

Introduction

The Open Educational Resources (OER) movement is a clearly defined initiative that seeks to make quality educational materials available to a global audience. However, any discussion of OER must include mention of both connected and tangential issues that impact their creation, use, adaptability, dissemination and support.

OER as content or as process of creating content is an important consideration in light of the potential for their use in developing nations. Ownership of OER content is another issue that deserves attention as the majority of OER has been created in Northern countries where copyright has historically been taken for granted and freely sharing content may be a challenge for some. Language considerations, software requirements, technical infrastructure concerns and understanding what makes material open and freely available when everyone does not share the same technical infrastructure nor financial resources influences who can make use of and repurpose this open access material where appropriate.

OER also has the potential to both tacitly and explicitly support the Millennium Development Goals (MDG), specifically goal two, to achieve universal primary education by 2015 (United Nations Millennium Development Goals, n.d.). This is an important consideration for OER because OER seeks to provide open access to educational content and in doing so to minimize divides, cross borders and make quality educational content available to all. With the MDG goals only a few years away and being a focus for both North and South supporters of this target, OER is uniquely positioned to participate in working toward and possibly supporting the achievement of this goal. The exponential advances in

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technology also have the potential to support this goal because both OER and technology provide the products and the transportation system.

Lastly, there is the matter of financial support. In our current global environment, identifying universal goals, which was by the United Nations Millennium Summit (United Nations Millennium Declaration, 2000), has the potential to channel funds towards those agreed upon goals and away from other initiatives even if those other initiatives have as much potential. For example, Perraton (2007) explains the impact of agreed upon policy to British education expenditures,

In the dotcom era it was inevitable that the information and communication technologies and the digital divide would get a new prominence. But two other policy developments had a major bearing on expenditure, on the technologies or on distance education. First, the commitment to education for all by 2015 has increasingly dominated British policy. There was interest in alternative approaches to education if – and only – they could help basic education. Second, in the same period, British policy favoured sector-wide approaches to aid and providing budgetary support rather than funding individual educational activities. (p. 168)

Thus, where there is clearly stated and agreed upon policy, expenditures will more than likely gravitate toward funding that supports that policy. In addition, the other challenge will continue to be choosing to direct funds toward outside (my neighbors versus my family) interests.

Advance Organizer

This paper will explore the potential for OER in the South. The paper will begin by providing a historical overview of OER with a look at OpenCourseWare and the issue of quality. Creating OER content that is South-friendly and looking at OER as a process instead of simply materials will follow. In the section on OER as a process, there is a brief description of consortia and a longer discussion using the African Virtual University as an example of OER as process and the benefits of consortia for the South. The paper will conclude with discussions of the copyleft movement and FLOSS as two tangential yet critical issues in the creation, use and dissemination of OER.

History

Each time someone chooses to read a book out loud to a group of small children or each time a book is shared because it inspired it's owner or the first time someone posts a how-to guide on the Internet because they are certain that others who are struggling with a unique piece of equipment could benefit from knowing important use strategies that are not in the manual, educational resources are, in a sense, made open. Accordingly, defining the current understanding of what open educational resources are is central to their discussion. The term Open Educational Resources was "adopted at a UNESCO meeting in 2002 to refer to the open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes" (D'Antoni, 2008, p.7). Open Educational Resources are, therefore, not simply content made available, but content that is accessible through the use of information and communication technologies (ICT) with a goal of both utilizing the materials as they exist and adapting and customizing the materials. In other words, there is an expectation that ICT will facilitate the use of OER and there is

also the belief that OER can and will be modified with an understanding that the content is not to be sold or in any way commoditized, but used for educational purposes. In other words, non-commercial use is encouraged.

The United Nations Educational, Scientific and Cultural Organization or UNESCO has been a key player in the drive for OER and one of the originators working toward a clear definition of the term. At meetings with International representatives, the definition of OER was discussed and confirmed. The definition that captured the expansive scope of the current understanding of OER can be found in Section One of *Open Educational Resources: Conversations in Cyberspace*, edited by D'Antoni & Savage (2009),

OER is a very broad concept. A wide variety of initiatives and online materials can be classified as educational resources: from courses and course components to museum collections, open access journals and reference works. And, over time, the term has come to cover not only content, but also learning and content management software, content development tools, and standards and licensing tools for publishing digital resources. These tools allow users to adapt resources in accordance with their cultural, linguistic, curricular and pedagogical requirements. (p.8)

OER then is not just educational content, but can be individual learning objects and full courses with syllabi, recommended homework and ways to test your learning. Moreover, OER is expanding to include the various technologies and movements necessary to make OER functional. Without free and open software or copyleft initiatives that sanction the sharing of information and information

technologies, creating educational content with a goal of sharing is not enough to assure sharing. One such example is the OpenCourseWare (OCW) Initiative, a galvanizing segment of the OER movement.

OpenCourseWare Initiative

For many, the use of the term OER presupposes that the discussion will include MIT's OpenCourseWare initiative, as that initiative was for many the spark that ignited the OER movement (D'Antoni & Savage, Introduction, 2009,). OpenCourseWare, a type of OER, became popular after members of the Massachusetts Institute of Technology (MIT) decided to solidify their place in the distance education arena in light of their mission, "to advance knowledge and educate students" (MITOpenCourseWare, 2009). To that end, they piloted a proof-of-concept site that has continued to grow the amount of their course materials available. The MIT OCW initiative does not provide full courses, but course materials used by their professors in the courses taught. Their website clearly defines the material by what it is not. MIT OCW is not an MIT education, nor does using the materials lead to an MIT degree, MIT faculty are not available for questions or comments and the course content provided may not be all of the content used in any particular course (MITOpenCourseWare, 2009)). This is an important distinction in the discussion of OER because it concretely describes a type of OER that is more learning object than complete course.

A few years after the pilot site, the MIT OCW initiative joined with other OER groups to create the Open CourseWare Consortium as a way to reach global teachers, researchers and learners. The OCW Consortium includes institutions all over the world and is primarily provided in digital formats (see OpenCourseWare Consortium, Consortium Members, n.d.) The OCW shares the goals of OER and

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clearly states desire to globally share resources on the homepage of their website “institutions working together to advance education and empower people worldwide through opencourseware”

(OpenCourseWare Consortium, Home, n.d.).

In 2007, MIT celebrated a milestone in the OER arena. They were able to show that the majority of their class materials were online and available for sharing (MIT news, 2007). Currently, MIT has course materials for 1900 courses available as a part of their OpenCourseWare initiative (MIT OpenCourseWare, 2009). This accomplishment is to be applauded, but must be considered in light of what is being provided and how it can be used. Course materials are not the same as actual courses and need to be of high quality and adaptable to facilitate learning.

Quality

A part of the definition of OER includes references to quality educational materials (D’Antoni, 2008). The William and Flora Hewlett Foundation, a key supporter of OCW and the OER movement, also references the importance of providing “high-quality digitized educational materials offered freely and openly for anyone with access to the Internet” (Hewlett, 2005 p. 2)). When the William and Flora Hewlett Foundation Education Program began looking at the educational resources available on the web, they determined the following:

In 1992, when the World Wide Web was launched, open information resources rapidly became freely available, although they were of widely varying quality. With rare exception, the available materials neither promoted enhanced learning nor incorporated the latest technological and pedagogical advances. Educational institutions and

publishers, lack of quality assurance for the content, and information overload also impeded the educational impact. During the 1990s, the funding for information technology in education primarily emphasized access to computers and Internet connection and the basic literacy for their use. (Atkins, Brown, & Hammond, 2007, p. 1)

Thus an implicit goal of the OER movement is not just to further inundate the Internet with educational materials, instead it is to make pedagogically sound customizable materials available that can be easily translated and repurposed by anyone seeking to learn or to teach. Re-purposing materials adds an additional step for users in the South who may need to translate the materials in addition to customizing the materials for their environment. This leads to the importance of being able to create your own OERs.

Creating Content

Because OER content can be learning objects, courses, software and publishing tools, creating OER with the expectation that its use will be global is an important consideration for North-South collaboration. However, in any collaborative movement research has shown that collaboration within the target population has more potential for sustained impact. Perraton (2007) provides examples of the move toward South-South teamwork in the context of reviewing possibilities for open universities, establishing open universities and providing examples of how open universities can work in developing nations (pp. 177-178). Understanding that there are social and cultural differences that will impact new projects in addition to financial considerations is an important first step in implementing any projects where sustainability is a goal.

Sally Johnstone, the founding director of the Western Cooperative for Educational Telecommunications or WCET, addressed the OER elephant in the room in an article published in 2005 in EDUCAUSE. In this article, Johnstone briefly acknowledges the very real issue of concern for developing nations (also referred to in this paper as the South), which is the issue of imperialism. She offers two counter examples by emphasizing the influence that the South has had when creating their own open educational content. Specifically, Brazil's open medical content that increased sharing by non-Portuguese speakers and an effort by African countries to create a history course where each country would be able to tell their own story, which could greatly impact the teaching of African history in the North (p. 18).

Stephen Downes (2006) provides a detailed view of various models for sustaining OER in an article entitled Models for Sustainable Open Education Resources. In the section on content models, he emphasizes the importance of reuse and adaptability as prerequisites for sustainability (Downes, 2006). Other issues include licenses so that material can be freely modified and adapted and the importance of co-development so that any concerns about imperialism are mitigated by the creation of OERs by both Western and non-Western countries (Downes, 2006).

Downes (2006) also references Johnstone's (2005) discussion of imperialism and the example in Brazil as another way of emphasizing the importance of collaborative development. In addition, Downes quotes from a UNESCO conference where he states that

“Mohammed-Nabil Sabry began the session by presenting the French University of Egypt's experience of adapting and using four OCW courses. He set the agenda for much of the week's discussion, by arguing that OER use could be improved most effectively

through a shift from a “provider”/“user” paradigm to a community model of collaborative development. The artificial provider/user/organiser/sponsor roles attributed to different actors in the first deliberations on OER are constraining and misleading: the reality of OER creation, adaptation, use, advocacy and financing is less neat, but provides far more scope for creativity and sustainable development. As one participant characterised it, it would represent a move from ‘knowledge for all’ to ‘construction of knowledge by all.’”

(UNESCO, 2005)

Downes (2006) goes on to quote David Wiley (2005) who succinctly summarizes key questions for content creation in particular and OER as a movement in general when he poses the questions in his blog, “what is the future of open education? Where is it going? I think there is only one answer: localization.” Wiley (2005) goes on to define the use of the term localization, he says “I mean not only translation, but also things like replacing inappropriate media (e.g., pictures of little anglo kids getting off[f] a school bus on a snowy day when you’re using content in Africa) and aligning examples, metaphors, and other socioculturally-loaded bits with the local context.”

OER as a Process and South-South Initiatives

If localization and collaboration have the potential to benefit the use of open educational resources from a global perspective, then consortia become not just a viable option, but also a goal for OER use in the South. Whether groups are clearly organized or ad hoc groups of teachers, researchers and learners coming together to create and determine content use, communities of educators can take the building blocks of OER, learning objects, courses, course materials such as syllabi and lecture notes, software

platforms, open access methods for publishing content and content repositories and transform those building blocks into constituent parts of the assembly of OER as a process.

An organization that stands out as a transformative OER adopter is the African Virtual University (AVU). The AVU is an important example because their commitment to understanding how to apply OER in their local environment epitomizes the benefits that can come from collaborating, cooperating and sharing in the educational arena. To appreciate the importance of this willingness to share, one need only look at the Northern academic arena where research is made available to other researchers in journal (paper) or password protected (electronic) environments. This prevents the duplication of research and in some situations, provides a springboard for new topics or the opportunity for literature reviews. Both environments, however, typically require paid for subscriptions to participate in knowledge sharing or paid membership in a group that allows resource sharing among members. These environments may seemingly promote sharing, but it is a limited form of sharing inside pre-determined boundaries even when universities and colleges provide the funding.

The AVU, on the other hand, models the use of a consortium of members sharing knowledge, supporting accessibility and facilitating teaching, researching and learning without the need for paid subscriptions or membership fees. This might not be a true paradigm shift in that this sharing may have a longer history than Northern researchers may perhaps be aware of, but this process of coming together is uniquely positioned to support the use of OER in the developing nations space where OER is created, used, adapted, disseminated and supported for, in and by other developing nations.

Consortia

For the AVU, consortia, as a way of collaborating, cooperating and sharing, became the OER process via the AVU OER architecture. In order to create, use, adapt, disseminate and support OER, groups of educators, researchers, learners, policy makers, and institutions must come together and agree on methods, deliverables and next steps if the initiatives are to be successful. Interestingly, the primary definition of consortium is “a combination of financial institutions, capitalists, etc., for carrying into effect some financial operation requiring large resources of capital” (Dictionary.com, 2009). The secondary definition is broader and says that consortium are “any association, partnership, or union” (Dictionary.com, 2009). Both definitions apply to the use of consortia in the OER process because successful Southern education initiatives will be a combination of educators and educational institutions working to effect educational initiatives that will require significant output in time, money, materials and human effort.

The African Virtual University OER Architecture

OER as a process borne of a collective has the potential to be a better way forward for developing countries because the products created will be relatable and relevant. If an American company were to create hygiene training with an emphasis on the use of water and washing hands, sub-Saharan students might not be able to apply this information if water is not readily available. A sub-Saharan educator who knows the environment that will be receiving the hygiene educational materials has a better chance of customizing them and creating relevancy than the American company whose goal is also to educate and assist. For those in the South educating, researching and learning with others in the South means

that there is not delay in transmission of success, challenge, obstacle or failure. Feedback is instead timely, relevant and utilizable. The African Virtual University or AVU explains this potential,

The promise of OERs resides not only in the digitized information itself, but also in developing the methodological approaches and mechanisms that manage and ascribe meaning to them. The AVU believes this development is best achieved through a collaborative partnership that focuses on the four main elements of the OER evolutionary process: Creation, Organization, Dissemination and Utilization. The strategic combination of these elements within the 'AVU OER Architecture' will lead to the development of a dynamic, rationale and comprehensive OER strategy for African education and training institutions. (2005, p. 3)

The AVU identifies their process as architecture or a scaffolding of OER that supports, encourages and provides opportunities for the evaluation of OER use in their Southern environment by other members of the same environment. In fact, the AVU elements for creation state that the framework for that piece of the architecture focuses on "developing capacity to create OERs "from scratch," localization and contextualization of OER content," and the organization piece emphasizes the importance of "developing a knowledge sharing culture" (AVU, 2005, p.6).

The AVU network consists of 50 member states in 27 countries (AVU, 2007a). Because the AVU subscribes to the fundamental value of collaboration, they collaborate both inside Africa and with Pan-African and International institutions (AVU, 2007b). To that end, the AVU is committed to capitalizing on their local member states.

By involving African institutions in the entire OER evolutionary process, issues pertaining to epistemological, ideological, cultural and social relevance as well as technology related challenges are reduced while enabling these institutions to participate actively so that they drive and own the process in terms of form, content, structure and orientation (AVU, 2005, p. 4).

In addition to the emphasis on local collaboration, the AVU also seeks to make use of the material currently available. Their Research and Innovation Facility conducted a pilot study with MIT to determine how to increase the use of OCW in African countries in June of 2005 (AVU, 2005, p.8).

Their study enabled them to determine the key obstacles to OCW use and accentuated the need for OER sensitization in Africa. Thus, the AVU is clearly committed to working within their borders, but also to co-opting material and collaborating outside their borders where appropriate. These methods have the potential to lessen a concern that many share, as affirmed in the AVU discussion paper that, “African universities and other tertiary institutions may tend to participate as unequal recipients of content with little control over its origination and appropriateness. (AVU, 2005, p.4)

The Copyleft Movement or Adaptability and Dissemination

Re-purposing material that requires author approval before making copies available to students, requiring the purchase of duplicate approved copies, and any other restrictions on material use prohibits full access. For educators in the South, adapting material to the local culture, a significant requirement, becomes even more challenging when material is restricted in any manner. Open access, on the other hand, opens the door to adapting material to the local culture and in the local dialect. Francophone

students can benefit from Lusophone materials and materials created for Anglophone students can be adapted to support Arabophone students. Ultimately, where material is created or who created the material can become a non-issue because true sharing will allow for adapting materials for use by anyone, anywhere.

In order to facilitate material modification, OER proponents leveraged the tenets of the copyleft movement. Wikipedia contains a brief definition, “Copyleft is a play on the word copyright to describe the practice of using copyright law to remove restrictions on distributing copies and modified versions of a work for others and requiring that the same freedoms be preserved in modified versions” (Wikipedia, Copyleft, 2009). The copyleft movement originated out of the sharing of computer code in the 1970s. Later Richard Stallman, the name most commonly associated with the copyleft evolution, founded the free software foundation commonly known as GNU, which stands for GNUs not UNIX (GNU Project, 2009). Then Creative Commons licensing, “inspired in part by the Free Software Foundation’s GNU General Public License (GNU GPL),” released both free tiered licenses for sharing information at different levels and free web software to assist end users in licensing and/or sharing their content (Creative Commons, History, n.d.). Creative Commons licensing currently provides six license types that allow content owners to share as much or as little as they like and to identify how others can or should share and adapt the selected content (Creative Commons, Licenses, n.d.). Secondly, Creative Commons licensing is largely international with upcoming projects to include even more countries in the creative commons licensing collective (Creative Commons, International, n.d.).

With the ability to share and licenses to support sharing, adaptability becomes attainable. In a developing nation, re-authoring, re-purposing and re-using material is not simply a cost savings, but also affords access to current methods of teaching and learning. This is a critical area of concern for OER because culture touches both teaching and learning. In a study on culture and its impact on occupational therapy students, researchers looked at students at the University of Southampton and the Bangladesh Health Professions Institute. In addition the researchers tied their research to pedagogy because culture can and does impact student-teacher interaction, how students teach, and how educators instruct (Watson, Chapman, Adams & Nila, 2006). The study concludes with a statement about the connection between culture and education,

However, it is also important to recognise that learning inevitably occurs within a context likely to incorporate a framework constructed by the educator with reference to his or her own learning and teaching preferences or styles, as well as local social and pedagogical cultures. (Watson et al, 2006, p. 554)

OER adaptability, then, necessitates that materials be modified with an understanding of the culture receiving the materials if they are to be used to their fullest potential. As mentioned earlier in the reference to David Wiley's blog, the example of anglo children experiencing a snowy day may not have the impact hoped for when teaching children in Sub-Saharan Africa because the example is not as relateable as a group of African children experiencing a sunny day. This idea of re-purposing and in many cases, the need to re-author OER, further accentuates the importance of adapting OER to the local culture in a global environment.

FLOSS: The Importance of Dissemination

Non-proprietary software is another support leg of the OER adaptability and use backdrop. Christopher May (2006) introduces his theory regarding the use of non-proprietary software by explaining how the software can assist developing countries,

I suggest that the support for non-proprietary software (collectively FLOSS) allows developing countries to comply with their multi-lateral commitments and support the potential development of local software development. Because of the General Public License's dependence on copyright law, the deployment of FLOSS allows compliance with the Trade Related Aspects of Intellectual Property Rights (TRIPs) agreement, while at the same time facilitating the development of a local software 'community'. (May, 2006, p. 142)

Once again, the idea of 'local' takes center stage in the discussion of developing nations.

Because high costs can be prohibitive, quality open access software is just as important as quality OER. Software is costly and proprietary, which means that only the owner of the software can sell, modify or update the software. Intellectual property rights or IPRs further damage access to software because IPR gives the perception of value where there may be none or where non-proprietary software could compete. In addition most IPR owners will not do business in countries where their property is not protected and developing countries may not be able to guarantee that protection.

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This is where FLOSS or Free/Libre Open Source Software comes into play. FLOSS is also known as FOSS or F/OSS. FOSS was the first term, but FLOSS has become three term of choice due to the more International nature of the term. Wikipedia provides a description of FLOSS that explains the adoption of the term,

Proponents of the term point out that parts of the FLOSS acronym can be translated into other languages, with for example the "F" representing *free* (English) or *frei* (German), and the "L" representing *libre* (Spanish or French), *livre* (Portuguese), or *libero* (Italian), and so on. However, this term is not often used in official, non-English, documents, since the words in these languages for "free as in freedom" do not have the ambiguity problem of English's "free." (Wikipedia, FOSS, 2009).

Ultimately, FLOSS opens the software door in the OER architecture model. Free and open or adaptable software provides another avenue for the South to take advantage of when creating open (adaptable) educational resources.

Conclusion

There is no question that the various divides can severely limit the ability of developing nations to utilize OER (Lane, 2009). However, progress is being made and OER is uniquely positioned to deliver in the South because the tenets of the OER movement are increasingly localization and adaptability.

James Wolfensohn, a previous president of The World Bank and a pivotal player in the OER movement, summarizes the importance of localization to developing nations, "Whether they live on the plains or in the valleys, whether they live in slums or isolated villages, whether they speak Hindi, Swahili, or Uzbek,

people have one thing in common: They do not want charity. They want a chance. They do not want solutions imposed from without. They want the opportunity to build from within. They do not want my culture or yours. They want their own. They want a future enriched by the inheritance of their past."

(World Bank Archives, 2008)

There are many issues remaining to address, but an initial review shows that OER can be an effective tool for increasing educational opportunities in the South because a vital part of the OER movement is localization. Downes (2006) uses the concept of localization to support content creation, Wolfensohn (2008) to confirm what the people of developing nations want and Wiley (2005) to emphasize a key factor in any movement, sustainability.

The other thing everyone is talking about is sustainability. How do we keep funding activities whose main purpose is to be free of charge once foundation funding goes away? It seems like we may be approaching the problem backwards somewhat. I think everyone is looking for huge funding to support huge projects. It seems to me that sustainability and scalability are problematic only when people rely on others to do things for them (e.g., when a site gets slashdotted). Scalability and sustainability happen more readily when people do things for themselves (e.g., the same content distributed by bittorrent). Centralizing open educational services is less scalable / sustainable. Decentralizing them is more scalable / sustainable. Wikipedia has two employees and well over a million articles in multiple languages. We need to learn this lesson if open education is really going to reach out and bless the lives of people. (Wiley, 2005)

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OER definitely has the potential to increase educational opportunities in the South and the first step toward this goal would be localization with an emphasis on local creation, local use, adapting for the local population, dissemination to the local population and support for the local population. This local content could then be shared outside the local communities and potentially enrich the North with germane information regarding the South while opening the door for the South to become a an important voice in the OER movement.

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