

Towards An Open Access Institutional Repository For Learning Objects: The University Of Colima Experience

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ABSTRACT

This paper presents an institutional proposal for the developing of a learning objects repository, based on the open access model. This repository will be a place for storage of the educational materials produced by academics and researches of the University of Colima in Mexico.

Interoperability is one of the main issues in creating a learning objects repository; our project will work holistic with the other educational software platforms of our institution, as the libraries system (SIABUC) and the distance education platform (EDUC). In addition, the learning objects on the repository will be standardized in order to use them on courses with external Learning Management Systems (LMS).

Keywords:

INTRODUCTION

In this document, part of the experience of building a repository for learning objects (LO) in the University of Colima is explained. The objective of the repository is to encourage the usage of learning objects by teachers and students of high school and higher education in our institution. With this, it seeks to strengthen the involvement of Information Technology and Communication in the process of teaching and learning by establishing a broader number of alternatives through the potential of learning objects as didactic support.

A learning object can be defined as “a pedagogical mediator that has been intentionally design for a learning purpose and serves actors in various educational modalities” (Nuevas formas de enseñar y aprender; Ministerio de Educación Nacional, s/f), besides, it can be considered that this objects are constituted as a “digital or non-digital entity that can be used, re-used or referred for the learning supported on technology” (Callejas, Hernández, & Pinzón, 2011).

With the goal of optimization the reutilization of learning objects it is necessary to count with a space “destined for its storage and classification to facilitate later maintenance, localization and, possibly, sharing the LO with other systems in diverse applications” (López, 2005), the space that fulfills this objective is known as a repository of learning objects.

METHODOLOGY

The results presented are derived of a progressive work that contributed to clarify the general characteristics, as well as the procedure to follow for the elaboration of learning objects that considers the characteristics of our institution.

Some of the moments that were part of the definition of such procedure were: the documental review of the concept of learning objects, several repositories (national and international) of learning objects and the analysis of processes and procedures in order to design the specific process for designing and making LO.

National repositories were reviewed: Technological Institute of Sonora (Instituto Tecnológico de Sonora, s/f), the Center of Resources for Teaching and Learning (CREA for its acronym in Spanish) of the Center of Economical Administrative Sciences of the University of Guadalajara (Universidad de Guadalajara, s/f); the institutional repository of the Network of Digital Collections of the National Autonomous University of Mexico

(UNAM, s/f). In the international level we considered: Bdigital, institutional repository of the National University of Colombia (UNAL, s/f); the Bank of Learning Objects and Information of the University of Antioquia (UDEA, s/f); also the Multimedia Educational Resource for Learning and Online Teaching (MERLOT, s/f) and finally AGREGA2 (Agrega, s/f).

The analysis of processes and procedures implied the review of a certified process and specific to the sub process of Design and Development of Educational Solutions Based on IT, in function on the participation of key actors that intervene in the development of learning objects.

FINDINGS

In order to define the appropriate procedure for the design and development of learning objects, an exercise in integration of procedures was performed.

In order to develop this repository we are working with the General Direction of Educational Resources at the University of Colima, they have an ISO-9001 certified process in the Management of Information Technology and Communication, in the sub process of Design and Development of Educational Solutions Based on IT, so it was decided to consider the requirements of this sub process and integrate the needs arising from the design, construction and evaluation of learning objects to a new process.

The certified sub process considers three key actors:

- a) The client,
- b) The responsible for customer service and,
- c) The personal dedicated to design and development.

Nevertheless, as part of the proposal for the elaboration of learning objects in our institution, it was considered necessary the definition of the participation of teachers, educational counselors and advisers of the General Coordination of Teaching that would be involved in the development of learning objects. At this new design, these actors have specific functions:

- **Teachers:** With the teacher begins the development of learning objects, as this is the person making the request to register a new learning object, also is responsible of the didactical design that will support the learning object. An essential task for the teacher is the development of thematic content because he is who holds the domain of his discipline.
- **Pedagogical Advisor:** The pedagogical advisor plays an support role in the didactical design of the object, he is responsible for reviewing, giving feedback and approving the didactical design of the learning object; therefore it belongs to him the first contact with the professor interested in the design of a new object.
- **Academic Advisor:** The academic advisor has two specific functions. First, he checks that the didactical design complies with the established requirements, he is also who makes the application to the General Direction of Educational Resources to start the development of the object corresponding to the technological dimension.
- **General Direction of Educational Resources:** Once the teacher, pedagogical advisor and CGD advisor have worked in the pedagogical dimension, the General Direction of Educational Resources is the responsible of the technological development which implies the development of the application, verification of prototype, evaluation of the teacher's satisfaction with the learning object, publication of the object, and finally, perform the monitoring and evaluation of the learning object.

In Figure 1 can be observed the defined procedure, considering the requirements of the certified sub process and the new needs related to the elaboration of the learning objects.

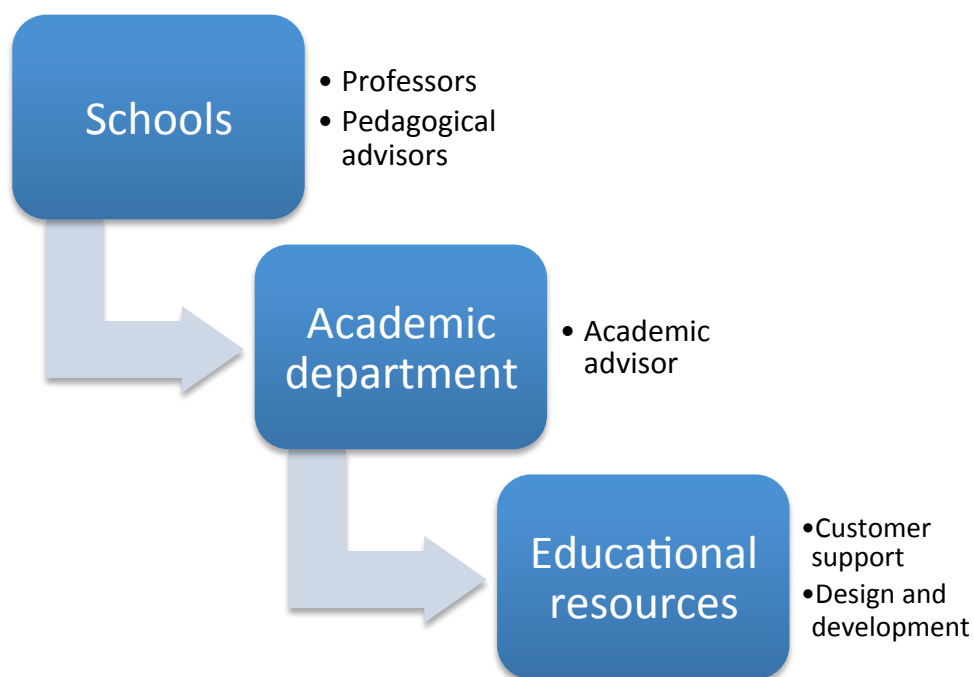


Figure 1: Flow for the development of a learning object.

By defining the above procedure, we seek to have multiple revisions of the learning object, prior to publication: first, by the pedagogical advisor, with emphasis on the didactical design; the second, by the CGD advisor, that will verify that all the requested elements have been considered for the development of the object; thirdly, the design and development team will verify the object as well as support the validation made by the teacher. This scheme is proposed to strengthen the quality of the learning objects that will be published in the institutional repository.

DISCUSSION

The University of Colima aware of the importance of learning objects in the teaching-learning process has developed through different stages of time, projects of this nature (Galeana, 2003), (Farias, Cruz, Ceja, Diaz, & Macias, 2006) and (Enríquez, 2006). Besides of a number of developments to automate various teaching processes, the most important are the libraries system (SIABUC) and the distance education platform (EDUC). Our repository will work holistic with those software platforms, because the interoperability is one of the main objectives in creating our learning objects repository. In addition, the learning objects on the repository will be standardized in order to use them on courses with external Learning Management Systems (LMS).

To this end, cataloging and packaging standards are fundamental in the process of assembly and distribution of existing instructional resources. The most representative in the field of e-Learning are the IEEE-LOM standard and the ADL-SCORM specification.

The IEEE-LOM (Learning Object Metadata) standard (IEEE, 2002) defines the syntax and semantics of Learning Object Metadata, which facilitates classification. It consists of over sixty descriptors grouped in a conceptual scheme of nine categories: general, life cycle, metadata, technical, educational, rights, relation, annotation and classification.

The ADL-SCORM (ADL, 2004) specification uses the IEEE-LOM standard for describing learning resources. It provides oriented guidelines interoperability between different e-Learning solutions. It consists of content packaging standards in order to create hierarchical structures that are interchangeable. Defines a protocol for communication between the user and a LMS, like one for the record of the actions performed by the user.

CONCLUSIONS

This paper presents the proposed establishment of an institutional repository of learning objects for the University of Colima, a platform that considers a group of interrelated services for the management of Learning Objects, from platforms with instructional resources of the institution.

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