Resources: an institutional case study*. Retrieved August 31, 2010 from http://www.elearningeuropa.info/files/media/media16677.pdf.

Lane, Andrew (2008). Widening participation in education through open educational resources. In T. Iiyoshi and M. S. V. Kumar (Eds.)
Opening Up Education: The Collective Advancement of Education through Open Technology, Open Content, and Open Knowledge pp. 149–164. Cambridge, MA: MIT Press.

Lerman S., S. Miyagawa, A. H. Marguiles. (2008). Open Courseware: Building a Culture of Sharing. In T. Iiyoshi and M. S. V. Kumar (Eds.)
Opening Up Education: The Collective Advancement of Education through Open Technology, Open Content, and Open Knowledge, pp. 213-227. Cambridge, MA: MIT Press.

Mellon (2004). *The Andrew W. Mellon Foundation 2004 Annual Report*. Retrieved August 13, 2010 from http://www.mellon.org/news_publications/annual-reports-essays/annual-reports

Moore, Geoffrey A. (1991). *Crossing the Chasm*. New York: HarperCollins Publishers.

New Zealand OER (2010). *New Zealand Open Educational Resources Project*. Retrieved August 31, 2010 from http://www.repository.ac.nz/.
OECD CERI (2006). *AESharenet, Australia*. Retrieved August 31, 2010 from http://www.oecd.org/dataoecd/61/21/37648060.pdf
Rogers, Everett M. (1983). *Diffusion of Innovations*. New York: Free Press.
Schuwer, R. (2010). *Wikiwijs A Nation Wide Initiative in The Netherlands*. Retrieved August 31, 2010 from http://wikiwijsinhetonderwijs.nl/over-wikiwijs/english/
SREB (2010). *Digital Content SCORE Goals*. Retrieved August 10, 2010 from http://www.sreb.org/page/1160/digital_contentscore.html
Stacey, P., R. Rominger (2006). A Dialogue on Open Educational Resources and Social Authoring Models. In *Open Education 2006 Conference Proceedings* pp. 107-115, Utah State University.
Wiley, D. (2010). *Research on OER Sustainability and Impact*. Retrieved August 31, 2010 from http://opencontent.org/blog/archives/1596
Yale (2010). *Open Yale Courses Aim*. Retrieved August 31, 2010 from http://oyc.yale.edu/

About the author

Paul Stacey
Director Communications, Stakeholder & Academic Relations, BCcampus.

With over 25 years as an educator in adult learning, Paul has delivered high-tech educational programs in the private and public sector around the world. Working with BCcampus, Paul is responsible for communications, curriculum development and academic growth. His BCcampus work includes support for OER curriculum development, communities of practice, and professional learning for educators. All BCcampus initiatives connect, collaborate, and innovate by generating partnerships among BC's public post-secondary institutions.

In addition to leading development of services to enhance online learning in BC's public post-secondary system Paul is himself an active online learner and online instructor. Paul completed a 100% online graduate program in Adult Learning and Global Change and, as an associate faculty member, co-developed and taught an online International and Global Distance Education course for the Master of Arts in Learning and Technology program at Royal Roads University.

BCcampus
555 Seymour Street
Vancouver, British Columbia
Canada, V6B 3H6
pstacey@bccampus.ca
http://www.edtechfrontier.com

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Beyond the first steps: Sustaining Health OER Initiatives in Ghana

Nadia Tagoe,* Peter Donkor,* Richard Adanu, Ohene Opare-Sem,*** N. Cary Engleberg,**** Aaron Lawson*****

* College of Health Sciences, Kwame Nkrumah University of Science and Technology

** College of Health Sciences, University of Ghana Medical School

*** School of Medical Sciences, Kwame Nkrumah University of Science and Technology

**** University of Michigan Medical School

Abstract

The introduction of open educational resources (OER) in two Ghanaian universities through a grant-funded project was embraced with a lot of enthusiasm. The project started on a high note and the Colleges of Health Sciences in the two universities produced a significant number of e-learning materials as health OER in the first year. Growing challenges such as faculty time commitments, technological and infrastructural constraints, shortage of technical expertise, lack of awareness beyond the early adopters and non-existent system for OER dissemination and use set in. These exposed the fact that institutional policy and integration was essential to ensure effective implementation and sustainability of OER efforts. Informed by the early OER experiences at the two institutions, this paper proposes that institutions in low resource settings perhaps need to pay close attention to awareness creation, initiative structuring, funding, capacity building, systemization for scalability and motivation if OER sustainability is to be achieved.

Keywords

open educational resources, sustainability, higher education, low-resource settings

---

Recommended citation:

Tagoe, Nadia; Donkor, Peter; Adanu, Richard et al. (2010). OpenSpires: Opening up Oxford like never before. In *Open Ed 2010 Proceedings* Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy]. <http://hdl.handle.net/10609/4849>

Introduction

Open educational resources (OER) have been described as "digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research" (OECD 2007). Their introduction in the early 2000s was embraced by many as the new way of offering learners and teachers wide access to educational material for their personalized use and adaptation. The role of these resources in enhancing teaching and learning in higher education is becoming even more pivotal in developing countries as educational institutions are usually faced with increasing student intake and deepening resource constraints such as limited access to print resource materials, inadequate numbers of faculty members, limited infrastructural capacity, low research capacity, and uneven development of basic ICT infrastructure.

Openness of educational resources has been immensely facilitated by the introduction of open licensing. The Creative Commons[1] for example, provides free licenses that enable authors and other creators to customise the licensing of their work based on the freedom they want it to carry. The authors determine how others may share, remix, commercialize, or alter the resource. Thus, Creative Commons Licensing has been widely used in OER development by clarifying the limits of resource usage. OERs typically come in various textual, audio, video or even simulative formats. Most are electronic and are usually distributed via the internet or local networks; thus promoting access on demand and learning at the learners' own pace. Such learner-centred teaching and learning materials go a long way in helping to address the challenges faced by higher education institutions in low resource settings.

The Colleges of Health Sciences (CHS) at two Ghanaian universities, the Kwame Nkrumah University of Science and Technology (KNUST) and the University of Ghana (UG) adopted the OER paradigm in 2009. With the help of a grant provided by the William and Flora Hewlett Foundation, KNUST and UG, in collaboration with the Universities of Michigan, Cape Town and Western Cape and OER Africa, piloted a Health OER initiative. Activities carried out under the project included a series of sensitization, policy, and production workshops for administrative heads and faculty members in February 2009. These workshops were organized in conjunction with University of Michigan and OER Africa. The two Colleges at KNUST and UG therefore became the implementing units for the broader introduction of OER at their respective institutions.

The First Steps

The OER concept was embraced with a lot of enthusiasm at the two institutions, and the initiative started on a high note. This was demonstrated by the several pilot e-learning and OER projects that were proposed by faculty members who attended the first production workshops at KNUST and UG. Following these workshops, faculty members began creating instructional modules on self-chosen topics and in their preferred format using the Creative Commons licensing. Technical support was provided by media specialists to ensure that content and designs were web-friendly and user-friendly. The productions were checked for possible copyright issues (a process referred to as

'dScribing' by University of Michigan[2]) prior to being forwarded to the web administration team for online publication. These efforts were assisted by one of us (NCE), a visiting professor from the University of Michigan who worked with the two institutions for a year to nurture their OER efforts. These exploratory endeavors also brought institutional resources that could further promote the initiative to the fore. The College of Health Sciences at KNUST for instance, discovered the potential of the Department of Communication Design which provided the media and technical expertise required for OER production. Similarly, leaders at UG engaged a resident multimedia expert to be responsible for the technical aspects of producing the desired materials. Drafts of institutional policies on OER were drawn up to create the necessary environment for the development, publication and dissemination of OER by addressing issues such as human resource, infrastructure, collaborations, publication rights and licensing, technical support, review process and quality assurance, access, potential liability, motivation and academic rewards.

The Colleges were particularly enthused by the opportunity OER presents as it helps improve the teaching of scientific processes through the use of images, animations and other visual means and the use of electronic resources to facilitate clinical demonstrations, which are conventionally taught to large groups of students simultaneously. The enrollment of large numbers of students well above the infrastructural and resource capacity of the institutions as well as the current promotion of learner-centred approaches in teaching and learning made the OER initiative more welcome. Indeed e-learning, which is the basis for all our OERs, has proved to be an effective method of teaching the complex physiological and biochemical processes associated with health sciences (Greenhalgh 2001, Ruiz et al. 2006, Bridge et al. 2009).

Initial efforts at the two institutions led to the production of thirteen (13) health OER materials from scratch and the creation of an OER-dedicated website for dissemination. Initially the OER materials were password-protected on the websites. However, institutional administrative approval was later granted to make the productions accessible pending the approval of the institutional policies. The OERs became freely accessible, and Ghana became a producer of health OER, making the institutions and authoring faculty more visible.

An unpublished survey by the teams at KNUST and UG that used self administered questionnaires to assess the acceptability of electronic OERs in their respective Medical Schools indicated extremely positive feedback. Two narrated animations that explained the polymerase chain reaction (PCR) were distributed to 150 third-year medical and students at KNUST. This topic was chosen because of student feedback on the difficulty they faced in understanding it from lectures or books. Similarly, a comprehensive learning package on Total Abdominal Hysterectomy (TAH) including narrated videos describing the surgery, interactive cases, and a self-assessment quiz was also distributed to nineteen fifth-year students at UG at the beginning of their clinical clerkship. With 73% and 100% response rates from KNUST and UG respectively, 82% of the KNUST students and all the UG students viewed the materials. On a 0 to 4 point scale used to rate the usefulness of the material; 4 being "extremely helpful" and 0 being "unnecessary", the average rating for the PCR animation was 3.5 and the average for the TAH videos was 3.6. All students who viewed the programmes at both institutions (100%) indicated that the e-learning programmes were "more effective" in comparison to other methods of learning. These results suggest that the dividends of adopting the use of e-learning and OER in higher education will be significant.

The Learning Process

As with every new initiative, difficult and unique challenges must be confronted as the process grows. Over-committed faculty time, technical, administrative and funding constraints became more apparent as the programme grew.

First, the heavy demand on the time of overstretched faculty resulted in a considerable wane in the initial excitement about OER and a decline in the level of activity among faculty as a typical OER module for instance, required about 35 man-hours which were supplemental to their regular responsibilities. Challenges including technological and infrastructural constraints and lack of the appropriate technical competencies also contributed to a stalled OER drive. Additionally, the promotion of the use and re-use of the materials being created was conspicuously ignored being limited to the authoring faculty and students in their class. Beyond that, the OERs were seen as being distinct from regular coursework and no plan for a formal integration into regular teaching and learning existed. Most effort and resources were directed towards just the production and publication of these OER materials to the detriment of their effective usage.

The resource gap experienced at the end of this donor-funded project also had a significant effect on OER efforts. The project period was relatively brief and sustainability measures had not been established. As is the case in many institutions, policies and procedures usually evolve with excruciating slowness (D'Antoni 2008). KNUST and UG were no exceptions and the adoption of OER into the organisational culture of the two institutions for both individual faculty and the institution as a whole, was a slow process.

Implications for Sustainability

The challenges revealed during the natural growth process of this initiative raised some valid sustainability questions. One can consider "sustainability" for this purpose, as the continued viability and achievement of one's OER objectives over the long term. Most OER initiatives start as grant-funded projects and rarely last beyond the life of the project (Friesen 2009). A UNESCO-initiated survey of over 600 participants from 98 countries listed sustainability as the fourth most important issue out of fifteen, in promoting OER (D'Antoni 2008). Even the top three issues that emerged - awareness raising and promotion, communities and networking, capacity development – are factors that also promote sustainability. The key lesson learnt by various OER implementers and evaluators is that sustainability cannot be attained without institutional integration at all levels (Dholakia et al. 2006, Downes 2007, OECD 2007, D'Antoni 2008, Friesen 2009). Based on our experiences in Ghana, we reinforce this assertion by proposing six areas that require institutional focus if OER sustainability is to be achieved (See Figure 1).

First, awareness creation is a process that seems especially important for driving the institutional adoption of OER in the first few years. At the two institutions, the policy and production workshops, the institutional draft policy and the first few OER projects served to launch OER awareness. The draft policies also helped to orient the governing bodies at the various levels about

institutional responsibilities and issues regarding intellectual property and copyright, quality assurance, staffing, training, motivation and academic rewards, as well as other administrative and infrastructural support. Continuous sensitization among faculty members and students is another effective way of facilitating OER implementation in institutions. Both KNUST and UG have done this by appointing OER Coordinators within their Colleges of Health Sciences whose tasks include getting additional faculty involved in material production, increasing student awareness and encouraging the use of these materials. Similarly, acquainting national bodies responsible for education and financing aware of this new direction and its benefits to education will go a long way to advance the OER cause in Ghana.

Secondly, a structural framework must be established within which OER activities operate. This is one way of addressing the post-project gaps created by the over-dependence on grants as the main driver of OER initiatives in our institutions. Structure must be instituted right from project design. A key deliverable of any OER initiative should be the business or sustainability plan which must contain short, medium and long term strategies to ensure its sustenance within the implementing institution. This plan will include strategies on funding, continuous awareness creation, building human and infrastructural capacity, systemized production of materials and mechanisms for integrating the use of OERs in mainstream teaching and learning. Such a plan will facilitate the continued production and use of OER and also lay the foundation for institutional take-over and integration.

Funding is another area of concern crucial to sustainability and must be tackled frontally. KNUST and UG, being public universities, are mainly financed by the government and therefore face funding challenges. One approach as suggested by Friesen (2009) is to link the tangible benefits of OER initiatives to core institutional priorities thus making a strong case for institutional funding. MIT's evaluation of its Open CourseWare revealed its significant influence on the selection of that institution by prospective students (MIT 2006). Similarly, KNUST has in recent times, embarked on increasing its visibility and contribution to global knowledge through digitization and opening up of all its printed scholarly work. The OER initiative can therefore link its objectives to this institutional priority in order to obtain the necessary support. UG is also committed to new ways of increasing the number of students trained in its health disciplines and OER can play a key role in this initiative. Institutional and government funding support however will eventually have to be supplemented by other funding models. The array of sustainable funding models for OER extensively outlined by Downes (2007) and Dholakia et al. (2006) provide enough choice for most settings.

Capacity development within the institution for OER production is also essential to most sustainability efforts. This includes, but is not limited to, the training of faculty members on material development and pedagogy so that they are able to contribute their intellectual content to the institutional effort. The Communication Design Department at KNUST has committed to capacity development by incorporating interactive design into its curriculum. Students will receive training and exposure to the creation of OER and thus become a valuable resource to the OER efforts of our universities. Local and global networking and collaborations also present a potential for cross-institutional capacity building. OER Africa's African Health OER Network, of which both KNUST and UG are members, is one example of platforms which promote the free access and sharing of educational resources as well as professional interaction among academics.

Another vital input to sustainability is the systemization of OER operations to facilitate scalability of material production. It is essential to design an operational system for the production and use of OERs that is informed by the experience of the introductory phase and the institutional OER structural framework proposed above. Workflow processes for creation and adaption of materials, mode of integration into regular coursework and formative evaluation will be useful constituents of such a system. Faculty will need to be supported to continue authoring OER materials. It may be helpful for instance, to schedule residential OER material production workshops for faculty and support staff where they would be free from regular work and could put more time into producing the materials. Student involvement in the production process has also been proposed by various authors (Atkins et al. 2007, Wiley 2007) and proven by some institutions such as University of Michigan's dScribe process, to be a valuable resource in OER initiatives. The two Ghanaian universities intend to explore the student corps system as support for creating, designing and adapting content, as well as clearing these materials for publication. At KNUST, Communication Design students supervised by faculty, work with College of Health Science faculty to produce OER as part of their required coursework for which they get academic credit. This has created a symbiotic relationship between the Colleges of Health Science and Art. Similar schemes could be replicated with students in other relevant disciplines, thus building OER competency and helping to reduce faculty time requirement in OER creation and the cost of required personnel.

Cross-institutional collaboration is another way to strengthen a systemized OER production process, especially in low resource settings. KNUST and UG so far, have produced modules on different topics and the two institutions freely share these resources for use and storage in each other's institutional repositories. Going a step further, the collegial approach to OER creation adopted by the Teacher Education in Sub-Saharan Africa (TESSA) programme promises even more benefits (Wolfenden 2008). It makes use of collaborative creation of resources with collective originality and authorship by using common templates in order to enable use in different environments. Such approaches do not only save resources and eliminate duplication of efforts but also enhances capacity building and the quality of materials created. Above all, greater numbers of OER productions become more likely than by pursuing insular individual approaches.

While focusing on the production of these materials, consideration should also be given to the appropriate enabling technology required. In spite of technological and connectivity challenges, innovative measures could be pursued to facilitate the dissemination and use of OER. Promoting interoperability and creating small-sized modular materials which are downloadable and could be distributed via simple physical media such as CDs and USB 'thumb' drives are examples of such measures. Enabling access of OER materials containing streaming video or audio on the local institutional server (intranet) is another way of circumventing the connectivity challenges.

Lastly, motivation and reward will facilitate the active participation of stakeholders to ensure the sustainability of OER in institutions. This can take the form of release time for OER activities and the recognition of published OER as credit towards promotions, particularly if OER products are endorsed by peer-review organizations, such as the Med Ed Portal of the American Association of Medical Colleges. This will increase interest and commitment from faculty. Students could also be motivated to assist in the development of OER through training, sponsorship to inter-institutional meetings, stipends and prestige.

Conclusion

The positive role of OER in enhancing education and access to knowledge cannot be over-emphasized. It has undoubtedly presented an opportunity for higher educational institutions in developing countries to make up for the shortage of educational resources that most grapple with. OER can be a solution much as mobile telephony has been to developing countries due to lack of fixed telephone infrastructure. Developing countries now have more than twice as many mobile subscriptions as in the developed world and percentage share of total world subscriptions for developing countries saw a sharp increase from 40% in 2000 to 70% in 2009 (ITU 2010). OER therefore can be the analogous "leap-frog" technology for developing country educators to bypass the long resource building period and provide high quality education through access to world class educational resources. This presents the opportunity for developing countries to become key producers of such resources especially in geographically bound knowledge areas for global use. Several OER implementers over the years have confirmed that challenges associated with sustaining these initiatives are unavoidable (Atkins et al. 2007, Friesen 2009) and each institution will therefore, contend with its own sustainability challenges. The areas discussed in this paper are only meant to serve as guideposts for institutions that seek to pursue this new direction in education. Wiley (2007) rightly predicts that open educational resources, like institutional websites, will soon become a service that the public will expect from every institution of higher education. Each institution will then have to find the will and the resource within itself to integrate and sustain the development and use of OER in its educational efforts.

Figures

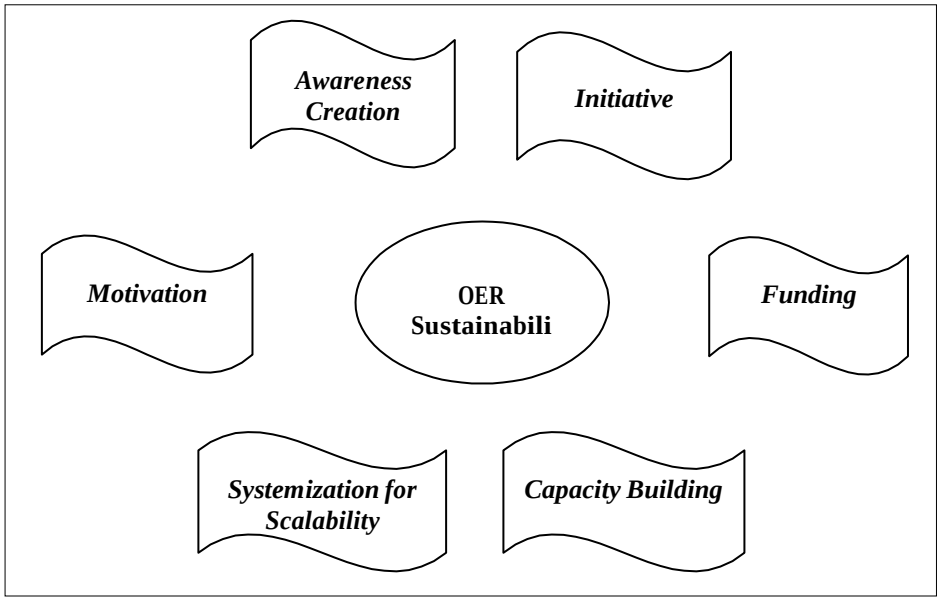

Figure 1 Proposed OER Sustainability Focus Areas

Notes

1. http://creativecommons.org/about/licenses/
2. https://open.umich.edu/wiki/DScribe

Bibliographic references

Atkins, D. E., Brown, J. E. & Hammond, A. L. (2007) A review of the Open Educational Resources (OER) Movement: Achievement, Challenges and New Opportunities. Report to the William and Flora Hewlett Foundation [Online], Available: www.oerderves.org

Bridge, P.D., Jackson, M. &Robinson, L. (2009) The effectiveness of streaming video on medical student learning: A case study, *Medical Education Online*; Volume 14:11 [Online], Available: www.med-ed-online.org

D'Antoni, S. (2008) Open educational resources: The way forward deliberations of an international community of interest, United Nations Educational Scientific and Cultural Organisation, International Institute for Educational Planning [Online], Available: http://oerwiki.iiep-unesco.org/images/4/46/OER_Way_Forward.pdf

Dholakia, U., King, J., & Baraniuk, R. (2006). What makes open education program sustainable? OECD. [Online], Available: www.oecd.org/dataoecd/3/6/36781781.pdf

Downes, S. (2007) Models for Sustainable Open Educational Resources, *Interdisciplinary Journal of Knowledge and Learning Object,* Vol. 3. [Online], Available: http://www.ijklo.org/Volume3/IJKLOv3p029-044Downes.pdf

Friesen, N. (2009) Open Educational Resources: New Possibilities for Change and Sustainability, *The International Review of Research in Open and Distance Learning*, Vol 10, No. 5.

Greenhalgh, T. (2001) Computer Assisted Learning in Undergraduate Medical Education, British *Medical Journal*, Vol. 322, pp 40–44.

ITU (2010) Measuring the Information Society 2010, International Telecommunications Union, Geneva. [Online], Available: http://www.itu.int/ITU-D/ict/publications/idi/2010/Material/MIS_2010_Summary_E.pdf

MIT (2006) 2005 Program Evaluation Findings Report, Massachusetts Institute of Technology, Cambridge [Online], Available: http://ocw.mit.edu/ans7870/global/05_Prog_Eval_Report_Final.pdf

OECD (2007) Giving Knowledge for Free: The Emergence of Open Educational Resources, Centre for Educational Research and Innovation, Organisation for Economic Co-operation and Development [Online], Available: http://www.oecd.org/dataoecd/35/7/38654317.pdf

Ruiz, J.G., Mintzer, M.J. & Leipzig, R.M. (2006) The impact of e-learning in medical education, *Academic Medicine*, Vol. 81, pp 207-212.

Wiley, D. (2007) On the Sustainability of Open Educational Resource Initiatives in Higher Education, OECD Centre for Educational Research and Innovation [Online], Available: www.oecd.org/edu/oer

Wolfenden, F. (2008) The TESSA OER Experience: Building sustainable models of production and user implementation, *Journal of Interactive Media in Education*, Volume 3 [Online], Available: http://oro.open.ac.uk/20664/1/F._Wolfenden_TESSA_OER.pdf

About the authors

Nadia Tagoe

College of Health Sciences, Kwame Nkrumah University of Science and Technology

Nadia Tagoe is the Programme Manager at the College of Health Sciences, Kwame Nkrumah University of Science and Technology (KNUST), Ghana. She manages the College's collaborative projects including the Ghana Michigan Collaborative Health Alliance for Reshaping Training, Education & Research (CHARTER) Programme and the Health Open Educational Resources (OER) Project, working with various partners including the University of Michigan and OER Africa. Nadia is a member of Project Management Institute and specializes in managing non-profit development projects. She has an MSc in Management and Implementation of Development Projects from the University of Manchester, a Postgraduate Diploma in Financial Management from the Association of Chartered and Certified Accountants, UK and a Bachelors degree from KNUST, Ghana. She currently focuses on managing global health research, education and training initiatives.

PMB, University Post Office
Kumasi, Ghana
nadiatagoe@yahoo.com

Peter Donkor

College of Health Sciences, Kwame Nkrumah University of Science and Technology

Peter Donkor is the Provost of the College of Health Sciences, Kwame Nkrumah University of Science and Technology (KNUST) and Professor of Maxillofacial Surgery. He has oversight responsibility for the Schools of Medicine, Dentistry, Pharmacy, Veterinary Medicine, and Allied Health Sciences at KNUST. He has served on committees and councils of several external organizations including the University of Michigan, USA; American Cleft Palate Association; OER Africa; West African College of Surgeons; Medical and Dental Council of Ghana; Ghana Cleft Foundation; and the Ghana Medical Association. He has served as President, of the Ghana Surgical Research Society, and the Pan-African Association for Cleft Lip and Palate. He co-founded specialist clinics for Cleft Palate and Head and Neck Oncology at the Komfo Anokye Teaching Hospital., Ghana. His research interests include human resources in health, open educational resources, head and neck malignancy, temporo-mandibular joint disorders, cleft lip and palate and facial reconstructive surgery.

PMB, University Post Office
Kumasi, Ghana
petadonkor@yahoo.com

Richard Adanu

University of Ghana Medical School

Richard Adanu is a specialist obstetrician gynaecologist. He graduated from the University of Ghana Medical School and completed his postgraduate training in obstetrics and gynecology at the Korle Bu Teaching Hospital in Accra, Ghana. He later obtained a Master of Public Health (MPH) degree from the Johns Hopkins Bloomberg School of Public Health as a Gates scholar. He has a special interest in reducing maternal morbidity, pelvic organ prolapse and pelvic floor repair. Richard is currently an associate professor and consultant with the University of Ghana Medical School. He is involved in teaching medical students and trainees in obstetrics and gynaecology. In addition to clinical practice and medical education, Richard researches in the field of women's health. He has skills in epidemiology and statistical analysis of data. His research interests are epidemiology of obstetric and gynaecological disorders in Ghana, family planning, cervical cancer screening and maternal injuries.

College of Health Sciences
P. O. Box 4236, Korle-Bu
Accra, Ghana
rmadanu@yahoo.com

Ohene Opare-Sem

School of Medical Sciences
Kwame Nkrumah University of Science and Technology

Ohene Opare-Sem is an Associate Professor of Internal Medicine and Consultant Haematologist at Kwame Nkrumah University of Science and Technology (KNUST). His main interests have been in the clinical areas of chronic Hepatitis B infections, Nucleic Acid Testing in Transfusion Medicine, and using platelet flow cytometry as a marker for platelet activation. His clinical work involves the treatment of a wide range of malignacies and haematological disorders. He is a Fellow at both the American College of Physicians and the Royal College of Physician, UK. Ohene has more recently taken a keen and still growing, interest in medical education and lately Open Educational Resource in the health sciences that has culminated in his appointment as the Coordinator for OER activities in the College of Health Sciences. He has been involved in the drafting of a university wide policy and designing and operating an OER production and publishing system.

PMB, University Post Office
Kumasi, Ghana
oparesem@hotmail.com

N. Cary Engleberg
University of Michigan Medical School

N. Cary Engleberg is Professor of Internal Medicine and Professor of Microbiology & Immunology, University of Michigan Medical School. His background includes a Diploma in Tropical Medicine and Hygiene from the London School of Hygiene and Tropical Medicine, a 2-year appointment in the Epidemic Intelligence Service, CDC Atlanta and the Indian Health Service, 2-1/2 years as a Peace Corps Medical Officer in Chad and Cameroun, and several decades of biomedical research. Dr. Engleberg has long-standing interest in using electronic media for medical education and has produced interactive and multimedia e-learning programs in both Michigan and Ghana. With members of the KNUST faculty, he produced a 22-minute video describing the motives and progress in establishing e-learning and open educational resources in Ghana (http://www.youtube.com/watch?v=CBUjlppWlZU).

1301 Catherine Road, Ann Arbor
MI 48109
USA
cengleb@med.umich.edu

Aaron Lawson
College of Health Sciences, University of Ghana

Aaron Lawson is a Professor of Anatomy and Provost, College of Health Sciences, University of Ghana. He graduated from the University of Ghana Medical School (UGMS) and obtained his PhD at the University of Leicester. He has served in various positions including Head of Anatomy Department, UGMS, Dean of UGMS, Honorary Research Associate/Fellow at the Department of Anatomy, University of Leicester and Visiting Scholar/Professor, Departments of Anatomy, Tulane University School of Medicine & University of Utah. His research interests include mechanisms of gastrulation and neurulation in the early embryo and has authored many publications in international peer-reviewed journals. As Provost, he administers the Schools of Medicine, Dentistry, Pharmacy, Public Health, Nursing, Allied Health Sciences, and the Noguchi Memorial Institute for Medical Research and is involved in Health Open Educational Resource programmes at the College. He also serves on the External Advisory Committee of University of Michigan's Centre for Global Health.

P. O. Box 4236, Korle-Bu
Accra, Ghana
lantelawson@yahoo.com

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Free Technology Academy: a Joint Venture of Free Software and OER

Wouter Tebbens,* David Megías, David Jacovkis,*** Lex Bijlsma******

* President, Free Knowledge Institute

** Associate Professor, Doctoral Programme in Information and Knowledge Society, UOC

*** Vice President, Free Knowledge Institute

**** Dean, Faculty of Computer Science, Open Universiteit Nederland

Abstract

The decision to publish educational materials openly and under free licenses brings up the challenge of doing it in a sustainable way. Some lessons can be learned from the business models for production, maintenance and distribution of Free and Open Source Software. The Free Technology Academy (FTA) has taken on these challenges and has implemented some of these models. We briefly review the FTA educational programme, methodologies and organisation, and see to which extent these models are proving successful in the case of the FTA.

Keywords

Free Software, Open Source, OER, business models, education

Recommended citation:

Tebbens, Wouter; Mejías, David; Jacovkis, David et al. (2010). Free Technology Academy: a Joint Venture of Free Software and OER. In *Open Ed 2010 Proceedings.* Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4850>

Introduction

In recent years, many educational institutions have developed strategies to facilitate the transfer of knowledge to the rest of society (Matkin, 2010). One of these strategies is the production of Open Educational Resources (OER), i.e., learning materials -textbooks, class notes, learning activities, etc.- which can be used, modified and redistributed by anyone with few restrictions (UNESCO, 2002).

The decision to publish educational materials as OER is usually supported by one or more of these arguments: because it is an efficient way to disseminate these works; due to ethical reasons against proprietary constraints in learning materials; or because of a governmental policy that requires them to do so. In the case of the Free Technology Academy, this decision was taken very early in the creation of the project, for two main reasons: the ethical imperative of facilitating universal access to knowledge and for consistency with an educational programme about Free Software.

That decision taken, the question arises of how it can be done in a sustainable way. One may think that no revenue can be generated with free (as in freedom) materials. On the other hand, considerable resources must be invested to produce, maintain and distribute them. In this paper, we discuss some of the models for the production of OER and the running of courses based on these materials. We show some business models from the domain of Free Software, which may be valuable for open education as well.

Finally, we discuss the particular choices of the Free Technology Academy and how some of these models are being applied. In particular, we identify three important challenges to open education: providing tools to enable feedback and updates, choosing document formats to facilitate authoring and distribution and designing economically efficient practices for open development of course materials.

Production models for free educational materials

The FLOSSmetrics project (Free/Libre and Open Source Software Metrics, n.d.) mapped the economic models behind 451 Free Software projects along three axis: control (software model), collaboration (development model) and revenue (business model). The software axis runs from proprietary to Free Software. The development axis runs from closed to open participation. The third axis contains the the ways in which software projects generate income, which can be summarised into the following main categories:

- *fully Free Software*, revenue is generated with training, custom development, consultancy, certification and other *services*

•business models based on proprietary add-ons, known as *open core* (like SugarCRM) or on publishing software both under a proprietary license and a free license, known as *dual licensing* (like MySQL)

•*platform providers* which generate revenue by aggregating applications into one coherent platform and certifying its quality (like RedHat)

The FLOSSmetrics research shows that service provision is the dominant way to generate revenues from free software. In education, the analogue to fully free software would be "fully free knowledge". In the educational domain, some typical services would be: tuition of learners in a course, assessment of learners' participation and certification of the acquired knowledge. The main ways of generating revenue with course books are the commissioned production of materials and by selling printed copies. Revenue can also be generated by providing custom training for specific target groups.

In addition to the above, forms of "open core" exist in education. In MIT's OpenCourseWare, some resources are published under free licenses, while enrolment is required to access the full course contents. The "platform providers" model can also be observed in the educational community. A university or network of universities offering a coherent educational programme could be seen as a platform provider, bringing a coherent programme with assured quality and formal recognition of results.

Production of materials

An interesting business model analysed in FLOSSmetrics is the *R&D Cost sharing* model, defined as cooperation between interested parties to achieve economic efficiency in the R&D of new software. It is observed that this model works best when all participants have equal rights. Free licenses, open standards and open development practices can assure such a level playing field.

Regarding the development of educational materials we find a wide range of models. Benkler (2006) analyses the differences between intra-firm, market- based and peer production, and uses economic theory to show that, in certain cases, peer production can be more economically efficient than the others. Important reasons for that to occur are 1) the lack of transaction costs (no contracts to be managed, almost no hierarchy), 2) motives other than monetary may induce people to participate in the production process, and 3) the results of the collaborative effort are available for all participants under equal conditions.

Course design

As described by (Glott, Meiszner, & Sowe, 2007), one of the main characteristics of Free Software communities is usually known as "openness" or "inclusivity". Meiszner (2010) suggests to apply Free Software concepts to education. They come with a "hybrid approach", a mix between an inside and outside approach. The former refers to a scenario where learners would build upon the

work of earlier cohorts contributing to a growing and improving body of course material. This is in line with Fischer's (2007) metadesign and dePaula's (2001) courses-as- seeds model. In addition, the latter refers to a scenario where learners are sent out to participate in Free Software projects and communities to apply and deepen their theoretical knowledge.

FTA master level programme in Free Software

The following sections give a general view of the FTA programme and methodology.

Free Software Curriculum

Only a small number of master programmes in Free Software is currently operating and none of them are international initiatives, although it is clear that international cooperation can be very useful in attracting a critical mass of learners. The FTA is the first effort towards an international master programme on Free Technologies.

The FTA programme started to run in 2010, with the support of the EC's Lifelong Learning Programme, with a pilot consisting of 8 courses which had 163 registered learners. Course materials were either translated from textbooks of the UOC programme (Universitat Oberta de Catalunya, n.d.) or developed afresh for the purpose. In 2011, the programme will be extended to 26 instances of 14 different courses. Many of these new courses will be based on the UOC programme, along with some courses from URJC (Universidad Rey Juan Carlos, n.d.) and OUNL (Open Universiteit Nederland, n.d.).

After completing a course, learners obtain a certificate issued by the FTA and recognised by the partner universities according to their own rules for external electives and substitutes. One of the objectives of the FTA project is to establish an international master programme certified by participating universities directly, rather than through recognition as electives or substitutes in some other programme. The road to such a programme will not be short or easy, mainly because of the diverging demands that national accreditation bodies would place on such an international programme. Therefore, the establishment of an international degree programme was not listed as a deliverable of the 2009/2010 project plan. However, in April 2010 an International Task Force was set up to plan a curriculum for such a programme (Free Technology Academy, n.d. a). In the model that is being developed, a core part of the curriculum will be shared between all partners, while tracks of different flavours will be elective, and may be offered only by some of the partners. Different options for recognition are being considered, such as local accreditation at the national level, double degrees between universities and joint degrees between various partners.

Educational methodology and course design

The FTA learning methodology allows learners to define their own study schedule: the main communication tools are asynchronous and there are few deadlines during the course and activities can be joined at different dates and times. This flexible model allows for anyone to join FTA courses, regardless of their location and job, as long as they have regular access to the Internet.

During the course, tutors use the class forums to engage learners in debates on issues related to the course. In this sense, the tutor is more a guide than a conventional teacher. Also, relevant experts are invited to participate in the course as guest lecturers, giving a video talk and discussing it with the group afterwards.

The evaluation of FTA learners is done continuously during the whole course. There are a number of Continuous Assessment Activities (CAA) for which learners receive marks. Depending on the course, these activities may consist of answering a set of questions, writing a short essay or completing and documenting a practical task. Also, participation in class activities is evaluated by tutors, usually accounting for 20% of the final grade. Following the courses- as-seeds model (see Section *Course Design*), learners are encouraged to contribute and provide feedback to existing course materials and a growing body of useful content.

FTA Campus

All courses provided by the Free Technology Academy are conducted entirely online at the FTA Virtual Campus, which is fully based on Free Software in order to guarantee its sustainability and the transfer of the technology and expertise to all present and future partners. The base for the FTA Campus is the University Campus (UC) project (Projecte Campus, n.d.), a framework developed by a consortium of Catalan universities in cooperation with the MIT that is published under the GPL license. In the FTA Campus, the UC framework runs on top of Moodle, a widely used Virtual Learning Environment also released under the GPL license. The FTA Campus integrates other Free Software applications such as Wordpress, MediaWiki, OpenFire and Mahara.

Quality and recognition

The overall quality policy of the FTA is laid down in a common QA plan. At the operational level, this provides for questionnaires sent to all participants (both learners and tutors) at the end of each course, the results of which are presented to the Board for decision making. At the strategic level, the Board has established a joint Scientific Council with recognised international specialists to oversee QA procedures in relation to the curricula and learning materials, learner performance, tutors, learning facilities and assessment outcomes.

Production methods in practice

The methods for the production of OER within the FTA are in constant evolution, as FTA partners strive to find and improve an efficient way to produce course materials. In the time since it started operating, the FTA has used three different non-exclusive models to produce the learning materials for its courses, showing an evolution towards a production process more open to external participation.

Quasi-static materials

The first FTA materials have been adapted from existing course books of the UOC's Master Degree in Free Software, translated from Spanish or Catalan into English and adapted to an international audience, and in some cases new content has been developed to complete them. Other materials are being planned using a similar process, where a single partner is in charge of the adaptation of an existing material. Completely new materials have also been produced this way for the FTA, either inhouse by one of the partners or by subcontracting external experts (see Figure 1).

This model allows the FTA to reuse existing high quality materials from partner universities and has the advantage of being simple to manage because it uses existing processes in the partner responsible of the material. However, it does not help to reduce the burden of maintaining these materials in the future.

Feedback cycle and open publication

The area of ICT is constantly changing and poses a moving target for the production and maintenance of educational resources. While some of the course materials used at the FTA age slowly and can be updated by the mere addition of new content, most of them need frequent revisions in order to prune and update obsolete information, cover new features in relevant applications and techniques, etc.

As a first step towards a more open process, the FTA is experimenting with a web-based document annotation tool (Van der Pol, n.d.) which allows users to comment on specific sections of a document. This will allow to centralise feedback from learners, tutors and external users in a single application, making it much easier for the FTA to review these comments for the next update of the resource (see Figure 2). This will help reduce the cost of maintenance of FTA materials, but still most of the effort will be carried out by the FTA.

Peer production

As a third step towards a collaborative process for the production of OER, the FTA is bringing together several interested actors in the joint production of course materials. While it does not constitute a fully open process, this model will allow the FTA to engage other parties in the whole process of developing a new course.

In this model, the FTA invites relevant experts and institutions on a particular field to participate in the development of a new course, including the authoring of course materials. The structure of the course is then discussed with the participants and the workload of developing the materials is distributed. The resulting OER are enriched by this discussion, and each participant invests only a fraction of the total resources (see Figure 3).

Shared exploitation, Network and Cooperation

The concrete implementation of the cooperation model in the FTA is presented in the following sections.

Shared Development and Exploitation

We apply the "shared R&D costs" model in order to set up an economically efficient educational programme. This takes place in two levels: a) open the FTA Campus to external users and enable participation as much as possible, and b) build a community of partners, universities, NGOs and companies who can add value to the network (Free Technology Academy, n.d. b).

Regarding the first part, the community of individuals, this can be seen as more than a conventional alumni network. A social network has been started as part of the FTA Campus, the FTA Community Portal, where alumni and external users can share experiences and discuss topics related to Free Technologies. However, in fact, part of the learning process itself is open: the FTA Campus Wiki, which is used in almost every FTA course to list interesting resources, summarise course outcomes and conduct group activities, is open to all users. External users also have access to Guest Lectures, and other activities will be made available for the general public in the coming months.

Regarding the second part, the partner network, the philosophy behind it is based on shared costs and shared revenues. It is expected that, due to the collaboration in the context of the FTA, partners can contribute to a set of common goals and benefit from the results of the collaboration, while each of them invests only a fraction of the overall effort. Partners join resources to execute the course programme and share the costs of development of additional courses, quality assurance and international recognition.

As mentioned above, the FTA performs a joint exploitation of the educational programme between its partners. In this sense, the FTA offers its partners various economical opportunities, such as sharing costs in the production and maintenance of a common curriculum, course materials

and a state-of-art study programme; a shared platform for joint communication to reach out to learners and potential staff; a virtual campus infrastructure that is jointly developed and maintained; and a common set of quality assurance and recognition procedures. At the same time, income generated by tuition fees and the sale of printed copies of course materials is also shared among FTA partners.

Revenue model

Drawing upon the lessons from Free Software, the FTA offers a "fully Free Knowledge" programme, compared to "fully Free Software" in the FLOSSmetrics research. Revenues are generated from educational services, which mainly refers to guidance during a course by a specialised tutor, continuous assessment and an FTA certificate which is recognised by partner universities. Currently, these three services are offered in one tuition fee per course module. Early registrations for courses are awarded with discounts. In addition to the revenue from tuition fees, the FTA partners have recently started to provide a Print-on- Demand (PoD) service to ship printed copies of digital course books to registered learners.

Conclusions and recommendations

The FTA aims to produce OER in a sustainable way, from both the social and the economic points of view. Some lessons can be drawn from the Free Software communities on how to reach sustainability without restricting users in their ability to participate and reuse the produced knowledge. The “fully free knowledge” model can be seen as a generalisation of “fully free software”, providing the freedoms to use, study, copy and distribute all expressions of knowledge, be it software, scientific research, cultural works or educational resources. Revenues can be generated through services around the production of, which is true for free software as well as for open educational resources. The production of such free knowledge can be intra-firm, market-based and peer to peer.

The FTA project addresses the challenge of sustainability by incorporating this model into the cycle of OER development and offers a set of services around these educational materials to generate the necessary revenues. These services are mainly educational, with courses that are delivered on-line using the FTA campus: expert tutor guidance, assessment of learner activities and issuance of certificates for learners who have reached the learning objectives of a particular course. These certificates are recognised by the official educational programmes offered by the Higher Education institutions integrated in the FTA network. In addition, the FTA also offers a Print on Demand service which allows to obtain physical copies of the books.

For the production of OER we identify three important challenges: providing tools to enable feedback and updates, choosing document formats to facilitate authoring and distribution, and designing economically efficient practices for the open development of course materials.

For its master-level programme in Free Software and Open Standards, the FTA has published all its course books under copyleft licenses. The reuse of existing courses under free licenses has

provided an economic headstart. For the adaptation, maintenance and production of new materials a clear evolution in production processes is taking place. The production has moved from the traditional "intra-firm" model to a market-based model and is evolving into a peer production model. In that sense the FTA follows the Courses-as-seeds model where course materials are seeded into the study programme and learners, teachers and external experts contribute their feedback which in turn is taken into account in next versions. Such development cycle poses new challenges, like the need to facilitate it with adequate tools. The FTA has started to use a web- based annotation tool that allows users to add comments and suggestions right on to the (digital) course books, as well as a community portal where anyone can participate in the decisionmaking and development process. Stable versions of the resulting materials are considered "official" when they have been supervised and approved by a group of experts belonging to the Higher Education institutions which constitute the FTA consortium or its associate partners, in order to guarantee their scientific and academic correctness.

The FTA seeks effective cooperation through a growing network of partners, based on sharing costs and revenues. Advantages for the learners include a wider programme, specialists from different countries and realities as well as certificates that are recognised by partner universities.

The combination of practical and effective tools, open standard file formats and free licenses together with an open business model following the fully-free- knowledge model with educational services is believed to provide the foundations for sustainability. Ultimately, this depends on having a sufficient number of people enrolling its programme. With this model, which may be useful for other fields different from Free Software and Open Standards, the FTA tries to reach sustainable production of OER.

Figures

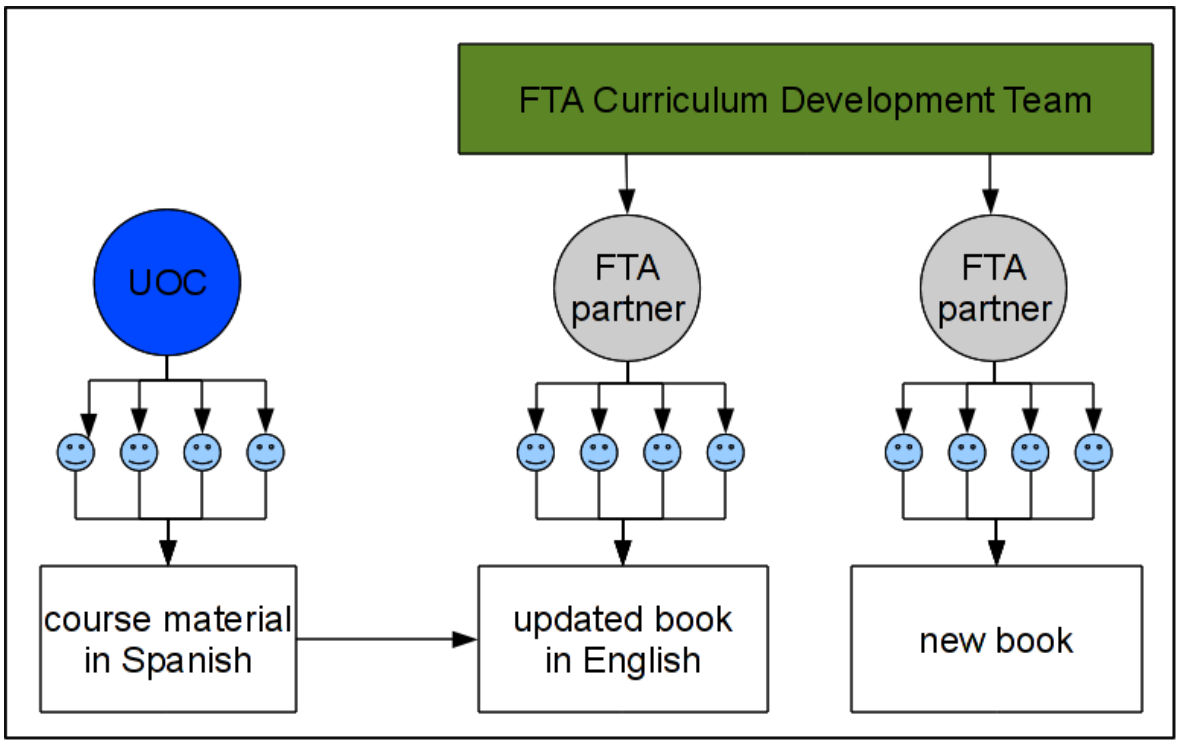

Figure 1. The first model of development of FTA materials is inherited from participating universities

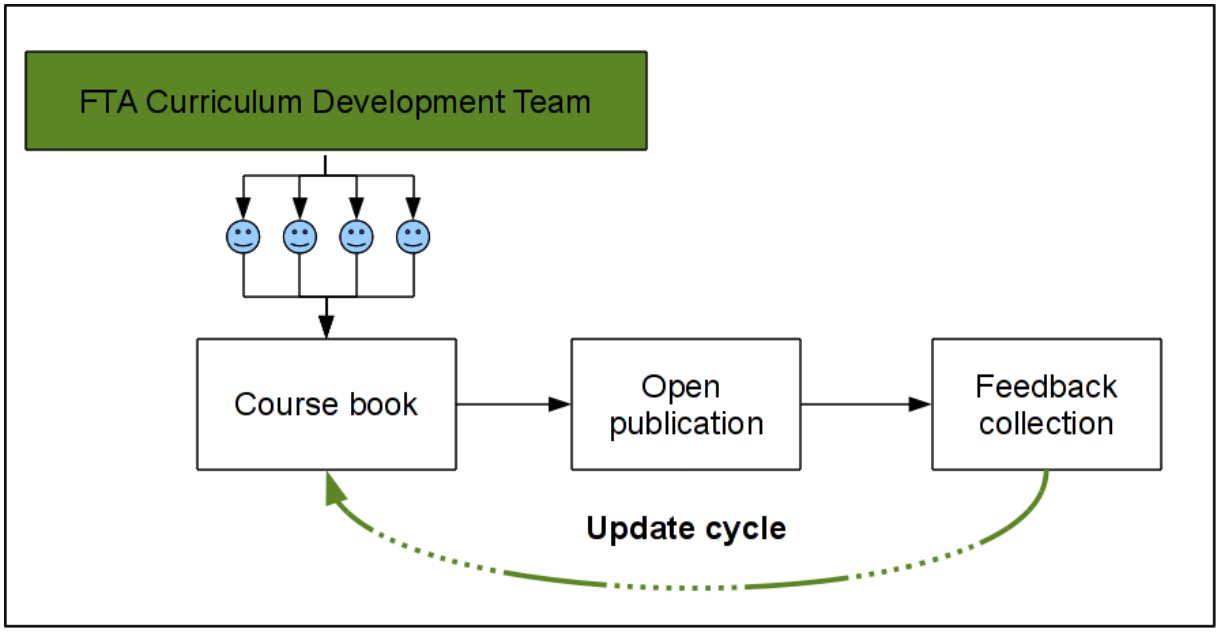

Figure 2: The second mode of development of FTA materials includes feedback mechanisms

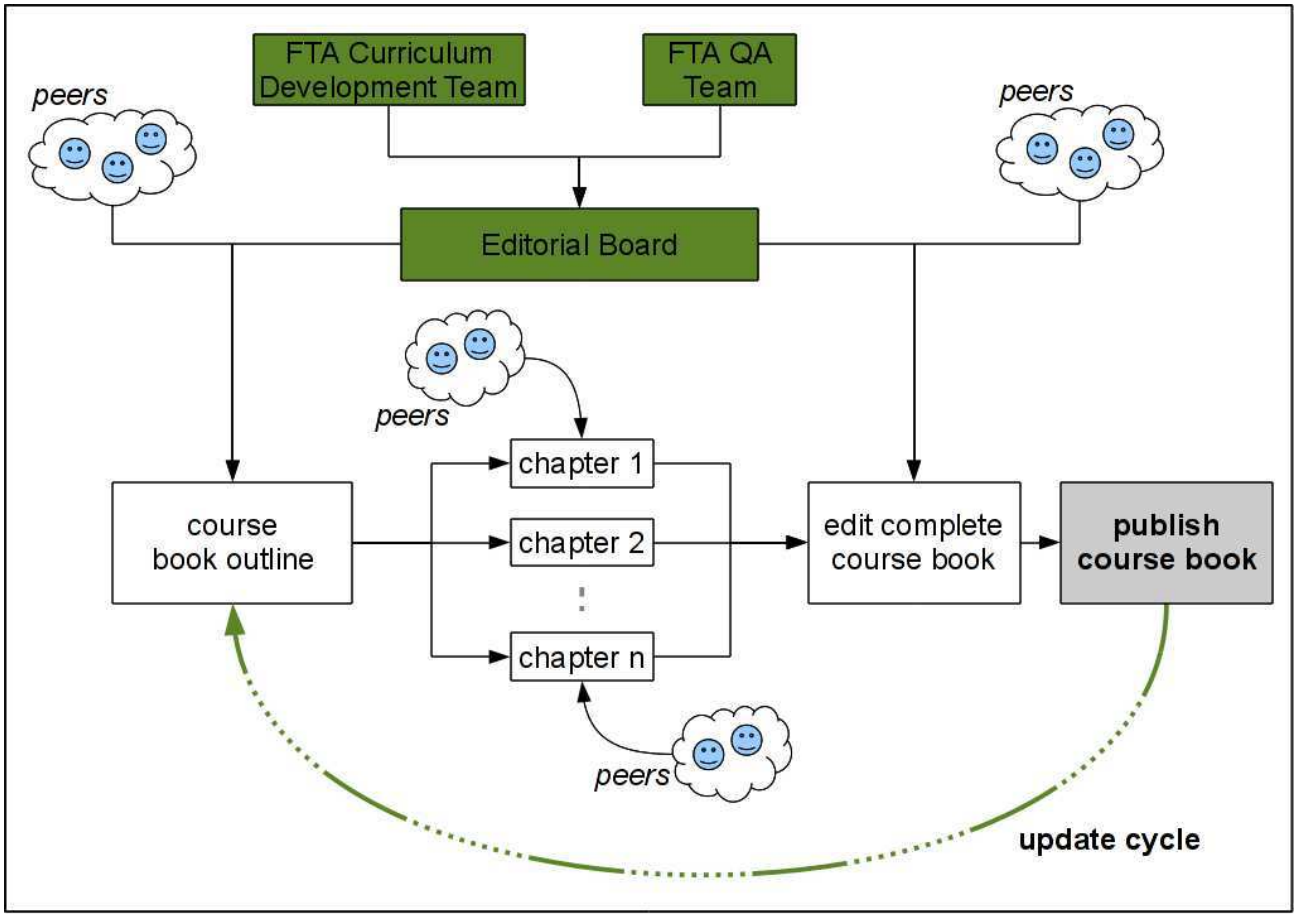

Figure 3: The P2P model includes the participation of interested actors

Acknowledgements

The authors wish to acknowledge the financial support from the Lifelong Learning Programme of the European Comission (ref. 142706-LLP-1-2008-1-NL- ERASMUS-EVC).

Bibliographic references

Benkler, Y. (2006). *The wealth of networks: how social production transforms markets and freedom*. Yale University Press. Retrieved Semptember 15, 2010, from http://www.benkler.org/wonchapters.html

dePaula, R. , Fischer, G. & Ostwald, J. (2001). Courses as Seeds: Expectations and Realities. *Paper presented at the European Conference on Computer-Supported Collaborative Learning 2001 (Euro-CSCL 2001).* Maastricht, The Netherlands .

Fischer, G. (2007). Meta-Design: Expanding Boundaries and Redistributing Control in Design. *Paper presented at the Interact'2007 Conference.* Rio de Janeiro, Brazil.

Free/Libre and Open Source Software Metrics . (n.d) Retrieved September 15, 2010, from http://www.flossmetrics.org/

Free Technology Academy (n.d. a). *Announcement #7: Study Programme 2011 published and registrations open.* Retrieved September 15, 2010, from http://ftacademy.org/announce/7

Free Technology Academy (n.d. b). *Associate Partner Network*. Retrieved September 15, 2010, from http://ftacademy.org/about/associate-network

Glott, R., Meiszner, A. & Sowe, S. K. (2007). *FLOSSCom Phase 1 Report: Analysis of the Informal Learning Environment of FLOSS Communities.* FLOSSCom Project.

Matkin, G. (2010). *The Open Educational Resources Movement: Current Status and Prospects*. Retrieved September 15, 2010, from http://unex.uci.edu/pdfs/dean/matkin_apru_paper.pdf

Meiszner, A. (2010), *The Emergence of Free / Open Courses - Lessons from the Open Source Movement'* (Doctoral dissertation, The Open University, UK, 2010).

Open Universiteit Nederland, Computer Science Department (n.d.). Retrieved September 15, 2010: http://www.ou.nl/eCache/DEF/12/274.html

Projecte Campus (n.d.) Retrieved September 15, 2010, from http://www.lafarga.org/campus/en/index.php

UNESCO (2002), *Forum on the Impact of Open Courseware for Higher Education in Developing Countries: final report*. Retrieved September 15, 2010, from http://unesdoc.unesco.org/ulis/cgi-bin/ulis.pl?catno=128515

Universidad Rey Juan Carlos (n.d.) *Master oficial en Software Libre*. Retrieved September 15, 2010, from http://master.libresoft.es/ (in Spanish).

Universitat Oberta de Catalunya (n.d.) *University Master's Degree Programme in Free Software.* Retrieved September 15, 2010, from http://www.uoc.edu/studies/mof/free_software/oficiales/master_oficial_software_libre/master_oficial_software_libre_plan.htm

van der Pol, J. (n.d.) *Annotation tool.* Retrieved September 15, 2010, from http://sourceforge.net/projects/annotationtool/

About the authors

Wouter Tebbens

President, Free Knowledge Institute

Wouter Tebbens is co-founder of the Free Knowledge Institute and director of the Free Technology Academy. Between 2006 and 2008 he was coordinator of the European Commission's FP6-funded SELF Project (Science, Education & Learning in Freedom) to design a platform for the collaborative construction of educational materials. He achieved a Master of Science in Mechanical Engineering at the University of Twente (Netherlands). He has worked in various functions in Europe, Argentina and Spain. In 2002 he founded the company xlocal.com offering services based on free software to SME companies. Between 2004 and 2007 he presided the working group on Free/Libre/Open Source Software at Internet Society Netherlands.

Free Knowledge Institute
Minahassastraat 1-203,
1094 RS Amsterdam The
Netherlands
wouter@freeknowledge.eu

David Megías

Associate Professor, Doctoral Programme in Information and Knowledge Society, UOC

Dr. David Megías achieved the Ph.D. degree in Computer Science in 2000, the M.Sc. degree in Computer Science (Advanced Automatic Control) in 1996 and the B.Sc. degree in Computer Engineering in 1994, all of them by the Universitat Autònoma de Barcelona (UAB) in Spain. He has made research stays at the Department of Engineering Science of the University of Oxford and at the Departamento de Ingeniería de Sistemas y Automática of the Universidad de Valladolid. He is an associate professor at the Universitat Oberta de Catalunya (UOC) in Barcelona (Spain), with a permanent position since October 2001. He is the Associate Director of the UOC's Doctoral Programme in Information and Knowledge Society and the coordinator of the Networking and Information Technologies field of this programme. His current interests include information security-more precisely, copyright protection, watermarking and data hiding schemes- as well as free software and open educational resources.

Universitat Oberta de Catalunya
Rambla del Poblenou, 156
08018 Barcelona
Spain
dmegias@uoc.edu

David Jacovkis
Vice President, Free Knowledge Institute

David Jacovkis studied Physics in the Universitat Autònoma de Barcelona (UAB), and achieved Master degrees in Materials Science (UAB) and in Systems and Networks Administration with Free Software in the Universitat Oberta de Catalunya (UOC). Since 2000 he works as IT manager and freelance consultant for several organisations, using Free Software almost exclusively. He is a lecturer at the UOC and has worked as an editor of educational materials. In 2007 he co-founded the Free Knowledge Institute.

Free Knowledge Institute.
Minahassastraat 1-203
1094 RS Amsterdam
The Netherlands
david@freeknowledge.eu

Lex Bijlsma
Dean, Faculty of Computer Science, Open Universiteit Nederland

Lex Bijlsma is Professor of Education and Software Construction and Dean of the Faculty of Computer Science at Open Universiteit (Netherlands). He obtained a Ph.D. in mathematics from the University of Amsterdam in 1978, and has worked as a researcher and lecturer in both mathematics and computer science at the Institut des Hautes Etudes Scientifiques, Eindhoven University of Technology and Utrecht University. His research interests include program design methodologies and mathematical techniques in computer science.

Universiteit Nederland
Valkenburgerweg 177
6419 AT Heerlen
The Netherlands
lex.bijlsma@ou.nl

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

The Value of Imperfection: the Wabi-Sabi Principle in Aesthetics and Learning

Jutta Treviranus
Director and Professor, Inclusive Design Institute, OCAD University.

Abstract
OER-based learning has the potential to overcome many shortcomings and problems of traditional education. It is not hampered by IP restrictions; can depend on collaborative, cumulative, iterative refinement of resources; and the digital form provides unprecedented flexibility with respect to configuration and delivery. The OER community is a progressive group of educators and learners with decades of learning research to draw from, who know that we must prepare learners for an evolving and diverse reality. Despite this OER tends to replicate the unsuccessful characteristics of traditional education.

To remedy this we may need to remember the importance of imperfection, mistakes, problems, disagreement, and the incomplete for engaged learning, and relinquish our notions of perfection, acknowledging that learners learn differently and we need diverse learners. We must stretch our perceptions of quality and provide mechanisms for engaging the incredible pool of educators globally to fulfill the promise of inclusive education.

Keywords
inclusive design, deep learning, marginalized learners, global network, collaborative production, accessibility, FLOE project

---

Recommended citation:
Treviranus, J. (2010). The Value of Imperfection: the Wabi-Sabi Principle in Aesthetics and Learning. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/4869>

OER commitments and Wabi-Sabi

A resounding commitment expressed by the Open Education Resource (OER) community this year is to “cross the chasm” toward broad adoption and sustainability and thereby become part of the mainstream of education (Vuchic, Chow, 2010). To achieve this we must garner broader participation, both in implementing and contributing resources. We must also address the needs of a greater diversity of learners, both to meet policy and legislative requirements (e.g., accessibility legislation), and to recruit a large untapped group of participants. Meeting these two objectives may initiate a virtuous cycle, in that a larger, more diverse group of contributors will result in a more diverse pool of resources that can then meet the needs of a greater diversity of learners. An essential prerequisite of meeting this commitment is a system that is inviting of contribution from a greater number and diversity of participants.

A second commitment is to support deep learning. This implies a fundamental departure from conventional or comfortable educational practices and a complete retooling of habitual educational quality judgments. Fortuitously, the two commitments are complementary.

As a step toward achieving these two commitments we must ask what currently prevents broader participation and how must we change OERs and OER delivery to support deeper learning. A worldview that is little known in the West but familiar to Eastern sensibilities may provide some insights into these two questions.

Wabi-Sabi is a Japanese worldview and aesthetic that recognizes the beauty in the imperfect, impermanent and incomplete. "[Wabi-sabi] nurtures all that is authentic by acknowledging three simple realities: nothing lasts, nothing is finished, and nothing is perfect."(Powell, 2004) It also encompasses the beauty of things modest, humble and unconventional.

Wabi-Sabi and learning design

You may ask what does appreciating imperfection, impermanence and incompleteness have to do with learning and OER adoption. Like many fellow parents I have watched my children abandon high-cost, perfectly polished educational toys for makeshift toys made from random articles and what we would call garbage. Cardboard-box castles held more appeal than Disney’s take on math. Geometry was learned from popsicle sticks rather than the latest animation. The “perfect” toys were less likely to encourage engaged, resourceful or inquisitive minds.

As educators we are aware of daily phenomena that show that the incomplete invites completion, the broken invites fixing, mistakes invite correction and a partial collection of examples invites more examples. Humans call forth the greatest resourcefulness and creativity when there is an immediate and urgent unsolved problem. The best arguments and explanations arise from disagreement and debate. We know that cognitive dissonance and exposure to the counterintuitive spurs growth. We are aware of the value of constructivist learning.

However, we frequently fail to integrate this intuitive knowledge into our teaching practices. My son once responded to me when I admonished him to think about a problem "mom I don't have to think about it, the textbook gives me the right answer." My daughter when I asked her about a haphazard picture of a horse, far below her usual standard, explained that she could never draw the horse as perfectly as the teacher so why should she even try. Robert Fulghum's (1998) book "All I Really Need to Know I Learned in Kindergarten," may be more applicable to the educator who would relearn how to turn on inquisitive minds from learners who are mercilessly candid and not yet compliant.

We are resistant to apply what we intuitively know about the value of Wabi-Sabi learning to formal education. Is formal education not about setting standards and supplying models of perfection for the student and supporting them in striving toward those standards? Should we not aim to provide curriculum that is without mistakes? Surely we don't want to abandon quality? The Wabi-Sabi worldview promotes the recognition that everything is imperfect and everything changes, even our notion of perfection. I would argue that the benchmarks for perfection in our curriculum can act as impediments to continuous improvement. Expanding on Voltaire's assertion that the perfect is the enemy of the good, I would argue that the perception and acknowledgement of imperfection powers the continuous move toward improvement and thereby sustains quality far better than the most foolproof and trusted certification of quality. What is perceived as perfect repels efforts to improve and becomes outdated and impoverished.

Although, as OER educators, we know these principles of Wabi-Sabi from experience, the quality standards used to judge OER do not include imperfection, incompleteness, impermanence, disagreement or dissonance, or their more positive articulations. In creating OER we frequently:

create the digital equivalent of the "sage on the stage,"
focus our energy on polished delivery not learner engagement,
use inflexible proprietary file formats that confound the creation of derivatives,
fail to support bidirectional communication,
do not support peer learning,
ignore the need for critical thinking, and
fail to accommodate translation into other languages and other modalities and delivery on diverse platforms.

It must be acknowledged that OER is the "new kid on the block" and as such needs to try harder to be perceived as worthy to overcome skepticism, inertia and distrust. However mimicking the status quo in traditional education may help us to blend in but will not help us to advance education.

Wabi-Sabi, Deep Learning and Marginalized Learners

The OER community and most education systems have acknowledged that the learning context has undergone a radical shift in the past two decades, requiring a corresponding shift in the approach to education. In a knowledge economy, education and the full development of human capital becomes

ever more critical. The prosperity of a society rests in large part on the educational development of its members. The emergence of the digital economy brings with it a major upheaval in the goals or required outcomes of education. Digitization is freeing us from the need to mass-produce the equivalent of human calculators, human hard drives or standardized human robots to staff our factories or offices. As has been outlined in many discussions of learning transformation (including 21st century learning), the new skills and knowledge of value are creativity, resourcefulness, flexibility, collaboration, communication, critical thinking and independent thought [21st Century Learning Initiative, 2010]. Unfortunately most education systems globally have not been retooled to nurture these skills or knowledge.

Another related motivation for retooling our education system, that the OER community has committed to help address, is the high level of educational drop-out in the United States and elsewhere. We have heard that students feel disenfranchised, do not see education as relevant, see the system as too inflexible and do not feel that their needs are being recognized or met. The learner most in need of a new approach to education is the marginalized learner. To heighten the urgency of this challenge, we are repeatedly reaffirming that sustainable prosperity can only be achieved when that prosperity includes all members of society [Martin Prosperity Institute, 2010]. This implies that learning must be inclusive. A successful economy must insure that no members are marginalized or excluded from education and employment.

Drop-out and marginalization are at least in part due to our overemphasis on inflexible standards of perfection – both in the curriculum and in the students we strive to produce. If our goal is to optimize learning for all learners we must recognize that learners learn differently. There is neither a single take on learning nor a best way to teach a concept. Learning outcomes research shows that learners learn best when the learning experience is personalized to their learning needs. Learning breakdown and drop out occurs when students face barriers to learning, feel disadvantaged by the learning experience offered or feel that their personal learning needs are ignored [CAST, Pearson Education, 2009].

OER has the advantage of being "born-digital" and can therefore harness the potential mutability or plasticity of digital delivery systems and digital content to assist in addressing the diversity of learning needs. Unfortunately many of our resources are not designed to take advantage of this plasticity and constrain the flexibility needed to tailor the experience to diverse learners.

Broader adoption through broader contribution

OER has the ingredients and foundational mechanisms to create the richly varied pool of resources needed to address the diverse needs of learners, thereby producing the variety of skills and knowledge needed in today's reality. OER at its heart is about pooling and sharing educational resources, about cumulative production and collaborative effort. However our notions of perfection and the need for constrained standards of quality have severely curtailed the power and size of our networked community.

OER must strive to be more like a barn raising or potluck meal than a formal carefully organized dinner party. The former is frequently more enjoyable and far more sustainable. Curriculum units

released through OCW say to the world "come partake of the best education." They do not invite participation or contributions. They do not encourage derivatives, tinkering or refinement. This means that a vast pool of possible adopters and contributors are reluctant to engage. Worldwide adoption must be based on more than worldwide consumption of OER. The necessary sense of ownership and inclusion in the process requires the commitment and a sense of shared responsibility that only comes from providing valued contributions. To unleash this potential we need to invite and make it easy to contribute variants and alternatives.

OER and inclusive education

OER has tremendous potential to meet the needs of a growing group of un-served learners who experience disabilities. Serving this group of learners will also remove barriers to OER adoption. Most countries, states and educational institutions have committed to provide equal access to education for students classified as requiring special education [United Nations, 2010]. All educational institutions in the United States, Canada and the European Union, for example, are governed by policies that require that curriculum be accessible to learners recognized as having a disability. Many of these policies are currently based upon a somewhat restrictive definition of disability and accessibility. Accessibility in formal education in the United States has become a large and complex framework focused on policy compliance and specialized service delivery. Students must qualify and resources must comply to a fixed binary notion of disability and accessibility – to constrain special service expenditures and to enable compliance monitoring and enforcement.

While OERs seem like a perfect mechanism for addressing the needs of learners requiring alternative access means, most Open Education Resources (OERs) are not designed to be accessible for learners with disabilities, most OER producers or developers are not aware of how to create accessible OERs, and most OER delivery mechanisms (e.g., OER portals) present significant barriers to learners using alternative access systems [Rush, 2010]. Consequently OERs do not meet legislative requirements in many countries.

One of the reasons for this situation may be that the formal accessibility framework adopted by many jurisdictions in high-income countries has received a less than welcoming reaction from the OER community. The reasons for this include:

Accessibility is seen to constrain creativity and innovation in both technological and pedagogical approaches, it is seen to be counter to interactivity or more engaging learning experiences,
OER creators are not aware of learners with the constrained set of qualifying disabilities among their user group,
the OER movement is dependent on voluntary participation which tends to be less responsive to enforced standards, and
the guidelines for complying are seen to be too complex and confusing and in some cases impossible to achieve.

The pervasive and well-entrenched accessibility framework and the reaction it has engendered in the OER community have acted as an impediment to adoption of OER as a curriculum alternative in

many formal education systems. These education systems fear litigation or other consequences of non-compliance with accessibility policy. This situation is unfortunate as the fundamental principles and motivations of OER and Accessibility are well aligned (inclusion, respect for diversity, equal access, open access, freedom to share and refine, etc.). More importantly the reforms required to achieve the OER community's vision of learning and education are the same reforms required to achieve the ultimate goals of accessibility (reforms to Digital Rights Management and Intellectual Property, move to digital content and delivery, recognition of the diversity of learners, learner choice, recognition of alternative learning delivery models, focus on deep learning, inclusive education). The two communities should be strong allies but find themselves relegated to opposite sides of a number of policy and advocacy debates.

The traditional approach to addressing the challenge of OER accessibility would be to modify all OERs and OER sites to meet a fixed set of accessibility criteria such as the Web Content Accessibility Guidelines, WCAG 2.0 (W3C, 2010). However there are several problems with this approach. There are a vast number of OERs, many of which are not amenable to modifying to meet WCAG 2.0. The time and resources required to modify all of the resources would be prohibitive. This approach provides a one-size-fits-all solution and does not recognize the full diversity of learners. The retrofit may compromise the learning experience for many learners. The approach would restrict the types of technologies, technical advances and range of interactive experiences that can be used in creating OERs for fear of contravening the accessibility criteria.

More significantly this traditional digital resource accessibility approach and the underlying policies and services that are based on fixed, binary notions of disability and accessibility do not serve the needs of learners with disabilities. This approach and framing:

excludes learners that do not fit the categories (notably, learners with disabilities have less degrees of freedom or flexibility to fit assigned classifications and are therefore more likely to "fall between the cracks"; in addition there are many learners who do not qualify as having a disability but would benefit from or need alternative learning experiences),
treats learners with disabilities as a homogeneous group when they are in fact the most heterogeneous group of learners,
classifies learners based on a single parameter, ignoring the multiplicity of needs and skills that affect learning,
constrains the design of learning resources thereby giving less leeway to address minority needs and non-normative learning styles or approaches faced by people with disabilities, and
compromise the learning experience for many of the learners the services are intended to serve (e.g., learners with disabilities relying on visual learning).

The fixed binary definitions also encourage specialized, segregated services for people with disabilities (i.e., they serve to "ghettoize" education for students with disabilities). This makes these services less sustainable (more vulnerable to funding cuts, open to the whims of shifting funding priorities, peripheral to mainstream efforts and investments, etc.) and more costly (duplicating services found in the mainstream)[United States Dept. of Ed., 2002].

There is another frequently missed casualty of the traditional special education framework. The implementation and interpretation of accessibility legislation intended to support inclusion has become exclusive and narrowly defined. This is in part due to the pressure to contain costs and

create a testable legislative compliance mechanism. Unfortunately this creates a large group of doubly marginalized learners. These learners are not served by mainstream education nor by service enhancements and programs intended to serve learners with disabilities. This includes children whose families or support mechanisms do not have the financial resources, administrative savvy or advocacy skills to enable the child to qualify for special services. It includes learners who do not fit the narrow classifications of disability, especially as it relates to learning or cognitive disabilities. It includes students who only receive attention once it is too late, once they have become a "disciplinary" or "behavior problem."

In response to this dilemma a number of research and standards efforts have proposed a relative framing of disability and accessibility recognizing the range of human diversity [Treviranus, Roberts, 2006]. All learners potentially face barriers to learning. Like barriers faced by people with disabilities these can be seen as a product of a mismatch between the needs of the learner and the learning experience and environment. Learning needs that affect learning can include:

sensory, motor, cognitive, emotional and social constraints,
individual learning styles and approaches,
linguistic or cultural preferences,
technical, financial or environmental constraints.

Using this framing an accessible learning experience is a learning experience that matches the needs of the individual learner or the learners within a group. Thus a resource cannot be labeled as accessible or inaccessible until we know the context and the learner/s. This aligns well with OER best practices, learning outcomes research and evidence regarding good pedagogy in OER-based education. This framing merely adds an additional critical impetus to the broader goals and values of the OER community. The added push recognizes that some learners are more constrained than others and are therefore less able to adapt to the learning experience or environment offered, with the result that the learning environment or experience must be more flexible.

To achieve an accessible or inclusively designed OER system requires the capacity to match the learning needs of individual learners. This requires OER resources that are amenable to reuse, and a large, diverse pool of OERs. If the default OER is inaccessible to a specific learner the delivery system would either:

1. transform the resource (e.g., through styling mechanisms),
2. augment the resource (e.g., by adding captioning to video), or
3. replace the resource with another resource that addresses the same learning goals but matches the learner's specific access needs.

To achieve this requires:

1. information about each learner's access needs,
2. information about the learner needs addressed by each resource,
3. resources that are amenable to transformation, and a pool of alternative equivalent resources, and
4. a method of matching learner needs with the appropriate learning experience.

A new initiative supported by the William and Flora Hewlett Foundation, the FLOE (Flexible Learning for Open Education) project creating the conditions needed to enable this approach to inclusive learning. FLOE leverages many years of work in Canada and internationally. The Connecting Canadians Initiative, which prioritized inclusive design, supported a large body of research into learning object repositories (which can be said to be the precursors of Open Education Resources) [Anderson, 2006]. This led to the creation of a number of foundational technologies and practices to support inclusive online learning such as Web4All and AccessForAll. AccessForAll is both an open international interoperability standard and a number of open source implementations for matching learning resources and learning delivery systems to meet the individual needs of learners. AccessForAll has been implemented in projects and services such as TILE (The Inclusive Learning Exchange), TransformAble, ATutor, the Angel Learning Management System, EU4All, Teacher's Domain and the K12 Library. These implementations have been used to refine both the standard and subsequent implementations [Treviranus and Roberts, 2007].

The approach to accessibility is based on the notion of designing for diversity and as such brings with it a host of associated benefits related to diversity, flexibility and adaptability in several realms. In many cases these are powerful motivators for adopting inclusive design principles that may be invoked if and when accessibility is not seen as a critical priority. Even when accessibility is seen as a requirement, these associated benefits can be added motivators for applying inclusive design principles. These associated benefits include: ease of internationalization and translation, OER portability across operating systems and browsers, ease of reuse, repurposing, and updating, improved discovery and selection of appropriate OER, and ease of delivery through a variety of mobile devices whether phones, smart phones, tablets or laptops. The project embeds inclusive design in the day to day OER workflow making inclusive design largely automatic and unconscious wherever possible and providing the supports and decision making tools to enable efficient and effective inclusive design where human judgment and effort are required.

Conclusions

To realize the full potential of OER we may need to learn from the Wabi-Sabi worldview and release attitudes and assumptions that hamper broader participation and constrain more inclusive education. Recognizing that learners learn differently, that diverse learners are needed in today's economy, and that to be sustainable we must invite and enable global contributions, the OER community must stretch perceptions of quality to more inclusive proportions.

Acknowledgements

The author wishes to acknowledge the William and Flora Hewlett Foundation for its generous support of the FLOE project as well as the larger FLOE project research team.

Bibliographic references

21st Century Learning Initiative (2010). Retrieved at http://www.21learn.org/site/.

Anderson, T. (2006). Retrieved from http://www.cjlt.ca/index.php/cjlt/article/viewArticle/28/26.

CAST (2010). http://www.cast.org/teachingeverystudent/ideas/tes/chapter1.cfm.

Fulghum, R. (1998). *All I Really Need To Know I Learned in Kindergarten*, New York: Villard Books, ISBN 0394571029.

Martin Prosperity Institute (2010). http://www.martinprosperity.org/research-and-publications/publication/releasing-constraints.

Pearson Education (2009). http://www.pearsoned.com/pr_2009/pearson_personalizedlearning.pdf.

Powell, R. (2004). Wabi Sabi Simple. Adams Media. ISBN 1-59337-178-0.

Rush, S. (2010). Unpublished report conducted by Knowbility.

Solomon, G., Allen, N., Resta, P. (Eds). *Toward Digital Equity: Bridging the divide in education*. New York, NY: Allyn & Bacon.

Treviranus, J. & Roberts, V. (2006). Inclusive E-learning in *International Handbook of Virtual Learning Environment*. Editors: Joel Weiss, Jason Nolan, Peter Trifonas, Kluwar, Springer, Hamburg.

Treviranus, J. & Roberts, V. (2007). "Disability, Special Education and IT", in *International Handbook of Information Technology in Primary and Secondary Education*. Editors: J.M. Voogt, G. Knezek. Springer, Hamburg.

United Nations (2010). Retrieved at http://www.un.org/en/documents/udhr/

United States Dept of Ed (2002). Retrieved at http://www2.ed.gov/inits/commissionsboards/whspecialeducation/reports/summ.html

Vuchic, V., Chow, B. (2010). Retrieved at http://cloudworks.ac.uk/cloud/view/3354.

W3C Web Content Accessibility Guidelines 2010, retrieved at http://w3.org/WAI.

About the author

Jutta Treviranus

Director and Professor, Inclusive Design Institute, OCAD University.

Jutta Treviranus is the Director of the Inclusive Design Research Centre (IDRC) and Inclusive Design Institute as well as full professor at OCAD University in Toronto http://inclusivedesign.ca. IDRC is an internationally-recognized center of expertise in the inclusive design of emerging information and communication technology and practices. Jutta has led many international multi-partner research networks that have created broadly implemented technical innovations that support inclusion. These include the Fluid Project (http://fluidproject.org) and the new project, Flexible Learning for Open Education (FLOE). Jutta and her team have pioneered personalization as an approach to accessibility in the digital domain and lead a number of successful international open source projects. She has played a leading role in developing accessibility legislation, standards and

specifications internationally (including WAI ATAG, IMS AccessForAll, ISO 24751, and AODA Information and Communication).

Inclusive Design Institute, OCAD University,
100 McCaul Street, Toronto, Canada, M5T 1W1
jtreviranus@faculty.ocad.ca

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

MultiCampus Open Educational Resources: the case of OER-HE

Frederik Truyen,* Cornelis Adrianus (Kees-Jan) van Dorp, Ben Janssen,*** Jose Rivera,**** Roger Griset*****, Ann Kuppens******

* Associate professor, Faculty or Arts, Katholieke Universiteit Leuven

** Research Director, EADTU

*** Senior Adviser, Executive Board, Open Universiteit, Heerlen

**** Technology Manager at Learning Technology, UOC

***** Specialist at Educational Resources , UOC

******* Research Assistant, Institute for Cultural Studies, Katholieke Universiteit Leuven

Abstract

In this paper we address the implementation strategies regarding Open Educational Resources within a multicampus setting. A comparison is made between 3 institutions that are taking a very different approach: K.U.Leuven, which is a traditional university, the Open Universiteit (Netherlands) which is in the process of starting up the Network Open Polytechnics, and the Universitat Oberta de Catalunya. We are looking deeper into the pedagogical and organizational issues involved in implementing an OER strategy and show how OER holds the promise of flexible solutions for reaching at first sight very divergent goals.

Keywords

Open Educational Resources, multicampus, regional embedding

Recommended citation:

Truyen, Frederik; vn Dorp, Cornelis Adrianus; Janssen, Ben et al. (2010). MultiCampus Open Educational Resources: the case of OER-HE. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4955>

---

1. Introduction

In the context of the project Innovative Open Educational Resources (OER) in European higher education (OER-HE) led by the European Association of Distance Universities (EADTU) we assess different kinds of approaches towards implementation of OER in a multicampus environment. OER can fill local expertise gaps help to create an integrated learning environment that is both virtual and physical, mixing distant and blended learning. We will detail how OER can offer both pedagogical and organizational flexibility. Each institution is trying to shape future learning conditions out of starting conditions that are historically evolved. In each case, the relation between content, human resources and knowledge dissemination is explored and a case is made to strengthen OER policies at the strategic institutional level, by connecting it to the different business models at hand. A thorough literature research on multicampus completes this effort.

OER-HE is a project in the Erasmus Lifelong Learning programme within the strand Virtual Campus, which includes 11 European partners and envisions a continuation (and extension) of the activities which started under the William and Flora Hewlett Foundation grants (Atkins, Brown, Hammond 2007) and continues the work on the *Multilingual Open Resources for Independent Learning* (MORIL) taskforce (van Dorp & Lane 2010: 577). OER-HE is organized into five study work packages: (1) OER widening participation (i.e., best practices), (2) OER multi campus (associations and stakeholder), (3) OER internationalization (development manuals), (4) Quality in OER (quality assurance of OER), and (5) a European OER portal (a repository).

All individual efforts of the EADTU members are consolidated under one future portal, which also provides access to the open course repositories of members. The project generates a concise manual, a handbook, on how to deal with OER. OER-HE consists of the following partners: EADTU, Universidade Aberta, Open Universiteit (Netherlands), Universidad Nacional de Educación a Distancia, FernUniversität in Hagen, Anadolu University, Università Telematica Internazionale UNINETTUNO, Open University, Katholieke Universiteit Leuven, Universitat Oberta de Catalunya, and Hellenic Open University.

2. Multicampus

In this paper we will focus on the OER-multicampus effort. Multicampus poses some specific organizational and pedagogical challenges (Gade 1993; Resta e.a. 2003; Holland & Sullivan 2005:1-14). The three partners involved in this research, the Universitat Oberta de Catalunya (UOC), the Katholieke Universiteit Leuven (K.U.Leuven) and the Open Universiteit (OUNL), look into OER for multicampus from very different backgrounds and goals. Whereas for UOC multicampus means a virtual campus, and ODL technologies are at the core of using OER, the OUNL is involved in a project to setup a *Network of Open Polytechnics* (NOP), aiming to share innovative course content to existing higher education institutions. For K.U.Leuven, OER

technologies help to overcome logistical and synergy problems stemming from its University Association, involving 13 institutions in multiple campuses throughout the Flemish Region.

OUNL has the explicit mission to provide Open Education in the Netherlands and Flemish-speaking Belgium, and has a widening participation role towards more classical education, as is exemplified by its role in the NOP. K.U.Leuven is a traditional University (the 4th oldest in Europe), with about 37.000 students at the University and totaling 75.000 in the whole University Association. UOC is a distance teaching University that provides Open education through innovative technologies. Widening participation is certainly a common ingredient in the reasons for looking at OER (Smith & Casserly 2006), but the three institutions do have their own very specific motives to pursue this line of action. For OUNL, it follows from their role within the NOP network, where quality content will be a common standard delivered to the polytechnics, and OUNL is the learning technology and pedagogical innovator.

The relation between the K.U.Leuven and its associated Institutions for Higher Education is more bi-directional: the institutions in the first place have an independent pedagogical concept, and often host disciplines that are not covered by K.U.Leuven. The aim of multicampus OER is in this case more a sharing of expertise, with collaboration on the content in a network of practice (Brown & Duguid 2001, Brown & Adler 2008); it will always be used in a blended learning context (Bijnens e.a. 2009: 164). The K.U.Leuven pilot in OER is *Literature and Culture in Europe* (LACE) (Truyen & Kuppens 2010), which builds on previous experience in the use of social software for Open Distance Learning (ODL) (Baetens, Truyen & Roegiers 2007).

For UOC, the high quality, finished Open course products are part of their added value. These need to be delivered and finalized before they are used. UOC is studying the optimization of the ratio of self-authored course materials and re-used OER in their course products. We will show that in these different contexts, OER indeed proves to be an enabling factor, but that on the other hand from the different stakes follows an impact on how OER courses are conceived. This has also an impact on the kind of Open licensing involved, which leads to different choices from the available Creative Commons licensing models (Bissell 2009: 100).

3. Institutional OER Objectives

OER can be implemented for a multitude of reasons, as our exploration in the three case studies will show. The three institutions involved allow us a sneak peek into their inner decision making process on OER.

Life-Long-Learning

OER fit very well into the mission of the OUNL, as it develops, provides and promotes innovative higher distance education of top quality, in collaboration with other HE-institutions in networks and alliances. As the Dutch prime university for lifelong learners, it addresses the wide-ranging learning needs of adult people during their course of life, plus the need to achieve a considerable upgrade of

the knowledge level of the community at large (Janssen e.a. 2009). A similar vision on the role of OER for Open universities is shared by the Open University UK (Gourley & Lane 2009). A first component of this strategy at OUNL was OpenER (Schuwer & Mulder 2009). OUNL is member of the Open CourseWare Consortium (OCWC).

OER is one of the instruments by which this necessary change can be achieved. Lifelong learning (LLL) should be enhanced in the direction of individualized mass production of resources in relation with social networks of individualized learners (Geith & Vignare 2008). New hybrid forms of both adult distance education and collaborative learning are needed. The potentialities of OER are very useful in achieving this goal, with different strategies and business models (Casserly 2007: 14-19; Rejas e.a. 2008).

On the contrary, K.U.Leuven offers traditional, daytime education both at the University Campus as well as in 12 institutions of Higher Education spread through the Flemish region. A strongly developed E-Learning system (Toledo) warrants a blended learning approach, offering both local branding possibilities as well as advantages of scale. The Belgian legislation offers possibilities to use copyrighted materials for educational purposes in a closed, subscriber-only learning platform, which is then equated with a classroom situation.

Both this legal situation and the fact that the thousands of courses in Toledo are meant for a blended learning context where a lot of information is passed directly in the classroom, makes that choosing for OER is not so evident. Understandably, the University seems still quite hesitant to embrace a true open policy: the focus is now in the first place on re-usable materials within the Association.

In July 2010, the Education Council of K.U.Leuven approved a policy document on OER submitted by the ICT for Education Board, inspired by the participation in OER-HE, and expanding on thoughts developed at the Council for ICT in Education of the University for many years (Truyen 2004, 2009). This document outlines several reasons why the K.U.Leuven should venture into OER.

Profiling

OER strengthen the profile of both the university and the individual researcher and teacher. For the institution, it is the ideal tool to foster the local embedding in a community. With its openly published materials and results, universities are present in broader layers of today's information society and get picked up earlier in Google. There is also a clear advantage to the individual researcher. There is a difference between the research published in top journals, which as such is aimed at a small, highly specialized audience, and many other competencies of the researcher, stemming from his teaching or work in a lab. OER help position the researcher in this broader field.

Mainstreaming

By distributing high quality OER, researchers help to mainstream new research insights. Used by teachers in higher education or at the secondary school level, it ensures that novel views on topics can be spread faster amongst the learning community. Mainstreaming amounts to shaping the

research environment. By mainstreaming their insights, researchers can foster interest in their research topic, and make a wider audience aware of the principles and issues at stake. This approach is also beneficial to the internet as a whole, through a positive effect on web searches. The more universities provide reference materials on the internet, the better the search results internet users will obtain, as is clearly demonstrated by how Wikipedia articles show up in Google searches.

Internationalization and reaching out to stakeholder communities

Research is international as such, yet part of the mission of the university is a service towards its "constituency", its regional embedding. Internationalization is an effort to provide a link between the local communities and the international dimension. OER can be freely embedded in local practices, enriching the international community with local perspectives. A lot of internet communities work on this principle: people share their views on open content online, while embedding it in very different practices and different contexts. There is an intrinsic link between well-understood OER and Social Software (see e.g. Piedra e.a. 2009).

Quality insurance

Paradoxically, one of the reasons traditional universities are hesitating to opt boldly for an open policy towards their learning materials, is that after review, many of the online courses on their e-learning platforms are not really ready for open publication. First of all, these courses are often used in a blended context, so not all relevant information is on the web: there is a lot of extra information communicated in the classroom. Second, a lot of third party materials on these closed e-learning systems are copyrighted. Third, in many ways online courses involve privacy data, in bio-medics even patient-related data. These data cannot be opened to the general public. Fourth, teaching is a dynamic thing: on the e-learning environment one will find a lot of drafts, unfinished materials, debates, that are not meant to be published. Finally, the quality might be not good enough for publication. In this sense, promoting university teachers to work towards open publishable materials is a good instrument for quality control.

Impact

The UOC is a member of the OCWC and is member of the Universia OCW project too, a consortium of Spanish speaking universities. UOC has high hopes from a new policy about OER which promotes a use of modular, reusable OER. They anticipate that this policy will promote the use of open licenses for a great part of our learning resources. The impact of university on society can be greatly increased thanks to the OCW project. The authors can share the learning resources using the OCW site and open licenses, and then use them in other educational institutions for teaching purposes.

Learning in the Digital Age

For the three involved institutions, OER is also a way to connect to the 21st century way of learning that is natural for the so-called Digital Natives (Brown 2000; van der Baaren e.a. 2008; Thierstein 2009). Our students are expected to want to integrate learning materials in their own digital workspace (for some critical caution see Bennett e.a. 2008).

4. Different pedagogical models involved

For the three involved institutions, starting from a very different background, with different goals and pedagogical frameworks, OER are part of their future way of work, for different but equally convincing and compelling reasons.

The educational design of the NOP (OUNL) is derived from good practices of undergraduate education and extensive experience in LLL of the partners involved in the NOP. Base elements in the programs are use of professional experience of the students in semesters, blended learning, a modular curriculum consisting of semesters that are directly relevant to the professional practice, active learning communities and high-quality educational resources that will be publicly available and open to modification (Janssen e.a. 2009).

The teaching method will be a combination of several complementary techniques, viz.

Face to face tutoring, plus lab sessions and feedback on assignments. These will be available at several separate locations; locations may be mixed during a degree course;

A working conference after every semester;

Digital learning environments comprising cooperation facilities between students (shared documents, video conferencing, text chat, asynchronous discussion groups), virtual classes (including full duplex audio, video, whiteboard, presentation software, session recording, document uploading, application sharing), facilities for personal supervision and coaching (e.g. portfolio management);

Learning at the workplace.

The materials will be developed initially and updated yearly by teams from all participating institutions. Except for copyrighted materials purchased from third parties, all materials will be offered in the form of OER, under the Creative Commons license. This means that they will be freely accessible to anyone, including students and teachers at other institutions, and may be used for any non-commercial purpose.

The motives of OUNL to start this national network are partnering in open innovation in LLL, sharing of costs of development of new modes of LLL-education, of costs of development of high quality materials adapted to lifelong learners, of costs of market penetration, branding of a new mode of LLL education (competitive advantage) and finally “Creative destruction" of existing models of LLL.

These are the requirements for the development and (re)use of OER:

In principle all educational resources for all semesters will be OER;

It must be possible to use annually fixed versions of OER based programs;

Public must have access to “fixed versions”;

Students, staff and public must have access to all resources in order to submit reviews and ratings, comments and suggestions, additions and improvements;

It must be possible for staff to ad user experiences;

Monitoring and blocking of rude behaviour and copyright violations;

Central and decentralized databases.

K.U.Leuven for its part is now in a new phase after many years of efforts for *guided independent learning*, where considerable funds were freed to help professors design courses in such a way as to stimulate self-study. This relied heavily on the use of e-learning tools, for which a comprehensive university-wide platform based on Blackboard and Question Mark Perception was introduced.

Current university doctrine rather emphasizes a more holistic approach called the "integral learning environment". In this concept, the whole of the university is re-centered as a learning organization. It has to be structured in such a way as to create a stimulating learning space for the students, whether this space is physical or virtual. Of course, this aligns with the transformation of the monolithic university into a completely different organization now as a multicampus higher education association. The institutions in the association each have their own pedagogical models, highly adapted to their disciplinary fields of research and training, e.g. competence-driven or inquiry-based training.

Given the support for the above-mentioned policy document on OER, the university envisions the publication of an open series of K.U.Leuven-branded courses, by using existing technology within the institution. The whole idea is to select courses with broad impact and publish them online as complete courses involving exercises and self-tests. The K.U.Leuven hopes to join the Open Courseware consortium on the basis of this series when sufficient courses are available online.

At the UOC, e-learning is based in the interaction between teachers and students in the virtual classroom. Perhaps, virtual classroom is an obsolete term for an obsolete way of learning, but is the only way we know until today with a demonstrated effectiveness.

The first step to effective use of OER is to break monolithic books into modular contents, and the use of an increasing number of external resources. This will increase the complexity of the content management in the university. All university life takes place at the Virtual Campus, comprising students, teachers, researchers, collaborators, and administrators. Students access to their virtual classrooms where they meet teachers, classmates, content, activities and communication tools necessary to study and learn. UOC sends all the required books before the beginning of the lessons to the students' home. The copyrights of these books belong to the university. Other versions of the contents are available through the virtual classroom: mobipocket, epub, html, pdf and audio.

The materials are not just important within the learning process. The institution considers them a strategic asset. Firstly, the exclusivity of content is a way to differentiate commercially the UOC courses from what other universities offer. And secondly, the materials are economically part of the assets of the institution.

UOC is working on a new Strategic Plan for 2010-2014 that includes a chapter on OER. Currently, UOC uses a great number of original self-developed resources, as opposed to other external resources. These external resources are, chiefly, journal articles or book chapters. Regarding the external resources being used, UOC should be able to determine which of these can be considered OER and which are simply complementary reading materials. UOC expects gains

from the possibility of including existing OER in its own courses (see e.g. McAndrew & Wilson 2008 and Petrides e.a. 2008).

An experience with focus groups should confirm or refute some of the following hypotheses:

Creating original material involves fewer hours of dedication, since the main part of authorship is undertaken by external professors, while the selection of materials for reuse must de done by the professors themselves.

The professor believes that the university policy is to produce original material as a differentiating element of quality with respect to other universities.

The professor believes that the subject material must include all assessable contents and must serve as a guideline for carrying out all continuous evaluation tests.

The professor sees the authorship of new materials as an alternative source of income.

To arrive at the ideal situation described, UOC works on a comprehensive policy with regard to contents, as opposed to a policy of exception and differentiated treatment that creates a series of particularities that are very difficult to manage and regulate.

The focus is on the creation of contents in those fields that are not covered by others. But this must be done differently: modular and decontextualized from the subject for which it was created. A clear policy must be established for opening contents and reducing exceptions to a minimum; to reward, if possible, professors and authors who publish contents in open source, and measure the impact that these contents have externally.

Conclusion

Multicampus is quite a different reality in the three case-studies within the OER-HE project. Embedded in a different context, going from completely virtual (UOC) over an open network effort (OUNL NOP) to a more multilateral approach (K.U.Leuven), it emerges that OER provide key solutions. However, the institutions have different goals. In the case of OUNL, widening participation and Life-Long-Learning are the main drives to look into OER. For K.U.Leuven, Profiling as well as mainstreaming and reaching out to stakeholder communities makes OER a natural choice. In the case of UOC, impact on society is important, and translates into the need to deliver timely, high-quality learning materials that offer the maximum of autonomy. The quality of its courses are UOC's main branding tool. This has been instrumental in the choice for OER. In the three cases, OER using adapted licensing models are considered a strategic asset.

Bibliographic references

Atkins, Seely Brown, Hammond (2007). *A Review of the Open Educational Resources Movement: Achievements, Challenges and New Opportunities*. <http://www.oerderves.org/wp-content/uploads/2007/03/a-review-of-the-open-educational-resources-oer-movement_final.pdf>

Baetens, J., Truyen, F., Roegiers, S. (2007). Wiki as catalyst for distance collaboration in an international course on film and literature. *Widening participation and opportunities by e-learning in higher education: promoting accessibility and improving the quality of lifelong open and flexible learning*. EADTU conference. Talinn, 23-24 november 2006.

Bennett, Sue, Maton, Karl and Lisa Kervin (2008). The 'digital natives' debate: A critical review of the evidence, *British Journal of Educational Technology* Vol 39 No 5, 775–786

Bijnens, H., Op de Beeck, I., De Gruyter, J., Van Petegem, W., Reynolds, S., Bacsich, P., Bastiaens, T., Kairamo, A., Lucas, G. (2009). Reviewing traces of virtual campuses: from a "fully-fletched virtual campus to a blended model. In: Stansfield M., Connolly T. (Eds.), *Institutional Transformation through Best Practices in Virtual Campus Development: Advancing E-Learning Policies*, 163-178 Hershey: IGI Global.

Bissell, Ahrash N. (2009). Permission Granted: Open Licensing for Educational Resources. *Open Learning* 24 (1), 97-106.

Brown, J. S. (2000). Growing up digital: how the Web changes work, education, and the ways people learn. *Change*, *March*/*April*, 10–20.

Brown, John Seely, Duguid P. (2001). Knowledge and Organization: A Social-Practice Perspective. *Organization Science* 12, 2, 198-213.

Brown, John Seely, and Richard P. Adler (2008). Minds on Fire: Open Education, the Long Tail, and Learning 2.0. *EDUCAUSE Review* 43 (1):16-20,22,24,26,28,30,32.

Casserly, Catherine M. (2007). The Economics of Open Educational Resources. *Educational Technology Magazine: The Magazine for Managers of Change in Education* 47:14-19.

Gade, Marian L. (1993). *Four Multicampus Systems: Some Policies and Practices That Work. AGB Special Report, Association of Governing Boards of Universities and Colleges*, Washington.

Geith, Christine, and Karen Vignare (2008). Access to Education with Online Learning and Open Educational Resources: Can They Close the Gap? *Journal of Asynchronous Learning Networks* 12 (1):105-126.

Gourley, Brenda, and Andy Lane (2009). Re-Invigorating Openness at The Open University: The Role of Open Educational Resources. *Open Learning* 24 (1):57-65.

Holland, Norma Brenner and Laurie Sullivan (2005). *Enterprise-wide System implementations at Multicampus Institutions*, Educause Research Bulletin, Volume 2005 issue 4, p.1-14.

Janssen, Ben, Bijlsma, Lex and René Bakker (2009). *The OER case of the Netherlands: the Networked Open Polytechnic*. ICDE World Conference. Maastricht, 7-10 July

McAndrew, Patrick, and Tina Wilson (2008). *Pocketing the difference: Joint development of open educational resources.* Paper read at 8th IEEE International Conference on Advanced Learning Technologies, ICALT 2008, July 1, 2008 - July 5, 2008, at Santander, Spain.

Petrides, Lisa, Lilly Nguyen, Anastasia Kargliani, and Cynthia Jimes (2008). *Open educational resources: Inquiring into author reuse behaviors.* Paper read at 3rd European Conference on Technology Enhanced Learning, EC-TEL 2008, September 16, 2008 - September 19, 2008, at Maastricht, Netherlands.

Piedra, Nelson, Janneth Chicaiza, Edmundo Tovar, and Oscar Martinez (2009). *Open educational practices and resources based on social software: UTPL experience*. Paper read at 2009 9th IEEE International Conference on Advanced Learning Technologies, ICALT 2009, July 15, 2009 - July 17, 2009, at Riga, Latvia.

Rejas-Muslera, Ricardo J., Juan J. Cuadrado, Alain Abran, and Miguel A. Sicilia (2008). *Information economy philosophy in universal education. The Open Educational Resources (OER): Technical, socioeconomics and legal aspects.* Paper read at 2008 IEEE International on Professional Communication Conference, IPCC, July 13, 2008 - July 16, 2008, at Montreal, QC, Canada.

Resta, P. E., C. E. Gonzales, and M. Menchaca (2003). *Facilitating systemic change in a multicampus system through faculty development*. Edited by F. Malpica, A. Tremante and N. Sala, International Conference on Education and Information Systems: Technologies and Applications, Proceedings.

Schuwer, Robert, and Fred Mulder (2009). OpenER, a Dutch Initiative in Open Educational Resources. *Open Learning* 24 (1):67-76.

Smith, Marshall S., and Catherine M. Casserly (2006). The Promise of Open Educational Resources. *Change: The Magazine of Higher Learning* 38 (5):8-17.

Thierstein, Joel (2009). Education in the Digital Age. *EDUCAUSE Review* 44 (1):33-34.

Truyen, F., Kuppens, A. (2010). LACE: How Open ICT Helps to Build International Masters in the Bologna Philosophy. In Gomez Chova, L. (Ed.), Marti Belenguer, D. (Ed.), Candel Torres, I. (Ed.), *Edulearn10 Proceedings CD*. Edulearn. Barcelona, 5-7 July 2010 (pp. 005427-005436). Valencia: International Association of Technology, Education and Development (IATED).

Truyen, F. (2009). *Sustainable Knowledge Development Policies in University E-Learning*. ICDE World Conference. Maastricht, 7-10 July (art.nr. 286).

Truyen, F. (2004). Total ReUse [online]: towards a virtual E-learning campus for sustainable knowledge development. *Mass-individualism of higher education for the knowledge-based society: EADTU annual conference 2004, Heerlen, 21-23 October 2004*.

Van der Baaren, John, Robert Schuwer, Paul Kirschner, and Maaike Hendriks (2008). Finding Your Way into an Open Online Learning Community. *Journal of Interactive Media in Education*.

van Dorp, Cornelis Adrianus (Kees-Jan), Lane, Andy (2010). *Diffusion of innovation through formal institutional networks*, ICL 2010 Hasselt, Belgium, Setp. 15-17 Proceedings p. 574-583.

About the authors

Frederik Truyen

Associate professor, Faculty or Arts, Katholieke Universiteit Leuven

Frederik Truyen is associate professor at the faculty of Arts, Leuven University. He publishes on E-Learning, Philosophy of Information, Epistemology and Social Theories of Knowledge. Coordinator ICT for Humanities and Social Sciences at Leuven University since 2006. Head of the Computer Dept. of The Faculty of Arts K.U.Leuven from 1989 till now. In charge of the Maerlant Centre (MediaLab Institute for Cultural Studies). PhD in Philosophy (Logic) in 1991. Professor at the Faculty of Arts in Information Science since 1997. Teaches Information Science (for History, Archaeology and Area Studies), Quantitative methods and Web technology. Active on ICT at several levels of the University, mostly related to Web technology and E-Learning

Katholieke Universiteit Leuven
Blijde-Inkomststraat 21
3000 Leuven Belgium
Fred.Truyen@arts.kuleuven.be)

Cornelis Adrianus (Kees-Jan) van Dorp
Research Director, EADTU

C.A. (Kees-Jan) van Dorp is Research Director and advisory to the Board and Executive of EADTU. EADTU is the representative organisation of both the European open and distance teaching universities, and the national consortia of higher education institutions active in the field of distance education and e-learning. Van Dorp maintains active involvement in research by coordination of European and US funded projects, task forces, academic initiatives and stakeholder cooperation, viz. the European Commission, the European University Association, the William and Flora Hewlett Foundation, the OpenCourseWare Consortium, and the United Nations Educational, Scientific and Cultural Organization.

EADTU
Valkenburgerweg 177
6419 AT Heerlen
The Netherlands
Kees-Jan.vanDorp@EADTU.nl

Ben Janssen
Senior Adviser, Executive Board, Open Universiteit, Heerlen

Ben Janssen is senior adviser to the Executive Board of the Open University of the Netherlands (OUNL), which he joined in 2002. He is responsible program manager for the Networked Open Polytechnic. Ben Janssen's formal education is in regional planning and economics. Ben Janssen was and is involved in national and international projects on OER and OER oriented business strategies.

Open Universiteit
Valkenburgweg 177
P.O. Box 2960
6401 DL Heerlen
The Netherlands
ben.Janssen@ou.nl

Jose Rivera
Technology Manager at Learning Technology ,UOC

José Manuel Rivera López is Product Manager for Digital Contents at the Learning Technologies office of the Open University of Catalonia. He is Engineer for the UPC, and has degrees in Marketing and Management at the UOC. He is the leader of MyWay and TRia projects and participates in Matterhorn international initiative

Universitat Oberta de Catalunya
Avinguda Tibidabo 47
08035 Barcelona
Spain
jrivera@uoc.edu.

Roger Griset

Specialist at Educational Resources , UOC

Roger Griset was trained as a librarian. He joined the UOC's Educational Resources Department five years ago. He is responsible for maintaining the university's OpenCourseWare website and participates in innovation projects on educational resources and the creation of digital repositories.

Universitat Oberta de Catalunya
Rambla del Poble Nou 156
08018 Barcelona
Spain
rgriset@uoc.edu

Ann Kuppens

Research Assistant, Institute for Cultural Studies, Katholieke Universiteit Leuven

Ann Kuppens has a degree in communication and cultural studies. She is a Research Assistant at the Institute for Cultural Studies at Leuven University. She works on the LACE project (Literature and Culture in Europe) which organizes a partnership for an International Master programme in Culture and Literature. Ann works on projects involving weblectures and video-enhanced Learning and International collaboration.

Katholieke Universiteit Leuven
Maria-Theresiastraat 23
3000 Leuven
Belgium
Ann.Kuppens@arts.kuleuven.be

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Opening Education Beyond the Property Relation: From Commons to Communism

The University of Utopia

Abstract

Open Education, and specifically the OER movement, seeks to provide universal access to knowledge, undermining the historical enclosure and the increasing privatisation of the public education system. In this paper we examine this aspiration by submitting the implicit theoretical assumptions of Open Education to the test of critical political economy. We acknowledge the Open Education movement's revolutionary potential but outline the inherent limitations of its current focus on the commons (property relations) rather than the social relations of capitalist production (wage work, the company) and because of this, argue that it will only achieve limited, rather than revolutionary, impact.

Recommended citation:

The University of Utopia (2010). Opening Education Beyond the Property Relation: From Commons to Communism. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.

[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/5243>

Introduction

The opening of education beyond the property relation is distinguished by two terms that are often used interchangeably, yet retain subtle differences: Open Education and Open Educational Resources.

Open Education refers to recent efforts by individuals and organisations across the world to use the Internet to share knowledge, ideas, teaching practices, infrastructure, tools and resources, inside and outside formal educational settings. Through collaboration and experimentation, new pedagogies and curricula are emerging. Although the term Open Education has been used since the 1960s, the current dominant use of the term refers to co-ordinated efforts during the past decade to exploit the growing availability of personal computers and increasingly ubiquitous high speed networks.

Open Educational Resources (OER) refers to both the worldwide community effort to create an educational commons and the actual "educational materials and resources offered freely and openly for anyone to use and under some licenses to re-mix, improve and redistribute" (Wikipedia). Typically, those resources are made available under a Creative Commons license and include both learning resources and tools by which those resources are created, managed and disseminated. As both a means of protecting and liberating research, teaching and learning materials, OER relies heavily on the use of open licenses, all of which are in one way or another derived from the General Public License (GPL) and Berkeley Software Distribution (BSD) licenses first created in 1989. Since the 1990s, software has been created and distributed using such licenses and it is widely acknowledged that Creative Commons was inspired by, and drew experience from, the use of open licenses in the world of software.

In just ten years, a relatively small number of educators have created a discernible movement that has attracted millions of pounds from philanthropic and state funding. This movement, growing out of hundreds of universities, colleges, schools and other organisations, has produced tens of thousands of educational resources, often entire course materials, that can be accessed by anyone with access to the Internet. Today, there are international consortia, conferences, NGOs and government reports that promote the opening up of education, to which Open Education and OERs are central.

Open Education is a pragmatic response by educators and researchers to the growth of the Internet, using a widespread technology to undertake what its advocates see as both a public good and to exploit an opportunity to effect educational reform. The question remains open as to whether Open Education and OER constitute a revolution in teaching and learning, as their proponents claim (Cape Town Open Education Declaration).

Private Property and Creative Commons

The values that underpin Open Education are liberal rather than revolutionary encoded in Creative Commons licensing and argued in a number of scholarly works (Lessig 2001, 2004; Boyle 2009; Benkler, 2006).

Creative commons licensing provides a method for producers of Open Educational Resources to define more precisely the terms of use of their intellectual property. Although this allows the producers to claim fewer rights than traditional copyright law affords, it does not undermine the law of private property. Creative Commons further liberalises the market by putting greater power in the hands of producers (i.e. teachers or their institutions) to determine the level of freedom to grant the consumer (Kleiner 2006). As such, Open Education and OER, in their attempts to provide universal access to knowledge, do not undermine the increasing privatization of the public education system.

The work surrounding Creative Commons provides persuasive and eloquent arguments about the importance of protecting and developing a creative and (re)productive commons in the face of attempts to consolidate the property relation in an increasingly digital culture. It builds on the work of Richard Stallman and the Free Software Foundation (Stallman 2002), which has worked to defend and sustain the freedom to share their creative output through the notion of 'copyleft'. The purpose of 'copyleft' is to overcome the rights of producer-control by asserting "the right to distribute copies and modified versions of a work and requiring that the same rights be preserved in modified versions of the work" (Wikipedia). Such novel licensing, however, does not ultimately undermine the law of private property, but, rather, makes the process of privatisation of information more transparent and the market for information more efficient by providing a clear and legally binding method of communicating the rights of the producer to the consumer.

Freedom of things not the freedom of labour

While Open Education claims to liberate intellectual work from the constrains of intellectual property law, it does nothing about liberating the intellectual worker from the constraints of the academic labour process.

The reification of 'the commons' as a site of non-scarce, replicable and accessible educational resources is to mistake the freedom of things for the freedom of labour. The increasing reliance on the online virtual world as a mode of teaching and instruction have exacerbated the proletarianisation of academic labour. Faculty have much in common with the historic plight of other skilled workers. Academic work is being restructured, through the imposition of virtual online technologies, in ways that reduce the autonomy, independence, and control of academics over their work, placing their knowledge and the dissemination and control of that knowledge into the hands of the university administration. As in other industries, technology is being deployed by management to discipline, de–skill, and displace labor (Noble 1998). The virtualisation of courses occurs long before the application of copyright and a novel license. OER is simply "a stage in the metamorphosis of the labour process". (Söderberg, 2007, 71).

As universities rapidly replace their collegial structures with corporate structures, prioritising commercial partnerships and promoting themselves as engines of economic growth (Finlayson and Hayward 2010; Levidow 2002), the work and rights of teachers grows increasingly vulnerable and exploited through the use of fixed-term and casual employment contracts and the roll out of technologies which aim to automate and regulate the work of teachers in the name of efficiency and improving the student-customer experience. In this form, education is simply a market where indebted students enter into a contract around learning content and accreditation. The value of the

content is, both in its form and substance, standardised so all customers receive the same quality of product and delivered with efficiency so as to reproduce it at low cost.

As the university increasingly adopts corporate forms, objectives and practices, so the role of the academic is to improve the brand and reputation of the university (Neocleous 2003). The profile provided by online courses and educational resources provides a further level of academic distinction to higher education institutions. To what extent the Open Education movement can oppose the corporatisation of institutions and the objectification of their staff and students, is still open to question, although the overwhelming trend so far is for OER to be seen as sustainable only to the extent that it can attract private and state funding, which serves the reputation building of the respective universities as institutions for the public good and notable for the quality of their teaching resources.

From the distraction of 'the commons' to a new common-sense

In the recent period the notion of 'open' has been subjected to a Marxist critique through a critical elaboration of the idea of the commons.

The Commons

The promotion of ‘the commons’ as a counterpoint to the commercialisation of all human relations has been most advanced by Marxist scholars. Writers in the Marxist tradition have exposed the historical development of capitalism as the destruction of common land and its associated customary rights. Capitalism began as a process of enclosure and improvement; starting in England in the 16th century it spread throughout the world by colonialism, empire and globalisation (Meiksins Wood, 2002). This process of enclosure (i.e. ‘primitive accumulation’) by which peasants and indigenous peoples were forced from the land was characterized by violence and repression, signaling a complete transformation in the most basic human practices with each other and with nature (Meiksins Wood 2002, 95; Bellamy Foster 2000).

Enclosure and improvement are not simply about the restrictions and development of common land, but are more fundamentally concerned with the historic and social fabrication of human labour as waged work, forming the basis for capitalist relations of production. Under the terms of waged work direct producers are dispossessed of all property, other than their own labour-power, which they are compelled to sell to their employers. The rate at which labour-power is exploited by employers decides the amount of surplus value that is produced. The rate of surplus value is not in any sense related to the concrete nature of labour (i.e. use value) or the quantity of goods produced (i.e. empirical wealth) , but is a social calculation based on the productivity of each worker (i.e. socially necessary labour) in relation to the productivity of labour in general (i.e. abstract labour), taken as a social average. It is the extent to which value in capitalism is calculated as the social

measure of a real abstraction, rather than simply by the quantity of goods produced, that defines the character of capitalist value (i.e. non-empirical wealth). Under pressure of competition employers are forced to improve the objective conditions of production, including the capacity of labour-power, to realise their investment on the market by the exchange of goods and services (i. e. commodities). These objective conditions include the forms in which labour-power is reproduced, meaning that the relations of work extend to include the whole of society, until they constitute the nature of the social itself (i.e. real subsumption).

These improvements are highly contentious and are prone to produce ever more sophisticated forms of worker resistance as the capacity of labour-power is improved. These increasingly sophisticated forms of protest ensure that conflict, contradiction and crisis are an endemic aspect of the capitalist world. The alternatives proposed by dispossessed workers are based on the social ownership and control of the conditions of production, which the increasingly socialised process of production implies. It is this increasingly social process of production which creates the conditions for the idea of 'the commons' to re-emerge as a critical principle and political project.

The peculiarity of capital is that these imperatives of production are impersonal and indirect, enforced through the abstract law of value which exists as the political power of the state and the economic power of money, each of which constitute the abstract power of the capital relation (Postone 1993, Clarke 1991). This process of abstraction renders what is a social and historical process appear as if it were natural and timeless, requiring a critique of political economy to reveal its true nature. Social emancipation involves connecting real practical and progressive alternatives with progressive critical theory (i.e. communism) (Clarke 1991).

Commonism

In the recent period the concept of 'commonism' has emerged as an alternative to communism, claiming to reignite Marx's critique by connecting it to the global network of contemporary struggles, 'the movement of movements', as the basis for new collective projects of resistance and mass organisation (Dyer-Witheford 2007). Key to the concept of commonism is its claim to avoid the bad history of authoritarian state communism, providing an antidote to centralised planning and the restrictions of private property through new forms of collective ownership.

The principle of commonism is derived from Autonomist Marxism, developed in continental Europe in the 1960s and 1970s through the work of Negri, Tronti etc (Wright 2002). A key feature of autonomist Marxism was the way in which it demonstrated theoretically that Marx's social theory was not only a theory of the circulation of capital, but provided a framework through which to articulate the ways in which struggles against capitalism were derived out of the circuits of capitalist expansion. The purpose of commonism is to point towards the kinds of progressive forms of social associations that these struggles have created. Commonism identifies these new forms of ownership as the *ecological commons* - through massive social planning, the *social commons* - through basic income and solidarity economics, and the *networked commons* - through Creative Commons and open source culture, including Open Education and Open Educational Resources (Dyer-Witheford 2007).

Commonism takes as its starting point the organising principle on which the circuit of capitalist expansion is established, i.e. the commodity form. Marx opens Capital Vol. 1 with the statement:

> The wealth of society in which the capitalist mode of production prevails, *appears* an immense collection of commodities; the individual commodity *appears* as its elemental form. Our investigation therefore begins with the analysis of the commodity (Marx Capital 1 – our emphasis).

Commonism takes this statement as the organising principle for its own radical response to the social relations of capitalist society:

> If the cell form of capitalism is the commodity, the cellular form of a society beyond capital is the common. A commodity is a good produced for sale, a common is a good produced, or conserved, to be shared. The notion of a commodity, a good produced for sale, presupposes private owners between whom the exchange occurs. The notions of the common presupposes collectivities – associations and assemblies – within which sharing is organised. If capitalism presents itself as an immense heap of commodities, commonism is a multiplication of commons (Dyer-Witheford 2007).

The emphasis here is on the difference between the production of goods for sale, and the production of goods to be shared as a public good. In each case the emphasis is on forms of ownership with no attempt to problematise the ways in which the goods are produced. While commonism does draw attention to progressive forms of collaborative labour, in relation to hacking and immaterial labour, its focus is very much on the positive redistribution of goods and resources. The implication is that forms of exchange produce different forms of social activity "shared resources generate forms of shared co-operation – associations – that coordinate the conversion of further resources into expanded commons" (Dyer-Witheford 2007), rather than searching for more substantive underlying levels of social determinations in the ways in which social relations are produced.

Hacking is one of the few examples where labour power, connected by a communications network, has demonstrated a real alternative to the academic labour process. Hackers offer a rare showcase of 'play struggle' that demonstrates the potential for new forms of work that might collapse and resist the distinction between producer and consumer, with the potential to subvert the logic of the commodity form (Söderberg 2007). However, in the forms in which is it currently practiced, hacking remains far from being an exemplary anti-capitalist type of work. Most hackers remain largely disconnected from wider social struggles, with their focus, where it exists, on challenging private property, asserting freedom of information and promoting civil liberties. The diversity of the hacker movement remains predicated on the liberal myth of meritocracy, an idea with close ties to the academic origins from where hacking emerged and which encodes class inequalities in terms of individual ambition rather than collective resistance (Söderberg 2007, 117). Furthermore, from the point of view of hacking, the immaterial and virtual world is not substantiated. Far from being derived out of virtuality, the Internet is, in fact, grounded in the

physical and natural world of electricity pylons, electro-magnetic fields, radio waves, power cuts, and fossil fuels.

While the identification of immaterial labour as a significant new form of capitalist production does point the way to progressive collective practices, the way in which immateriality is described: "those forms of communicational and affective production associated, not exclusively but strongly with digital networks" (Dyer-Witheford 2007), diverts attention from Marx's substantive account of the relationship between materiality and immateriality in capitalist society. For Marx, all forms of capitalist work are defined as the asymetrical relationship been use value (materiality) and exchange value (immateriality), where goods are defined by their usefulness but are only made in order to be exchanged. The defining feature of bourgeois social science is its complete inability to recognise the significance of value, as a non-empirical (i.e. immaterial) social substance, and its motivational power for a fully capitalised human society, with all of its devastating consequences (Kay and Mott 1982; Sohn-Rethel 1978).

With its focus on exchange rather than production, commonism not only replays the consumerist limits of OER, but also, ironically, is in danger of replicating the forms of social regulation it is attempting to avoid: Socialism. If Socialism is "the collective ownership of the means of production and economic planning in an industrialised context" (Postone 1993, 7), then commonism looks very much like the latest form socialist society. Notwithstanding the fact that commonism attempts to privilege one form of planning over another, radical and democratic rather than centralised and repressive, without an awareness of the processes through which capitalist society is (re)produced, these instructions look normative and contingent rather than determined by a progressive social project (Postone 1993, 11 & 15).

A fully grounded social theory begins in the substantive forms within which social relations are derived and determined. For Marx those relations are determined by Capital, described as "value in motion..." (Marx Capital 1). Therefore the starting point for any analysis of capital is value and not the commodity form (Postone 1993; Clarke 1991). While Commonism is right to draw our attention to the significance of the commodity-form as the organising principle for capitalism and for struggle, Marx is careful to draw our attention to the fact that the wealth of capitalist societies only *appears* to be the vast accumulation of commodities. The real wealth of capital society is not material things, but immaterial value, the substance of which is abstract labour, which *appears* in the form of things (i.e. commodities). Therefore, any attempt to build a critique of capital from the concept of the commodity form, rather than the immaterial reality of value out of which the thing like world of commodities are derived, is based on a fundamental misconception of Marx's critical social theory and the form of value in capital.

A fully developed critique of capital does not start by replicating the cell-like commodity form; but, rather by negating the non-empirical logic of capitalist production: anti-value in motion through insurgent interruptions (Bell and Cleaver 1982; Dinerstein and Neary 2002). The key point is that "Marx's notion of the overcoming of capitalism... involves a transformation not only of the existing mode of distribution but also of the mode of production" (Postone, 1993, 23). This does not mean simply doing less work or no work, allowing machines to produce the wealth of society (Gorz 1992). Rather, it means recasting the meaning and purpose of work based on an emancipatory notion of what constitutes wealth in a newly substantiated post-capitalist world. Marxist scholarship is replete with what that wealth might look like, for example 'the society of abundance' based on a reworking of the relationship between need and capacity (Kay and Mott 1982), or 'disposable time'

drawing on Marx's formulations in the Grundrisse (Postone 1993), or an Open Marxism based on the dissolution of the relationship between use and exchange value organised around a programme where humanity becomes the project rather than the resource (Bonefeld, Gunn and Psychopedis 1992), or the reconnection of manual and intellectual labour (Sohn-Rethel 1978), or the creation of 'mass intellectuality' through the promotion of a critical and practical reflexive self consciousness among direct producers (Hardt and Negri, 2000).

What all of these post capitalist forms of wealth have in common is an awareness that capitalism has made an exponential improvement of the productive power and knowledge of humanity, but that these powers and knowledge have been used to alienate and oppress its own productive populations (Postone 1993). Any progressive revolutionary project must be based on the need re-appropriate this knowledge and power for the populations that have produced it; not simply to make available new knowledge in less restricted 'open' forms, nor to reify new forms of property relations through commons and commonism; but, rather, to produce a new common sense: raising critique to the level of society so that society can recognise its real nature and recompose itself in a more sustainable and progressive form.

Conclusion. The violence of the virtual

Open Education and OER are progressive attempts to provide educational materials that are openly accessible. While these forms of provision stretch the limits of the laws of intellectual property, they do not undermine the laws of private property, but further liberalise the conditions through which knowledge can be exchanged. While these new educational resources provide for closer engagement between student and academic they do not undermine the ways in which capitalist work is organised, rather they exacerbate the proletarianisation of academic labour.

Despite the dynamism generated by the digitalisation of social life and the apparently endless possibilities provided by this 'technological utopia', the logic of the so called virtual revolution does not escape the conditions where 'the dull compulsion of economic life completes the subjection of the labourer to the capitalist' (Marx Capital Vol 1). Our analysis has identified Capital as 'value in motion', which, in the form of abstract labour, provides a real logic for the concept of immateriality, i.e. exchange value, and a real substance for the notion of the virtual. In the bizarre world of capitalist production, social wealth is measured as the expansion of a socially constituted substance (exchange value) in a material form (use value). The brutal logic of capitalist production really is the logic of abstraction and the immaterial, or, in other words, the violence of virtuality and its destructive consequences.

The question for a *really* open education is not the extent to which educational resources can be made freely available, within the current constraints of capitalist property law; but, rather, what should constitute the nature of wealth in a sustainable and progressive post capitalist society. That is the really open question.

Bibliographic references

Bell, Peter and Cleaver, Harry (1982). 'Marx's Theory of Crisis as a Theory of Class Struggle' Research in Political Economy. The Commoner: A Journal for Other Values (2002) – http://www.commoner.org.uk/cleaver05.pdf

Benkler, Yochai (2006). The Wealth of Networks. Yale University Press, New Haven and London.

Bonefled, Werner, Gunn, Richard and Psychopedis, Kosmas (1992) Open Marxism – Dialectics and History Volume 1, Pluto Press, London.

Cape Town Open Education Declaration. http://www.capetowndeclaration.org/read-the-declaration

Clarke, Simon (1991). Marx, Marginalism and Modern Sociology, Macmillan, London.

Dinerstein, Ana and Neary, Michael (2002). 'Anti-value in Motion: Labour, Real Subsumption and the Struggles Against Capitalism', in A. Dinerstein and M. Neary (eds) The Labour Debate: An Investigation into the Theory and Reality of Capitalist Work, Ashgate, Aldershot: 226 – 240

Dyer-Witheford, Nick (1999). Cyber Marx: Cycles and Circuits of Struggles in High Technology Capitalism, University of Illinois Press, Urbana and Chicago.

Dyer-Witheford, Nick (2006). 'Species Being and the New Commonism: Notes on an Interrupted Cycle of Struggle', The Commoner, http://www.commoner.org.uk/11witheford.pdf

Dyer-Witherford, Nick (2006). 'The Circulation of the Common', paper presented at Immaterial Labour, Multitudes and New Social Subjects: Class Composition and Cognitive Capitalism, Kings College Cambridge.

Dyer-Witheford, Nick (2007). Commonism. Turbulence 1. http://turbulence.org.uk/turbulence_1/commonism/

Finlayson, Gordon & Hayward, Daniel (2010). Education towards Heteronomy: A Critical Analysis of the Reform of UK Universities since 1978. http://lncn.eu/e56

Foster, John Bellamy (2000). Marx's Ecology. Materialism and Nature. Monthly Review Press, New York.

Gorz, André (1992). Farewell to the Working Class, An Essay on Post Industrial Socialism, Pluto Press, London and Sydney.

Hardt, Michael and Negri, Antonio (2000). Empire. Harvard University Press, Cambridge MA and London.

Kay, G. and Mott, J. (1982). Political Order and the Law of Labour, Macmillan, London.

Kleiner, Dmytri (2006). The Creative Anti-Commons and the Poverty of Networks. Mute Magazine. http://www.metamute.org/en/WOS4-The-Creative-Anti-Commons-and-the-Poverty-of-Networks

Lessig, Lawrence (2004). Free Culture. The Penguin Press, New York.

Lessig, Lawrence (2001). The Future of Ideas. Random House, New York.

Levidow, Les (2002). In: Robins, Kevin and Webster, Frank eds. The Virtual University? Knowledge, Markets and Management. Oxford, UK: Oxford University Press, pp. 227–248.

Marx, Karl (1990). Capital Vol 1, Penguin, London.

Neocleous, Mark (2003). Staging power: Marx, Hobbes and the personification of capital. Law and Critique. 14, 147-165.

Noble, David F. (1998). Digital Diploma Mills: the automation of higher education. First Monday Vol. 3, Issue 1.

Postone, Moishe (1993). Time, Labour and Social Domination – A Reinterpretation of Marx's Critical Theory, Cambridge University Press, Cambridge.
Söderberg, Johan (2007). Hacking Capitalism. The Free and Open Source Software Movement. Routledge, Oxford.
Sohn-Rethel, Alfred (1978). Intellectual and Manual Labour: A Critique of Epistemology, Macmillan, Basingstoke.
Stallman, Richard (2002). Free Software, Free Society: Selected essays of Richard Stallman. GNU Press, Boston.
Wikipedia: Open Educational Resources. http://en.wikipedia.org/wiki/Open_educational_resources
Wikipedia: Copyleft.
http://en.wikipedia.org/wiki/Copyleft
Wood, Ellen Meiksins (2002). The Origin of Capitalism. A Longer View. Verso, London.
Wright, Steve (2002). Storming Heaven: Class Composition and Struggle in Italian Autonomist Marxism, Pluto Press, London.

About the authors

The University of Utopia

We call education the real movement which abolishes the present state of things. The conditions of this movement result from the premises now in existence.

http://www.universityofutopia.org

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Determinants of the educational use of digital learning materials:

The mediating role of self-efficacy, perceived norm and attitude

Frederik Van Acker,* Hans van Buuren, Karel Kreijns,** Marjan Vermeulen****
* Assistant Professor, Open Universiteit Nederland.
** Associate Professor, Open Universiteit Nederland.

Abstract
Initiatives to stimulate the development and propagation of open educational resources (OER) need a sufficiently large community that can be mobilized to participate in this endeavour. Failure to achieve this could lead to underuse of OER. In the context of the Wikiwijs initiative a large scale survey was undertaken amongst primary and secondary school teachers to explore possible determinants of the educational use of digital learning materials (DLMs).
Basing on the Integrative Model of Behaviour Prediction it was conjectured that self-efficacy, attitude and perceived norm would take a central role in explaining the intention to use DLMs. Several other predictors were added to the model as well whose effects were hypothesized to be mediated by the three central variables.

All conjectured relationships were found using path analysis on survey data from 1484 teachers. Intention to DLMs was most strongly determined by self-efficacy, followed by

attitude. ICT proficiency was in its turn the strongest predictor of self-efficacy. Perceived norm played only a limited role in the intention to use DLMs.

Concluding, it seems paramount for the success of projects such as Wikiwijs to train teachers in the use of digital learning materials and ICT (e.g. the digital blackboard) and to impact on their attitude.

Keywords
digital learning materials, attitude, self-efficacy, Integrative Model of Behavior Prediction, determinants of ICT use, perceived norm

---

Recommended citation:
Van Acker, F.; Van Buuren, H.; Kreijns, K. et al. (2010). Determinants of the educational use of digital learning materials: The mediating role of self-efficacy, perceived norm and attitude. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].< http://hdl.handle.net/10609/5242>

Introduction

1. Why are teachers reluctant to integrate digital learning materials into their classroom practices?

Since over two decades ago, ICT was introduced into classroom practice it has gained much attention and ever growing confidence in its effectiveness. ICT is believed to be more than the core of the Information Society. It is supposed to be paramount to the education of knowledge workers (Pelgrum, 2001). Although benefits of ICT use in education have been acknowledged (e.g. Hayes, 2005; Vichitvejpaisal et al., 2001; Higgins, 2003; Meijer, van Eck, & Felix, 2008) teachers do not seem to integrate it into their teaching activities (Cuban, 2001; Varank, & Tozoğlu, 2006; Yang, & Huang, 2008) and, thus, the use of digital learning materials (DLMs).

Failure to motivate teachers to use DLMs could make the development of such materials seem less rewarding or attractive. The lack of newly developed materials could in its turn lead to an increased underuse of DLMs, hereby completing a vicious circle.

In the Netherlands, the Wikiwijs initiative aims at disclosing *open* DLMs for use in all strata of education. The effectiveness of this initiative depends largely on the actual use of DLMs in education. Therefore, in the current research paper, important determinants of using ICT in education and the lack of ICT in classroom practice will be further investigated in the context of teacher's usage of DLMs. More precisely, we will test several hypotheses concerning DLM use basing on the Integrative Model of Behavior Prediction (IMBP: Fishbein, 2000; Fishbein & Yzer, 2004; Yzer, Capella, Fishbein, & Hornik, 2004).

2. Developing a theoretical model of DLMs usage based on the IMBP

The IMBP constitutes the theoretical framework on which the current study is based. This model integrates the "theory of planned behaviour" (Ajzen, 1991), the "social cognitive theory" (Bandura, 1986), and the "health believe model" (Janz & Becker, 1984) and contains a number of critical factors which determine educational ICT use. A discussion of the IMBP will be followed by a brief review of literature in support of the application of this model in the domain of the advancement of the integration of ICT in teachers' pedagogical practices .

In the IMBP, dispositional variables are key determinants with respect to a specific behaviour, here teacher's usage of DLMs in education. Although the model takes into account organizational variables, the main focus of the IMBP is on individual level characteristics. Attitude, self-efficacy and perceived norm are the most important dispositional variables in the IMBP. When combined, these factors are conjectured to influence behavioural intention which, in turn, is related to the actual behaviour. According to the model, the intention-behavior relationship may be moderated by

environmental variables (such as the non-availability of DLMs or the proper ICT infrastructure) and by teacher's actual ICT knowledge and skills.

Furthermore, IMBP considers the positive and negative outcome beliefs teachers have should they use DLMs (e.g., DLMs give more variations during class and DLMs require more class preparation) to be antecedent variables of attitude. The antecedent variables of subjective norm concern teachers' normative beliefs that important people (e.g. colleagues and parents) may think that they should use DLMs. Finally, self-efficacy antecedent variables concern the convictions (i.e. the efficacy beliefs) teachers have that they can use DLMs and that they can overcome the impediments to use DLMs. Figure 1 displays an adaptation of the IMBP for the current domain (i.e. the advancement of the integration of ICT in teachers' pedagogical practices). This figure also shows that the variables are grouped into proximal, distal and ultimate variables. Proximal variables include all the dispositional variables and, therefore, the terms dispositional and proximal are interchangeable. The distal variables encompass all the variables at the level of teachers' characteristics and school organization, and the ultimate variables the determinants at the level of local, regional, and governmental organization.

3. Empirical studies in support of the application of IMBP in the current domain

A comprehensive review of the literature by Mumtaz (2000) resulted in a number of contextual as well as some dispositional variables influencing teacher's use of ICT. Contextual variables include the environmental variables (in IMBP moderating the relationship between behavior intention and actual behavior), the distal, and ultimate variables (in IMBP, the effects of these variables are mediated by the dispositional variables), but exclude the individual level characteristics. The most influential contextual variables according to the Mumtaz study were access to resources, quality of the ICT infrastructure, perceived ease of use, incentives to change, support and collegiality in the school and school and national polices. Individual level characteristics found to be of importance were commitment to professional learning and background in formal computer training. Contextual environmental variables will not be discussed in this paper as we consider in the current study only the direct and mediating effects of the determinants of behaviour intention. The effects of all other variables on the other hand will be empirically tested.

A more recent study by Tondeur, Valcke and van Braak (2008) attempting to integrate both school and teacher level characteristics in an explanatory model of ICT use, found that gender and previous computer use were significant predictors of the adoption of ICT for pedagogical use. Contextual school level characteristics and contextual environmental variables found to be of importance were similar to the previously cited study (Mumtaz, 2000) and included availability of ICT (hardware and an Internet connection in the classroom), schools' openness to change, presence of a school ICT policy and availability of ICT support.

In a recent review of antecedents of laptop use among educators (Moses, Khambari, & Luan, 2008), it was found that gender, lack of time, technology competence as well as administrator and ICT support are important predictors of actual ICT usage. Moreover, this study also acknowledges the impact of attitude. Other authors (Cuban, 2001; Teo, Lee, & Chai, 2007; Kersaint, Horton,

Stohl, & Garofalo, 2003; van Braak, 2001) assert that notwithstanding the potential of ICT, effective implementation of technology is highly dependent on positive attitudes. Attitude is considered to be a key variable in IMBP and will, therefore, take a central role in the current paper.

Several studies thus confirm the roles of distal (e.g. support in school, background and training) and environmental variables (e.g. access to and quality of infrastructure) , hereby providing support for the applicability of the model to the context of educational ICT use. The cited studies clearly show the importance of several contextual factors, but largely ignore the main dispositional variables of interest in this study.

4. The current study

The aim of the current research is to disentangle the interrelationships between attitude, self-efficacy and perceived norms and to discover which other variables affect their relationship with behaviour. If teachers have explicit knowledge about the advantages ICT offer in educational practice, why does their behaviour point in the other direction? Which variables (contextual or dispositional) inhibit the use of computer related technology in education?

According to IMBP it is conjectured that self-efficacy, attitude and perceived norm will directly impact on the intention to use DLMs. Next, we hypothesize that these dispositional variables will indeed mediate the effect of several other distal factors. This results in three additional hypotheses:

(1) ICT proficiency and entrepreneurship (cfr. commitment to professional learning; Mumtaz, 2000) will be positively related with the intention to use learning materials, mediated by self-efficacy,

(2) (negative) outcome expectations and computer anxiety will be negatively related with intention, mediated by attitude and

(3) received support will be positively related with intention, mediated by perceived norm.

Method

A questionnaire was administered electronically in December 2009 to teachers of primary and secondary schools. The latter encompass pre-vocational secondary education (four years), senior general secondary education (five years), and pre-university education (six years). A total of 1484 teachers completed the questionnaire entirely. Table 1 contains the most important socio-demographic information about the sample.

Apart from the demographical variables, the questionnaire included the measures for the proximal and distal variables of interest. The measures were either adapted from existing measures or newly constructed. Cronbach's alpha was calculated for each scale as a measure of internal consistency.

Attitude towards the use of DLMs

Attitude was measured using a 12-item bipolar scale. Respondents rated several aspects of DLM usage on a 7-point rating scale with end anchors such as boring versus fun or useful versus useless ($\alpha = .97$).

Self-efficacy

The self-efficacy scale consisted of three items such as "I am convinced I can effectively make use of digital learning materials in my courses". Questions were answered on a seven point rating scale with end anchors being "fully agree" and "fully disagree" ($\alpha = .91$).

Perceived norm

Perceived norm was measured using three items gauging to what extent teacher thought that colleagues in the own section, other sections and other schools were making use of DLMs. Answers ranged from "not at all" to "very frequently" on a seven-point scale ($\alpha = .80$).

Intention to use DLMs

Seven items were used to measure the intention to use DLMs. All items were answered on a seven-point rating scale with end anchors being "extremely likely" and "extremely unlikely". An example of an item was: "I have the intention to use digital learning materials frequently in my courses" ($\alpha = .97$).

Distal variables

A single item measured ICT proficiency. Respondents could answer how well they could use ICT in their pedagogical practices on a scale ranging from beginner to guru. The entrepreneurship scale ($\alpha = .90$) consisted of 10 items measuring the extent to which teachers were taking initiative to school themselves in the domain of ICT and DLMs. Outcome expectations ($\alpha = .86$) and anxiety ($\alpha = .96$) were measured with 7 and 5 items respectively such as "Regularly using digital learning materials will increase my workload" and "The use of digital learning materials in my courses makes me anxious". Finally, to measure perceived support, respondents were asked to indicate whether they received support from other teachers, could take courses, take part in support teams or none of the above ($\alpha = .55$). Scores ranged from 0 to 3.

For each scale, items were reverse scored if applicable and the average scale score was computed. Due to the use of prompts in the Web-based survey, the data set had no missing values.

Analysis

The first hypothesis regarding the importance of the proximal variables, was tested using multiple linear regression analysis. Structural equation modelling (with the AMOS 8.0 software) was used to test hypotheses 2 to 4 and to assess model fit. Model fit was evaluated using (1) the χ^2 statistic, which becomes lower as model fit improves; (2) the comparative fit index (CFI), for which values between .90 and .94 indicate good fit, whereas values of .95 and higher indicate very good fit; (3) the Tucker Lewis index (TLI), for which values of above .95 indicate good model fit and (4) the

root mean square error of approximation (RMSEA), for which values of .06-.08 indicate a good fit and values of .05 and less indicate a very close fit (Hu & Bentler, 1999).

Results

Correlations between the variables in the different models can be observed in Table 2. The same table also includes the mean score and standard deviations for each variable.

Hypothesis 1: the influence of attitude, self-efficacy and perceived norm
A regression analysis was performed using intention to use DLMs as the dependent variable. Results can be found in Table 3. All predictors have a significant effect on the intention to use DLMs. The standardized regression coefficients show that, when controlling for attitude and perceived norm, self-efficacy is the strongest predictor.

Hypothesis 2: Self-efficacy mediates the influence of entrepreneurship and ICT proficiency
SEM was used to assess the adequacy of a fully mediated model. Model fit was poor and modification indices suggested to add a direct path between entrepreneurship and intention. The resulting model and its estimated parameters can be found in Figure 2. The resulting model showed very good fit ($\chi^2(1, N = 1484) = .20$, $p = .64$, CFI = 1.00, TLI = 1.00 and RMSEA = .00).

Hypothesis 3: Attitude mediates the relationship between outcome expectations and computer anxiety
Here as well, SEM was used to assess the adequacy of a fully mediated model. The model showed very good fit ($\chi^2(2, N = 1484) = 4.59$, $p = .10$, CFI = .99, TLI = .99 and RMSEA = .03). Figure 3 contains the conjectured paths as well as the estimated coefficients.

Hypothesis 4: Perceived norm mediates the effect of perceived support
The SEM analysis indicated that the fully mediated model showed poor fit and therefore the saturated model was adopted. Figure 4 shows the resulting model and the associated path coefficients.

Discussion

Analyses revealed the importance of the three proximal variables under study. Together, these variables explained 65 percent of variance in intention to use DLMs. Self-efficacy was found to be the strongest predictor, closely followed by attitude. Compared to those two variables, perceived norm played only a limited role in predicting teachers' intention to use DLMs. Attitude, which was the second most important predictor of DLM use, seems to impact more on intention than self-efficacy, when basing on the direct paths between (see Figures 2 and 3 respectively). The strong

relationship between attitude and self-efficacy (see Table 2) tempers this effect however. When considering the unique impact of both variables in the multiple regression, self-efficacy remains the important predictor.

Entrepreneurship was strongly related to self-efficacy. Teachers who take training initiatives and who actively seek support from peers or experts experience higher levels of self-efficacy. The conjectured mediation of self-efficacy on the relationship between entrepreneurship and intention was only partially confirmed. There was a moderate direct effect of entrepreneurship as well. The effect of ICT proficiency, which comes down to more general ICT skills, on the other hand was fully mediated by self-efficacy. Moreover this effect was clearly less pronounced than the impact of entrepreneurship.

Negative outcome expectations as well as computer anxiety were negatively related to intention to use DLMs. As expected, these relationships were fully mediated by attitude. Although levels of computer anxiety were reasonably low, computer anxiety still plays an important role in the extent to which teachers use DLMs.

In the final model, the impact of perceived support and perceived norm was tested and a partial mediation effect was found. Although the relationship between perceived norm and intention was fairly weak, a direct effect as well as an indirect effect of perceived support were found. It must be noted that when controlling for both other proximal variables, the explanatory power of perceived norm is even smaller. The influence of perceived norm could be underestimated due to the consistently low scores. Anecdotically, in several interviews concerning the Wikiwijs project, teachers indicated that they experienced little to no pressure to use ICT or DLMs. Most of them explained this by the lack of a clear policy concerning DLM use on school and governmental level. If government and school management would communicate a clear strategy concerning the use of open educational resources in education, the effect of perceived norm could possibly be discerned more prominently.

Conclusion

The Integrative Model of Behaviour Prediction was found to be a useful paradigm to research teachers' intentions to use DLMs. Although some predictions made by the model do not fully comply with the empirically found relationships, the alterations (i.e. addition of direct paths) can be justified. Future research should focus on self-efficacy and attitude as determinants of DLM use and policy makers should mainly develop strategies to impact on those variables by providing sufficient training and support for teachers in using DLM's and ICT in general. The importance of entrepreneurship should be further studied in combination with new distal variables. The IMBP can provide directions for this future research.

Figures and tables

	primary education (*N* = 742)	secondary education (*N* = 742)
age	*M* = 41.59; *SD* = 12.01	*M* = 44.31; *SD* = 12.37
gender	men*: N* = 140*;* women*: N* = 602	men*: N* = 410*;* women*: N* = 332

Table 1 - Socio-demographic information about the sample

	M (*SD*)	attitude	self-efficacy	intention	perceived norm	ICT proficiency	computer anxiety	outcome expectations	perceived support
attitude	5.62 (1.03)								
self-efficacy	5.22 (1.46)	.70							
intention	5.04 (1.57)	.70	.76						
perceived norm	3.94 (1.13)	.23	.26	.32					
ICT proficiency	4.53 (1.04)	.37	.41	.38	.04**				
computer anxiety	1.71 (1.13)	-.48	-.40	-.36	.00**	-.42			
outcome expectations	3.79 (1.62)	-.26	-.18	-.16	.03**	-.24	.37		
perceived support	1.42 (1.06)	.22	.19	.24	.33	.11	-.07	-.04**	
entrepreneur-ship	3.79 (1.32)	.53	.56	.65	.29	.42	-.24	-.10	.33

Table 2 - Correlations between the measured variables; the second column contains the descriptives for each measure

Note: All correlations are significant at the .001 level, except those marked by **. All scores ranged from 1 to 7, except for perceived support where the maximum score was 4.

Variable	*B*	*SE B*	ß	*p*
Attitude	.49	.04	.32	< . 001
Self-efficacy	.55	.03	.51	< . 001
Perceived norm	.16	.02	.12	< . 001

Table 3 - Regression results for the three proximal variables predicting intention to use DLMs (N = 1484)

Note. R2 = .65 (F(3, 1480) = 818.52, p < .001).

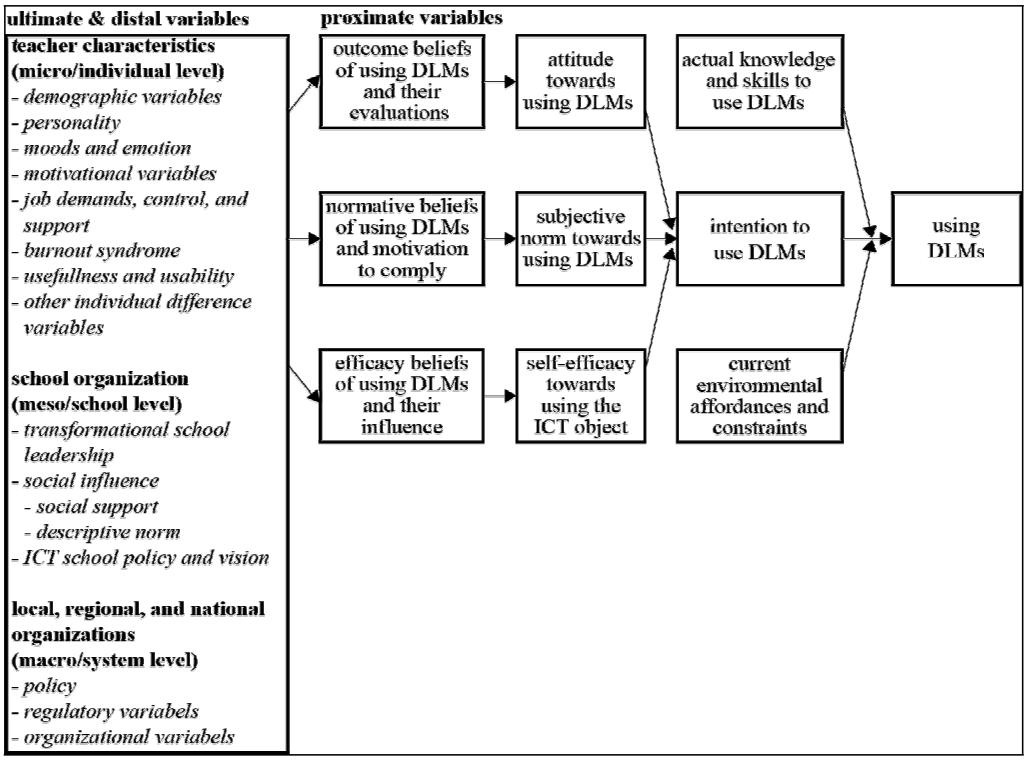

Figure 1- IMBP adapted to the domain of the advancement of the integration of ICT in teachers' pedagogical practices

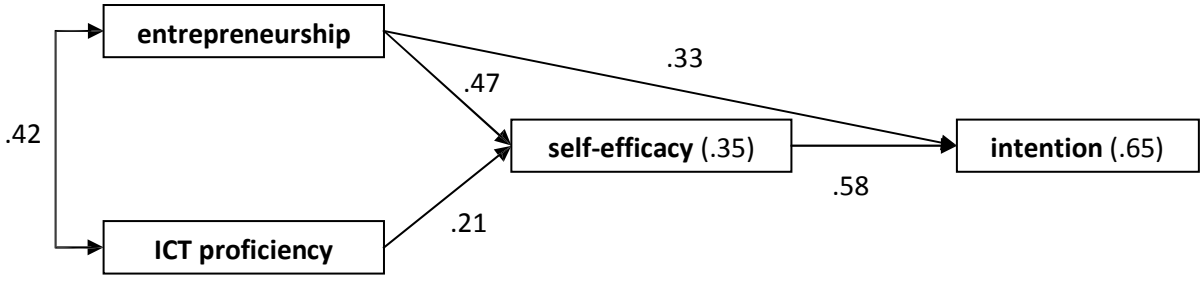

Figure 2 - Path analysis testing the mediating role of self-efficacy in the relationship between entrepreneurship, ICT proficiency and intention (all p's < .001).
Values between brackets indicate the explained variance (R2).

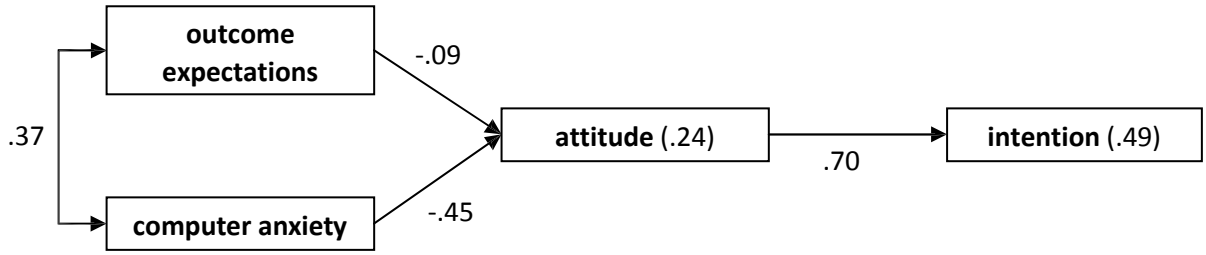

Figure 3 - Path analysis testing the mediating role of attitude in the relationship between outcome expectations, computer anxiety and intention (all p's < .001).
Values between brackets indicate the explained variance (R2).

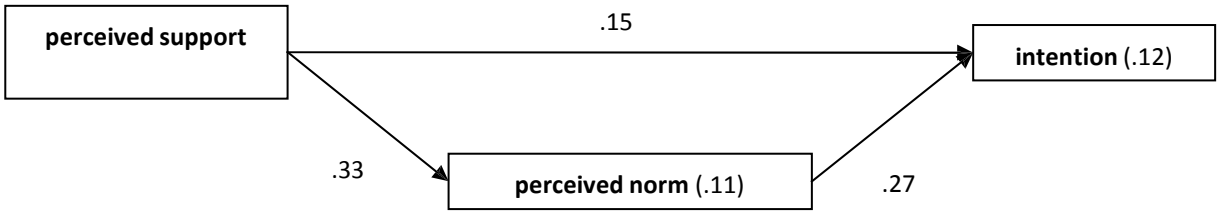

Figure 4 - Path analysis testing the mediating role of perceived norm in the relationship between perceived support and intention (all p's < .001). Values between brackets indicate the explained variance (R2).

Bibliographic references

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Cuban, L. (2001). *Oversold and underused: Computers in the classroom*. Cambridge, MA; London: Harvard University Press.

Fishbein, M. (2000). The role of theory in HIV prevention. *AIDS Care*, *12*, 273–278.

Fishbein, M. & Yzer, M.C. (2003). Using theory to design effective health behavior interventions. *Communication Theory*, *13*, 164–183.

Hayes, D. N. A. (2005). ICT and Learning: Lessons from Australian Classrooms. *Computers & Education*, *49*, 385-395.

Higgins, S. (2003). *Does ICT improve learning and teaching in schools? A professional user review of the UK research undertaken for the British educational research association*. Southwell: British Educational Research Association.

Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55.

Janz, N. K., & Becker, M. H. (1984). The health believe model: A decade later. *Health Education Quarterly*, *5*, 34–41.

Kersaint, G., Horton, B., Stohl, H., & Garofalo, J. (2003). Technology beliefs and practices of mathematics education faculty. *Journal of Technology and Teacher Education*, *11*, 549–577.

Meyer, J., van Eck, E., & Felix, C. (2008). *Leren met meer effect: Rapportage van het onderzoek*. Amsterdam: SCO Kohnstamm Instituut.

Moses, P., Khambari, M. N. M., & Luan, W. S. (2008). Laptop use and its antecedents among educators: a review of the literature. *European Journal of Social Sciences*, *7*, 104-114.

Mumtaz, S. (2000). Factors Affecting Teacher's Use of Information and Communications Technology: a Review of the Literature. *Journal of Information Technology for Teacher Education*, *9*, 319-342.

Pelgrum, W. J. (2001). Obstacles to the Integration of ICT in Education: Results from a Worldwide Educational Assessment. *Computers & Education*, *37*, 163-178.

Teo, T., Lee, C. B., & Chai, C. S. (2007). Understanding pre-service teachers' computer attitudes: Applying and extending the Technology Acceptance Model. *Journal of Computer Assisted Learning*, *24*, 128-143.

Tondeur, J., Valcke, M., & van Braak, J. (2008). A multidimensional approach to determinants of computer use in primary education: teacher and school characteristics. *Journal of Computer Assisted Learning*, *24*, 494-506.

Van Braak, J. (2001). Factors influencing the use of computer mediated communication by teachers in secondary schools. *Computers & Education*, *36*, 41-57.

Varank, I. & Tozoğlu, D. (2006). Why are teachers resistant to change? Key issues and challenges in technology integration. *Afyon Kocetepe Universitesi Sosyal Bilimler Dergisi*, *8*, 193-207.

Vichitvejpaisal, P., Sitthikongsak, S., Preechakoon, B., Kraiprasit, K., Parakkamodom, S., Manon, C., & Petcharatana, S. (2001). Does Computer-Assisted Instruction Really Help to Improve the Learning Process? *Medical Education*, *35*, 983-989.

Yang, S. C. & Huang, Y.-F. (2008). A study of high school English teachers' behavior, concerns and beliefs in integrating information technology into English instruction. *Computers in Human Behavior*, *24*, 1085–1103.

Yzer, M. C., Capella, J. N., Fishbein, M., & Hornik, R. (2004). The Role of Distal Variables in Behavior Change: Effects of Adolescent's Risk for Marijuana Use on Intention to Use Marijuana. *Journal of Applied Social Psychology*, *34*, 1229-1250.

About the authors

Frederik Van Acker
Assistant Professor, Open Universiteit Nederland.

Frederik Van Acker has an MSc and PhD in psychology from the Vrije Universiteit Brussel and is currently employed as an Assistant Professor at the Open University of the Netherlands. His main research interests are statistics and methodology and the use of ICT in education. Frederik is one of the main investigators in Wikiwijs, a project funded by the Dutch government with the objective to construct a Web-based platform to share and create Open Educational Resources for all levels of education.

Open Universiteit Nederland
Valkenburgerweg 177
6419AT Heerlen The
Netherlands
frederik.vanacker@ou.nl

Hans van Buuren
Associate Professor, Open Universiteit Nederland.

Hans van Buuren is head of the Research Methods and Statistics department of the School of Psychology of the Dutch Open University. He designed, developed, implemented and evaluated in an electronic learning environment the so-called Research Competence Curriculum in which research methods and statistics have been integrated in a series of cumulative and concentrically designed practicals in the field of psychology. At this moment he is program manager of the Wikiwijs Project for studying the effects of Wikiwijs on making, developing and sharing open digital learning materials by teachers for all levels of education.

Open Universiteit Nederland
Valkenburgerweg 177
6419AT Heerlen The
Netherlands
hans.vanbuuren@ou.nl

Karel Kreijns
Associate Professor, Open Universiteit Nederland.

Karel Kreijns has an MSc in electrical engineering and a PhD in educational technology. He is currently an associate professor at the Ruud de Moor Center for the Professionalization of Teachers which is at the Open University of the Netherlands. He is also *lector* at Fontys University for Applied Sciences. His research interest are ecological psychology in relation to the construction of CSCL environments, social psychology of distributed learning groups using CMC, and the application of motivational and social cognitive theories regarding the use of ICT in pedagogical practices.

Open Universiteit Nederland
Valkenburgerweg 177
6419AT Heerlen
The Netherlands
karel.kreijns@ou.nl

Marjan Vermeulen
Associate Professor, Open Universiteit Nederland.

Marjan Vermeulen has an MSc and a PhD in education. She is currently working as an associate professor at the Ruud de Moor Center for the Professionalization of Teachers. She has expertise in the field of policy regarding the teaching profession and is closely involved in the Wikiwijs research.

Open Universiteit Nederland
Valkenburgerweg 177
6419AT Heerlen The
Netherlands
marjan.vermeulen@ou.nl

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Big and Little OER

Martin Weller
Institute of Educational Technology, The Open University

Abstract
Much of the attention around OERs has been on institutional projects which make explicit learning content available. These can be classified as 'big OER', but another form of OER is that of small scale, individually produced resources using web 2.0 type services, which are classified as 'little OER'. This paper examines some of the differences between the use of these two types of OER to highlight issues in open education. These include attitudes towards reputation, the intentionality of the resource, models of sustainability, the implicit affordances of resources and the context of their hosting sites.

Keywords
OER, granularity, attitudes, reuse, openlearn, user generated content

---

Recommended citation:
Weller, Martin (2010). Big and Little OER. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].<http://hdl.handle.net/10609/4851>

Introduction

Much of the focus on OERs has been around large-scale, externally funded OER projects such as MIT's Open Courseware and the Open University's OpenLearn projects. These have been successful in raising the profile of open education, creating a semi-politicised open movement and in generating impressive download figures of resources (eg Carson 2005).

If one broadens the definition of OERs to encompass resources produced by individuals and shared on sites outside the formal education portals eg YouTube, Slideshare, Flickr, then a continuum of resources can be considered. These vary in granularity, quality and explicit learning intentions. Drawing on the experience of an European Union funded project which explored the uptake of OERs in developing countries (Sidecap), the OpenLearn project and individual blogging experience this paper aims to explore some of the issues these types of OERs raise.

We can broadly characterise these two types of OER as 'big' and 'little' OER (from Hoyle 2009), where:

Big OERs are institutionally generated ones that arise from projects such as OpenLearn. These are usually of high quality, contain explicit teaching aims, presented in a uniform style and form part of a time-limited, focused project with portal and associated research and data.

Little OERs are the individually produced, low cost resources. They are produced by anyone, not just educators, may not have explicit educational aims, have low production quality and are shared through a range of third party sites and services.

Using this broad generalisation we will explore some of the issues around the use of OERs in education. This is drawn on the following experience:

> OpenLearn – the Open University launched OpenLearn in October 2006 as a result of a grant from The William and Flora Hewlett Foundation. In the first two years, OpenLearn grew to include over 8000 study hours of learning materials from Open University courses, and had over 8 million visitors (Lane *et al* 2010)
>
> The Sidecap Project was funded by the European Union (ACP-European Union Cooperation Programme in Higher Education), and had partners in Scotland, England, Mauritius, West Indies and Fiji. (EDULINK). The project ran for 32 months (until Spring 2010) with the objective of promoting multilateral activity amongst the partners through practical activities, networking and hands-on exercises designed to improve the quality of teaching and support for students. The project particularly focused on the uptake and use of OERs to create a sample course in each institution.
>
> Blogging – having kept a blog for over four years (edtechie.net), I have used it as a means of experimenting with different styles and as an output for a range of content and media. The blog acts as a central hub for a distributed academic identity across multiple services including Flickr, Slideshare, Twitter and YouTube.

This experience has highlighted the different ways in which OERs are used, and how the implicit and explicit messages contained within big and little OERs are interpreted by users. The main issues are as follows.

Status

All of the ACP (Asia-Caribbean-Pacific) partners in the Sidecap project reported reluctance by academics to reuse content from others. Much of this resistance was allied with notions of identity and status. To reuse someone else's content in teaching was interpreted as a sign of weakness, or a threat to their (often hard-won) status as expert. This objection was somewhat alleviated when the provider of the content was a recognised university with an international reputation. In this case, the big OERs have an advantage, because there is both a sense of mistrust about the type of material produced for little OERs, and also an anxiety that their use would be perceived as unprofessional. The large scale OER projects tend to have a pre-publication filter policy, so only high quality material is released. It also has the associated university brand linked to it, so there is a quality 'badge' and recognised reputation which can be seen as enhancing the individual lecturer's quality and teaching.

Big OER could be viewed as a 'colonizing species', whereby their presence changes the environment to make it more favourable for subsequent acts of reuse, such as little OERs.

Aggregation and Adaptation

Many of the big OERs have explicit learning aims associated with them, or at least an intended level and audience. Little OERs on the other hand are created for a variety of purposes and rarely have explicit learning metadata associated with them. This means that big OERs are a useful starting point and can often be used 'wholesale', ie without adaptation. Indeed the experience of the OpenLearn project has been that very few units are changed or adapted for use. The OpenLearn research (McAndrew *et al* 2009) report states

"In relation to repurposing, initially it was thought:

1. that it was not anyone's current role to remix and reuse;
2. the content provided on the site was of high quality and so discouraged alteration;
3. there were few examples showing the method and value of remixing;
4. the use of unfamiliar formats (such as XML) meant that users were uncertain how to proceed."

There were a number of collaborative projects established between the OpenLearn team and other institutions whereby content was adapted for use, eg by translation.

With little OER their use is often unpredictable, precisely because they are a smaller granularity and do not have the same level of intentionality associated with them. An example might be an image shared on Flickr, which depicts, say a collection of toys, and is used in a presentation as a representation of diversity within a community. The resource may not be adapted, but it is used in an unintended and unpredicted context. This is an example of what Zittrain (2008) terms generativity which he defines as "a system's capacity to produce unanticipated change through unfiltered contributions from broad and varied audiences". Little OERs are high in generativity

because they can easily be used in different contexts, whereas the context is embedded within big OERs, which in turn means they are better at meeting a specific learning aim.

This may indicate different patterns of use will operate for big and little OER. With the former the emphasis is on adaptation, taking large chunks of content and expending resource in adapting it to local use. An example of this is the essay writing course developed at the University of the South Pacific (http://www.usp.ac.fj/studyskills/CFDL/module1.html), which was adapted from a course developed by three New Zealand tertiary institutions. Little OER use tends to be focused less around adaptation and more around aggregation, ie taking a number of different resources and creating a cohesive educational narrative that brings these together.

Models of sustainability

The sustainability of big OER projects has been an issue of concern since their inception. As Wiley (2007) puts it

> "the William and Flora Hewlett Foundation has put millions of dollars into university-based open educational resource projects around the world. Given the current budget climate for education, a concern naturally arises about the future of the university-based open educational resource projects. What will happen when the targeted external dollars dry up? Will the initiatives themselves also dry up? How are these initiatives to sustain themselves over time?"

Big OER projects have a variety of models of funding, and Wiley highlights three of these demonstrating a range of centralisation: a centralised team funded by donors and grants (MIT); linking it into teaching responsibilities (USU); decentralised collaborative authoring (Rice).

The costs vary for these approaches, with MIT estimating it costs approximately 10,000 USD per course, and the Rice model being near to free as courses are created by interested parties, as with open source software. The returns for institutions may vary also, for example the OpenLearn project was responsible for generating around 7,000 course registrations in one year, improving the Open University's global presence, generating publicity, operating as a basis for research funding and a means for establishing partnerships. This was partly a function of the OERs being direct OU content, unlike the Rice model.

The sustainability of little OER is less of an issue and is probably closest to the second of Wiley's models. These types of resources can be seen as near frictionless outputs from standard academic practice. For example, if a presentation is given then uploading it to Slideshare is a zero cost activity, and adding a synchronised audio file to create a slidecast takes only a modest amount of time. The result is a shareable OER that can be aggregated and used elsewhere. Similarly keeping blogs is often seen as an additional activity, but can be seen as a by product of academic activity, such as keeping notes, working up ideas, etc. Clay Shirky talking of cognitive surplus, recounts how a TV producer responded when he told her about Wikipedia:

> "She heard this story and she shook her head and said, "Where do people find the time?" That was her question. And I just kind of snapped. And I said, "No one who works in TV

gets to ask that question. You know where the time comes from. It comes from the cognitive surplus you've been masking for 50 years." ()"

The same might be true of generating little OERs. They don't necessarily take extra time, but we have spent much of that time creating non-shareable resources. A small, but indicative example is that when I used to attend conferences I was required to write a report on the conference which would go to the funding committee in my department, but which would not be read by anyone else. Now I write a blog post, or create a slidecast, or make a YouTube video which is accessible to everyone.

The key to sustainability for little OER then is to encourage the use of such tools and the generation of new habits which make their production second nature.

Affordances of OERs

Both Wiley and McAndrew *et al* state that individual users don't tend to adapt OERs (by which we mean big OERs). The reasons for this are varied, including technical complexity and motivation. One other reason which the OpenLearn team suggest is that the "content provided on the site was of high quality and so discouraged alteration". This is an interesting observation as it seems to indicate that high quality content encourages a somewhat passive acceptance. In this sense big OER may be seen to be akin to broadcast content. The OpenLearn team also reported that social interaction was not a high priority for most users: "a large choice of content is considered the most important feature of OpenLearn and that interacting with other learners is low on this list" (although there was an active subset of users who were identified as social learners and made extensive use of forums).

In contrast the low production quality of little OERs has the effect of encouraging further participation. The implicit message in these OERs is that the consumer can become a producer – they are an invitation to participate precisely because of their low quality. Whether this is in writing a blog post that links to it, or in creating a video reaction, the low threshold to content creation is a feature of little OER. Not all users of a site will become creators YouTube claim that "52 percent of 18-34 year-olds share videos often with friends and colleagues" (http://www.youtube.com/t/fact_sheet) whereas the majority of wikipedia edits are performed by a small group of users (Ortega 2009). But taken as a whole, there has be a revolution in content production. For example The CEO of Google has declared that now, society produces more information in two days than was created from the beginning of human history until 2003, stating "the real issue is user-generated content." (http://techcrunch.com/2010/08/04/schmidt-data/).

In educational terms it may be that both have a role to play within a learning context, or course. Learners may want to feel the reassurance of the quality brand material for core content, but also want a mixture of the more social, participatory media that encourages them to contribute also.

Portals and sites

The traffic to many of the big OER sites is impressive, with MIT OpenCourseWare averaging 1 million visitors a month. Most big OER projects have a specific site associated with them, although their content may be used to populate other portals and repositories also.

Little OER tends to be found on third party, 'web 2.0' type services, such as Slideshare, YouTube, Scribd, etc. There are advantages and disadvantages to both approaches, which can be summarised as

	Specific Project Site	**Third party site**
Advantages	Greater brand link	Greater traffic
	Link through to courses	Cheaper
	Control	Greater serendipity
	Ability to conduct research	Expertise in social software development
Disadvantages	Requires specialist team	Can lose service
	Requires updating	No control eg over downtimes
	Lower traffic	Loss of ownership of data
	More expensive	Other non-educational content also present

So for example, Slideshare is a site for sharing powerpoint presentations, which you can add audio too, favourite, comment upon and embed elsewhere. It attracts significantly more web traffic than MIT's Opencourseware site, but of course features presentations about all manner of subject. This raises a number of questions such as

i) Are people more likely to share content through a service such as Slideshare? If so, why? Is it because it easier or because they will greater number of views?

ii) Is the basic unit of sharing (the presentation) at Slideshare, a granularity people understand more than courses and units at OER sites?

iii) Is the comparison fair? Can we consider Slideshare an OER repository of sorts?

iv) Are commercial operations better at developing sites and adding in the necessary functionality this than educational ones?

v) Are people 'learning' from Slideshare? If so, how does it compare with learning from OERs?

vi) What are the dangers that your resources will be lost on Slideshare, and what use is your data being put to?

At the moment we are too early in the development of OERs and these third party services to answer many of these questions, but the different hosting options of big and little OERs raise these issues for educators.

The role of context

Some of you may have heard this story, which is true, but was set up by the Washington Post:

> "A man sat at a metro station in Washington DC and started to play the violin; it was a cold January morning. He played six Bach pieces for about 45 minutes. During that time, since it was rush hour, it was calculated that thousands of people went through the station, most of them on their way to work.
>
> In the 45 minutes the musician played, only 6 people stopped and stayed for a while. About 20 gave him money but continued to walk their normal pace. He collected $32. When he finished playing and silence took over, no one noticed it. No one applauded, nor was there any recognition.
>
> No one knew this but the violinist was Joshua Bell, one of the top musicians in the world. He played one of the most intricate pieces ever written,with a violin worth 3.5 million dollars.
>
> Two days before his playing in the subway, Joshua Bell sold out at a theater in Boston and the seats average $100."

It's usually taken to demonstrate that we don't stop and appreciate what is around us, and in our busy lives we can pass by things of beauty and value. But it has some lessons for our discussion of OERs also.

The first may be that people don't value free things, or are suspicious of free. We have become accustomed to roughly equating monetary price with value or quality. Free is therefore obviously low quality or suspicious at least. Online there is a general expectation that resources will be free, although the success of iTunes apps is beginning to challenge this. But in education there is still an expectation that high quality education costs. OERs are of course, only part of the educational offering – they are the content, and just as important is the associated support and assessment that forms a higher education degree. But in this respect big OERs have a relationship to price when they are the learning materials used by the universities. The message then is that some people have valued them highly enough to pay for them (and the associated services). Little OER by its very nature has not been paid for and so one variable people use to judge value is absent, namely whether someone would pay for it.

But perhaps what is more significant about the violin story is what is says about context. The reason many people passed the violinist by was because of context – they are in an underground station, which is an unpleasant place to be, and want to get out of it as fast as possible; Because they are probably on their way somewhere and want to be punctual; Because they're not expecting to encounter classical music there and so have a different mindset in place; etc.

Building on the distinction made in the last section, big OER is often found in a specific repository and people have come to it with the intention of learning. It is placed within an educational context. Little OER is often placed on third party services which will contain a range of content and people may not have learning as their goal when encountering these resources. This may mean that a different audience is reached, but it may also result in any educational intention in the content being misconstrued or missed.

The importance of educational context was one outcome in a project I ran recently. In a project at the Open University a number of volunteer academics were given Flip cameras and over the course of three months encouraged to become producers of video content (Weller 2010). They uploaded their content to YouTube and to a wiki. As one of the contributors commented:

> "No amount of creativity in the making of an artefact will compensate for the absence of a framework within which to disseminate it. My Facebook postings (of links to my 2 videos) received brief comments from 3 of my 67 'friends'. Nothing on Twitter or Youtube. This demotivated me to continue investing the time. If I'd had, say, a teaching forum with students working on intercultural semiotics, I'd have had more of an impact."

As was suggested above, little OER encourages aggregation and through this, the creation of context. While this offers greater flexibility, it also requires greater effort, whereas the educational context of big OERs is inherent in both their location and their content.

Conclusion

The categorisation of educational resources as big and little, ie those produced institutionally or individually, provides a lens on some of the issues and uses of the open education movement. One key difference is that of intentionality, where big OERs are created for the specific purpose of learning, whereas little OERs may be created from a variety of motivations, but can have an educational intention ascribed to them by someone else.

There are significant differences between the way in which these types of OERs are used and interpreted by audiences, which relate to quality, reputation and ease of production. It may well be that a 'mixed economy' of both types of OER is the best route to realising open education. Big OER is a useful means of raising the profile of open education and an initial way of approaching reuse that overcomes many of the objections based on quality and reliability. Little OER represents a more dynamic model that encourages participation, and may be more sustainable. For learners, a mixture of both may also create a varied, engaging experience.

Bibliographic references

Carson S (2005). *MIT OpenCourseWare 2005 Program Evaluation Findings Report.* http://ocw.mit.edu/ans7870/global/05_Prog_Eval_Report_Final.pdf

Hoyle, M (2009). *OER And A Pedagogy Of Abundance* http://einiverse.eingang.org/2009/11/18/oer-and-a-pedagogy-of-abundance/#more-181

Lane, Andrew; Connolly, Teresa; Ferreira, Giselle; McAndrew, Patrick and Wilson, Tina (2010). Reusing,reworkingandremixingopeneducationalresources. In: Marshall, Stewart and Kinuthia , Wanjira eds. Cases 'n' Places: Global Cases in Educational and Performance Technology.Educational Design and Technology in the Knowledge Society. Charlotte, NC: IAP - Information Age Publishing.

McAndrew, P.; Santos, A.; Lane, A.; Godwin, S.; Okada, A.; Wilson, T.; Connolly, T.; Ferreira, G.; Buckingham Shum, S.; Bretts, J. and Webb, R. (2009). *OpenLearn Research Report 2006-2008*. The Open University, Milton Keynes, England. http://oro.open.ac.uk/17513/1/Researchfinal_low.pdf

Ortega, F (2009) *Wikipedia: A quantitative analysis*. PhD Thesis. http://libresoft.es/Members/jfelipe/thesis-wkp-quantanalysis

Shirky, C (2008) *Gin, Television and Cognitive Surplus.* http://www.edge.org/3rd_culture/shirky08/shirky08_index.html

Wiley, D (2007) *On the Sustainability of Open Educational Resource Initiatives in Higher Education*. OECD. http://www.oecd.org/dataoecd/33/9/38645447.pdf

Weller, M (2010) *The Podstars Lessons* http://nogoodreason.typepad.co.uk/no_good_reason/2010/07/podstars-as-.html

Zittrain J (2008) *The Future of the Internet, and how to stop it*. Yale University Press

About the author

Martin Weller
Institute of Educational Technology

Martin Weller is Professor of Educational Technology at the Open University. He chaired the OU's first major elearning course, which attracted over 12,000 students annually. He has been the director of VLE and the SocialLearn projects. He is the author of two books on elearning and is currently authoring one on digital scholarship. He blogs at edtechie.net

The Open University
Walton Hall
Milton Keynes
MK7 6AA
United Kingdom
m.j.weller@open.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Proceedings | Barcelona Open Ed 2010 | http://openedconference.org/2010/ Universitat Oberta de Catalunya | Open Universiteit Nederland | Brigham Young University

Proposing a 'Consent Commons' in open education

Balancing the desire for openness with the rights of people to refuse or withdraw from participation

Dr Jane Williams,* Suzanne Hardy, Dr Megan Quentin-Baxter*****

* Director eLearning, Centre for Medical Education, University of Bristol.

** Senior Advisor, Higher Education Academy Subject Centre for Medicine, Dentistry and Veterinary Medicine, School of Medical Sciences Education Development, Faculty of Medical Sciences, Newcastle University.

*** Director, Higher Education Academy Subject Centre for Medicine, Dentistry and Veterinary Medicine, School of Medical Sciences Education Development, Faculty of Medical Sciences, Newcastle University.

Abstract

A new 'Consent Commons' licensing framework is proposed, complementing Creative Commons, to clarify the permissions given for using and reusing clinical and non-clinical digital recordings of people (patients and non-patients) for educational purposes. Consent Commons is a sophisticated expression of ethically based 'digital professionalism', which recognises the rights of patients, carers, their families, teachers, clinicians, students and members of the public to have some say in how their digital recordings are used (including refusing or withdrawing their consent), and is necessary in order to ensure the long term sustainability of teaching materials, including Open Educational Resources (OER). Consent Commons can ameliorate uncertainty about the status of educational resources depicting people, and protect institutions from legal risk by developing robust and sophisticated policies and promoting best practice in managing their information.

Keywords

consent, digital professionalism, ownership, copyright, licensing, consent commons, good practice, risk management, educational resources

Recommended citation:
Williams, J.; Hardy, S.; Quentin-Baxter, M. (2010). Proposing a 'Consent Commons' in open education. Balancing the desire for openness with the rights of people to refuse or withdraw from participation. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].< http://hdl.handle.net/10609/4864>

Introduction

In order to effectively and openly share educational resources we need to establish and routinely adhere to legal and ethical good practice in relation to the rights inherent in original works, and to educate colleagues and students in the principles and behaviours of 'digital professionalism' (Ellaway & Topps, 2010). The long term usability of OER in healthcare education has been affected by changes in policy, technology and public opinion whereby some shared resources containing recordings of people (which complied with good-practice guidelines at the time of collection e.g. CyberAnatomy at Newcastle University, and the Bristol Biomed Image Archive) have since been 'locked down' to local virtual learning environments (VLEs) or completely withdrawn due to concerns firstly about the clarity of how the people depicted wanted their recordings to be used, and secondly about the clarity of ownership and licensing of copyright. Creative Commons (http://creativecommons.org/) has revolutionised sharing digital recordings/media by explicitly identifying author ownership and licensing of copyright works and how copyright works may be attributed, used and reused (e.g. cc: by-sa (Attribution-ShareAlike)), and supports the concept of 'fair use' by being explicit about how copyright works can be used for educational purposes.

In most disciplines attaching a Creative Commons licence to a copyright work is enough to safeguard the original author rights, but in the clinical field the rights of people/data subjects (particularly patients) also have to be taken into account, such as privacy (consent to take) and confidentiality (consent to disclose) (General Medical Council [GMC], 2008). These concepts are often conflated with copyright, leading to confusion regarding the status of use and reuse of educational resources in healthcare where copyright status may be clear, but consent is not (or *vice versa*). Consent is bound by principles and ethics, and practice may be improved with awareness and education (leading to permanent culture change). We also need new tools to help manage and communicate the importance of consent.

Past research has identified some excellent practice but a high degree of variability and a lack of clarity around how existing (as opposed to new) recordings can be made (Ellaway et al., 2006; Common Healthcare Educational Recordings Reusability Infrastructure [CHERRI3], Organising Open Educational Resources [OOER] funded by the Higher Education Academy and Joint Information Systems Committee [JISC] with support from the Higher Education Funding Council for England, and international experiences e.g. MedEdPORTAL and the Health Education Assets Library [HEAL]), citing, for example:

A very wide range of awareness of the issues involved when recordings of patients are used in education, as opposed to the patient's care programme or in research;
Clinical providers do not feel that they have responsibility for or control over the issues that arise once recordings of their patients are transferred into the HE sector;
Universities are unaware of the risks posed by clinicians employed by the clinical provider, and with an academic honorary contract to deliver education in non-clinical (i.e. educational) settings, with materials which may have unclear consent;
Many clinical providers declare ownership/copyright of recordings of their patients acquired on their premises, but do not have pre-written licensing agreements;
Staff in universities are not always able to keep track of every project in their institution that involves the acquisition and/or use of patient recordings;
It is currently very difficult for any teacher to find out what responsibilities, to the patient, to clinical providers and to their medical school, they are taking on as an individual;
There is no easily accessible source of information, policy documentation or guidelines;
Students and teachers increasingly use pre-existing patient images from the web without adequately considering its copyright or how it was consented.

Here we argue that copyright and consent should be treated separately, necessitating the development of a 'Consent Commons' framework to support digital professionalism recognising the rights of people to be treated fairly and with respect. This will help institutions to develop standardised policies and practice (Huston, 2004) around the creation and deployment of educational resources containing recordings of people, and better manage legal risks (OOER, 2010). It balances a desire for sustainable open access with protecting patients' and other peoples' rights and expectations of how recordings of them, especially if captured in a clinical setting, may be used.

Definitions

Digital recordings are defined here as any digital file (including but not limited to photographs; images such as scans, ECGs and X-rays; audio; video and patient data such as blood pressure or case histories) derived from people (patients and non-patients). The terms digital media, recordings and clinical recordings are used interchangeably in this document.

Patients and non-patients are defined as:

Patients, carers, patient families and friends, etc;
Teachers: academics, clinicians, practice/work based learning tutors;
Clinicians, care workers, support staff, etc;
Students;
Role players, actors, performers, contractors (including members of a recording crew);
Owners of products (where commercial products or brands/logos, etc., appear in recordings)..

Rationale

The Data Protection Act (1998) in the United Kingdom (http://www.legislation.gov.uk/ukpga/1998/29/contents) requires **"***anyone who handles personal information to comply with a number of important principles***"** (Information Commissioner's Office) and gives "*data subjects*" (individuals) rights over their personal information. A person's "*physical or mental health condition*" captured as part of healthcare treatment is considered to be "*sensitive personal data*" (placing additional requirements on data controllers and processers) under the terms of the Act (part 1.2). The Act also gives data subjects the "*right to prevent processing likely to cause damage or distress*" (part 2.10), and has parallels in EU legislation through the European Parliament (1995) Data Protection Directive 95/46/EC and the Organisation for Economic Co-operation and Development (OECD) 1980 (accepted 1981) guidelines.

The Act also states that **"**'*personal data' means data which relate to a living individual who can be identified—(a) from those data, or (b) from those data and other information which is in the possession of, or is likely to come into the possession of, the data controller*", which has been used by some to argue in favour of anonymising personal data (General Medical Council [GMC], 2002). This may not be possible in the case of clinical recordings, or may not be able to be future-proofed if data from different sources is amalgamated in such a way as to recreate identification of the data subject. Making recordings available as OER would conceivably fall within "*organisation, adaptation or alteration of the information or data*" and "*disclosure of the information or data by transmission, dissemination or otherwise making available*" (part 1.1) there seems little choice but to ensure that all data subjects have given (and continue to give) their informed consent. When gaining consent we enter into a contract promising to respect that person's wishes at the time of collection, taking responsibility for the storage, use and reuse of recordings, and renewing consent, if necessary. Responsibilities apply at both organisational and individual level, and are transferred when recordings move across boundaries hence the consent status needs to be an explicit part of the recording and, in a clinical context, signed consent forms for treatment, research and/or education should be stored with the patient record (OOER, 2010).

Authentic patient encounters are vital to good teaching and learning within the healthcare professions. Patients, their families and healthcare workers are often willing to collaborate with educators by sharing their story as told in a podcast, video or acted out by a role player; allowing recordings including photographs and x-rays to be taken for teaching purposes; or agreeing to their 'case' (medical history/patient record) being adapted for presentation to students, etc. Healthcare workers, academics, students and other people (such as contracted film crews and actors) often participate in the development of such resources. All of these are entitled to be treated with respect and in some cases (actors) professional bodies or guilds may have their own rules about how recordings of that person may be used and reused.

Equally there are many reasons why a person may wish to refuse or withdraw consent. They may not want digital recordings of them (whether anonymised or not) appearing in educational resources distributed openly via the Internet; they may become well and prefer to avoid a continuing reminder of a time when they were poorly; they may die and it is a family request that the recording is removed or replaced. Risk-aversion predicts that organisations will want to have policies covering what they will and won't do to comply with such requests, regardless of their legal obligations.

We need flexible and accessible tools to help people to review how their recordings have been distributed and sophisticated 'take down' policies so that data subjects can take responsibility for monitoring how recordings are used and reused (otherwise the practicalities of renewing consent where recordings are used in educational materials may become overly burdensome). Where a person wishes to withdraw their consent it may not be possible to remove all copies of that recording from the Internet, but it may be possible to alert users to the fact that a recording has been 'taken down', removed or replaced.

In the United Kingdom those who consent patients for recordings (employed by NHS) are not always the same as those who wish to use the recordings in education (academic institutions). Responsible users of educational materials containing recordings of people will want to satisfy themselves that the recordings have been captured, consented, kept and transmitted in accordance with best practice and respect, even if they don't have access to copies (because of data protection).

A Consent Commons licensing framework would clarify the policies and terms under which consent was managed. Consent Commons extends the concept of a 'Clinical Commons' originally proposed by Ellaway, et al. (2006), which recommended an additional licensing necessary to ensure the sustainability and 'openness' of online teaching materials involving clinical recordings.

> "Clinical recordings (such as images, videos and scans) have long been one of the mainstays of healthcare education. In recent years the subject matter of such images has remained largely constant but increasingly they are recorded digitally and viewed online. This new format and medium has so enabled duplication and onward transmission of recordings that processes and guidelines created to safeguard patients' interests and guide the practice of clinicians, teachers and technicians no longer fulfil their purpose" (Ellaway, et al., 2006 p1).

Consent Commons

The proposed Consent Commons licensing framework is a data subject version of Creative Commons and has the following characteristics:

> Complements Creative Commons to identify the consent status of recordings of people appearing in educational resources;
> Is a set of principles reflecting best practice, not an automatic right (like copyright);
> Accepts a basic human right for people to refuse digital recordings of themselves appearing and, where they have previously consented, their right to withdraw that consent;
> Works like Creative Commons in that educational materials would be hallmarked with a licence illustrating the consent status, and when consent needed to be reviewed or withdrawn;
> Has levels of release (e.g. closed, 'restricted', open but review [date]; fully open, etc.);
> Requires technology to enable data subjects to review recordings, and OER to be able to 'check for updates/status' and warn users if resources have been withdrawn or updated/replaced (OOER, 2010).

Future Developments and Changing Culture

While guidance and toolkits are being developed to influence policy regarding reusing medical images (CHERRI3) and good practice in creation of digital education resources (OOER, 2010) there is a fundamental requirement to promote continuous improvement in digital professionalism. Further work is taking place in the United Kingdom through a '*reusing medical images*' project (Williams and Jacobs, 2009) which has created a taskforce of stakeholder organisations expected to generate consensus around high-level standards and guidance. The GMC has consulted on their 2002 guidance on *making and using visual and audio recordings of patients* which is due to be published in 2010 and is reviewing their 2008 guidance on consenting the use of clinical recordings to be used in teaching (in addition to clinical treatment and research).

Ellaway et al. (2006) recommended "*all creators and users of clinical recordings be better educated and supported in the use of such recordings and that this training and support is normalised as much as possible both for quality assurance and economies of scale purposes*". The Higher Education Academy MEDEV Subject Centre is running workshops on applying digital professionalism when creating and using educational resources as part of the dissemination of the good practice risk management toolkit developed in OOER (2010). Some of these are aimed at encouraging best practice behaviours among role models in programmes teaching clinicians to teach as "*most learners are still strongly led by tutors and course practices: tutor skills and confidence with technology are therefore critical to learners' development*" (Beetham at al., 2009 p2). Two new OER projects will continue to develop the concepts of Consent Commons in collaboration with the United Kingdom national repository JorumOpen.

Conclusions

Creation of a Consent Commons licensing framework is a radical proposal to safeguard the long-term sustainability of OER containing recordings of people arising from the clinical education community in the United Kingdom. The concept requires further discussion at an international level and we would welcome input from the international OER community. Here we have argued the need for a Consent Commons as a tool supporting the development of policy and process around the rights of people to refuse or withdraw their consent, and the need for permanent culture change and the growing concept of digital professionalism. We also need new technologies around OER to enable users to take responsible decisions about using or reusing OER containing recordings of people.

For such a proposal to be accepted widely, it must have at its core, common principles and standards but ones which enable organisations to take into consideration local contexts and accountability. Consent Commons, to be successful, must work at a level that incorporates and supports national policy and guidelines where they exist, enables institutions to mitigate risk and enact robust policies and codes of practice and help individuals be clear how resources can or can not be reused.

Acknowledgements

With grateful thanks to Neil Jacobs, Rachel Ellaway, Adrian Longstaffe, John Bradfield, Chara Balsubramaniam, Lindsay Wood, Gillian Brown, General Medical Council, Wellcome Images, the team at Creative Commons, Institute for Medical Illustrators, and the partners in the various projects including the Strategic Content Alliance who have lent their academic capital to this debate. Much of the work described have benefited from funding from the Higher Education Academy, the Joint Information Systems Committee and the Higher Education Funding Council for England

Bibliographic references

Beetham, H., McGill, L., & Littlejohn, A. (2009). *Thriving in the 21st century: Learning literacies for the digital age*. Glasgow Caledonian University/Joint Information Systems Committee. Retrieved September 17, 2010 from http://www.jisc.ac.uk/media/documents/projects/llidareportjune2009.pdf

Creative Commons. Retrieved September 17, 2010 from http://creativecommons.org/

Data Protection Act, Office of Public Sector Information (1998). Retrieved September 17, 2010 from http://www.opsi.gov.uk/acts/acts1998/ukpga_19980029_en_1

Ellaway, R., Cameron, H., Ross, M., Laurie, G., Maxwell, M., & Pratt, R. (2006). *Clinical recordings for academic non-clinical settings*, Joint Information Systems Committee. Retrieved September 17, 2010 from http://www.cherri.mvm.ed.ac.uk

Ellaway, R. & Topps, D. (2010). Digital professionalism. Workshop at *AMEE 2010, 6-8 September 2010, Glasgow*. Retrieved September 17, 2010 from http://www.slideshare.net/rellaway/dp-amee2010-toshare

European Parliament (1995). *Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data*. European Parliament and the Retrieved September 17, 2010 from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31995L0046:en:HTML

General Medical Council (2002). *Making and using visual and audio recordings of patients*. General Medical Council, London. Retrieved September 17, 2010 from http://www.gmc-uk.org/guidance/ethical_guidance/making_audiovisual.asp

General Medical Council (2008). *Consent guidance: Patients and doctors making decisions together*. General Medical Council, London. Retrieved September 17, 2010 from http://www.gmc-uk.org/guidance/ethical_guidance/consent_guidance_index.asp

The Health Education Assets Library (HEAL). Retrieved September 17, 2010 from http://www.healcentral.org/index.jsp/

Higher Education Academy (HEA). *Open educational resources*. Retrieved September 17, 2010 from http://www.heacademy.ac.uk/ourwork/teachingandlearning/oer/

Higher Education Funding Council England (HEFCE). Retrieved September 17, 2010 from http://www.hefce.ac.uk/

Huston, J. L. (2004). *The need for mandatory clinical recording standards*. Clinical Medicine, 4(3), 255-257.

Information Commissioner's Office. *Your rights, responsibilities and obligations to data protection*. Retrieved September 17, 2010 from http://www.legislation.gov.uk/ukpga/1998/29/contents

JorumOpen. Retrieved September 17, 2010 from http://www.jorum.ac.uk/

Joint Information Systems Committee (JISC). *Open educational resources*. Retrieved September 17, 2010 from http://www.jisc.ac.uk/oer/

MedEdPORTAL. Retrieved September 17, 2010 from http://www.aamc.org/mededportal/

Organisation for Economic Co-operation and Development (OECD) (1980). *Guidelines on the protection of privacy and transborder flows of personal data*. Retrieved September 17, 2010 from http://www.oecd.org/document/18/0,3343,en_2649_34255_1815186_1_1_1_1,00.html

Organising Open Educational Resources (OOER) (2010). *Final report,* The Higher Education Academy Subject Centre for Medicine, Dentistry and Veterinary Medicine. Retrieved September 17, 2010 from http://www.medev.ac.uk/oer/

Williams, P. J. & Jacobs, N. (2009). Use of clinical recordings in non-clinical (e.g. educational) settings: Next steps. *NHS-HE Forum*. Retrieved September 17, 2010 from http://www.nhs-he.org.uk/forum/Next%20Steps%20Nov09_v1a.pdf

About the authors

Dr Jane Williams

Director eLearning, Centre for Medical Education, University of Bristol.

Jane has worked in the field of technology enhanced learning for over 20 years. She currently leads the adoption and development of digital technologies to support undergraduate medicine at the University of Bristol and manages a wide-ranging portfolio of local and national projects and initiatives. Her research interests include: staff-student partnerships in the co-development of online educational resources; the role of technologies to develop effective e-learning practice, and developing working solutions in the areas of copyright and patient consent for educational materials. Jane was a partner in the Organising Open Educational Resources (OOER) one-year pilot project where she led the development of a toolkit for managing patient and non-patient consent. She is currently a subject expert to the Common Healthcare Educational Recordings Reusability Infrastructure (CHERRI3) project developing high level standards and advice on issues relating to reusing medical images.

University of Bristol
39-41 St Michael's Hill
Bristol BS2 8DZ
United Kingdom

j.williams@bristol.ac.uk

Suzanne Hardy

Senior Advisor, Higher Education Academy Subject Centre for Medicine, Dentistry and Veterinary Medicine, School of Medical Sciences Education Development, Faculty of Medical Sciences, Newcastle University.

Suzanne has worked in supporting good practices in the development, adoption and dissemination of learning technologies in medical, dental and veterinary education for 12 years. Most recently she managed the OOER project in the United Kingdom Open Educational Resources (OER) programme. Embedding the good practice recommended in the final OOER project report via further OER work in these subject areas will be her focus until August 2011. Suzanne also manages the publications of the Subject Centre including special reports, a high quality 36-page newsletter (published 3 times a year) and the website. She is an advisory board member for, for example, mental health in higher education project, Public Health Open Resources for the University Sector, the Royal College of Psychiatrists Undergraduate Education Scoping Group, and is especially interested in the use of the arts in medical education.

Newcastle University
Newcastle upon Tyne NE2 4HH
United Kingdom

suzanne.hardy@ncl.ac.uk

Dr Megan Quentin-Baxter

Director, Higher Education Academy Subject Centre for Medicine, Dentistry and Veterinary Medicine, School of Medical Sciences Education Development, Faculty of Medical Sciences, Newcastle University.

Megan has worked with the Subject Centre since 2000, prior to which she was Deputy Director in the Faculty of Medicine Computing Centre at Newcastle University. She gained her PhD in the use of educational technology and has research interests in hypermedia. She has led >£10M educational development projects at Newcastle and contributed to >£40M led by others. She was awarded a Newcastle University Teaching Fellowship in 2005 and serves on many local and national committees such as the Higher Education Academy/JISC joint operational group. She is an inaugural Fellow and founding member of the Academy of Medical Educators and has run many international and national workshops including for IMS-Global and the eUniversity project in the

Unied Kingdom. She regularly contributes to staff development activities and directed the OOER project, securing funding for two further OER projects in 2010-11.

Newcastle University
Newcastle upon Tyne NE2 4HH
United Kingdom

megan.quentin-baxter@ncl.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Search and Discovery: OER's Open Loop

Nathan R. Yergler
Chief Technology Officer at Creative Commons

Abstract
Open educational resources (OER) promise increased access, participation, quality, and relevance, in addition to cost reduction. These seemingly fantastic promises are based on the supposition that educators and learners will discover existing resources, improve them, and share the results, resulting in a virtuous cycle of improvement and re-use. By anecdotal metrics, existing web scale search is not working for OER. This situation impairs the cycle underlying the promise of OER, endangering long term growth and sustainability. While the scope of the problem is vast, targeted improvements in areas of curation, indexing, and data exchange can improve the situation, and create opportunities for further scale. I explore the way the system is currently inadequate, discuss areas for targeted improvement, and describe a prototype system built to test these ideas. I conclude with suggestions for further exploration and development.

Keywords
linked data, semantic web, web search, metadata harvesting, OER quality, distributed curation

---

Recommended citation:
Yergler, Nathan R. (2010). Search and Discovery: OER's Open Loop. In *Open Ed 2010 Proceedings*. Barcelona: UOC, OU, BYU. [Accessed: dd/mm/yy].
<http://hdl.handle.net/10609/4852>

Introduction

The phrase "Open Educational Resource" (OER) was first introduced in 2002 at the UNESCO Forum on the Impact of Open Courseware for Higher Education In Developing Countries ("What is OER?," n.d.). Since its introduction, the phrase "OER" has come to encompass more than simply the availability for use without royalty. OER has come to describe the environment in which the resource is developed. This environment includes sharing materials created, using or adapting materials created by others, and sharing back modifications so that others may benefit ("Why OER?," n.d.). The success of this environment requires that educators can find materials to work with, they can make changes to the materials found, and they can publish the modified resource in a manner which makes it available to others. When all of these assumptions are true, a self-reinforcing cycle exists which allows the best materials to be discovered and continuously improved within communities of interest.

However, these assumptions are not all true today, and the cycle of discovery, improvement, and publication is impeded at every level. Educators are unable to find resources which are appropriate for their use, and when they do find them, they are often unable to adapt and improve them, due to either format, permissions, or licensing issues. While more research is needed to establish baseline metrics, it is clear from conversations within the OER community that both educators and publishers view discovery as a hurdle to adoption. When educators do find resources and improve them, the opportunities for contributing back may be limited (i.e., by institutional policy), or the republished resource may not be discoverable by downstream users. Search and discovery underlies all of these issues.

An Ideal Search Tool

An ideal search tool for educators would return materials that are relevant, usable, and from a diversity of sources. Web scale search tools generally accomplish relevance through the use of full text indexing and link analysis. While some are adding support for structured data, the present level of adoption is limited to specific use cases and vocabularies. The reliance on a full text index and link analysis casts a broad net when searching, but impedes the process of discovery by including resources which are not necessarily educational. Increasing the relevance of the resources returned by a search can minimize the time educators need to spend exploring irrelevant resources.

The usability of a resource refers to several characteristics, including but not limited to its copyright status. For example, a resource released under a Creative Commons Attribution 3.0 License is very usable from a copyright perspective, but if the resource is only provided in Portable Document Format (PDF), it is less usable (editable) than one provided as Open Document Text (ODT). If the format requires proprietary, commercial tools for editing, it is less usable in a broad sense than one which can be edited using a variety of tools (i.e., ODT, which allows users to choose between open source and commercial tools for editing). The usability of

resources impacts every stage of the cycle. Discovery takes longer if an educator needs to manually explore whether resources can be adapted for their classroom use, or edited with the tools available to them. Improvement may require specific software tools, or not be possible at all. Finally, publication of improved resources may not be permitted by the license. When looking for educational resources, an ideal search tool would provide easy filters for format and license information, allowing educators to choose resources which they can adapt for their own needs, and ideally, re-share.

Finally, a search tool which only provides results from a single site or repository is less useful than one which provides access to the wealth of OER sites available. The development of the OER ecosystem resembles the development of early data networks which eventually became the internet. Educators are asked to join multiple networks and sites to publish content there, and the ability to "connect the dots" between resources on different platforms is limited. An ideal search tool could address this by aggregating information from multiple sites and multiple authorities (curators), providing users with a single view on a large pool of OER which can then be explored and dissected.

Areas for Targeted Improvement

Looking at the description of an ideal search tool (one which provides results that are relevant, usable, and from multiple sources), we can begin to see how web scale is presently inadequate. While it excels at providing information from multiple sources, it does so at the expense of relevance and usability. There are two problems that must be addressed to improve current OER search tools: the size of the search pool (what resources are relevant), and the ability to filter by resource properties (i.e., license, subject, etc), which is also referred to as faceted search.

Curation

The present situation for OER mirrors the situation when Creative Commons launched its licenses in 2002. Creative Commons licenses are decentralized: there is no centralized database of licensed works, and no registration is required to use them. Creative Commons provides tools which generate our suggested marking, but ultimately authors and publishers are responsible for marking works with a CC license. Like OER, Creative Commons licenses suggest a cycle of re-use: creators make their work available, and other creators can find materials they can re-use. As the licenses became more widely used, questions about how to find Creative Commons licensed works increased. What was needed was an approach to search that limited the size of the search pool (to only licensed works), and added the ability to filter within that pool by the specific license permissions (i.e., those which allow derivative works, or commercial use).

Creative Commons addressed this issue by building a prototype search tool based on Nutch (http://nutch.apache.org), now a project of the Apache Software Foundation. Nutch provides the basic tools needed to develop a search engine, including a crawler and document processing and indexing support. Creative Commons' prototype indexed resources with a CC license, and added

the ability to restrict searches by license type. The use of an existing open source platform allowed Creative Commons to more rapidly develop the prototype, and to demonstrate a viable approach to indexing licensed materials. It is worth noting that Creative Commons' search tool was eventually decommissioned, as search vendors saw the value of providing support for Creative Commons licenses in their core offering.

Creative Commons was able to limit the set of resources to search by using the Creative Commons license metadata to identify resources as members of the set or not. Unfortunately no similar mark exists for open educational resources, significantly because there are standing questions about what qualifies a resource as educational, as well as what qualifies it as "open".

One way to limit the set of resources is to adopt a curatorial model, which allows individuals or organizations to specify a set of resources they believe are educational. These resources may also meet some additional criteria, such as having passed a review for quality or relevance to a particular domain. A curatorial approach leverages the nascent OER ecosystem by allowing domain experts to focus on their particular area of expertise and pushing the need to normalize data into an infrastructural layer.

Organizations and individuals are already acting as distributed curators, although they may not consider their work as such. OER publishers, such as university open courseware (OCW) platforms, are acting as de facto curators. Aggregators which identify resources and add metadata or other value (such as the website OER Commons), are acting as more formal curators, developing an index of OER and allowing their community to comment on and annotate it. Leveraging this curation process fully means that resources identified by a curator are indexed, and that users may exclude specific curators or limit their search to a subset of curators. A tool which operates in this manner would allow users to search across a wide diversity of sites, as well as offer the ability to discover new communities that may be relevant to their area of interest.

Indexing

Providing access to specific properties of resources through the search index may also offer dramatic improvements to the search utility. Many OER publishing platforms allow authors to add metadata about their work, such as educational level, subject area, and language. As mentioned previously, existing curators are also adding or updating metadata about resources. This information may be indexed by a web scale search platform, but is usually simply considered as additional text. Allowing users to search by a specific property (i.e., education level) allows much more precise refinement. An improved OER search tool should offer users the ability to refine and filter searches based on metadata provided by the creator, or by another curator.

Provenance is an important issue to consider when determining how to index metadata. In order to maximize flexibility for users, metadata will need to be indexed in a manner which allows the exclusion of, or limitation to, specific curators. A naive approach which does not store the source of metadata will only offer incremental improvements over existing systems.

Metadata Exchange

Adding structured data to works (i.e., RDFa + [X]HTML) provides a structure which allows emergent tools and applications to be built with the data in ways not previously expected (Abelson, Adida, Linksvayer, & Yergler, 2008). While the ideal scenario is one which relies solely on linked data, there are many incumbent platforms which do not support linked data, and are unlikely to adopt it without a clear benefit. For this reason, different approaches to the exchange of data between sites will be required to fully utilize resource metadata from different curators and communities.

At a meeting of organizations interested in OER search and discovery in July 2009, participants agreed that search and discovery tools could be improved without end to end agreement about format and schema of metadata. The recommendation from this meeting (Duval & Yergler, 2010) suggests some baseline practices for publishers to adopt which will enable tools to build upon their work. An improved OER search tool should leverage the existing behavior of publishers and users, without requiring the adoption of specific technologies. By leveraging existing behavior, tools can demonstrate utility and provide guidance for developing standards and practices by consensus.

A Prototype System

In 2008 Creative Commons began developing a search prototype focused on OER and on testing the feasibility of these approaches. This prototype, DiscoverEd (http://wiki.creativecommons.org/DiscoverEd), is also based on Apache Nutch, and attempts to address the shortcomings of existing search tools (Bissell, Park, Yergler, & Linksvayer, 2009). DiscoverEd addresses both of the identified shortcomings: limiting the pool of resources to be searched and providing faceted search, and incorporates improvements in all three targeted areas. The result is a search platform which can be adapted to a variety of domains, and which provides users an improved ability to find resources which are relevant, usable, and from a diversity of sources.

DiscoverEd utilizes a distributed curation process to address the issue of limiting the set of resources to search. The list of resources from all curators is used to direct a crawl for traditional full text analysis, providing a baseline search experience for resources without additional metadata. The curator (or curators) of each resource is displayed in the search results. A user may choose to limit their search to specific curators, or exclude one or more curators from a search in order to find resources most relevant to their needs.

DiscoverEd's curatorial process is distributed because it assumes curators will be publishing their selections (and possibly metadata) on their own sites, and DiscoverEd will ingest them. This is in contrast to requiring curators or publishers to deposit or register materials with a central authority. By adopting a distributed process, DiscoverEd encourages curators to take ownership of their work, and allows other applications to be built using the data, without permission or mediation.

In order to support curation, DiscoverEd adds an additional step to the typical crawl-index process, aggregation (Figure 1). This step polls curators for new resources, and aggregates the metadata about them in an RDF store using Jena (http://openjena.org). When Nutch crawls the resources, additional structured data (RDFa) may be extracted from the resource as well. The index generated by Nutch includes all of the known information about each resource, including curator provided information and information from the resource itself.

Curators can provide their list of resources to DiscoverEd in several ways. DiscoverEd has the ability to consume Atom and RSS feeds describing resources, harvest resources and metadata from Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH, a protocol implemented by many repository platforms which enables clients to harvest metadata about resources), and can discover additional feeds through the use of Outline Processor Markup Language (OPML, a format often used to describe a list of feeds). DiscoverEd's architecture utilizes extensions to support different interchange formats, which allows for the new formats to be added without impact on other parts of the application.

The adoption of curation also allows DiscoverEd to test improvements to indexing. Curators may simply identify resources, or they may also provide additional metadata about resources. This metadata is combined with structured data found in the resource (i.e., RDFa in the resource), and is searchable through DiscoverEd's web interface, allowing users to further refine their search results. DiscoverEd accommodates varying descriptions and classifications of resources by displaying all the information found, and allowing users to further refine their search by curator or other property. For example, different curators might identify the same resource as educational, but have differing perspectives on the subject or education level. If a user learns that specific curators' perspectives match their own, search results can be limited to those curators, excluding metadata and resources from others.

Areas for Further Research

DiscoverEd demonstrates how the overall search experience may be improved with targeted improvements. It does this by leveraging the existing behavior of publishers and the OER ecosystem. DiscoverEd also provides a platform for additional testing and experimentation, which is necessary to determine if these solutions improve OER search at scale. Additional curation and publishing of linked data that describes resources will encourage the development of additional tools which leverage this information. Based on experience to date, there are several areas which require further exploration.

While DiscoverEd focuses on leveraging existing technology and tools to improve OER search, scientifically rigorous research about educators' search habits and success rates will enable more thorough evaluation of success. Such research will establish baseline metrics regarding efficacy of web scale search. The creation of a testing suite/protocol for measuring efficacy of experimental search tools could be an additional benefit of completing this research.

DiscoverEd currently makes no attempt to normalize or rationalize metadata from different curators. Operating DiscoverEd at scale may reveal that this leads to fractured search results where two curators have used similar, but not identical terms. One approach to addressing this may be the application of domain specific thesauruses, which would allow indexing by the

curator provided terms, as well as synonyms. Such an approach has the advantage that it does not require publishers or curators to change their existing behavior. However, a successful experiment should also attempt to draw conclusions and provide feedback to curators so that they can see emergent behavior and possibly reach consensus on how to label specific terms.

While current curation models largely center around identifying existing resources and optionally adding additional metadata, this is not the only model for curation. Curators may also work directly with creators to review, vet, and ensure the quality of their work. In this scenario, it is mutually beneficial for creators to indicate that their work has passed review: it provides the both parties with additional credibility, and may increase adoption and reuse of the curated works. The curator, however, may be understandably concerned about misappropriation of any badge or mark used.

Creative Commons developed technology for describing copyright registrations in 2008-2009 as part of the CC Network project (Yergler, 2009). The CC Network model does not rely on a central authority; rather, it utilizes reciprocal assertions about a work's status. The adaptation of this work to support quality and review marks would provide a flexible model for stronger curation, as well as additional linked data about works.

DiscoverEd currently relies on a polling model: the DiscoverEd site administrator needs to execute an aggregation and crawl, which will find new resources and add them to the index. Protocols like PubSubHubbub (PuSH) (Fitzpatrick, Slatkin, & Atkins, 2010) describe how feeds can be augmented with push notifications. To fully utilize PuSH, curators would need to ping a hub when they update their content. However, by supporting PuSH, curators could ensure that aggregators and search tools are as up-to-date as possible. The development of a prototype to test this approach should include implementation with a publication/curation platform, as well as in DiscoverEd.

Finally, DiscoverEd provides a search tool which exposes structured data and curation to users. Additional, complementary tools can help increase the impact and adoption. Tools such as validators, structured data generators, and tools which help users publish information about their source works would all complement an enhanced search tool.

Conclusion

An ideal OER search tool will provide results which are relevant, usable, and from a diversity of sources. Such a tool would help close the loop of discovery, improvement, and publication, allowing open educational resources to fulfill their promise and continue to scale. DiscoverEd demonstrates how these can be achieved through targeted improvements to indexing, and the addition of curation. While further development is needed, it is clear that improvements to search and discovery can help open educational resources fulfill their promise.

Figures

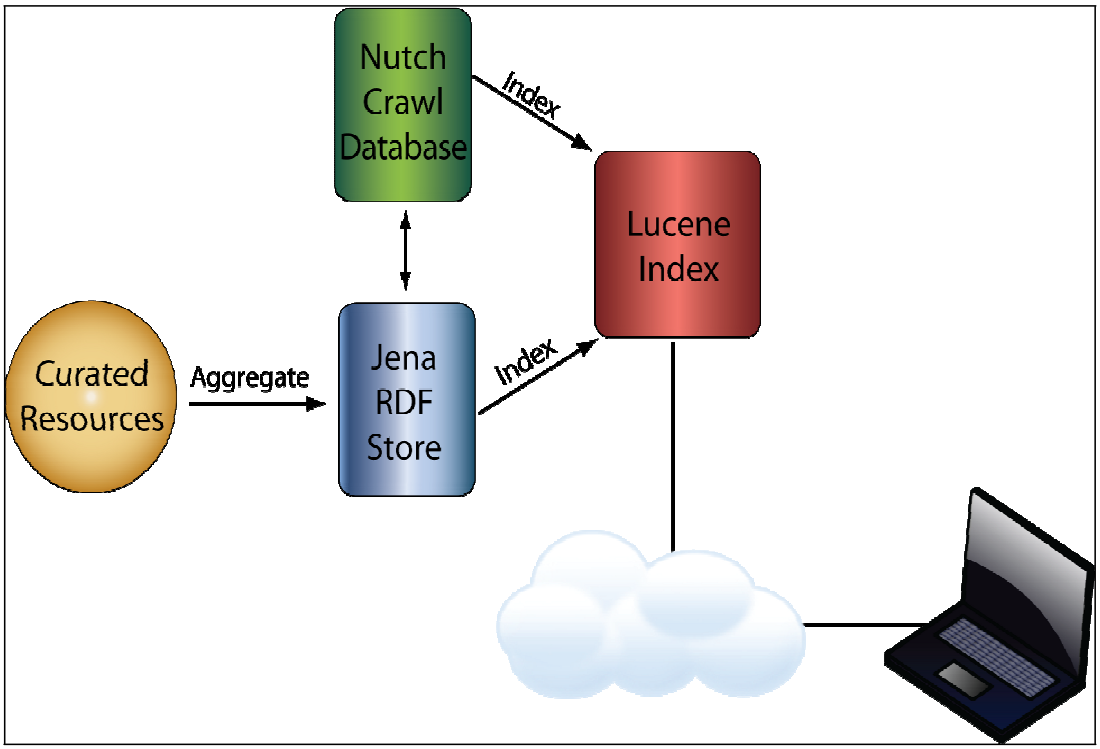

Figure 1: DiscoverEd system architecture

Acknowledgements

Creative Commons is grateful for the generous support of organizations including the Center for the Public Domain, Google, the John D. and Catherine T. MacArthur Foundation, the Mozilla Foundation, Omidyar Network, Red Hat, and the William and Flora Hewlett Foundation, as well as members of the public. Creative Commons' work on open education search and discovery has been supported by the William and Flora Hewlett Foundation and the Open Society Institute. Thanks to Ahrash Bissell, Mike Linksvayer, and Timothy Vollmer for providing review of this paper.

Bibliographic references

Abelson, H., Adida, B., Linksvayer, M., & Yergler, N. (2008, May 1). ccREL: The Creative Commons Rights Expression Language. Retrieved September 12, 2010, from http://www.w3.org/Submission/ccREL/

Bissell, A., Park, J., Yergler, N., & Linksvayer, M. (2009). *Enhanced Search for Educational Resources - A Perspective and a Prototype from ccLearn*. Retrieved from http://learn.creativecommons.org/wp-content/uploads/2009/07/discovered-paper-17-july-2009.pdf

Duval, E., & Yergler, N. (2010, January 28). Towards a Global Infrastructure For Sharing Learning Resources. Retrieved September 12, 2010, from http://wiki.creativecommons.org/Towards_a_Global_Infrastructure_For_Sharing_Learning_Resources

Fitzpatrick, B., Slatkin, B., & Atkins, M. (2010, February 8). Draft: PubSubHubbub Core 0.3 -- Working Draft. Retrieved September 12, 2010, from http://pubsubhubbub.googlecode.com/svn/trunk/pubsubhubbub-core-0.3.html

What is OER? (n.d.). *OER Africa*. Retrieved September 11, 2010, from http://www.oerafrica.org/understandingoer/UnderstandingOER/WhatisOER/tabid/1097/Default.aspx

Why OER? (n.d.). *OER Commons Wiki*. Retrieved September 11, 2010, from http://wiki.oercommons.org/mediawiki/index.php/Why_OER%3F

Yergler, N. (2009, May 12). Describing Work Registrations. Retrieved September 12, 2010, from http://labs.creativecommons.org/~nathan/oscri/describing-registrations.html

About the author

Nathan R. Yergler
Chief Technology Officer at Creative Commons

Nathan R. Yergler is Chief Technology Officer at Creative Commons. Mr. Yergler joined Creative Commons as a software engineer in 2004, and has been responsible for developing the technical infrastructure which supports Creative Commons licenses, as well as tools for users of the licenses. Previously, he held a faculty position at Canterbury School. While at Canterbury, Mr. Yergler developed learning technology to connect teachers, students, and parents. He pioneered the use of Python in Canterbury School's Computer Science courses, developing both introductory and advanced elective curricula. Mr. Yergler holds a B.S. in Computer Science from Purdue University.

Creative Commons
171 2nd Street, Suite 300
San Francisco
CA 94105
United States of America
nathan@yergler.net

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.

Examining the sustainability issues in UKOER projects:

Developing a sustainable OER ecosystem in HE

Li Yuan,* R. John Robertson, Lorna M. Campbell,*** Chris Pegler,******

* Learning Technology Advisor/Senior Researcher, JISC CETIS, Institute for Educational Cybernetics, University of Bolton.

** Research Fellow, JISC CETIS, Centre for Academic Practice and Learning Enhancement University of Strathclyde.

*** Assistant Director, JISC CETIS, Centre for Academic Practice and Learning Enhancement University of Strathclyde.

**** Senior Lecturer, Institute of Educational Technology, The Open University.

Abstract

The development of open educational resources (OERs) is becoming a strategic priority for governments and education institutions around the world, in response to funding cuts and rising costs in educational provision. In the United Kingdom, a government-sponsored Pilot Programme on Open Educational Recourses (JISC/HEA, 2009) was launched in 2009 with an initial budget of £5.7m. This paper reviews the key sustainability issues identified by the projects including the different approaches and models that have been adopted in order to sustain the continuing development and release of OER once funding has ended. The analysis also considers the challenges relating to the development and implementation of policies and processes for sustainable OER practice within institutions and among academics. The paper concludes by drawing on the experiences from the wider United Kingdom and international OER communities to develop a sustainable OER ecosystem model that can facilitate discussions on future development of OER initiatives.

Keywords
Open Education, Open Education Resources, Sustainability, UKOER, Ecosystem

---

Recommended citation:
Yuan, L.; Robertson, R. J.; Campbell, L. M. et al. (2010). Examining the sustainability issues in UKOER projects: Developing a sustainable OER ecosystem in HE. In *Open ED 2010 Proceedings*. Barcelona: UOC, OU, BYU.
[Accessed: dd/mm/yy].<http://hdl.handle.net/10609/5064>

---

1. Introduction

In 2009, the higher education funding bodies of the four nations of the United Kingdom (England, Scotland, Wales and Northern Ireland) launched a multi-million pound Open Educational Resources (OERs) initiative (the UKOER) in United Kingdom higher and further education institutions, designed to make a wide range of on-line learning resources freely available, easily discovered and routinely re-used by both educators and learners worldwide. The programme was planned two phases and is jointly managed by the United Kingdom Joint Information Systems Committee, JISC and the United Kingdom Higher Education Academy, HEA (JISC/HEA, 2010). In the first, pilot phase of the programme (April 2009 – April 2010), the programme provided an initial £5.7m to fund 29 pilot projects in three different strands: *institutional, subject centre and individual.* Aimed at promoting, creating and sharing resources among academics and institutions, at both the national and international levels, the programme also seeks to build a professionally organised open resources infrastructure to support innovation in higher education. D'Antoni (2008) points out that the majority of OER programmes are currently undertaken on a project basis, raising the issue of sustainability for these projects as a major concern when the project funding runs out. As with other OER programmes and projects, one of the most important challenges facing the UKOER programme is how to ensure project sustainability once funding is ended. In order to achieve sustainable OER policy and practice in institutions and ensure universities could continue sharing materials at a similar pace beyond the funding period, the projects were encouraged to explore the various issues that might arise in relation to the release, access and reuse of teaching learning materials from universities. These included development and implementation processes and policies, intellectual property rights (IPR), institutional culture; technical requirements and data management issues (JISC, 2009).

Wiley (2007) has argued that the concept of sustainability in relations to OER initiatives comprises two elements: the sustainable production of OER and the sustainable sharing of resources. According to Wiley, OER projects need to find a way to sustain the production and sharing of open educational resources and a way to sustain the use and reuse of their open educational resources by end users in order to achieve sustainability. To make OER initiatives work and keep them for the long run, it is important to first gain and maintain a critical mass of active, engaged users, increase usability and improve quality of the resources created. There is growing interest in community-based approaches to produce content and promote sharing and use of resources. Therefore, promoting communities of practice is vital to the sustainability of OERs. It is also widely agreed (see for example, Friesen, 2009) that OER initiatives need to be embedded in institutions as processes or practices in which the production and reuse of OERs becomes a normal consequence of educational activities for academics. Furthermore, Robertson (2009) argues that the sustainability of OERs depends on how institutions will choose to manage and use their digital material in the future.

Hylén (2007) suggests that two common approaches have been used by OER initiatives: the institutional model and the community model. Most institutional OER initiatives are based on initial government or philanthropic funding and need to look into different revenue models for the long term sustainability of their initiative. The community model builds on voluntary work and enthusiasts, in which sustainability is not so much a matter of financial resources but effort to keep

the community alive and help it grow. As the United Kingdom OER programme funded three strands: institutional, subject centre and individual, it is able to explore not only institutional approaches to OER initiatives but also community approaches within institutional contexts. This paper considers these institution-based approaches and how they propose to address long term sustainability with continued releasing of new OERs beyond the funding period.

2. Institutional Approaches to Sustainability

The sustainability of OER projects, was one of the top concerns of the UKOER programme, and it is expected that all funded projects would seek to develop sustainable practices so that universities are able to continue sharing materials at a similar pace beyond the funding period.

> "Successful projects will also work to develop processes and policies to embed the practice of open educational resources release beyond the funded life of the project. We would expect to see clear evidence within proposals of an intention to do this. Bidders should also describe a business model supporting this process. " (JISC/HEA call, 2009)

The key phrase in this remit is that institutions are required: "...to embed the practice of open educational resources release beyond the funded life of the project". Therefore the obligation is not just to develop and use new OERs but to develop an approach that ensures that new OERs will continue to be developed and released for open and shared usage.

Seven institutions were funded to develop existing teaching and learning resources into OERs that would be the equivalent of one undergraduate course (360 credits). All of the projects identified some issues related to OER sustainability and proposed different approaches to address them. Brief extract from the projects published proposals (JISC, 2009) indicate how they intended to address the issue of ongoing sustainability (see figure 1).

The figure 1 shows that all funded projects considered a long term commitment to develop a sustainable approach to support ongoing OER production and release. The projects not only sought to continue to produce and release new OERs but also made efforts to develop and modify institutional strategies and policies, provide staff training, establish guidance and support mechanisms to embed policy to transform academic practice and change culture within institutions, department and schools. In the next section, the manner in which these proposed approaches to sustainability have been implemented is further explored.

3. Sustainable issues in UKOER programme

Pegler (2010) has identified range of issues related to sustainable OER practice within institutions which support or prevent ongoing release and reuse OERs, including the following key areas:

The time and effort required to move to sustainable OERs
Building awareness of academic towards OERs
Staff development
Incentives for sector wide sharing
Evidence of effectiveness in the use of OERs
Easy use tools for dissemination and deposit
OERs should be widely recognised as good for UKHE
Policy and practice to encourage and offer reward to "Open" behaviour
Support and advice on copy right
Recognition of the multiple purposes of OERs and the value of raw learning resources
Policy for potential risk management
Guidance for OER news users and producers

McGill, Beetham, Falconer & Littlejohn (2010) argue that sustainability of OER depends on embedding open practices into institutional policies and services, and on encouraging open sharing in existing communities such as subject networks. In the UKOER programme, projects have adopted diverse approaches and models to support producing and reusing OERs across institutions beyond the funding period. Based on an analysis of the project final reports (JISC, 2010) and discussions from the programme events and meetings (CETIS, 2010), a number of important principles for sustainability appear to be emerging from the projects. These are presented here briefly:

Creating and modifying policies to promote the release and reuse of OERs: All of the projects reviewed existing policy and strategy documents in relation to IPR, institutional repositories and learning and teaching resources; and several projects developed new OER-specific policy documents. One institution (see the Unicycle project) developed a policy which embedded OERs into teaching and learning practice. This requires staff to use OERs in their courses and release OERs when developing and delivering new courses. Some institutions (For example the BERLiN project) have developed policies to integrate OER practice into their professional reward and recognition schemes. These developments have been prompted by recognition that if OER development practices are viewed as an additional responsibilities, they are unlikely to be sustainable.

Developing guidance and support mechanisms for long term OER release: While some projects (for example the Open Spires project) have adopted a centralised model of OER release by establishing a central OER support unit within an institution to provide technical and other supports for procuring and releasing OERs, others (such as the Unicycle project) have adopted a distributed model in which no additional staff were recruited and the responsibilities for producing OERs were assigned to representatives from different faculties. Many projects (for example the OTTER project) found that the most sustainable approach is to embed the OER development process into practice by empowering academics to release their own educational resources, rather than take on the financial burden of building a centralised team to make materials public. For example, the OTTER team developed the CORRE framework (OTTER, 2010) which provides a

systematic and replicable set of practices and procedures for the creation and management of OERs, designed to be sustainable after the project ends.

Creating communities of practice: Many projects identified that encouraging academics to engage with or stay engaged with OER activities is central to the sustainability of OER within institutions. One of the approaches adopted by some projects, therefore, was to develop communities of practice among academics to support the sharing of practice and content with others through OERs (McGill, Beetham, Falconer & Littlejohn , 2010).

Developing new business models to make effective use of OERs: although business models associated with OERs are tricky and are still in their infancy, some institutions (see BERLiN project) have started to explore the benefits of OERs to higher education and use OERs as the basis of developing new courses and new partnerships nationally and internationally. Some institutions involved in the UKOER project have also developed international partnerships to generate feedback on the wider usefulness of OERs. For example, partnerships in the OER Africa programme (for example the BERLiN project) have helped to improve the quality of OER provision and support more effective reuse locally. It has also helped the British institutions to gain a better understanding of technical and educational issues in different social and culture contexts through collaboratively developing and reusing OERs.

Removing technological barriers to make OER release and reuse easier: Technical challenges relating to development of OERs and to their hosting, discoverability and tracking can be very real obstacles to achieving sustainable practice among academics. It is therefore important to make OER tools and platform easy to use and access. Most projects have used technology and platforms that their institutions already use or that academics are familiar with (CETIS, 2010). Some projects also developed specific tools to empower non-technical teaching staff to create highly interactive and accessible multimedia learning materials. One example of this is Nottingham‘s open source e-learning development tool Xerte Online Toolkits (BERLiN project, 2010)Leeds Metropolitan University’s Unicycle project also developed an OER submission widget which allows an academic to drag and drop a resource onto the widget on their desktop, enter essential metadata and the item gets sent to their institutional repository (Unicycle, 2010).

Encouraging wider participation and provision of staff training on OERs: A number of projects made the release and reuse of OERs become more sustainable within the institutions through engaging with a range of staff, raising awareness, creating a workable model and attempting to change academic working practice and culture (McGill, Beetham, Falconer & Littlejohn, 2010). For example some institutions incorporated the development of OERs into their Postgraduate Certificate in Learning and Teaching in HE curriculum so that OERs become a part of their professional development requirements. Staff training also helped academics identify OER related IPR issues and promoted awareness of copyright (Unicycle, 2010).

It is notable that all of the UKOER projects have put considerable efforts to find ways to continue producing OERs beyond the funding period through embedding OERs into process and practice, reviewing institutional policy and developing new mechanisms to enable, support and encourage sustainable production and sharing of resources. However, the challenge of working

through sustainability issues related to OERs cannot be fully addressed through a single funding programme over a short period of time. It is expected that UKOER2 will take what has been learned from the pilot programme further and explore new approaches and models to ensure producing OERs can become an integral part of an academic's teaching responsibilities and a significant aspect of delivering the educational mission of institutions.

4. Developing a Sustainable OER ecosystem

The OER Foundation (2009) argues that a sustainable ecosystem requires that the elements of the system are continually engaged in a set of relationships with every other element constituting the environment in which they exist. Robertson, Mahey & Allinson (2008) adopted the ecological approach to express a comprehensive view of the interactions of repositories and services that addresses cultural, political and financial influences as well as technical protocols. Such an approach helps to capture the dynamics of a complex system that has continually evolving processes, and indicates where change is occurring in order to facilitate communication and understanding between repository managers, implementers, developers, users and funding agencies. Similarly, the ecological metaphor offers an alternative way to analyse and examine the development of OER initiatives and the "elements", "relationships" and "interactions" required for sustainable OER ecosystems.

In an ecological view, OER ecosystems can be studied at many levels including the macro or global education level, the meso or national educational system level and the micro or institution level. The main entities in all of these levels include individuals (educators and learners), institutions (organisations and communities) and funding agencies and governments. A sustainable OER ecosystem can only be achieved by all of these elements continually engaging with the others within and outside their systems, enabling them all to realise the tangible benefits of supporting learning in all educational settings including formal and informal.

The ecology approach provides a useful framework for analysing and examining the development of sustainable OERs in the United Kingdom context. As the OER foundation (2009) argues this provides the necessary elements and environment required for individuals and institutions interacting within a particular educational system to identify paths, connections and supporting activities to the establishment of a sustainable OER ecosystem. Figure 2 illustrates how government agencies and funding bodies, institutions, subject cnetres and individuals are engaging in the production and reuse of OERs within the particular educational system and articulates the key interactions, dependencies, and influences in order to address social, organizational, cultural and technical issues to achieve sustainable. In the future it seems clear that higher education institutions will need to improve efficiencies through OERs, e.g. reduction in cost and improvements in quality. Educators and learners will need to participate in communities of practice where OER development and reuse becomes a normal consequence of educational activities. A content infrastructure needs to be established through developing OERs that support informal and formal education and catalyse innovations in higher education. This meso – level OER ecosystem will rely for success on the sustainability of OER projects at the micro level (institutions, subject centres and individuals) and, if successful, will eventually foster the global sustainable OER ecosystem at macro level. As higher

education systems in most countries are largely publicly-funded, OER sustainability in this sector would benefit significantly by using national funding models both as an incentive and as a steering device that will enable institutions, communities and individuals to explore how best to achieve self-sustainable OER ecosystems.

Conclusion

Sustainability is clearly a key issue for OERs, especially, those external funded projects. The UKOER pilot programme has provided an opportunity for institutions to review policies and supporting mechanisms, and embed processes into the academic practices in order to continue releasing OERs beyond the lifetime of the funded project. During the pilot programme, different approaches and models have been adopted by the funded project to address the issues related to sustainable OERs. There is little doubt that OERs will move into the mainstream of higher education and that the need for sustainability of OERs will require institutions to respond to this strategic challenge. In the long term however, there is a need to develop sustainable OER ecosystems where institutions can address their own business needs around OERs. At the same time, they must begin to shift from institution-based to community-based approaches in order to cultivate communities of practice where OER development and reuse becomes an integral part of everyday educational activities.

Figures

Institution	Project title	Project overview	Approaches to Sustainability
Coventry University	Open Content Employability Project	Delivering a minimum of 360 CATS points of undergraduate open education resources. Developing the experience, policies and processes on which to build an open content culture.	Developing policies and procedures to help embed an open content culture within Coventry University; developing culture of open content deposit and use within the university.
Exeter University	Open Exeter	Using of appropriate new technologies and contextually located within a rich array of learning materials. marketing Exeter's education 'brand' through increasing international intake and the availability of OER	OER will thereby become an integral component of curriculum design and delivery; Harnessing existing professional support staff with expertise in IT, databases, education, and IPR to create sustainable working practices.
Leeds	Unicycle	Identifying materials of value to other	Integrating OER development into the

Metropolitan University		institutions and partners and release them under an open license.	University's sustainable planning cycle to ensure future funding.
Leicester University	OTTER	Enabling, piloting and evaluating systems and processes designed to enable individuals, teams and departments to release high quality open educational resources (OERs) for free access, reuse and repurposing by others, in perpetuity.	Developing a sustainable model for the release of existing learning materials as OERs at team, departmental and institutional levels.
Nottingham University	BERLiN	Providing guidance and advice, which will benefit the whole of the United Kingdom sector by disseminating the project experiences, exploring the issues raised in the wider take-up and development of an OER.	OER as a catalyst for change in the practice of academics from all parts of the University.
Oxford University	Open Spires	Making a range of audio and video podcasting material available through the web and other channels. The material will be open for reuse and redistribution by third parties globally.	Supporting academics to use the decentralised content creation workflows developed by the central podcasting service developing appropriate development support materials for staff and documented workflows for cultural change to ensure that considerations of open release become part of the digital content creation cycle at Oxford University
Staffordshire University	OpenStaffs	Depositing high quality educational resources, in different formats and develop policies and procedures to retrieve and repurpose learning objects internally and externally	Key to sustainability will be the automated integration and embedding of the process into the day to day provision of access to learning and teaching materials across the University and will be in line with the quality mechanisms inherent in the TSL Policy.

Figure 1 - Institutional approaches to Sustainability

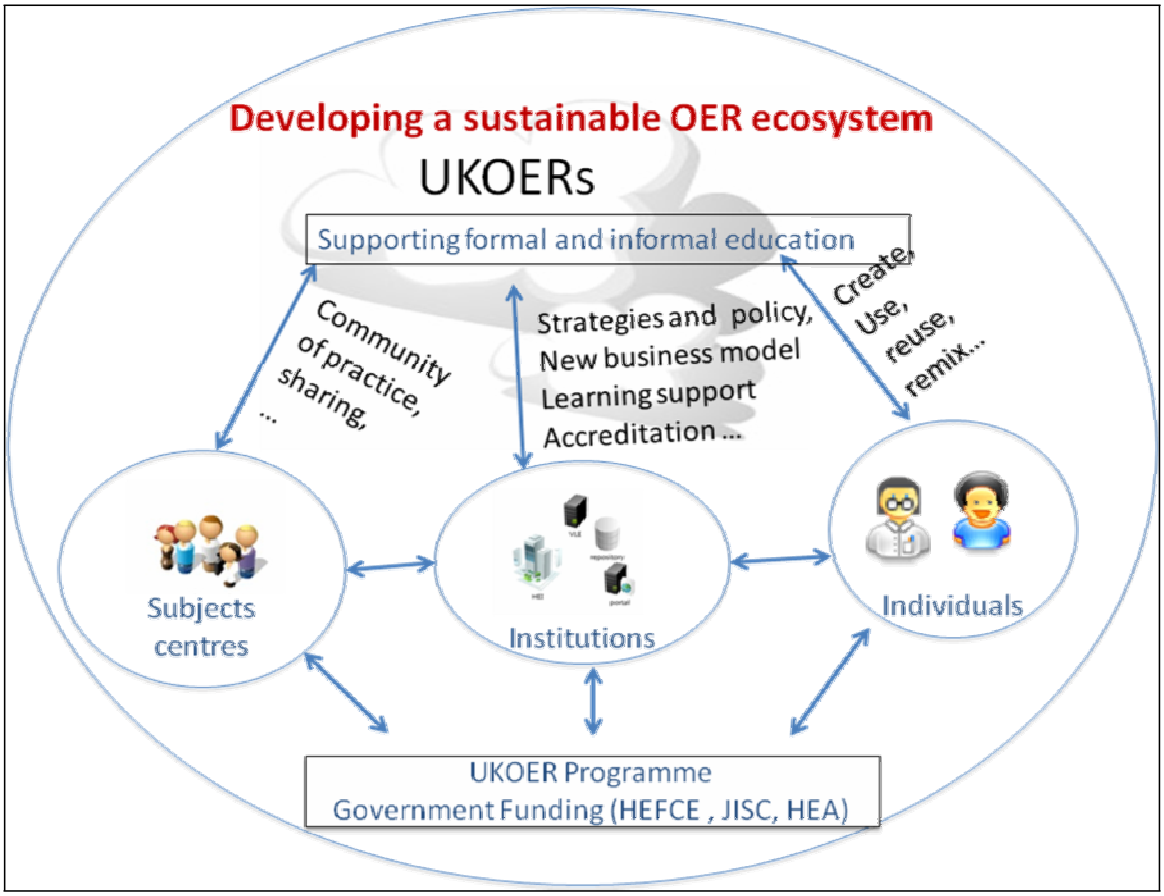

Figure 2 - A sustainable OERs ecosystem

Bibliographic references

CETIS, (2010). *Open Educational Resources.* Retrieved from, http://jisc.cetis.ac.uk/topic/oer

Cooke, R. (2008). *On-line Innovation in Higher Education.* Retrieved from http://tinyurl.com/5vt5lo

D'Antoni, S. (2008). *Open Educational Resources. The way forward. Deliberations of an international community of interest.* Retrieved from http://learn.creativecommons.org/wp-content/uploads/2008/03/oer-way-forward-final-version.pdf

Friesen, N. (2009). *Open Educational Resources: New Possibilities for Change and Sustainability*. Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/664

JISC, (2009). *Open educational resources programme*. Retrieved from http://www.jisc.ac.uk/oer

Hylén, J. (2007). *Open Educational Resources: Opportunities and Challenges.* Retrieved from http://www.oecd.org/dataoecd/5/47/37351085.pdf

McGill, L., Beetham, H., Falconer, I., & Littlejohn, A. (2010). *UKOER Pilot Programme Synthesis And Evaluation Report.* Retrieved from http://www.caledonianacademy.net/spaces/oer/index.php?n=Main.PilotProgrammeSynthesisAndEvaluationReport

Pegler, G. (2010). *How can we achieve sustainability in OER?* Retrieved from http://www8.open.ac.uk/score/print/oer-and-sustainability-leeds-manifesto-draft;

Robertson, J. (2009). *Open Education: project or process and practice?* Retrieved from http://blogs.cetis.ac.uk/johnr/2009/09/09/open-education-project-or-process-and-practice/

Robertson, J., Mahey, M., & Allinson, J (2008). *An ecological approach to repository and service interaction.* Retrieved from http://ie-repository.jisc.ac.uk/272/1/Introductoryecologyreport.pdf

Wiley, D. (2007). *On the Sustainability of Open Educational Resource Initiatives in Higher Education*. Retrieved from http://www.oecd.org/dataoecd/33/9/38645447.pdf

Institutional OER projects and websites

Building exchanges for research & learning in Nottingham (BERLiN)
http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/berlin.aspx

Open content at Oxford University
http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/openspires.aspx

Open content employability project
http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/ocep.aspx

Open Exeter
http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/openexeter.aspx

Open, transferable & technology-enabled educational resources (OTTER)
http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/otter.aspx

OpenStaffs
http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/openstaffs.aspx

Unicycle
http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer/unicycle.aspx

About the authors

Li Yuan
Learning Technology Advisor/Senior Researcher, JISC CETIS, Institute for Educational Cybernetics, University of Bolton.

Dr Li Yuan is a Learning Technology Advisor for JISC CETIS and a senior researcher within the Institute for Educational Cybernetics, the University of Bolton. Li is currently involved in supporting the JISC/HEA Open Educational Resources programme and the JISC Distributed Virtual Learning Environment (DVLE) programme. Her main interests include open educational resources, learning design, digital repositories and ICT policy and practice in Education. Prior to joining IEC, she was a research follow in the School of Education, Queen's University of Belfast, where she worked on the General Teaching Council for Northern Ireland's (GTCNI) digital repository project.

JISC CETIS, Institute for Educational Cybernetics
University of Bolton
Deane Road, Bolton, UK, BL3 5AB
l.yuan@bolton.ac.uk

R. John Robertson
Research Fellow, JISC CETIS, Centre for Academic Practice and Learning Enhancement University of Strathclyde.

John Robertson works for CETIS (Centre for Educational Technology and Interoperability Standards) - one of the Innovation Support Centres in the United Kingdom funded by JISC (Joint Information Systems Committee) to: represent Further and Higher Education in the development of relevant standards and specifications and provide guidance and support for JISC programmes. John currently supports JISC's work in Open Educational Resources. A librarian by training, his professional background is in development and support projects around the management of digital assets, repositories, digital libraries, and metadata; he also has an ongoing interest in the role of community and personal formation in education.

JISC CETIS, Centre for Academic Practice and Learning Enhancement
University of Strathclyde
50 George Street UK, G1
1QE
robert.robertson@strath.ac.uk

Lorna M. Campbell
JISC CETIS, Centre for Academic Practice and Learning Enhancement University of Strathclyde.

Lorna M. Campbell is one of the CETIS Assistant Directors with responsibility for the area of systems and content. Her main areas of interest include open educational resources, repositories,

metadata and resource description and management within the teaching and learning sector. She has worked in learning technology since 1997 and has participated in a wide range of learning technology interoperability standards bodies. She is currently based at the University of Strathclyde in Glasgow.

JISC CETIS, Centre for Academic Practice and Learning Enhancement
University of Strathclyde
50 George Street
UK, G1 1QE
lmc@strath.ac.uk

Chris Pegler
Senior Lecturer, Institute of Educational Technology, The Open University.

Chris develops and leads online courses within the Open University's MA in Online and Distance Education and during 2009/2010 was Academic Director of the national Support Centre for Open Resources in Education (SCORE) www.open.ac.uk/score supporting OER practice across higher education. Her main research area is reuse of digital resources, including OER and learning objects. Chris is interested in all aspects of elearning and founded/leads the OU's 400-strong eLearning Community initiative. She is co-editor (with Professor Allison Littlejohn) of the Routledge book series Connecting with eLearning, within which she has co-authored Preparing for Blended eLearning and The Educational Potential of ePortfolios.

Institute of Educational Technology
The Open University
Walton Hall Milton Keynes
UK, MK7 6AA
c.a.pegler@open.ac.uk

This proceeding, unless otherwise indicated, is subject to a Creative Commons Attribution-Non commercial-No derivative works 3.0 Spain licence. It may be copied, distributed and broadcast provided that the author, and the institutions that publish it (UOC, OU, BYU) are cited. Commercial use and derivative works are not permitted. The full licence can be consulted on http://creativecommons.org/licenses/by-nc-nd/3.0/en/deed.en.