

Open Educational Resources Plus Social Software: Threat or opportunity for Canadian Higher Education?

Terry Anderson
Professor, Athabasca University
terrya@athabascau.ca
phone 780 425 5950

Two emerging developments afford opportunity to drastically alter the way people learn and acquire knowledge. The first is the availability of open education resources (OERs) that expand earlier models of discrete learning objects to the production and free dissemination of complete courses and programs. The second is the rapid emergence of a host of networked tools collectively known as social software. This paper overviews developments in both technologies and the social systems emerging to exploit these innovations for both formal and informal learning.

Open educational resources (OER)

Open educational resources (OER) are teaching and learning resources developed by and designed for use in educational and informal learning programs that are licensed for free use and adaptation by others. An early gathering of stakeholders in 2002 referred to Open Educational Resources (OER, as being digital resources, enabled by information and communication technologies, for use and adaptation by a wide variety for non-commercial purposes. The final communiqué of this UNESCO sponsored group affirms the goal of developing “together a universal educational resource available for the whole of humanity... and that this open resource for the future mobilizes the whole of the worldwide community of educators”. UNESCO 2002 . UNESCO takes a wide view of OER and identifies three types:

- 1 Learning Content: Full courses, courseware, content modules, learning objects, collections and journals.
- 2 Tools: Software to support the development, use, re-use and delivery of learning content including searching and organization of content, content and learning management systems, content development tools, and on-line learning communities.
- 3 Implementation Resources: Intellectual property licenses to promote open publishing of materials design principles of best practice, and localization of content. (Hylan, 2006)

Attempting to build on the model developed by open source software developers, educators are learning to collaboratively develop educational content and make that content freely available for use in their own as well as the programming of others. Initially led by MIT's Open Courseware project, the Open Courseware Consortium now lists 116 member universities nearly half of which are from developing countries who are making content available anywhere/anytime. However early studies (Atkins, Brown& Hammond, 2007) hylan (Hylan, 2007) 2006 are showing that use and re-use by both learners and institutions is less than optimal and business models to support development and distribution have yet to emerge.

OERs extends the vision of increasing access to quality learning opportunities that has long defined and inspired educators but the costs and functionality of the media used to instruct both on campus and at a distance has always been problematic. There is considerable evidence accumulated over the past thirty years that documents the improvement to both teaching and learning when multi-media is used to enhance presentation, individual study and group collaboration (Boyle, 2002; Lam & McNaught, 2006; Middleton, 2000; Zhang, 2005). Unfortunately, the production of quality multimedia is expensive and time consuming and thus many educational institutions rely on almost exclusively on lecture, discussion and very simple graphics (Powerpoint) for presentations. Further more, the distribution of multimedia has until recently been problematic involving considerable preplanning, transportation of film and slides and challenges in making display technology available for classroom and distributed groups or individual study. The Net has drastically altered these constraints by providing means to both create and distribute multi-media and text based educational content at very low cost and with greatly reduced technical and artistic requirements of producers. Thus, it is now possible for educators to both produce and consume learning content that (at least theoretically) can be distributed, used and re-used on a global scale at affordable cost.

However, adoption and effective of any innovation use is not solely a function of the affordances of new tools (Rogers, 2003) (Bijker, 1999). Rather, innovation is socially constructed and constrained by the social context and the individuals who are offered opportunity to use the innovation (Fulk, 1993). Recent studies of OER ((Huyen, 2007; Remmele, 2006) and earlier work on learning objects (Parrish, 2004) demonstrate that the promise of OER resources is mitigated by a variety of institutional and personal challenges. From an institutional perspective, OER raises copyright and ownership issues as it re-opens debate about ownership of educational content produced by faculty, contracted teachers and institutional support staff. Questions of quality control also arise when production and dissemination moves beyond the confines of a single classroom to a world stage. Education is deeply contextualized (Dewey, 1916), therefore assuming that an educational resource designed for one context will afford effective use in a different context is an unlikely proposition. Moreover, there are many technical and legal issues that must be resolved if teachers are able to edit and re-contextualize these resources. Finally, developing sustainable development and delivery business models when resources are made available at no cost to the end user is extremely challenging.

Despite these obstacles and concerns the increase in content and quality of OER resources continues to grow (Seely Brown & Adler, 2008). Great interest in OER has arisen in many developing countries and especially in China where a consortium of universities are actively translating work done in other languages in addition to developing native Chinese language OERs (see <http://www.core.org.cn/cn/jpkc/>).

OERs also present opportunities for educators to join in the emerging model of peer-to-peer (Bauwens, 2005), networked (Benkler, 2004, 2006) and user controlled forms of production. These models draw examples from the open source software, the success of Wikipedia, and the development of many multi-user input information production

models, to demonstrate how widely distributed individuals can cooperatively produce very complex information products. Although we have yet to see projects as successful as Linux, Apache or Wikipedia develop in OER contexts, I believe that study of the means and tools used by these groups will allow us to develop effective distributed production models for very complicated, yet adaptable OERs.

Axel Bruns (2008) has written extensively about successful projects in which consumers also act as producers of useful artifacts. He coined the terms producer and produsage (consumers + producers = produsage) to describe these emergent form of production. Bruns extracted four principles of successful produsage:

- 1 **Community-Based** –the community as a whole can contribute more than a closed team of producers.
- 2 **Fluid Heterarchy** – producers participate as is appropriate to their personal skills, interests, and knowledge, and may form loose sub-groups to focus on specific issues, topics, or problems
- 3 **Unfinished Artifacts** –projects are continually under development, and therefore always unfinished; their development follows evolutionary, iterative, palimpsestic paths.
- 4 **Common Property, Individual Rewards** – contributors permit (non-commercial) community use, adaptation, and further development of their intellectual property, and are rewarded by the status capital they gain through this process (Bruns 2008 24-29)

Following production models such as have evolved in successful produsage communities provide models for overcoming some of the problems associated with low participation in current OER development projects

The rationale for OER development and deployment is often based on particular contexts of individual institutions. For high status institutions such as MIT, with huge demand for their face-to-face programming, OER's raise profile of the institution and fulfill altruistic aims of individual faculty and the institution. Less prestigious universities may use OER's as a means to expose and challenge their faculty to develop higher quality learning resources. In all cases, distribution of OER resources increases brand recognition and status of public institutions. Public universities have also argued that OER distribution benefits the public good through increased provision for lifelong learning opportunities and thus entitles them to greater draw on the public purse. International development agencies have also seen OER production as a means to grow self sufficiency and create economies of scale amongst small universities in developing countries. (see for example the Commonwealth of Learning's www.wikieducator.org/ - project in which Wiki technology is used as a platform to develop OERs). Finally, universities have argued that OER's meet their requirement for public service by increased provision of free learning opportunity.

But education provision requires more than content alone and thus we turn next to the second major innovation attracting attention for both formal and informal learning.

Social Software

The second innovation is social software, most clearly exemplified by the millions of Canadians using Facebook for fun, social and family communication and support, to extend and re-energize their social networks.. Will social software emerge as the primary tool through which distance education learners find each other, collaborate on projects, share learning resources and develop informal study buddy and study partner exchanges? Will these tools be used for distributing copies of tests, recycling papers and other ways subverting older models of formal education? The recent [case at Ryerson University](#) in which a student who organized an online study group on Facebook and was charged with academic misconduct for leading activities which he claimed mirrored activity undertaken regularly in face-to-face study groups illustrates the challenges of these technologies to pre network models and standards of behaviour. Will informal learning create the social glue and motivation to support extensive use of OER materials such that learners can reduce or eliminate the cost of enrollment in formal education programming?

The social attribute of social software comes from the capacity of these tools to support sharing, annotating, discussing, editing and collaboratively constructing among aggregations of learners and teachers (Anderson, 2005). The size of these aggregations can vary from 2 to many millions. The openness and potential for sharing makes social software particularly powerful for education and learning applications. Many of our most powerful pedagogical theories and understandings of learning processes assume that knowledge is both created and validated in social contexts. Thus, developments in social software hold far reaching promise to effect teaching and learning.

The term, social software, is often attributed to Clay Shirky (Shirky, 2003) who defined it as “software that supports group interaction” Allen (2004) noted the historical evolution of software tools as the net gained in capacity to support human interaction, decision making, planning and other higher level activities across the boundaries of time and space, and less adeptly those of culture and language. Levin (Levin, 2004) noted the affordances of the Web to support new patterns of interconnection that “facilitate new social patterns: multi-scale social spaces, conversation discovery and group forming, personal and social decoration and collaborative folk art.” Coates (2002) describes the functional characteristics of social software to extend human communications capabilities. He notes the enhanced communications capacity provided by social software over time and distance (the traditional challenges of access addressed by distance education). He goes on to point out that social software adds tools to help us deal with the complexities and scale of online context such as collaborative filtering, spam control, recommendation and authentication systems. Finally he argues that social software supports the efficacy of social interaction by alleviating challenges of group functioning such as decision making, maintaining group memory, and documenting processes.

To further clarify the term, in an educational context, I defined educational software “as networked tools that support and encourage individuals to learn together while retaining individual control over their time, space, presence, activity, identity and relationship” (Anderson, 2005). This definition speaks to the right of learners (and teachers) to retain control over the educational context in which they are engaged. The definition obviously resonates with distance educators who define their particular form of education by the increase in access (in many dimensions) to the educational process. However, social

software is also being used on-campus in 'blended learning' formats where it affords and encourages communication, collaboration and social support within and outside of the time and place of normal classroom learning.

Social software in the form of blogs, wikis, reference and resource aggregators and profiles are being used in both campus and distance education contexts. It is as yet unclear as to the effect of these interventions on formal learning outcomes, persistence or cost. However, As Richardson (2006) notes "In an environment where it's easy to publish to the globe, it feels more and more hollow to ask students to 'hand in' their homework to an audience of one. ... when many of our students are already building networks far beyond our classroom walls, forming communities around their passions and their talents, it's not hard to understand why rows of desks and time-constrained schedules and standardized tests are feeling more and more limiting and ineffective." (Richardson, 2006). It is also unclear how energetically formal education institutions should build in social spaces that were originally designed for informal socialization and networking.

Social software may have its mostly compelling application in 'reducing the loneliness of the long distance learner'. I have argued earlier that the missing opportunities for both formal and informal interaction in distance education contexts are associated with the high rates of drop out and non completion (Anderson, 2005). However, even in many forms of independent study based distance education, social software functions as a disruptive technology since it affords collaboration and collusion for learning designs that assumed that students work alone and in isolation.

Recently Jon Dron and myself (Dron & Anderson, 2007) have been developing a 'taxonomy of the many' which divides social software applications and activities into three overlapping categories (see figure 1). The first aggregation is the familiar group context. Groups have been the basis for formal educational organization for hundreds of years and many of the organizational and learning activities developed for classroom groups can be directly adapted to online groups. We have also seen the development and employment of large scale Learning Management Systems (LMS) such as Blackboard and Moodle that provide teaching and learning support services for group based learning. However groups are limited by their size, exclude those who are not members (including alumni), rely on privacy and closed systems and are often marked by instructor domination and control of the learning context. The second aggregation of the many we refer to as networks. Networks are much more loosely organized than groups and rely on free entry, and contribution by diverse members – some of which may be enrolled in formal education programming, but networks are also enhanced with participation from professionals in the field, graduates, mentors, friends and co-workers. Networks are often not limited in time and may provide social learning opportunities that extend far beyond (in time and in space) learning opportunities provided by groups. Many of the so called Web 2.0 tools including blogs and social networking environments have been optimized for use in Network contexts. Networks also allow and encourage emergent behaviours many of which may not be under the control of the instructor- yet they may provide very powerful learning opportunities. The final aggregation is collectives which consist of the aggregated activities of the crowd that are harvested and exploited by Net users for

learning and decision making. As individuals groups and networks use the Net they leave traces of their activities and contributions. These contributions can then be harvested, compared to individual and group profiles, selectively filtered and in other emergent ways be used to guide and inform learning activity.

Figure 1. Taxonomy of the Many (Dron and Anderson, 2007)

We believe that knowledge of the existence and the appropriate forms of activity and organization of each of these three aggregations is useful for developing effective social software applications. Our current and ongoing work at Athabasca University using the elgg software suit is demonstrating both the challenges and the opportunities of application of the taxonomy

Convergence

The convergence of OER and social software promises to resolve many of the concerns with either intervention used alone. Many users find that the lack of peers and resulting social support inhibits social integration into their learning programs (Tinto, 1987; Woodley, 2004). Since student support is rarely, if ever, available to users who independently select and work with OER's, the addition of emergent study buddies and study groups may result in much higher and more successful use. Second, since OER materials generally require contextualization, the capacity to engage with other learners in social spaces allows for both critique and revision of OER materials, in a social context, to increase their functionality and relevance to particular learning groups.

Finally, social software itself often lacks rationale for extensive use. Many sites report fall off of users once the user has explored, personalized and adapted the environment. Part of the attraction seems to be the stimulation of learning to master the game and once completed, continuing motivation to participate is lessened. Theoretical models are being developed (see for example (Dwyer, Hiltz & Widmeyer, 2008) to help explain the complex relationship between task, usage, appropriation and tool functionality, but it is very challenging to predict which social software sites will attract and retain critical masses of users. The pursuit of either formal or informal learning objects may provide the necessary motivation for continuing use.

OERs, and Canadian Universities

Canadian Universities have to date shown little interest in developing and making available OER's. This can partially be explained by the famine of funding that currently afflicts all forms of education innovation and research in Canada. But this lack of enthusiasm is also related to complacency and lack of a sense of a compelling reason to explore these potentially disruptive technologies. For many university professors their sense of professional self is wrapped up in the creation of unique educational content and delivering this in face-to-face interaction with students. They have not had opportunity, nor tools and expertise to creatively re-purpose, mash-up and reformat learning resources that were created by others so as to create alternative forms of teaching and learning. This is especially apparent when these OER based activities may decrease interest in their

face-to-face expositions.

Accreditation remains the key and driving force behind much student effort and willingness to pay high tuition rates. OERs currently lack this accreditation. Although at least one Canadian University (Athabasca) allow challenge of courses for credit, most require completion of courses in traditional or distance modes. I can imagine the emergence of sophisticated testing and quality assurance systems or even new higher education institutions that focus more or exclusively on assessment and credentialing and which leave instruction to OERs and other means of online supported learning. This form of assessment based education was practiced by the University of London from 1858, with, 39,326 external students recorded as passing University of London examinations, between 1887 and 1931 (Tait, 2003) These graduates worked from curriculum outlines provided by the University which were in many cases much less detailed than current OER resources. In addition tuition services to support students studying for these courses were provided by colleges and individuals throughout the British Empire. One could easily imagine this type of credentialing service arising again with enhanced services that connect students to OER's and to each other and which use modern adaptive testing techniques and portfolio type assessments.

We can also expect students to use OER's as supplemental resources for courses in which they are enrolled at Canadian Universities. This exposure may 'raise the bar' or at least expectations of students and increase pressure on faculty to develop or at least use more sophisticated forms of multi-media instructional resources.

Conclusion

It is currently unclear what the effect of OER and social software innovations will be on Canadian Universities and thus premature to conclude if they are a threat or a major enhancement to Canadian higher education institutions. The context and use of these tools is rapidly changing and thus research results are preliminary and often outdated due to rapid advance of tools. However, many practicing academics have at least some personal experience to relate and share, thus I anticipate a continuing discussion on their impact.

It is clear that OER's on their own are not yet being used extensively to replace study through more traditional campus and distance programming. However, it seems likely that social software will support the emergence of more robust forms of collaborative and cooperative learning that meets social as well as instructional needs of an increasing number of lifelong learners. Together these tools provide a promise of access that is of particular interest in regions where there is a severe lack of access to traditional higher educational programming. In Canada, if nothing else OER and social software used together and alone increase exposure to Net enhanced ways of learning. We can expect the more innovative public institutions and a host of existing and new private educational systems to actively deploy both of these tools in efforts to enhance the quality, quantity, profitability and hopefully the experience of higher education

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