

OER: disruptive innovative solution to the challenges of education

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Sub-theme 4: Innovation

OER: Disruptive Innovative Solution to The Challenges of Education

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Abstract

The education sector globally is facing a lot of challenges: the challenge of numbers, of relevance, of quality, of access, of costs and of speed. The solution to these multiple challenges probably lies in a number of disruptive innovative solutions. These include inculcating self-learning (building on meta-cognition), measuring learning, collaborative and co-operative learning, personalisation of learning and learning analytics. However, in addition to new systems or technologies, we need a fundamental change of perspective. A very promising technological and pedagogical model that has received a lot of attention during the last few years and adoption by Stanford, Harvard, Duke and almost 100 of the world's top ranking Universities to teach millions of learners is that of the MOOC.

The Open Educational Resources have become an important part of educational delivery. The establishment of OER University is a milestone in that direction. There are hundreds of OER repositories to allow teachers and students to use, and adopt content. Keeping in view the significance of OERs, we organized The OER MOOC with the purpose to enhance knowledge about OERs and to equip for effective use and adopt OERs in ones programs as well as to be able to create your own OERs and contribute to the pool of OER resources. We further wanted to explore the potential of MOOCs to create a model of simultaneously teaching on-site and off-site learners, using synchronous and a-synchronous teacher learner interactions to deliver high quality learning to large numbers, maybe evolve a model for a classroom of 10,000 learners. In this study, we shall elaborate on our methodology, outcomes and the impact factors The OER MOOC had on the learners.

Keywords: OER, MOOC, Learning, Impact

Introduction

Almost everyone in India is conscious of the importance and urgency of the Challenges in Education and these are reflected in several other parts of the world as well. Some of these are the challenge of numbers, of relevance, of Quality, of access, of costs and of speed. There is sometimes a sense of paralysis at the enormity of the challenge and the apparent impossibility of managing conflicting expectations. The solution to these multiple challenges probably lies in a number of disruptive innovative solutions. These include inculcating self-learning (building on meta-cognition), measuring learning, collaborative and co-operative learning, personalisation of learning and learning analytics.

However, in addition to new systems or technologies, we need a fundamental change of perspective. Education is seen as the responsibility of the State and the system is based on authority and licenses and permissions to allow education to be transacted in modern times this is unlikely to work. As Henry Maine had said 'as society progresses, it moves from status to contract'. So must the educational system build contractual relationships between the learner and providers of learning as more important than statutory authority.

A very promising technological and pedagogical model that has received a lot of attention during the last few years and adoption by Stanford, Harvard, Duke and almost 100 of the world's top ranking Universities to teach millions of learners is that of the MOOC. The MOOC is considered on the one hand as a panacea for education and on the other as a defilement of the sanctity of the higher education tradition. The truth probably lies somewhere in between and we wanted to explore the potential of MOOCs to create a model of simultaneously teaching on-site and off-site learners, using synchronous and a-synchronous teacher learner interactions to deliver high quality learning to large numbers , maybe evolve a model for a classroom of 10,000 learners. Thus we decided to conduct The OER MOOC.

Open Educational Resources

The Open Educational Resources have become an important part of educational delivery (Kanwar, Balasubramanian, & Umar, 2010). The establishment of OER University (OERu) is a milestone in that direction. The OERu is a global consortium of post-secondary institutions collaborating around the assessment and accreditation of learners studying online and using OER (Conrad, Mackintosh, McGreal, Murphy, & Witthaus, 2013). Taylor (2012) described the aim of the OERu as providing free education to learners worldwide using OER as learning materials, with pathways provided to enable them to gain credible qualifications from government recognised or accredited educational institutions. This was also substantiated by Jan Thomas (Vice Chancellor of the University of Southern Queensland) that the OER university model opens education because of "the ability to access university level courses and where cost has been removed as a barrier to learning" (OER Foundation 2012: Online).

There are hundreds of OER repositories to allow teachers and students to use, and adopt content. The figures from OER Commons (<http://www.oercommons.org/oer>) website indicate interesting data:

Data for Subject Areas	Data for Grade Levels	Data for Material Type
(3249)Arts (1318)Business (14437)Humanities (11466)Mathematics and Statistics (21873)Science and Technology (11575)Social Sciences	(11240)Primary (29665)Secondary (32007)Post-secondary	(14240)Activities and Labs (3328)Assessments (1299)Audio Lectures (924)Case Study (4049)Full Course (528)Games (4247)Homework and Assignments (6437)Images and Illustrations (837)Interactive (2432)Lecture Notes (8489)Lesson Plans (4653)Primary Source (11820)Readings (1534)Reference (80)Resource Review (4873)Simulations (6426)Syllabi (3744)Teaching and Learning Strategies (1025)Textbooks (1034)Unit of Study (6601)Video Lectures (3348)Other

Table 1 Number of OERs available at OER Commons website

Taylor (2012) identified the potential here and states that , “growing inventory of OER and open access materials available on the web provides the opportunity to develop courses using a “free range” learning strategy where learners can customise the content to suit their own needs and interests within the context of a university-level course”.

The open source software movement has been considered as a precursor of OER movement. Open source software is such computer software whose source code is available to anyone to copy, modify and redistribute the code and its modifications without paying royalties or fees. SourceForge.net, the largest open source software development web site, now hosts over 130,000 open source projects. The basic premise of open source model is to make open source systems are freely available, without separate license contracts or fees. Although there may be some inherent costs to such operations, like basic computer and network connection costs, its free for users the users can download and use open source systems from the net (without paying for the software). The examples of successful open source projects include the Mozilla Firefox browser, the OpenOffice.org office application suite, the AzureusBitTorrent Peer-to-Peer file-sharing client, and many software tools used in educational settings.

Some important implications emerge from this movement:

1. Cost Reduction: A recent study by the British Educational Communications and Technology Agency (Becta), for example, found that the total cost per PC in primary schools was half the costs in non open-source schools, including costs for hardware, software, network, training, consumables, and formal and informal support (Becta, 2005).
2. High quality systems development: Since it involves “wisdom of masses”, creation or development of open source software in a distributed and collaborative environment makes it high quality where it is tested and retested by large community.
3. Open source licenses: Allows users to modify the source code as per local needs and create other variants (like Ubuntu operating System based on Linux) ([http://www.ubuntu.com/ ubuntu](http://www.ubuntu.com/ubuntu))
4. Promoting e-learning models: Toumi (2005) found that the community working on open source projects can outperform traditional formal educational models in the form of building expertise and skills.

The idea of learning objects originated during 1990s as an extension of the object-oriented computer programming model (Sharma, 2002). The term “learning object” was coined in 1994 by Wayne Hodgins. The learning objects have some properties like inheritance, portability, mutability etc. Littlejohn (2003) identified treating educational resources as learning objects and suggested packaging educational content in standardized and re-usable modules, which can then be combined to produce high-quality learning experiences. However, the concept of learning objects did not hold good for long as it was found to be difficult to implement and it has some pedagogical issues (Littlejohn, 2003).

A major change happened towards our approach when in 1998 when David Wiley coined the term “Open Content”. While targeted at the educational community (and learning object creators specifically), the term quickly entered the vernacular of internet users. One role of open content in the history of OER is its popularization of the idea that the principles of the open source / free software movements can be productively applied to content, and the creation of the first widely adopted open license for content (the Open Publication License). (Source: OECD, <http://www.hewlett.org/uploads/files/HistoryofOER.pdf>)

Year 2001 witnessed two important developments. Larry Lessig and others founded the Creative Commons and released a flexible set of licenses that were both a vast improvement on the Open Publication License’s confusing license option structure and significantly stronger legal documents. One role of Creative Commons in the history of OER is the increase in credibility and confidence their legally superior, much easier to use licenses brought to the open content community. Also in 2001 MIT announced its OpenCourseWare initiative to publish nearly every university course for free public access for noncommercial use. MIT OpenCourseWare has played many roles in the history of OER, including being an example of commitment at an institutional level, working actively to encourage similar projects, and lending the MIT brand to the movement. Developments at MIT were quite interesting. Attwood (2009) reported about setting of a committee by Charles Vest, the

then President of MIT to think about the growing significance of WWW and Distance Education. The ethos of the open-source software movement were so prominent that one of the head of the committee, while taking a shower had thought, 'Well, if we're not going to try to make money from our educational material, maybe we should just give it away.' Creation of OCW (OpenCourseWare of MIT) was announced in 2001, since then many thousand of courses are available online at no cost to students all over the world. A year later, in the summer of 2002, UNESCO organized the Forum on the Impact of Open Courseware for Higher Education in Developing Countries, where the term "open educational resources" was adopted and defined Open Educational Resources as "technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes."

Creative Commons have compiled various definitions of OERs at http://wiki.creativecommons.org/What_is_OER%3F which can be referred to for details. Johnstone (2005) summarised OERs as

- "Learning resources courseware, content modules, learning objects, learner-support and assessment tools, online learning communities
- Resources to support teachers tools for teachers and support materials to enable them to create, adapt, and use OER, as well as training materials for teachers and other teaching tools
- Resources to assure the quality of education and educational practices."2

Tuomi (2006) reports educational transformation via OERs in various ways: OERs getting integrated in existing educational practices progressively leading to new forms of practice. OERs, further, will give rise to qualitatively new approaches to education and learning. The Cape Town Open Education Declaration (September 2007) "Cape Town Open Education Declaration: Unlocking the promise of open educational resources" has been signed by 2453 individuals and 253 organisations is another important milestone. The Declaration reads, "We are on the cusp of a global revolution in teaching and learning. Educators worldwide are developing a vast pool of educational resources on the Internet, open and free for all to use. These educators are creating a world where each and every person on earth can access and contribute to the sum of all human knowledge..."

The support of different governments like the four-year, \$2B Trade Adjustment Assistance Community College and Career Training Grant Program (TAACCCT) of the United States to leverage OER to support the development of a new generation of affordable, post-secondary educational programs that can be completed in two years or less to prepare students for careers in emerging and expanding industries is a major boost to openly licensed materials for free use, adaptation, and improvement by others.

The OER MOOC

The Open Education Resources MOOC was a 4 week online program designed to enhance knowledge about OERs and to equip for effective use and adopt OERs in ones programs as well as to be able to create our own OERs and contribute to the pool of OER resources. The nominal duration for completing this course was 4 weeks. However, because of the nature of this program which allows flexibility and personalisation, participants were allowed to take another 2 weeks if they so wished to complete the course. This MOOC was designed to help impart the knowledge and develop the skills needed to be successful in learning from OERs or teaching the chosen subject to post-secondary students and life-long learners using OERs. MOOC after OER included access to colleagues and discussion forums with other MOOC participants centered upon common interests and pursuits.

Why We Selected This Topic?

The topic should be of such nature which is need based and can attract right kind of learners in large numbers. Since MOOCs are designed for large clients, hence MOOCs on popular topics stand a great chance of success. We selected 'The OER MOOC' topic because Open Educational Resources (OER) are being adopted by many in government, non-government, private, business and educational sectors. Our MOOC was designed to help impart the knowledge and develop the skills needed to be successful in learning from OERs or teaching the chosen subject to post-secondary students and life-long learners using OERs.

Learning Outcomes

The OER MOOC was designed to achieve the following learning outcomes:

LO1: Become informed of the various OERs, their different sources and the skills of searching and inclusion of OERs in educational programs.

LO2: Able to search for open licensed materials and create OERs.

LO3: Appreciate the significance of OERs Open Licenses in the evolution of copyright law and how new licensing regimes such as 'creative commons' become a game changer in education.

LO4: Will be able to develop a sample OER related to his/her field of expertise.

Expectations from the Learners

In order to receive the maximum benefits from this course, participants were expected to:

- dedicate focused time towards learning
- participate in discussions

- be active learners
- share their ideas and experiences via blogging and microblogging, in addition to live chats during synchronous sessions

Structure of the OER MOOC

'The OER MOOC' comprised 4 modules. All these modules had a nominal duration of one week, each module structured as 5 sessions, which could be seen as a daily action plan for systematic and regular participation in learning and have similar components including:

- Introductory Text based materials
- Introductory Video
- Lecture Presentations
- Blog posts for learning materials
- Tweets from time to time
- A resource base of links to relevant resources

Each module took approximately 4 – 5 hours, depending on ability and engagement with online materials.

Methodology

For The OER MOOC we adopted synchronous mode of interactions. Although the limitation of live session is that due to time zone of presentations there may be less participation however since we recorded the sessions so those who could not join us for live synchronous sessions were able to watch the recording. There were other features of The OER MOOC:

- **Activities to be done by participants:** At the end of live sessions the presenter provided assignments and exercises to the participants. They were expected to complete them at their blog sites and inform the link to the course facilitators.
- **Use of twitter and blog:** An extensive use of social media was a prominent feature of The OER MOOC. The participants were asked about their twitter handle and blog site url via a google form in the beginning of the course. They were asked to use hashtag #oermooc in all their communications. There was a special session using Twitter extensively, entitled, #OER and Mobile Learning (#mlearning) the details of which are provided below.

- **Storify to compile conversations on the oer mooc:** We configured Storify for collecting all comments for #oermooc so that these could be published or embedded on any site for the learners.
- **Flipped classroom:** We further conducted one session as a Flipped Classroom. This was done because in the beginning of the course (August 18, 2013) we had a session on Copy right issues and creative common licences. The participants were very much interested in this session and had many questions. They were provided material on this topic. We compiled their questions and discussed them in a special session “Resolving issues in licencing” conducted on September 16, 2013.
- **Online Session + Twitter Meet-Up:** #OER and Mobile Learning (#mlearning): { for more details pl refer to <http://classroom-aid.com/2013/09/20/online-session-twitter-meet-up-oer-and-mobile-learning-mlearning-2/> }.

With the purpose to provide practical hands on experience to the participants, an online session was conducted as Online interactive course module permanent URL :<http://oermllearning.classroom-aid.com/> with Twitter meet-up hashtag #oermooc. The course module was a web package, participants did not need to sign up or login to any other system. They were asked to just visit the permanent URL (<http://oermllearning.classroom-aid.com/>) and they were good to go.

The learners needed only a Twitter account to participate in this online session. They were asked to tweet their comments or questions with hashtag #oermooc. MsJessie Chuang and Dr Ramesh Sharma moderated the tweets.

After the session was finished, the tweet thread was summarized using Storify. All the course materials: the interactive course module, the Google Doc. with extended reading, and storified discussion have been kept freely accessible on the site.

Extended reading: Extended reading for OER and Mobile Learning is a public Google Document that everyone can edit, or add recommendations in Twitter meet-up time or after that. The same is available online for anyone to contribute at https://docs.google.com/document/d/1jEesAE0VJLwsoRILVeS0f_InIkIIKSkUTPzhipx0ZzY/edit?usp=sharing

Participants

We provided adequate publicity for The OER MOOC to attract students to the course. We made use of various social media to tell the world about our course. Sending out messages to different listservs or online groups was also done. We further asked our colleagues to spread the word about the course. There were more than 1500 learners in the course. Since we had opted for WizIQ as platform for interactions, the system was able to handle large enrollments.

Results and Analysis

Below are some of the demographics of the learners taken from the registration data from WizIQ database for The OER MOOC. Around 61 per cent of the learners were from India. There was good representation from United States, United Kingdom, Sri Lanka, South Africa, Pakistan, Nigeria, Mexico, Malaysia, Canada and Australia among many countries. The distribution further shows that almost all the nationalities were interested in learning about OERs.

Majority of the learners of The OER MOOC (56 per cent) were males followed by 39 per cent female learners. Around 5 per cent of learners were not interested in revealing their gender. Most of them are teachers. Some of them are teaching online as well as face-to-face. Some of the participants are non-academic too.

Lessons Learned and Suggestions

Since this was our first MOOC of this kind, we have learned certain lessons:

- We need to provide adequate publicity about the programme to make people aware about the course.
- Use of Social Media is good for publicity and later on for obtaining feedback and communicating with learners.
- Live sessions are useful for interactions among teacher-expert and learners as well as among learners themselves.
- In the beginning of course, an introductory session on how the course will progress, how to use platform for live sessions (as we used WizIQ) for learners makes them use it effectively.
- Giving assignments at the end of live sessions and asking learners to attempt them in their blog and using microblogging gives an opportunity to involve community for feedback and reflection.
- Sharing blog links of participants among themselves was recommended as it gives an opportunity to all to understand what others are performing.
- For live sessions, internet bandwidth was an issue on some occasions. Participants and experts faced some interruptions during some of the sessions.
- Recording live sessions and uploading them on YouTube gave an opportunity to those who could not attend live sessions.
- Examining chat session questions and points during session is a good idea because during session expert may not be able to answer all of them. Thus response to them can be provided later on via discussion forums or in next live session.

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