

Conference Report: Open Education 2007

"OERs will really start to succeed when they can augment our experience of the learning space that is the entire internet, instead of sitting off to the side and requiring learners to self-identify that they want an OER." [Scott Leslie](#), researcher

Open Education Resources (OER) are educational material and resources that the general public can freely use for teaching, learning, and research. Like Open Source Software (OSS), OER contain content that is freely reused and redistributed without the traditional restrictions imposed by copyright. OER also includes the tools used to develop, improve, and distribute this content to communities.

The [Open Education 2007: Localizing and Learning](#) conference was held at Utah State University in September. The conference focused on the ability of people to learn as simply publishing OER content online does not guarantee that it can be effectively used for learning. This theme was investigated from two perspectives. The first was from the developer perspective with the sharing of efforts to localize the educational content and make it more relevant to the people using it. The second was from the user perspective where organizations utilizing or deploying OER spoke of their experiences, challenges, and successes.

This report provides an overview of the sustainability, localization, technological, legal and interoperability issues raised at the conference. It concludes with the authors' views regarding the future direction of OERs, based on their research being conducted at Carleton University's Technology Innovation Management program.

OER Sustainability

OER localization and sustainability were central to many presentations. Many of the represented OER projects are suffering from sustainability uncertainty, either on the education front lines or in application development and enhancement. Most organizations developing OER are dependent on grants and institutional funding for their survival, and admit that this is not a robust sustainability model.

The authors argue that a first step to building OER sustainability is developing a thorough theoretical understanding of OER and the issues impacting those participating in the OER community. Yet, only three presentations were primarily based on academic or management theory.

The first was a presentation of a grounded qualitative study into the benefits for professors who develop Open CourseWare (OCW) content. The researchers uncovered a wide variety of benefits including increased exposure, improved networking, increased class enrolment, and easier curriculum dissemination. The [study](#) represents a first attempt to perform a rigorous study on the topic of OER adoption motivations using a generally accepted research methodology.

The second theoretical study used discourse theory (communication analysis) to analyze the different ways in which two OER communities, MIT and UK Open University, convey their goals and objectives to different audiences. The findings show that the messages conveyed to the faculty and students developing and using OER are very different from the messages conveyed to the universities' upper leadership. This [research](#) suggests that the current sustainability of these two programs is precariously dependent on very different messages being conveyed, and accepted, by different parties who have

varying interest in the future of the OER projects.

The third theoretical presentation was given by the authors of this article. Their conference paper was co-authored with Steven Muegge and can be found [here](#).

There were numerous non-theory presentations which addressed sustainability from a more practical point of view. Continuously changing intellectual property issues such as copyrights and licenses were carefully considered. Closely related were problems surrounding standards for content and content management. These issues are becoming more significant in the OER domain as localization and adoption in developing countries exposes new cross-jurisdictional and technological difficulties.

OER Localization

Many individuals and organizations presented either their efforts to use and localize OER in their regions or expressed their desire to investigate OER to support their particular education efforts. Entities such as the United Nations (UN), non-governmental organizations (NGOs), and governments of developing nations figured significantly throughout the conference and there was a keen interest in localization efforts in developing regions of the world. The problems associated with localization in both the developed and developing world has also been a focus of recent efforts to enhance the applications that support OER. A wide variety of issues were raised surrounding the roadblocks impacting the ability to localize OER. Two key sets of roadblocks were addressed, namely the physical barriers due to ineffective technology and the lack of institutional infrastructures, and the legal barriers created by intellectual property protections.

It is very difficult to engage groups in using OER if the content is not sensitive to the language, cultural, and political differences between OER developers and users. When content must be localized, who is ultimately responsible for that localization? Should the developers be the ones who adapt it to the different markets they are targeting or is it up to the users in the market to adapt the content themselves?

Some argued that content must be intelligently adapted by developers if they want to see content adoption by the OER community. Others argued that it is impractical for the developers to be sensitive to all of the issues important to a particular market. Allowing users in the market to adapt the content engages and empowers them to develop and adapt OER on their own, therefore increasing the likelihood of the content being effectively used.

Underlying Technology

Many NGOs expressed a keen desire to see continued growth of open content being produced in the OER community. Their main concern with delivering education to developing countries is the difficulty in making OER available in areas lacking significant technology infrastructure. Many of the representatives insisted that the OER community must solve the issues associated with rights and licenses and make it transparent for OER users. The proliferation of OER technologies and licenses presents major challenges to the ultimate sustainability of the OER community as the content becomes less interoperable. Similar to OSS, different OER content licenses can be incompatible with other licenses. This creates difficulty when remixing content to meet specific educational or localization requirements when a single source does not suffice.

Making a general repository for OER also becomes complicated since a system must clearly track and

convey to the user the license associated with a particular piece of content. Some OCW systems attempt to address this tricky problem by allowing every piece of content, paragraphs or even individual words, to have an accompanying license placed in meta-data so that the license can follow the content as it is reused and remixed.

Ultimately, license incompatibilities prevent the remixing of content, regardless of how smart a particular content management system may be. One solution is to encourage authors to put their work in the public domain. However, this is not always possible as some jurisdictions, including the EU, do not allow citizens to put anything in the public domain as that right is reserved for government institutions.

[Creative Commons](#) licenses allow authors to give users the same rights as if the content was in the public domain, but with some limitations, such as attribution, while avoiding the EU problem. Unfortunately, commonly used share-alike clauses still make it almost impossible to adapt content to meet the license limitations of other content. With several issues at stake--education, empowerment, gender equality--the NGO representatives felt it was vital to use OER without concern about which content is suitable for use. In other words, it is their responsibility to overcome the physical barriers while it is the responsibility of the OER community to find a solution to the legal barriers associated with rights and licenses.

The following NGOs shared their experiences using OER to achieve their goals:

- [Youth Managed Resource Centers](#), a provider of technology and computer skills to rural communities in Nepal; given their limited resources, they were interested in OER that could be used offline and independent of Internet connectivity
- [Teachers Without Borders](#), an international NGO devoted to closing the education divide, is trying to harness the potential of OER as a tool to supply their volunteer teachers and learning centres with appropriate, free and customizable content
- [Teacher Education in Sub-Saharan Africa](#), a research and development programme creating OER and course design guidance for educators working in Sub-Saharan African countries

Numerous OER applications were showcased. [OpenCourseWare](#) represents one of the largest concentrations of OER content, but the content is not always easy to remix. This can be circumvented by downloading the content and modifying it in a manual way, but this is inefficient. To address this, [OpenCourseWare In Motion](#) harvests OCW-based [eduCommons](#) course content and allows the import of selected portions into a wiki system. Through the wiki, users can modify content and allow other users, such as students, the ability to further modify, extend, or discuss the content. This technology also benefits from other wiki capabilities including basic user administration, tagging and tag clouds, and the ability to effectively build links to navigate the content.

[WikiEducator](#) provides a collaborative system for developing course content. Unlike OCW systems that often employ a rigorous interface to collect and structure the content, WikiEducator was designed to provide flexibility to authors to create content and to simplify methods to remix and discuss. Sufficient structure is supplied so the author can identify consistently formatted objectives and activities for the students to use as learning objectives for the material.

There were presentations by numerous universities, such as Utah State, Penn State, and Yale, demonstrating their different implementations of OCW or other competing OER deployment technologies. Many of these organizations gave valuable insight into their particular successes or failures in trying to implement and localize their own OER systems.

There were a number of efforts to connect this growing supply of OER content and capabilities to make it easier for individuals to find the specific content, irrespective of the content's location. Google is participating by providing support for searching, OER content organization, and means to identify licensing. Presentations from the [National Repository of Online Courses](#) and [Flat World Knowledge](#) showed promising efforts to provide micro-publishing support for OER content. Basically, the goal is for professors and students to be able to pull together the content they desire and then have it printed and bound like a textbook, but at a fraction of the cost since the content is freely available.

Rights and Interoperability

Another solution proposed at OpenEd2007 is an Open Education License or [OEL](#) that confers all of the advantages of the public domain without any of the restrictions of other licenses. Most importantly, this will make OEL licensed content completely compatible with other licenses while meeting cross-jurisdictional requirements of not waiving rights to content. Granted, when OEL licensed content is mixed with other licensed content, the product will fall under that latter license, but the original content will still remain freely useable by anyone. This will also open the door to contributors in jurisdictions that do not give the right to put content in the public domain.

Standards and Interoperability

At the moment, interoperability is essentially limited to content within a particular content application or OER project. The development of standards to support interoperability is underway in a number of projects, including [Curriki](#). These efforts attempt to address broad issues related to the metadata problems associated with OER, such as technology frameworks and rights alignment. There are fears that if the OER community does not begin adopting technical standards, OER will continue to evolve as a collection of incompatible content that is as collaboratively limited as traditional web content.

OER must also differentiate from regular web content by supporting educational standards meeting the specific learning objective standards set at the state or federal level. The benefits to OER projects adopting standards are twofold. First, it will enhance interoperability; however, the proposed standards are for the construction of content that meets learning objectives and is not inherently concerned with meta-data, licensing, and the other limitations of technical and legal interoperability. Secondly, meeting educational standards increases the ability of OER to be adopted as approved curriculum in the jurisdictions to which the standards apply.

Unfortunately, the benefits of OER meeting government educational standards are not practically realizable at this time. There is a standards framework in place in the US, for example, but only one state has adopted the standard. However, there is great potential in the standards and there are efforts to adopt and implement them by many state governments.

Insights

OpenEd2007 was successful at educating people and organizations from different disciplines about how to take OER to the next step in different environments. All conference participants gained new insights about the potential for widespread education enabled by OER.

Localization was highlighted by powerful presentations from NGOs working in developing nations. These demonstrated that progress is being made to meet the goals of the United Nation's

[Education For All](#). However, all participants in the OER domain must overcome physical, technological, and legal barriers to localization. There is also the question as to what roles each organization plays in localization efforts and who is responsible for overcoming these barriers.

Academic and management theory can be used to assess the current sustainability problems and suggest possible solutions. Intellectual property concerns were also central to the sustainability discussion. The growing number and nature of licenses is creating problems for interoperability and compatibility between education sources. On a larger scale, cross-jurisdictional problems regarding open content require more attention.

OpenEd2007 raised many issues that researchers and OER practitioners can take away and hopefully develop solutions to be discussed at future OER conferences.

Future Directions

OER have a significant and growing presence in the education systems of developed countries. Unfortunately, their impact in developing countries remains below its potential. There is, however, a growing desire from a variety of organizations to bridge the digital divide and bring both technology and education to the developing world.

Currently, it is unclear how different forces are impacting innovation in the OER domain. The motivation and ability framework described by Clayton Christensen in [Seeing What's Next: Using Theory to Predict Industry Change](#) is one possible perspective. In systematically applying this framework, we find that although organizations such as the United Nations (UN), various UN agencies, and other NGOs have mandates that provide them with the motivation to provide localized OER to developing countries, they lack the ability to effectively do so. On the other hand, Western businesses, universities, and governments of developed nations have the financial and technological capability to enable this evolution of education, but they lack the required motivation. We observe that various forces are currently at work to shift the motivation and ability of these organizations. The signals of change we assess are an environment conducive to innovation, the availability of low cost computing and OER supporting technology, and increasing NGO technical capabilities and localization initiatives.

Strategic choices by participants in this emerging industry will shape its future direction. Management theory predicts that progress from innovation requires both the motivation and ability to innovate. For those groups with the motivation to improve education in developing countries, the development of new technologies and OER will complement their existing educational infrastructure. For those groups with the required ability, partnerships will create a viable option for education.

OER complement existing educational technologies by enabling better learning without compromising other national priorities for education. We also [identify and assess](#) the impact of potential hurdles in the path to widespread innovation of OER in developing countries, and summarize the implications of our analysis for researchers and policy-makers.