Innovative Applications
Open Educational Resources and Mobile Resources Repository for the Instruction of Educational Researchers in Mexico

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Abstract

The movement of Open Educational Resources (OER) is one of the most important trends that are helping education through the Internet worldwide. "Tecnológico de Monterrey" (http://tecvirtual.itesm.mx/) in Mexico, with other Mexican higher education institutions, is creating an Internet/web based repository of OERs and Mobile Resources for the instruction and development of educational researchers at undergraduate, Master's and Doctoral level. There is a lack of open educational resources and material available at the Internet that can help and assist the development and education of educational researchers in Spanish speaking countries. This OER repository is part of a project that is experimenting new technology for the delivery of OERs from one repository (http://catedra.ruv.itesm.mx/) through an indexed OER catalog (http://www.temoa.info/) to mobile devices (Ipod, Iphone, MP3, MP4). This paper presentation will describe and comment about this project: outcomes, best practices, difficulties and technological constraints.

Keywords

Innovation, Educational Technology, Open Educational Resources, Mobile Resources, Communities of Practice, Researchers Career Development

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Introduction

The movement of Open Educational Resources (OER) is one of the most important trends that are helping education through the Internet worldwide, and it's a term that is being adopted every day in many educational institutions, from Higher Education to K-12 where OER are being created and used; especially those which have embraced distance education (e-learning) and information and communication technologies (ICT) as one of their major institutional and teaching efforts, such as "The Instituto Tecnológico y de Estudios Superiores de Monterrey" (ITESM –*Tecnológico de Monterrey*) has done in Mexico.

One of the most competitive private higher education institutions in Mexico, "El Tecnológico de Monterrey" (ITESM) (also named *TEC de Monterrey)*, has implemented for more than 20 years videoconferencing, TV satellite and online instruction to deliver distance education courses and programs, and also more than 10 years using different e-learning platforms (LearningSpace, BlackBoard, FirstClass, BSCW, WebTec) to enhance its traditional face-to-face and distance education programs at undergraduate and graduate level (Masters and Doctoral).

Through this e-learning electronic delivery educational platforms ITESM has reached all its 30 or more campuses around Mexico; allowing them delivery, currently, more than twelve thousand e-learning courses every semester. Blackboard is its major e-learning platform, and it is widely used both locally (each campus has certain autonomy in its use) and through the entire ITESM system.

To help this institutional distance education effort and to respond to Mexican and Latino American educational needs "*El Tecnológico de Monterrey*", and with other Mexican higher education institutions, they have developed an important educational initiative: an Internet/web based repository of OER and Mobile Resources for the instruction and development of educational researchers at undergraduate, Master's and Doctoral level.

There is a lack of educational resources and material available freely at the Internet that can help and assist the development and education of educational researchers in Spanish speaking countries. There is an important need for conducting educational research that can help to handle many of the different educational Mexican and Latin-American problems and issues. This educational research needs to be based on academic and scientific standards, one of the goals of this OER and Mobile Resources Repository is to give and make available methodological and epistemological tools and resources for conducting educational research with rigor and care.

This OER repository (http://catedra.ruv.itesm.mx/) is part of a project financed by CONACYT, a Mexican public institution, with the main objective to develop educational resources which will be accessible for everybody not only at the Internet and computer devices, also using mobile devices for *mobile open resources.* This OER repository is part of a project that is experimenting new technology for the delivery of OER from the repository (http://catedra.ruv.itesm.mx/) through an indexed OER catalog (http://www.temoa.info/) to mobile devices (Ipods, Iphone, MP3, MP4, and so on).

This OER and Mobile Resources Repository is connected with the *TEMOA*, a Mexican OER indexed catalog (http://www.temoa.info/), named before Knowledge Hub (KHUB). Which was another important open educational initiative from Tecnológico de Monterrey. The initiative is conceived by the faculty's needs to find effective materials in teaching and learning and with the certainty that the resources found respects intellectual property and legal rights from their original authors. It is a public catalog that provides a multilingual search engine that allows the user to discover selected Open Educational Resources (OER) using metadata enriched by experts and enhanced by librarians, using Web 2.0 such faceted searching and social networking tools. The TEMOA website , former KHUB is for free use available on the Internet for teachers, professors and self-learners of all levels, from higher education to K12.

"At the heart of the movement toward Open Educational Resources is the simple and powerful idea that the world's knowledge is a public good and that technology in general and the World Wide Web in particular provide an extraordinary opportunity for everyone to share, use, and reuse knowledge. OER are the parts of that knowledge that comprise the fundamental components of education—content and tools for teaching, learning, and research" (Atkins, Brown, and Hammond, 2007, p. 6).

The OERs are important worldwide because they are helping and having impact on the different educational levels (through the Internet), at both dimensions: distance education and face-to-face education (Fountain y Mortera, 2007). The Tecnológico de Monterrey participates in the process of offering open educational resources available at the WWW through its initiative named TEMOA, and its new OER and Mobile Resources Repository for the instruction of educational researchers; doing this is trying to respond Mexican and Latin-American educational needs, and worldwide educational issues.

This paper will present the results, outcomes and experiences on a project about innovative applications and the use of new technologies using OER which allowed the delivery and transferability of knowledge through the Internet and mobile devices to help the instruction and educational formation of Educational Researches in Mexico and Latin-America.

Open Educational Resources and Mobile Resources for the Instruction of Educational Researchers Project

Currently, the Internet and the Information and Communication Technologies (ICT) are allowing access to open educational resources at different educational levels in the world; although these resources by themselves do not solve the diversity of educational issues and problematic, they contribute to the dissemination of educational material and they help to improve the educational conditions in different countries and societies around the world.

This paper has the objective to present the first stage of the project named "Open Educational Resources and Mobile Resources for the Instruction of Educational Researchers," funded by the

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Corporation of Universities for the Development of Internet (CUDI) and the National Council for Science and Technology (CONACYT) in Mexico. This project aims to develop instructional material and educational resources for training educational researchers located in a digital content repository, contributing to the reduction of the educational gap and learning problematic in Mexico and Latin-America, and for an equal access to educational resources available at the Internet. The main goal is to generate a body of open educational resources (OER) and mobile learning resources (ML) on educational research methodology issues which are free and licensed for use, reuse and distribution within the academic community in Spanish speaking countries and around the world.

The project allows CUDI main goals to help knowledge-sharing based on academic networks using the Internet 2 as a mean of communication and advanced services through a networking of diverse communities within Mexico, especially in education and at international level. All this, is based through an academic work between researchers and teachers from different Mexican higher education institutions, public and private, in the area of educational research methodology, where the processes of communities of practice are crystallized with open educational resources and mobile resources created and deposited in a digital repository open to everybody in the world through the WWW.

Among the specific project objectives are: a) to facilitate the use of technology for teacher training, to develop educational innovations to generate a sense of social consciousness and commitment for the solution of the educational problems, and to generate academic networks and knowledge exchange at national and international level using the Internet as a mean of communication; b) to develop a shared project that can enrich the knowledge of educational technology and the Internet as a research tool which can facilitate and support the access to open educational resources (OER) and mobile resources (MR) located in the WWW, to be used by faculty and researchers from Mexico and Latin America in their courses. All these objectives were accomplished through two main activities: 1. Through the interaction of higher education faculty and researchers, with the main goal to build a digital content repository of open educational resources and mobile resources; 2) and through the project findings based on its applications, studies and dissemination of knowledge in specialized journals and papers also in national and international congresses.

The Mexican higher education institutions which are participating and collaborating within the project are:

1. Tecnológico de Monterrey (ITESM)
2. Universidad de Montemorelos (UM)
3. Universidad de Guadalajara (UDG)
4. Universidad Autónoma de Yucatán (UADY)
5. Instituto Tecnológico de Sonora (ITSON)
6. Universidad Autónoma de Guadalajara (UAG)
7. Universidad Autónoma Metropolitana (UAM)

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Research Objectives

a) Creation and hosting of a digital content repository of Open Educational Resources (OER) and Mobile Resources (MR) of educational research methodology and research training resources.
b) Documentation of the management process and creation of OER and MR as well as the hosting process of the content repository site for educational resources on educational research and research training, as well as the guidelines for its organization, accessibility and dissemination in Spanish speaking countries.
c) Implementation of the project with teachers and researchers to see how they use these resources and inquire among them their perception on the creation, use, reuse and sharing of open educational resources (OER) and mobile resources; through quantitative, qualitative or mixed studies.

Research Problem

The lack of open educational resources and mobile resources for educational research training and instruction in diverse areas of educational research methodology, the field of epistemology, theoretical and diverse pedagogical approaches, and on how to handle information (data collection and analysis) available on the Web; it makes necessary not only to study the current state of educational research from the perspective of the use of information and communications technologies (ICT), but also to work with the production and development of such materials and educational resources to be easily accessible and free to teachers, students, and researchers interested in the improvement and acquisition of this kind of knowledge and research resources in Mexico, Latin America and the world .

The central idea of the project is to develop and implement open educational resources and mobile resources for learning and training educational researchers. Therefore, there are three important elements to support the project: open educational resources, resources for mobile learning and training of educational researchers.

Research Questions

1. What are the main issues to consider for the production and design of open educational resources and mobile resources for educational research among teachers and researchers in Mexico and Latin-America?
2. How do teachers and researchers use free and open resources for educational research and researchers training?
3. Which are the main inputs of open educational resources and mobile learning resources for training of educational researchers?

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Research Hypothesis

1. The main issues to consider for the production and design of open educational resources and mobile resources for educational research among teachers and researchers in Mexico and Latin-America come from many venues, such as: theoretical background, faculty professional experience, and the mission of each higher education institution (Colleges and Universities).
2. Teachers and researchers use the OER and MR in different ways, based on their theoretical perspectives, course objectives, research practices and institutional interests.

Literature Review (theoretical approach):

A. Open Educational Resources (OER). The concept of Open Educational Resources refers to a body of educational material which are free and available on the Internet and WWW (they can be in form of: text, video, audio, software, and multimedia, among others). They have free licenses for the production, distribution and use of these resources to benefit the global educational community, particularly for to be used by teachers, faculty and students from diverse educational levels.

The term was first used in July 2002 during a UNESCO workshop on open courses (open course ware) in developing countries (D'Antoni, 2008; Burgos Aguilar, 2008). Open educational resources are part of what has been named information society and knowledge society, where is a growing use of new forms of processing, distribution and use of information and knowledge based on new information and communication technologies (ICT).

B. Mobile Learning (MLearning). It is defined as a learning environment that is based on receiving or delivering electronic content (eLearning) with support of mobile technology (electronic devices) and is carried out for different contexts (mobility) which aims to support other means of education in order to achieve real learning. MLearning does not seeking to replace the distribution of e-learning methods, but adds an additional channel for learning. MLearning refers to environments which are intelligent, sensitive and responsive to the presence of people (Ruyter and Aarts, 2003), it is a type of instruction that is not limited by the learning environment, to the contrary, it complements and enriches the learning process where spontaneity, personalization, portability, convenience, adaptability, integration and availability are essential characteristics.

C. Training of Educational Researchers. The profile of an educational researcher is ambitious and includes knowledge, skills and attitudes, such as his or her extensive knowledge on educational practices and research methodologies, strategic thinking, scientific rigor and interdisciplinary expertice (Paul and Marfo, 2001, Eisenhart and DeHaan, 2005, Torres, 2006). The training of educational researchers involve a complex process because the nature of educational research itself (Berliner, 2002; Labaree, 2003); especially because the existing difficulties imposed by the context, for the multitude of institutional, social and political factors involved (Weiss, 2003), also, for the various conceptions of the process itself (Torres, 2006), and by the extensive, depth and specificity of the required curriculum (Paul and Marfo, 2001, Eisenhart and DeHaan, 2005; Torres, 2006).

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Performing this process in a distance learning environment poses additional challenges, such as using technology as a mean, not an end, designing specific programs and not simply re-apply the traditional balancing cognitive and affective aspects, among others (Torres, 2005 ; Chivers, 2006 and Ramírez, 2008).

The register of researchers in Mexico shows numbers really low. The National System of Researchers (2007) reported that it had registered 14, 681 researchers in all areas in the entire country (a country with 105 million people). The Mexican Council for Educational Research reported 301 researchers from 60 partner public and private institutions in 26 states or province, 96% with postgraduate degree (COMIE, 2008).

Methodology

The research methodologies to be used along the project: multiple case studies and studies with mixed methods, in order to study the processes of joint construction of experiences, transfer processes, identification of the impact on user perceptions of innovation in educational projects based on the creation and use of open educational resources (OER) and mobile learning resources, technological appropriation and correlations of technological standards, as well as the collaborative construction raised through the project with support from Internet 2.

Project Results

The achievements and progress in the first stage of the project (January to August, 2010) were as follows:

1. It was built the project registration form: http://tinyurl.com/registro-proyecto
2. Creation of the faculty and researchers group project website:
    http://sites.google.com/site/oer4share/
3. Researchers project forum: http://foros.um.edu.mx/rea/index.php?board=14.0
4. Guidelines for subprojects: http://sites.google.com/site/oer4share/
5. Planning and development of the training workshop for the creation of REA and MR, April 20 (3-7 pm) and April 21 (9 am – 7 pm), 2010, in the city of Morelia, México. Application of an online survey of 30 questions to all participants to obtain project information: http://foros.um.edu.mx/rea/index.php?topic=37.msg74 # msg74
6. Tecnológico de Monterrey has developed three subprojects within the main project. a) Open Educational Resources (OER) and Mobile Resource in Educational Research Training, contributions given by Project Cudi-CONACYT (PhD student Rogelio Martinez). b) Macro study on the participation of the seven institutions Cudi-CONACYT project during the production process of REA (Leonardo Glasserman PhD student). c)

Construction of virtual networks in the generation of REA and Mobile Resources (PhD student Jorge Alfaro).

7. Set up of the content repository link: http://prod59ms.ruv.itesm.mx/catedrate/
8. Videotape: "*Reunión del grupo de investigadores con VC internet 2*" (03-24-2010). http://sesionvod.itesm.mx/acmcontent/8caa76e6-0b05-4435-8c65-99e7ddd2cddf/Unspecified_EGE_2010-03-24_03-13-PM.htm
9. Development and application (01-06-2010 to 30-08-2010) of a survey to teachers, faculty and researchers participants: http://www.surveymonkey.com/s/D668GJW
10. Development and application of a survey for OER and MR teacher users: http://foros.um.edu.mx/rea/index.php?topic=100.0

Note: Each participant institution has to create 6 OER and MR = a total of 42 OER/MR.

Conclusion

Open educational resources (OER) are material which helps to enrich and fortify the educational process. OER and MR, are also considered material and resources that give support and make strong the teaching process itself, they are also a medium where any teacher can develop competencies and processes of appropriation who allows him or her go beyond their previous knowledge.

Diverse challenges come out while you are developing learning communities. Like any research and applied project where intervene a group of persons, they face and experiment obstacles for accomplishing project objectives, these challenges need to be handle through a joint work with the effort of all the community members. The project described in this paper had many and diverse challenges and constraints in different ways (technically, procedural, and motivational), however any of these obstacle defeated the main goal of this educational project.

It is necessary to work on the development of a culture of collaboration for joint construction, and communities of practices, for future educational purposes, especially in the field of innovation and educational research. The fact that seven higher education institutions in Mexico worked together, putting all their forces to accomplish a common goal, and helped to develop this OER and MR educational project, it was by itself a real success.

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