OpenCourseWare and Open Educational Resources: The Next Big Thing in Technology-Enhanced Education?

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ABSTRACT

OpenCourseWare (OCW) and Open Educational Resources (OER) are two new and closely related educational technologies. Both provide open access to learning materials for students and instructors via the Internet. These are for the moment still very young technologies. While they have grown dramatically in just ten years there is still relatively little literature about their application in higher education. This paper will introduce the technologies, discus their potential, and offer some concepts for where researchers may take the topic in the future.

INTRODUCTION

As technology continues to play a larger role in the delivery of higher education educational researchers face an ever-changing landscape of topics and questions. Over the past decade focus has shifted from questions of if online education can work to how it can work to how to best use what is known to work. Hardware-related research has moved from what students can accomplish with technology at home with desktop computers to what they can do with laptop computers to what can happen with ubiquitous technology in the form of mobile computing. These and other issues will continue to offer questions to modern educators. Part of the challenge to researchers is to continually identify the next area demanding attention.

One rapidly growing new avenue of technology enhanced education is the creation, use, and adoption of OpenCourseWare (OCW) and Open Educational Resources (OER). While the expansion of these new technologies, both inside the United States and internationally, has moved at an astounding pace little exists in the literature about the real impact on education. Some case studies have been done but when compared to other educational technologies OCW and OER are still relatively unexplored areas. This paper seeks to first define OCW and OER and what they can do and also challenge the community of higher education researchers to pursue new knowledge about just what is happening with these tools in practice.

DEFINITIONS OF OCW AND OER

OCW and OER are similar resources. Both are digitized educational materials that are provided online at no cost to the user. Both can be used in similar ways for education and in some cases they are included almost interchangeably in research on the topic. There are, however, some distinct differences between the two technologies.

OER is the broader of the two categories. Hylen (2005) defines OER as, "Open Educational Resources are digitised materials offered freely and openly for educators, students and self-learners to use and re-use for teaching, learning and research" (p. 1). OCW is similar, but more narrowly defined. The OpenCourseWare Consortium defines OpenCourseWare (OCW) as "... free and open digital publication of high quality university-level educational materials. These materials are organized as courses and often include course planning materials and evaluation tools as well as thematic content" (OCW Consortium, 2010).

At a basic level, all OCW materials are, by definition, OER, but not all OER materials are OCW. The real differences are in breadth and organization. OCW materials are organized as

courses and as such have both a progression and volume of content that covers a large enough area of a certain field or topic to approximate what a student would encounter in a post-secondary class on the subject. OER may rise to that level, but at the same time may be as simple as a podcast of a single lecture or the sharing of a single presentation file.

These distinctions may be important depending on the need of the user. A learner seeking a large volume of information about a subject probably needs to find an OCW course; a resource that provides a full range of learning activities. For a learner seeking one specific piece of information the right OER could be the better, more efficient resource. As with many resources the right choice between OER or OCW depends on the requirements of the user.

A BRIEF HISTORY

At the time of this writing in 2011 OCW is reaching its tenth year of existence, originally launched by the Massachusetts Institute of Technology (MIT) in 2001 with content for over 1600 courses (Abelson, 2007). The stated goal of the program is to "...provide the content that supports an education" (Kirkpatrick, 2006, p. 53). Since the MIT launch other organizations have been created to organize and distribute OCW materials. The OCW Consortium boasts a membership of hundreds of universities and related organizations at the time of this writing (OpenCourseWare Consortium, 2010) and other universities have their own OCW functions, including the Johns Hopkins Bloomberg School of Public Health, Yale University, Carnegie Mellon, and Notre Dame just to name a few.

OCW has experienced large-scale growth, both at MIT and across other institutions. From the initial 1600 course launch of OCW at MIT their program has grown to over ten million users (Edudemic, 2011). Yet another study indicates that there are more than 3,000 courses available from over 300 universities internationally (Yuan, et. al., 2008). Other user statistics, outside of the membership of the OCW Consortium, are difficult if not impossible to attain. Because there is no central repository of OCW materials, nor any central record-keeping of OCW activity there is really no way to know how many people have accessed OCW courses or how often people do so.

Information about OER is even more difficult to obtain. Because OER materials can be as small as just a single multimedia file, produced and distributed by virtually any provider, there is no way to track individual access to OER resources. There is real educational value to the information contained in OER materials, but at the moment there is no detailed information about how or to what extent the information is being used.

To frame where OCW is in terms of the life cycle of educational resources online learning, a delivery method that is still maturing and growing, was officially founded in 1993. The United States Distance Learning Association recognizes this date as the time that Jones International University became the first accredited online university. So, online learning, something that many in higher education still consider to be new technology, was launched a full eight years before OCW came into existence.

THE NEXT BIG THING?

This paper's title is in the form of a question, not a statement. The reason for this is that the author is posing a question rather than sharing definitive results. Are OCW and OER going to be the next big drivers of online learning and blended course design? Will they impact higher education as a whole to the extent that online education has in the past several years? Will dedicated OCW and OER theorists begin to enter into the literature?

There are not any answers to these questions right now. What is important to higher education, however, is to openly ask these questions and openly discuss the possibilities. With so many organizations investing in OCW and OER, and so much material available, there is anecdotal evidence that these materials are popular, and perhaps even important. What is lacking, however, is literature examining and assessing the use of such materials in operational environments. While there is some, it is rela-

tively scarce considering the size of OCW and OER programs.

There are helpful guidelines available for how to use OCW and OER materials, and even some information indicating that people have taken advantage of the materials. A 2004 survey of educators using MIT's OCW found that 57% used OCW for course or curriculum development and 47% have adopted elements of MIT materials for use in their classrooms (Marguiles, 2004). Rennie and Mason (2010) provide a five step process through which OER materials, including OCW, are used to design a course:

1. Identify the main generic headings for course content (key topics for discussion and learning)
2. Search for relevant resources that can be re-used for these headings
3. Write 'wrap-around' materials that contextualize and support the learning resources
4. Add your new materials to the common pool (if required)
5. Select a format for sharing (a wiki, etc)

Thus, practitioners have roadmaps available for adopting and adapting OCW and OER materials for use in their classrooms. The question remains, however, as to how these materials are being applied today and how they may be applied in the future.

FUTURE POSSIBILITIES

There is some discussion in the literature about what OCW and OER may become in the future. Taylor (2007) foresees this possible future as one where,

> ...the OCW movement has the opportunity to expand its vision and operations to enable the OCW learners to have access to academic support, to have the opportunity to be assessed and to have the potential to gain credit towards recognized qualifications awarded by a credible accreditation agency (p. 3).

This possibility is not without its merits, and is in fact already in operation in at least one program at Fredrick Community College in the state of Virginia, USA. There, students can take advantage of freely provided online courses in emergency management and transfer those completed courses to the college, in addition to taking a college-provided exam, and pay a nominal fee to receive academic credit and eventually earn an associates degree in Emergency Management.

Duderstadt (2008) has a similar, if more encompassing, vision of what OCW may grow to become. The concept of the meta-university involves combining resources in a manner where, "Open source, open content, open learning, and other 'open' technologies become the scaffolding on which to build truly global universities..." (Duderstadt, 2008, p. 11). Duderstadt (2009) poses an even more forward looking projection by proposing that the combination of OCW, emerging technologies, and other social and educational factors could, in the future, yield, "...the linking together of billions of people with limitless access to knowledge and learning tools enabled by a rapidly evolving scaffolding of cyberinfrastructure; which increases in power one-hundred to one-thousand-fold every decade" (p. 31).

These are certainly bold predictions, events that, if accurate, would change the face of higher education for everyone. Such possibilities are the reason that these questions must be asked and research must be pursued. It is easy to look at predictions like the ones above and dismiss them as impractical or even impossible. If nothing else, recent history has shown us that such dismissals can be both premature and dangerous.

Looking back at the early days of online education, how many people then would have believed what has happened so quickly? Who would have believed that just one of many companies involved in for-profit education, Apollo Group, Inc., owner of the University of Phoenix and other providers, would grow to a market cap of US$5.66 billion at the time of this writing (Yahoo Finance, 2011)? The provision of higher education is something that is guaranteed to change, particularly as technology advances and

society's demands shift. OCW and OER may never reach the scale that some are predicting, but with millions of users already taking advantage of the technology it seems likely that it will continue to grow and exert more influence onto the educational landscape.

For practitioners and researchers alike the question becomes how to study this new sector of the educational landscape. Certainly, case studies of existing applications of OCW and OER will offer better insight into what the technologies may be capable of. Some of these have been done, but many more will be necessary to truly begin to understand how to optimize the technology's use. Beyond studies of what is being done, studies of what resources are available need to be pursued as well. Learning how big OCW and OER are, the rate at which they are growing, and where that growth takes place can serve to frame the technology and create a baseline from which to consider what will happen in the future.

Knowing what exists in OCW and OER will be a good start to the research. This will be complimented by further studies on how such materials are produced. This may be the area of future research that is best represented in the current literature, with much discussion of copyright issues and similar logistical concerns over posting open content. From this base there is a broad opportunity for research into methods for capturing, archiving, and distributing OCW and OER. Embedded methods for tracking use and linking institutionally hosted materials to more centralized OCW and OER repositories could also be explored and developed.

In addition to organizational and operational studies, pedagogical research will also be valuable as OCW and OER grow into the future. Studies of educational effectiveness, student response, and successful faculty use of the materials will all serve to provide sound pedagogical footings for more refined models of how to apply these resources in the educational community. Beyond this point there will certainly be more areas in which to focus research efforts. Most important will be a deliberate focus on OCW and OER by educational researchers of all types and the construction of a robust body of literature to support ongoing conversation.

CONCLUSION

The world is changing at an ever-faster pace and those changes include higher education. As technologies advance and access to technology spreads, more people will have the opportunity to use technology-enabled educational tools. Online education is still a growing, changing, and challenging aspect of blending technology and education, but it is not alone in its position. OCW and OER have the potential to foster substantial change in how and where people learn in the future. To be prepared for this potential change it is critical that educational researchers invest the time into studying these new tools and create a base of literature about what they are, how they work, and what they might mean in the future.

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