

# Open Educational Resources for Development of University Courses

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## **Abstract**

Open Education Resources are educational materials purposely made available for free use by others. They offer tremendous potential for reducing costs and increasing access to education especially in the developing world. This paper discusses issues of quality, localization, adaptation and integration that need to be addressed in order to make OER adoption a successful strategy.

## **Keywords**

Open Educational Resources (OER), curriculum development, barriers, sharing

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# Introduction to Open Education Resources

Open Education Resources (OER) are web-based educational materials that have purposely been made freely available for the re-use by others. Whether for informal or formal learning, they offer an alternative to developing new course materials or purchasing content from a publishing house. UNESCO (2002) noted the potential benefit of OER for expansion of education in the developing world. If materials could be freely shared, then there would be less expense in curriculum development for new courses. Over 200 educational organizations have signed the Cape Town Open Education Declaration (Open Society Institute, 2007) a manifesto to remove barriers to education through the sharing of OER. In principle, users of “open” educational resources are free to use, adopt, modify and re-publish the materials to suit their own purpose. Creators of materials may assign specific rights to the reuse of their OER and usually do so through a Creative Commons License (Lessig, 2010). The most common license provisions require acknowledgement of the source, but allow free non-commercial use.

The OER approach is growing in academic journals. For example, Athabasca University Press publishes the *International Review of Research into Open and Distance Learning* as a free online electronic journal. An annual grant helps cover the editing costs, and Athabasca absorbs the overhead of the electronic infrastructure. Now in its tenth year, IRRODL has become one of the most widely read and cited journals in the field of Distance Education. Although the journal is distributed for free, it maintains a rigorous academic review standard using the Open Journal System – open source software that itself is free to use.

AUPress has also produced a free series of academic books *Issues in Distance Learning* (Anderson, 2008) that have rapidly achieved high levels of readership. Free distribution makes academic content that has largely been produced through government research grants by publicly funded academics available to a much larger audience than traditional distribution channels. Once again, the benefit of this openness is particularly felt in developing countries.

In a traditional publishing model, the market provides a financial incentive to produce and update quality texts, ancillary materials such as study guides, images and examination banks, and to invest in their marketing and distribution. These costs are passed along to the students and become a major part of the cost of education. Unfortunately few students in the developing world can afford commercial textbooks. Free materials provide an alternative, and the growing cost of texts has already inspired collaborations between Rice University’s Connexions and the Community College Consortium for Open Educational Resources (CCCOER) to produce open textbooks (Baker, Thiersten et al, 2009). In addition to the economic incentives, open textbooks can be made available for digital distribution – thus they could be openly vetted and adapted by faculty to ensure accuracy of content and enable selection of material relevant and appropriate for the target audience. While the benefits seem obvious, many questions arise about the economic sustainability of the OER approach.

While a growing number of projects and consortia are forming to share educational media resources, individuals are also contributing to the growing pool of open resources. Informal learning has been flooded by the thousands of ten-minute videos that have been posted on repository sites

like Youtube.com. These “how-to” vignettes cover most every topic from piano jazz to calculus. Whatever the motivations of the producers, their continued growth whether measured in available videos or number of viewers is probably the strongest indicator that there is a sustainable market for open education and that schools, colleges and universities no longer have a monopoly on the distribution of knowledge.

## The UWI-AU Pilot Workshop

Despite their apparent popularity, a number of pragmatic issues such as availability, quality, format, and copyright surround the use of OER in academic settings. In 2010 the University of the West Indies Open Campus, and Athabasca University conducted a pilot workshop to see if Open Education Resources could actually be used to construct university level curricula. UWI was interested in increasing its distance education offerings throughout the sixteen Caribbean countries it supports and a masters program in Instructional Design could provide the skilled designers to produce the new courses. Coincidentally, Athabasca’s Centre for Distance Education was also interested in expanding programming to offer an online graduate program in Instructional Design. A Cooperative venture using Open Education Resource would greatly advance the interests of both organizations and the use of OER had the potential to reduce costs of development.

**Workshop preparation:** Draft outlines from each university’s program proposals were compared to identify six common modules of interest. The next step was to have research assistants conduct an internet search to identify available materials. Then, the workshop brought curriculum development leaders from each university together in Barbados for during the first week of May. Their goal was to come to a consensus on the format of the module specifications, to select appropriate resources, and to report on the feasibility of the approach.

The search for available resources was conducted over a week in April. Each module was assigned to a research assistant, and they were provided with the module topics and a list of known OER repositories. They were also allowed to search using Google. Both research assistants had previous training on evaluation of on-line learning objects using the Learning Object Review Instrument (Nesbit, Belfer and Vargo, 2002). The LORI evaluation criteria were slightly modified to meet the needs of the project, and an on-line SurveyMonkey form was used as a quick database to enter relevant resources. Results and observations of the researchers were posted on the project wiki at <http://uwi-au.wikispaces.com/>.

The search results showed that finding relevant OERs was not an easy task. Many of the repositories turned out to be project sites that pointed to other repositories. Many of the repositories had poor meta-data or poor search mechanisms. Google search proved much more efficient in locating objects than approaching repositories directly or going through federation gateways such as GLOBE ([www.globe-info.org](http://www.globe-info.org)). As copyright ownership and usage permission were often unclear, particularly when a site obviously embedded content from a third party, the advanced search function on Google proved advantageous as it allowed filtering for materials that had a Creative Commons license. Objects that were found varied greatly in target audience, format, content quality, and size. Few met the SCORM concept of a learning object as a complete unit of instruction; most were text documents, web pages, images or videos. The OER world is very much “buyer beware”:

you get what you pay for, but the price is patience. Eventually, eight to ten OER were recommended for each of the six target modules.

**The workshop:** Curriculum specialists from AU attended the weeklong workshop along with a group of instructional designers and media producers from UWI. The first task for Monday (day one) was to settle on a specification template that could be used for all modules. Fortunately a developer from UWI had brought along a template that all agreed would be sufficient for the task. The research assistants called in by Skype and gave a one hour summary of the work they had done, highlighting the reasons why the recommended resources had been selected.

The group was then divided into three teams of three or four people each, the project leads from both AU and UWI were also assigned to groups but ended up spending most of their time moving from group to group to advise on the process. Each team was assigned two of the modules and progress reports were made at the end of each day with a final review of the products and accomplishments on Friday morning (day 5).

Each team had five tasks:

1. Review the draft program proposal to specify learning outcomes for each module
2. Provide a draft treatment for learning activities that might best produce the outcomes.
3. Review the recommended learning objects to decide if they were appropriate for the revised outcomes.
4. Identify new OER and supplementary (commercial or institutionally developed) resources that could be used in meeting the objectives
5. Document the module specifications using the agreed upon template.

#### **Workshop outcomes**

Each team was able to complete the module specifications using Open Education Resources. In many cases they were surprised that some OER had been made available by the same authors who had successful commercial resources.

#### **Discussion:**

OER in the area of Instructional Design do provide a feasible alternative to purchase of commercial materials or to the development of new curriculum resources. The range of available resources will probably vary with the content area. OER can be used directly, they can be re-purposed to meet local needs, or they can provide models for developing new resources more appropriate for the target audience.

Many resources offered as OER have unclear copyright information – this is particularly true of web sites and documents that borrow heavily from other web sites without documenting the copyrights associated with the embedded materials. OER with unclear copyright or licensing information were unusable by the workshop participants.

Despite the amount of effort that has poured into learning object repositories, Google seemed to be a more efficient search tool, particularly since the advanced feature allowed the user to specify materials with CC licensing.

Because OER originate in so many different contexts, they have no standard format, complexity or length. Although there are meta-data standards such as the IEEE, these standards are not well adhered to and meta-data is often missing or incomplete. OER originating in multi-party collaborations may fare better in this regard – projects like the Commonwealth of Learning's WikiEducator ([www.wikieducator.org](http://www.wikieducator.org)) or the CCOTP open textbook projects found they had to establish templates and guidelines early in the production process, so more uniformity of OER can

be expected from these sources. Organizations anticipating large curriculum development projects might profit best from establishing collaboration guidelines early in the project to avoid results that can not be easily assembled into courses.

OER currently focus on content; little or no meta-data is available on the embedded learning activity or implicit learning strategy in the OER. More attention needs to be paid to approaches like Dalziel's (2003) Learning Activity Management System where the focus is on reuse of the pedagogic strategy rather than re-use of the embedded content.

While OER may be free, considerable effort may be required to find suitable material and edit them into a smooth learning package. Instead, OER users may find the integration resembles a circus ringmaster who provides context and cues the appropriate resources as required. The ringmaster will need to remind the learner on how to re-enter the main learning package after viewing the OER.

The OER may contain material that is not the most appropriate for achieving the learning objectives of the course in its unique context. Thus, there may well be a need for adaptation and localization of the material, e.g., replacing US or Canadian examples with Caribbean examples, the incorporation of new learning scenarios, changing language structures.

It may also be necessary to use supplementary resources. Note that it is possible that some of these supplementary resources could be commercial, but care must be taken how these are used so as not to affect the CC license of the course material and the possibility of it being added to the bank of OER. So the listing of a course text book as recommended reading would be fair usage, but the incorporation of parts of the commercial text book without copyright permission would not.

Most OER repositories do not collect user reports on the quality of the resources provided, Although Youtube.com does provide a five-star rating, the criteria for the rating are proprietary and influenced heavily by core users. Popularity does not always reflect quality or suitability for an intended audience. These decisions have to be made by the course designer as they review OER.

OER do little to address technical problems of use of web information. An organization that embeds third party resources into their lessons needs to have contingency plans against the sudden disappearance of selected resources. The best strategy is to cache the selected OER to an internal server, and advise the owner with a request for copyright permission to mirror the resource for a certain period of time. Organizations unable to cache the selected resource need to have a contingency plan involving alternate resources should the primary OER suddenly disappear or have its CC license revoked by the owner.

Copyright law and enforcement varies around the world. When in doubt institutions should exercise caution when embedding materials from web sites located in jurisdictions where copyright is unheeded because the original owner of the material may choose to have their copyright enforced in the institution's home country where the law is less forgiving.

## Conclusion

OER is about sharing. Institutions that embed OER material in the courseware have a moral obligation to share back derivative works. If an organization that embarks on an OER strategy can not find suitable materials, they should create them and share them back to the community. OER is

built on trust. To ensure a sustainable OER environment continues, institutions should encourage the widest possible distribution of their adaptations of OER and other educational resources they possess.

As much as academic freedom needs to prevail, adhering to some practical standards for the authoring of OER materials greatly enhances their potential re-use. Connexions and the Open Textbook Project provide good examples of how the creation of common resources eventually led them to reduce chaos by agreeing to standard software tools and templates for creating pages, conventions for naming elements and files, and standards for managing and reviewing workflow (Baker et al, 2009). Connexions provides a set of guidelines for would be authors at <http://cnx.org/help/authoring/authorguide>. Similarly, clear declarations of copyright and permissions need to be attached to the objects through Creative Commons Licensing. The final hurdle is better metadata including object descriptions so that OERs can be easily found by search engines. Such constraints are simply the beginning of making content shareable and it may be easier to set such standards in a small community of sharing colleges than to attempt to attain global agreement.

If OER grows to be a widespread practice, then incentives other than royalties may be needed to attract future contributors. Institutional OER sharing policy may need to be negotiated during renewal of faculty employment or when hiring contract writers. As course content becomes uniform and ubiquitous, institutions will have to distinguish themselves and compete based on other services they provide learners rather than the quality of the content in their courses.

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