Running Head: Pure Potential: The Impact of Open Educational Resources

Pure Potential:

The Impact of Open Educational Resources

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ABSTRACT

There is obviously a need for education alternatives, and Open Educational Resources (OER) has the potential to fill in some of the gaps and meet the increased demand for education. This paper purposes that OER has the potential to aid in bridging some of the educational gaps and meet the educational needs of millions of people worldwide. OER is just starting to get established and course materials are quickly increasing, but there are still some issues that are impeding the ability for the materials to get to those who need them most, especially in developing countries.

This paper will attempt to explore and describe what is meant by 'open' when discussing specifically OER, what OER is, and some of the gateways to accessing the multitude of resources available. It will also cover some of the opportunities as well as challenges of OER, and specifically how these issues relate to those people who are in need of these resources most, particularly in developing countries. A closing discussion will follow about the future of OER, and the necessity to change current teaching practices and help facilitate improved and wider uses.

Learning is a treasure that will follow its owner everywhere. ~Chinese Proverb

INTRODUCTION

Education is a basic human right as laid out in Article 26 of the United Nation's The Universal Declaration of Human Rights (United Nations website). In an attempt to deliver that basic human right, UNESCO aims at meeting the learning needs of all children, youth and adults, by 2015 (UNESCO web-page, education). At the same time, WikiEducator is a community project working towards a free version of the education curriculum by 2015 (Wikieducator, About). Furthermore, Sir John Daniels, President and CEO of the Commonwealth of Learning in Canada and founding member of Wikieducator, has presented a staggering look at the future of education "Half of the world's population is under twenty years old. Today, there are over thirty million people who are fully qualified to enter a university, but there is no place available. This number will grow to over 100 million during the next decade. In most of the world, higher education is mired in a crisis of access, cost, and flexibility. The dominant forms of higher education in developed nations—campus based, high cost, limited use of technology—seem ill-suited to address global education needs of the billions of young people who will require it in the decades ahead" (Atkins, Brown, & Hammond, 2007, p.33).

There is obviously a need for education alternatives, and Open Educational Resources (OER) has the potential to fill in some of the gaps and meet the increased demand for education. This paper purposes that OER has the potential to aid in bridging some of the educational gaps and meet the educational needs of millions of people worldwide. OER is just starting to get established and course materials are quickly increasing, but there are still some issues that are impeding the ability for the materials to get to those who need them most, especially in developing countries.

This essay will attempt to explore and describe what is meant by 'open' when discussing specifically OER, what OER is, and some of the gateways to accessing the multitude of resources available. It will also cover some of the opportunities as well as challenges of OER, and specifically how these issues relate to those people who are in need of these resources most, particularly in developing countries. It's not just about access though. Another big consideration is the need to reconsider the whole teaching process, while training teachers how to teach more effectively using OER and 21st century technology, (including web 2.0 applications, such as wikis, blogs, and social networking sites). Acceptance must also be gained for OER as a viable way to educate and gain knowledge. A closing discussion will follow about the future of OER, and the necessity to change current teaching practices and help facilitate improved and wider uses.

OER OVERVIEW

The open educational resources (OER) movement is just getting it's feet on the ground and becoming better established. The term 'open educational resources' was used for the first time in 2002, when it was adopted during a UNESCO conference (Giving Knowledge for Free, 2007). There is a wide discussion of OER among literature, and currently there isn't one definitive or standard definition. It can be difficult to define OER, since both technology and practices are constantly being improved upon and in a state of change, especially as larger numbers of people take notice and participate. One of the most widely used definition today is, “open educational resources are digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research” (Giving Knowledge for Free, 2007, p. 30).

OER includes learning content, tools, and implementation resources. Learning content can be described as full courses, content modules, and journals just to name a few. Tools consists of software that supports the use of the learning content, and implementation resources, such as licenses (Giving Knowledge for Free, 2007). The truth is that the definition of OER is very broad and many materials can be considered OER under this definition, so it it important to understand that not all materials are equally open in terms of licensing.

While all OER are available for use for free through the Internet, they are not all available for adapting, and/or redistributing. Depending on the type of license the work has been assigned. It is important to define exactly how to make materials free and completely open to anyone to modify, adapt, copy, and distribute etc., in order for them to have the greatest affect and make them as accessible as possible.

OPEN DEFINITION AND LICENSES

According to the 'Free Cultural Works' definition which was initiated by Erik Moller, with the idea in mind that “the easier it is to re-use and derive works, the richer our cultures become” establishes that completely 'open' works allow certain freedoms, such as modifying content or making copies (Wikieducator, what is free content) . The official “definition of "Free Cultural Works" is as works or expressions which can be freely studied, applied, copied and/or modified, by anyone, for any purpose” (Definition of Free Cultural Works Wiki). To be considered an 'open' work by the 'Free Cultural Works' standard than it must either be in the public domain, or use one of Free Licenses available. Another aspect is the format of the materials itself and if it encourages modifications. A very widely used format is the PDF, which does not allow for easy adaption, thus limiting it's user the freedoms set out in the free cultural works definition (Wikieducator, what is free content).

The emergence of open licenses from Creative Commons (CC), has enable authors and creators to copyright their works in ways that are less restrictive then current copyright laws, while still retaining some rights (Creative Commons, About). One of the great things about CC is that it allows users to build the license based on what best fits their needs and desires for their work. This has contributed to a large number of authors licensing their works under a creative Commons license and making them available for others to use openly. While there is no debating the fact that the creation of open licenses has had a significant impact on freeing up knowledge and helping to facilitate the OER movement, there is still wide debate about which licenses are best applied to OER so that they will have the greatest and most wide ranging affects on society.

MIT, one of the very first major institutions to publish their course materials for free, decided to apply a Non-Commercial (NC) license, and many institutions have followed suit. It may be that there was not enough understanding yet of the implications on users, especially in developing countries when they choose to license their OER under such a restriction. In developing countries where print based materials are often the normal tool of education, and are the only way people without computers can get information, selling copies is often the only way to offset the costs of printing materials, and may even provide another way that poor communities can raise their economic capabilities (Moller, 2007). Using the NC license really limits how OER can be used and benefited from. OER licensed under the NC option do not fall under the category of 'open' in the 'Free Cultural Works' definition.

A majority of OER are licensed under the SA or ShareAlike option, which restricts some uses, but is still considered 'open' under the 'Free Cultural Works' definition. The ShareAlike option stipulates that any re-use of the material must be licensed under the same license, which in essence seems like a great idea, since any ideas or material built upon that OER remains open

and available for everyone to use. Currently there is debate that SA is as harmful as NC, since it is not re-mixable. “Only 1/3 of Creative Commons’ own licenses are compatible in terms of cross-license remixing”(Wiley, 2007). Not having the ability to mix materials because of conflicting licenses is another disadvantage for developing nations to be able to combine resources for distribution. Using the CC-BY (BY stands for attribution) license, or putting materials into the pubic domain, is the best way to ensure that they have a chance to be used in any capacity, and therefore reaching and helping a larger and often more in need audience.

OER INITIATIVES AND GATEWAYS

OER can cover any educational level, from K-12 on up to higher education. There are currently thousands of OER available in all levels of education and more being created everyday, all over the world. OER initiatives can either be institutionally based, such as MIT or community based, such as Connexions. The differences are that in a community based initiative users can also participate as producers, so it's a two-way street. In a institutional backed initiative it is only a one way street, where the producers (who are often faculty or members of that institution), do not allow users to contribute to or modify their educational materials.

There are concerns that a community based initiative in which anyone can contribute makes it harder to establish a way to guarantee quality OER. Often an institution based initiative will only convert course materials that have already been vetted by a group of administrators or policy makers, so many other educators do not call into question the quality. While institutionally based initiatives are more likely to have a source of stable funding, community based initiatives are more likely to stimulate or encourage the growth of knowledge, and allow the public at any level to get involved in the OER movement. The re-use of information is what helps the growth of society and allows for innovation and creation of new ideas. This is one of

the great potentials of OER, but only if educational materials are freed up and allowed to be built upon.

The sheer volume of materials can be overwhelming to OER users, and finding the initiatives or the items they need may prove difficult. Making materials accessible and easy to find is one of the challenges facing the OER movement. Luckily there are a number of important community wiki projects, such Wikieducator, Wikiversity, and UNESCO OER community wiki, that have emerged to support the distribution and development of OER. Both the Wikieducator and UNESCO OER community wiki offer a page of links to useful resources and portals associated with OER. Some highlights of the major portals or gateways that are helpful in finding OER materials are as follows (all material came from Wikieducator's webpage of Exemplary Collection of Open e-Learning Content Repositories):

- MERLOT, which stands for Multimedia Educational Resource for Learning and Online Teaching, has more than 14,000 resources available for free. It was designed for faculty of students of higher education and basically is a catalog of online learning materials. One of the great things about MERLOT is that the materials are organized into specific disciplines, making it easier to find materials.
- OER commons is one of the largest resources, having over 120 content partners and providing access to over 24,000 items for educators and learners. One of the cool things about OER commons is that it uses some Web 2.0 features, such as tags, ratings, comments, and reviews to help connect educators and give them encouraging online experience.
- There is the Open Courseware Directory (OCD), which has 7 groups of discipline specific courses, and provides a annotated listing of courseware from the world's

universities, colleges and other educational institutions. The OpenCourseWare (OCW) Finder "currently shows results from several collections: MIT OCW , Utah State University, Johns Hopkins School of Public Health OCW, Tufts University OCW, Foothill De-Anza SOFIA, and Carnegie Mellon Open Learning Initiative" just to name a few.

- The Resource Discovery Network (RDN) is "the UK's free national gateway to Internet resources for the teaching, learning and research community. It is a collaboration of over 70 educational and research organizations, including the Natural History Museum and the British Library. It gives access to over 100,000 resources."
- UNESCO Open Training Platform (OTP) is another gateway that provides an access point for training resources. The site currently offers over 3,000 training resources, and it is specifically targeting developing countries (UNESCO Open Training Platform).

OER USERS AND LANGUAGE TRANSLATIONS

Even though there are millions of OER available, very little is known about who uses and produces the available OER, and more research needs to be done concerning users and producers. The institution based initiatives, especially at universities who use their own faulty to produce materials try to keep track of who their users are, but many OER repositories do not require any type of log-in procedures to keep track of users (Giving Knowledge for Free, 2007). By far the biggest contributors to OER projects and materials are from English speaking developed countries (Giving Knowledge for Free, 2007). The data that is available does show that users access OER from all over the world. For example, "In January 2007 Connexions reported that it is accessed by more than 1 million people from 194 countries" (Giving

Knowledge for Free, 2007, p.50). Many of the users are either educators, or self-learners, who have already had a formal education.

Repositories that incorporate OER in different languages have an increase in users. It not only affects the number of visitors to a site, but also has an impact on where the visitors came from. “MIT OCW translation affiliation sites account for the most dramatic increase in traffic during the last year, with 3.4 million visits recorded to their four translation sites during 2005” (Giving Knowledge for Free, 2007, p. 50). This is why translation projects are essential in spreading the use of OER. Amazingly translation projects that make current OER available in multiple languages, represent only 9-10% of all open courses, but received nearly 50% of the total traffic to OCW courses” (Giving Knowledge for Free, 2007, p.43) This is a clear sign that more efforts are needed to translate OER to multiple languages.

OER IN DEVELOPING NATIONS

Although there are some initiatives that are geared toward developing nations, much more can be done. One of the great things about OER is that they facilitate collaboration and sharing of resources, which can help to cut costs for nation's that have a hard time covering educational expenses. OER has the potential to have great impact on developing nation's by enabling freedom of education, but there are a number of challenges in not only getting OER to the developing world, but getting them to use it and create culturally significant materials themselves. If OER has a chance to help deliver much needed education to those in developing nations, than some major obstacles must be overcome.

The UN's commitment to bringing basic education to everyone worldwide by 2015 is a gigantic endeavor. If they are going to have any chance of succeeding OER will definitely have to play an important role. The biggest challenges to reaching that goal is providing education to

those in the very poor rural developing areas of the world. The greatest inhibiting factor in all these scenarios is a lack of technological infrastructure. There are some advances being made, such as the One Laptop per Child (OLPC) program that "focuses on durability, low power consumption, and network connectivity, with an initial target price of US $100" (Hassin, Mora, Muegge, & Pullin, 2008).

Another way to deliver OER content may be through the use of cell phone technology, since in developing countries far more people have cell phones or access to a cell phone then they do to a computer. Cell phones are favored, because they are less expensive, and do not require being literate to use. "As a result, close to 2.5 billion people in developing countries will own a mobile phone within five years, and a larger number will have shared access to a phone, a potential 'market' for 'massification' of education in both school and non-school contexts"(Atkins, et al., 2007, p.43).

Another encouraging factor is that in the next five years, mobile phones most likely will have the processing power of today's PC (Atkins, et al., 2007). These combined factors ensure that a great deal of people in developing countries will use mobile phones for Internet access, thus opening up even more possibilities for OER to reach new users.

There is no doubt that technology and the infrastructure to support it will evolve and improve, and this will help encourage use of OER. There are other factors involved in getting people in developing countries to use and contribute to OER. Mathias Hatakka, presents the findings of a case study done in Sri Lanka, and Bangladesh, which examines some of the challenges faced by developing nations in terms of "Which inhibiting factors for reuse do content developers and teachers experience in developing countries experience"(Hatakka, 2009, p.2).

Some of the main factors relate to educational regulations, language, computer literacy, and teaching practices.

Education regulations that are imposed at both at national level and by universities make it difficult for educators to use OER in teaching. According to Hattakka, "In Bangladesh, before being allowed to run a course the universities have to receive permission from a grant committee and to receive the permission the universities have to provide a list of which text books to be used in a course" (Hatakka, 2009, p.7). At the university level rules often are very strict about what can be used in the curriculum. This does not encourage an atmosphere of using OER, and actually makes it nearly impossible for OER to get established and noticed as a useful tool in the eyes of officials, as well as educators.

Another difficulty is related to language translations or style, such as slang, or a choice of words that may make it hard for students to understand the materials. Some of the instructors from the study said that it was just easier and less time consuming to base their classes off textbooks, and that they could make the material suitable for their students using local examples (Hatakka, 2009). Some other obstacles given are the time spent searching for appropriate OER materials, and then the time spent adapting those materials to a context and level that students could understand.

"Modifying open content to the context of the students is however seen as time consuming and one informant said that creating own material is preferred since it takes less time compared to modifying open content to fit with the context of the country" (Hatakka, 2009, p.9). This is very problematic since there is a real need for educators and content producers in developing countries to contribute OER that are culturally significant to make it easier for more people to use and adapt locally produced materials. Many of the study participants had very low

computer and information literacy skills, which greatly inhibits the effectiveness of searches or the possibility of finding the right materials for their purposes. Teaching traditions or style also has an affect, and many developing nations are textbook dependent, and are convinced that the textbooks are a superior and trusted source to use. “One informant said that he rarely uses Internet in content development as the information he needs only is available in text books and cannot be found on Internet” (Hatakka, 2009, p.12). Teachers also are concerned that their intellectual creativity is compromised when using Internet resources, and many see it as their job to transfer their perspective to the students, and decide what information students get access to (Hatakka, 2009).

OER AND TEACHING

In a way this could be seen as the traditional knowledge transfer from a teacher centered approach, which has been the standard educational practice. The OLCOS Roadmap (2007) report suggests that in order for OER to really have an significant impact on teaching and learning, current teaching practices need to be changed. “In particular, OLCOS warns that delivering OER to the still dominant model of teacher centered knowledge transfer will have little effect on equipping teachers, students and workers with the competences, knowledge and skills to participate successfully in the knowledge economy and society” (OLCOS Roadmap 2012, 2007, p.12).

Young students who have grown up with technology and are used to it's capabilities and the interconnectivity of the Web. They “learn from and with their peers as much as from standard sources of authority”, and that they are “inherently collaborative learners who want to learn by doing” (Atkins et al., 2007, p.). The roadmap points out that “students recall as little as 5 per cent of a lecture or 10 per cent of what they read, but remember more than 75 per cent if they

"practice by doing". (OLCOS Roadmap 2012, 2007, p.38) Many of the "social software" based tools and services on the web, including blogs, wikis and RSS feeds provide an opportunity to "practice by doing", and ultimately enhance both teaching and learning (OLCOS Roadmap 2012, 2007, p.21). These tools have the potential to make OER more effective and viable. In order to incorporate these innovative learning tools and practices "educational institutions and teachers/tutors must change their role from dispensers of knowledge to facilitators of individual and collaborative learning and knowledge development" (OLCOS Roadmap 2012, 2007, p.40).

CONCLUSION

There is great need for educational materials to be shared and distributed worldwide to meet the current and future educational challenges. OER coupled with improved technological infrastructures, and tools, have the potential to meet that need. Millions of uneducated people suffer needlessly because of a lack of educational resources. Getting educated can have a great and lasting effect on a persons life, their community, and ultimately the world. In developing counties an education can make the difference between economic stability and poverty. As people became educated and started to create their own OER materials. Copyright licenses would also start to reflect the needs of those nations, and possible stimulate economic and technological progress.

It can enable entrepreneurship by providing users with "knowledge and skills to do things that they could not do before", and some may be able to earn a living by "distributing OER in a paper based format" (Hassin et al., 2008). There are many people and projects working on granting everyone equal opportunities to education. The potential benefits are significant, according to Atkins et al. (2007), "there is hunger among ordinary people to learn English better, to improve their business skills, to learn how to do specific technical tasks that improve their

employability" (p. 32). A promising example of OER that attempts to help meet needs in India is the "e-GyanKosh project initiated by Indira Gandhi National Open University (IGNOU) which is actively involved in developing the OER materials for training of youth, unskilled and semi-skilled workers" (Jena, n.d.).

In the future technological infrastructure will grow, and access to OER will increase. This will enable contributors from other nations to add cultural significant materials. As OER becomes more widely available, accessible, and accepted, it will become an important part of closing the educational gaps, especially for those who need it most.

The challenges won't be easily overcome, but as more people recognize and participate in OER creation, organization, and development, the beneficial outcomes will become more prominent and visible. It is equally important that current teaching practices or methods be reconsidered if OER is going to have any significant and lasting impacts.

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