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Open Educational Resources (OER)

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Abstract

Just over a decade old, the open educational resources movement has garnered considerable attention recently with increased attention of the accessibility and cost of education. Open educational resources are digital learning objects that are "offered freely and openly for educators, students, and self-learners to use and re-use for teaching, learning, and research." It is the leading trend in distance education/open and distance learning domain as a consequence of the openness movement. There is no universal usage of open file formats in OER. The development and promotion of open educational resources is often motivated by a desire to provide an alternate or enhanced educational paradigm.

Types of open educational resources include: full courses, course materials, modules, learning objects, open textbooks, openly licensed (often streamed) videos, tests, software, and other tools, materials, or techniques used to support access to knowledge. OER may be freely and openly available static resources or dynamic resources which change over time in the course of having knowledge seekers interacting with and updating them, or a course or module with the combination of these resources. The present paper dealt with detail description of open education resources, their forms, uses, advantages and limitations.

Introduction:

The OER movement originated from developments in open and distance learning (ODL) and in the wider context of a culture of open knowledge, open source, free sharing and peer collaboration, which emerged in the late 20th century. OER and Free/Library Open Source Software (FLOSS), for instance, have many aspects in common, a connection first established in 1998 by David Wiley who coined the term open content and introduced the concept by analogy with open source. Richard Baraniuk made the same connection independently in 1999.

The movement originated in the late 1990s with the first major initiative coming from the Massachusetts Institute of Technology (MIT). The MIT Open Course Ware project is credited for having sparked a global Open Educational Resources Movement after announcing in 2001 that it was going to put MIT's entire course catalog online and launching this project in 2002. In 2002, MIT released 50 freely available courses through the Open Course-Ware initiative. One year later, MIT officially opened Open Course Ware with 500 classes. In a first manifestation of this movement, MIT entered a partnership with Utah State University, where assistant professor of instructional technology David Wiley set up a distributed peer support network for the OCW's content through voluntary, self-organizing communities of interest.

The term "open educational resources" was first adopted at UNESCO's 2002 Forum on the Impact of Open Courseware for Higher Education in Developing Countries.

In 2005 OECD's Centre for Educational Research and Innovation (CERI) launched a 20-month study to analyze and map the scale and scope of initiatives regarding "open

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educational resources" in terms of their purpose, content, and funding. The report "Giving Knowledge for Free: The Emergence of Open Educational Resources", published in May 2007, is the main output of the project, which involved a number of expert meetings in 2006.

In September 2007, the Open Society Institute and the Shuttleworth Foundation convened a meeting in Cape Town to which thirty leading proponents of open education were invited to collaborate on the text of a manifesto. The Cape Town Open Education Declaration was released on 22 January 2008, urging governments and publishers to make publicly funded educational materials available at no charge via the internet.

Thus, Open Educational Resources (OERs) are type of educational materials that are in the public domain or introduced with an open license. The nature of these open materials means that anyone can legally and freely copy, use, adapt and re-share them. OERs range from textbooks to curricula, syllabi, lecture notes, assignments. tests, projects, audio, video and animation.

UNESCO believes that universal access to high quality education is key to building of peace, sustainable social and economic development, and intellect dialogue. Open Educational Resources (OER) provide a strategic opportunity to improve the quality of education as well as to facilitate policy dialogue, knowledge sharing and capacity building.

OER are teaching, learning, and research resources that reside in the pub domain or have been released under an intellectual property license that permit their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, software, and any other tools, materials, or techniques used to support access knowledge.

OER is a relatively new phenomenon which may be seen as a part of a large trend towards openness in higher education including more well-known established movements such as Open Source Software (OSS) and Open Acc (OA). But what is meant by "open" and what are the arguments for striving openness?

The two most important aspects of openness have to do with free availability of the Internet and as few restrictions as possible on the use of the resource. There should be no technical barriers (undisclosed source code), no price bard (subscriptions, licensing fees, pay-per-view fees) and as few legal premises barriers as possible (copyright and licensing restrictions) for the end-user. End-user should be able not only to use or read the resource but also to adapt build upon it and thereby reuse it, given that the original creator is attributed

Defining the Scope and Nature of Open Educational Resources:

The idea of open educational resources (OER) has numerous working definitions. The term was firstly coined at UNESCO's 2002 Forum on Open Courseware and designates

"Teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. Open licensing is built within the existing framework of intellectual property rights as defined by relevant international conventions and respects the authorship of the work".

William and Flora Hewlett Foundation which defines OER as:

"Teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge."

The Organization for Economic Co-operation and Development (OECD) defines OER as:

"Digitized materials offered freely and openly for educators, students, and self-learners to use and reuse for teaching, learning, and research. OER includes learning content, software tools to develop, use, and distribute content, and implementation resources such as open licenses".

By way of comparison, the Commonwealth of Learning has adopted the widest definition of Open Educational Resources (OER) as

"Materials offered freely and openly to use and adapt for teaching, learning, development and research"

The above definitions expose some of the confusions that exist with OER:

Nature of the resource: Several of the definitions above limit the definition of OER to digital resources, while others consider that any educational resource can be included in the definition.

Source of the resource: While some of the definitions require a resource to be produced with an explicit educational aim in mind, others broaden this to include any resource which may potentially be used for learning

Level of openness: Most definitions require that a resource be placed in the public domain. Others require for use to be granted merely for educational purposes, or exclude commercial uses.

At the same time, these definitions also share some universal commonalities, namely they all:

- cover both use and reuse, repurposing, and modification of the resources;
- include free use for educational purposes by teachers and learners
- encompass all types of digital media.

Thus, Open Educational Resources (OER) are freely accessible, usually openly licensed documents and media that are useful for teaching, learning, educational, assessment and research purposes. Open Educational Resources include learning content, tools and licenses.

Learning Content: Full courses, Course materials, Content modules etc.

Tools: Software to create and manage open learning content.

Licenses: Intellectual property licenses to promote open publishing of materials, design-principles, and localization of content.

OER Tools:

Some of OER tools which help educators to enrich their classroom practice with better learning resources are :

EDUCAUSE: EDUCAUSE is a nonprofit association and the foremost community of IT leaders and professionals dedicated to advancing higher education. It provides higher education professionals, students and parents with a better community platform to exchange their expertise. EDUCAUSE's library aggregates over 24,000 resources (Analytics, E-Textbooks & MOOCs) submitted by EDUCAUSE, EDUCAUSE Center for Analysis and Research (ECAR), EDUCAUSE Learning Initiative (ELI), Higher Education Information Security Council (HEISC), Grant programs and other members.

Open Class: Open Class is an amazing learning environment that's open, easy, and completely free. It helps educators bring social learning and interactive experiences to their students. Open Class allows users to select from exceptional OER content like video and more from The Khan Academy, Ted-Ed, and YouTube EDU, along with others that use the Creative Commons license. It has many tools for educators to create, manage and share content & also for students to learn socially.

Google in Education: Google provides all educators with tools and solutions to improve teaching and learning. Refer to training and support resources which help you make the most of technology in the classroom. Google education allows students to explore their passions and discover new ones by getting involved. It allows users to share their work through blogger, YouTube, Google docs and many more. It also offers scholarships for students. Their main aim is to provide learners with open learning content anytime, anywhere and on any device.

Wiki-Educator: Wiki-Educator is an evolving community intended for the following tasks:

- Planning & development of free content
- Building Open Education Resources (OER)

Open of Course: Open of Course provides educators and students with Multilingual and Free Online Courses and Tutorials. It also offers free Module hosting for people willing to share their knowledge under an open content license.

The Open University: The Open University is the United Kingdom's university dedicated to distance learning. They allow their content to be accessible to all and provides hours of content freely available via. YouTube, iTunes U and Open Learn, much of which can be reused in a way that benefits someone. It has a huge community to spread the content online.

OLAT: OLAT (Online Learning and Training) is an Open Source LMS (Learning Management System) tailored to the needs of Universities and Higher Education institutions. There are approximately 70',000 users and nearly 50 institutions in Switzerland using OLAT (with up to 5,000 courses and millions of resources), and the numbers keep on growing.

Canvas:Canvas engages students in learning anytime, anywhere and support 1:1 and other technology initiatives both in and outside the classroom. It also defines course, curriculum and certification paths, including pre-test and post-test assessment tracks. Canvas allows users to easily access and inserts audio, video, text, images and more on every learning contact point.

Commonwealth of Learning: Commonwealth of Learning involves in the creation of open educational resources. It provides schools with materials under the Creative Commons

license agreement to support independent study in 17 specially selected secondary school subjects.

School Tool: School Tool is an open source, web-based student information system designed for schools in the developing world, with strong support for translation, localization and automated deployment and updates via. the Ubuntu Linux installer and package management system.

The above mentioned are the few OER tools, there are many more tools like these.

Characteristics of OER:

OER has the following characteristics:

1. Freely accessible content, media and resources.
2. Freely reusable copyrights and formats.
3. Design is considerate of bandwidth and accessibility.
4. Freedom and openness as principles in their production and use.

Functions of OER:

The following are the functions of open educational resources:

1. Offer a broader range of subjects and topics to choose from and allow more flexibility in choosing material for teaching and learning (i.e. cont that can be easily modified and integrated in course material)
2. Allow for engaging teachers in leveraging the educational value of resource through providing their own personal assessments, lessons learned a suggestions for improvements.
3. Provide learning communities such as groups of teachers and learners w easy-to-use tools to set up collaborative learning environments (e.g., grou Wikis or Weblogs, social networking, content feeds, etc.).
4. Promote user-centered approaches in education and lifelong learning; users not only consume educational content but develop their own E-Portfolios, and share study results and experiences with peers.
5. Open educational resources initiative seeks to use information technology to help equalize access to knowledge and educational opportunities across the world. The initiative targets educators, students, and self-learners worldwide.

International programs:

High hopes have been voiced for OERs to alleviate the digital divide between the global North and the global South, and to make a contribution to the development of less advanced economies.

Europe – Learning Resource Exchange for schools (LRE) is a service launched by European School net in 2004 enabling educators to find multilingual open educational resources from many different countries and providers. Currently, more than 200,000 learning resources are searchable in one portal based on language, subject, resource-type, and age-range.

India – National Council Of Educational Research and Training digitized all its textbooks from 1st standard to 12th standard. The textbooks are available online for free. Central Institute of Educational Technology, a constituent Unit of NCERT, digitized more than

thousand audio and video programmes. All the educational AV material developed by CIET is presently available at Sakshat Portal an initiative of Ministry of Human Resources and Development. In addition, NROER (National Repository for Open Educational Resources) houses variety of e-content.

US –Washington State's Open Course Library Project is a collection of expertly developed educational materials – including textbooks, syllabi, course activities, readings, and assessments – for 81 high-enrolling college courses. All courses have now been released and are providing faculty with a high-quality option that will cost students no more than $30 per course. However, a study found that very few classes were actually using these materials (http://www.nacs.org/Portals/NACS/Uploaded_Documents/PDF/Research/OCLresults2014.pd).

Dominica – The Free Curricula Centre at New World University expands the utility of existing OER textbooks by creating and curetting supplemental videos to accompany them, and by converting them to the EPUB format for better display on smart phones and tablets.

Bangladesh is the first country to digitize a complete set of textbooks for grades 1-12. Distribution is free to all.

Uruguay sought up to 1,000 digital learning resources in a Request For Proposals (RFP) in June 2011.

South Korea has announced a plan to digitize all of its textbooks and to provide all students with computers and digitized textbooks.

The Michigan Department of Education provided $600,000 to create the Michigan Open Book Project in 2014. The initial selection of OER textbooks in history, economics, geography and social studies was issued in August, 2015. There has been significant negative reaction to the materials' inaccuracies, design flaws and confusing distribution.

South Africa-The Shuttleworth Foundation's Free high school science texts for South Africa

Saudi Arabia had a comprehensive project in 2008 to digitize and improve the Math and Science text books in all k-12 grades. Saudi Arabia started a project in 2011 to digitize all text books other than Math and Science.

OER global logo adopted by UNESCO

With the advent of growing international awareness and implementation of open educational resources, a global OER logo (shown right) was adopted for use in multiple languages by UNESCO. The design of the Global OER logo creates a common global visual idea, representing "subtle and explicit representations of the subjects and goals of OER". Its full explanation and recommendation of use is available from UNESCO.

Advantages of OER:

Advantages of using OERs include:

1. Accessibility: Students anywhere in the world can access OERs at any time, and they can access the material repeatedly.
2. Scalability: OERs are easy to distribute widely with little or no cost.
3. Augmentation of Class Materials: OERs can supplement textbooks and lectures where deficiencies in information are evident.

4. Enhancement of Regular Course Content: Multimedia material such as videos can accompany text. Presenting information in multiple formats may help students to more easily learn the material being taught.
5. Quick Circulation: information may be disseminated rapidly (especially when compared to information published in textbooks or journals, which may take months or even years to become available). Quick availability of material may increase the timeliness and/or relevance of the material being presented.
6. Less Expensive: The use of OERs instead of traditional textbooks or course packs, etc. can substantially reduce the cost of course materials for students.
7. Showcasing of Innovation and Talent: A wide audience may learn of faculty research interests and expertise. Potential studehts and donors may be impressed, and student and faculty recruitment efforts may be enhanced.
8. Continually Improved Resources: Unlike textbooks and other static sources of information, OERs can be improved quickly through-direct editing by users or through solicitation and incorporation of user feedback. Instructors can take an existing OER, adapt it for a class, and make the modified OER available for others to use.

Disadvantages of OER

Disadvantages of OERs include:

1. Quality Issues: Since many OER repositories allow any user to create an account and post material, some resources may not be relevant and/or accurate. Inconsistent availability across disciplines and/or across specific content areas within disciplines.
2. Lack of Interaction: lack of human interaction between teachers and students. OER material is created to stand alone, and since self-learning users may access the material outside of a classroom environment, they will miss out on the discussion and instructor feedback that characterize for-credit classes and that make such classes useful and valuable.
3. Language and/or Cultural Barrier: Although efforts are being made to make OERs available in multiple languages, many are only available in English, limiting their usefulness to non-English speakers. Additionally, not all resources are culturally appropriate for all audiences.
4. Technological Issues: Some students may have trouble using some OERs if they have a slow or erratic internet connection. Other OERs may require software that students don't have and that they may not be able to afford.
5. Concerns Intellectual Property/Copyright: Since OERs are meant to be shared openly, the "fair use" exemption from the U.S. Copyright Act ceases to apply; all content put online must be checked to ensure that it doesn't violate copyright law.
6. Sustainability Issues: OER creators generally do not receive any type of payment for their operators; there may be little incentive for them to update their OER or to ensure that it will continue to be available online.
7. Unrealistic expectations from administrators as to the extra time it takes for faculty to incorporate OER into their courses. To some degree this can be just a cost-shifting exercise where the money the students save, is due to uncompensated extra time put in by faculty.

8. Uncertainty in ongoing maintenance of web-based resources. What happens when the person who created the resource has moved on to other interests and the resources becomes obsolete?

Conclusion: Given the diversity of users, creators and sponsors of open educational resources, it is not surprising to find a variety of use cases and requirements. For this reason, it may be as helpful to consider the differences between descriptions of open educational resources as it is to consider the descriptions themselves. One of several tensions in reaching a consensus description of OER (as found in the above definitions) is whether there should be explicit emphasis placed on specific technologies. For example, a video can be openly licensed and freely used without being a streaming video. A book can be openly licensed and freely used without being an electronic document. This technologically driven tension is deeply bound up with the discourse of open-source licensing.

There is also a tension between entities which find value in quantifying usage of OER and those which see such metrics as themselves being irrelevant to free and open resources. Those requiring metrics associated with OER are often those with economic investment in the technologies needed to access or provide electronic OER, those with economic interests potentially threatened by OER, or those requiring justification for the costs of implementing and maintaining the infrastructure or access to the freely available OER. While a semantic distinction can be made delineating the technologies used to access and host learning content from the content itself, these technologies are generally accepted as part of the collective of open educational resources.

Since OER are intended to be available for a variety of educational purposes, most organizations using OER neither award degrees nor provide academic or administrative support to students seeking college credits towards a diploma from a degree granting accredited institution. In open education, there is an emerging effort by some accredited institutions to offer free certifications, or achievement badges, to document and acknowledge the accomplishments of participants

Open Educational Resources (OER) have advantages for faculty and students. For students, it all but guarantees access to course materials and presents a significant cost saving. For faculty, it represents the change to explore and modify new content and to expand one's pedagogical reach, moving from teaching students around an institution to potentially teaching students from around the world.

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