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Developing moodle-supported courses using a course template and learning objects: a layman's experience

Desarrollo de cursos en moodle utilizando una plantilla y objetos de aprendizaje: un modelo para personas inexpertas

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ABSTRACT

This paper examines whether an academic in the field of information technology can develop a quality online Master's degree program in Education Research Methods outside of his area of expertise. It examines his reliance on preprogramed course development templates and relevant learning content to accomplish this complex task rapidly and efficiently. This study follows a developmental research approach that assesses

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the course assembly process as well as the outcome of this pedagogical intervention. It discusses the implications of using the Moodle course management system as an integral part of this course design and assembly process.

KeyWords:

Online course development, course design, course template, course assembly, instructional design, learning activity, learning object.

RESUMEN

Este documento examina si un académico en el campo de la tecnología de la información puede desarrollar un programa de Maestría en línea de calidad en Métodos de Investigación en Educación fuera de su área de especialización. Examina su dependencia de las plantillas de desarrollo de cursos preprogramadas y el contenido de aprendizaje relevante para realizar esta tarea compleja de manera rápida y eficiente. Este estudio sigue un enfoque de investigación del desarrollo que evalúa el proceso de montaje del curso, así como el resultado de esta intervención pedagógica. Discute las implicaciones de usar el sistema de gestión de cursos Moodle como parte integral del proceso de diseño y montaje de este curso.

Palabras claves:

Desarrollo del curso en línea, diseño del curso, plantilla del curso, montaje del curso, diseño instruccional, actividad de aprendizaje, objeto de aprendizaje.

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1. INTRODUCTION

This paper examines the challenging course development process that a university professor in Computer Sciences followed to develop a pedagogically sound graduate program in Educational Research and Methodology outside of his field of expertise. It considers the course assembly process he followed using a Moodle course template to build and structure this program of courses in rapid succession. It discusses the process he followed to select learning objects that were conceived and developed by academics at the public University of Cienfuegos, Cuba, and decisions he took to adapt this course content for Mexican learners at the private University of Las Californias, in Tijuana, Mexico.

A Course Design Templates

Designing an online course as part of a broad graduate program of studies requires anticipating students' learning needs across broad program of studies and planning how other university academics will teach a series of courses at a distance. Online learning requires an educational model of learning mediated that makes intensive use of a familiar learning environment and an efficient instructional approach adapted to students' and their instructors needs (Pérez, Jordano, & Martín, 2017). This teaching and learning experience are generally mediated by technological systems used to design, deliver, and manage such courses. Some systems such as Teleduc, Microcampus, Moodle, or Mundicampus function as Open Source software while others such as WebCT and Blackboard exist as proprietary software. Developing online courses using such technological tools nevertheless challenges educators to undertake complex design tasks that they liekly have not formally been trained to undertake. As Cabero (Cabero, 2006) explains, online course development requires more preparation time and more instructional effort than classroom based education than classroom-based teaching does. Accordingly, a academic's technological skills, proficiency and expertise is generally insufficient for this type of work. Thus, the author concludes many courses do not demonstrate a high level of academic quality.

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Yet, one of the potential advantages of course management systems is that educators can select or devise course creating template. This may help them create several or many courses in a row following a common pedagogical approach (Area, 2018) (Bartolomé & Steffens, 2015) (Powell et al., 2015). Such a template consists of a software framework into which content can be added to complete the course. It comprises a blank course structure designed using a course management system for a hypothetical course. It does not include real course content but provides functioning hyperlinks linking content to key course categories. Key categories fall under a number of section headings into which teachers can add their own course material. A design approach to courses relies on a pre-arranged instructional strategy designed into the template. Indeed, Lane (Lane, 2008) warns that the "default" design of course management programs may in turn dictate the pedagogical strategies and "tools" educators follow to develop their courses may in fact determine instructional methods underlying the course design. Whether course designers select their own template or obtain someone else's is not therefore not as important as whether they ensure that it meets sound pedagogical outcomes and factors determining course quality (Santángelo, 2000) (Pérez, Jordano, & Martín, 2017) .

Course Content

The rapid development of a Master's program in Educational Research and Methodology using Moodle as a content management system hinged on the course assembly of learning objects an e-learning platform using a template devised for this purpose. This object-oriented approach to course design also assumed that an instructor can effectively employ learning objects from multiple origins to produce a sound curriculum (Polsani, 2003). These segments may serve a variety of educational experiences and pedagogical purposes (Harman & Koohang, 2005). Such instructional content, (Ortiz y Morer, 2005) assume, should be easy to adapt to a new learning context according to the particular necessities of the learning and teaching process. In fact, the learning object-oriented course development approach in this study is characterized by the assumption that instructors and course developers create

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independent segments of educational content that can effectively be re-employed in an entirely different context. Nevertheless, the course content developed in Cuba needed to be adapted to the particularities of a graduate program in Mexico. Primary and secondary education in Cuba and Mexico are subject to very different conditions affecting teacher hiring, in class teaching, curriculum development, supervision and evaluation, and governance (Smith, 2013)

For this reason, the course developer under study searched for context-specific learning objects in online learning objects' repositories. He relied on ADL-SCORM protocols (Jolliffe, Ritter, & Stevens, 2012) to complete this task. This search netted FTP applications, conference videos, telephone, CD-DVD-ROM disks, printed matter and many others components incorporating Internet and communications protocols. The graduate program developped for the University of Las Californias in Tijuana, Mexico consisted of eighteen courses, each four months in length. This online graduate program comprised a blended learning and teaching approach combining online and inclass learning periods. It allowined for collaborative interaction among students and between them and their instructor and supported an inquiry and discovery-based approach to online learning. Students completed three courses per semester and were evaluated at the end of each of these periods. They could not register for a new set of courses until they passed previous courses. They could choose these from a set of five available courses.

2. METHODOLOGY

This study followed a developmental research design (van den Akker, 2011), assessing the process as well as the outcome of such a pedagogical intervention. It derived meaning from this educator's practical experience and his reflection about the course development process he followed. This approach views educational research as a means to contribute to more practical relevance in the field of education. It tested the course developer's ability to develop a complete Master's program on his own using over two five-month periods "onsite" and another five-month period of

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developmental work at a distance. The insight this paper provides was gathered from notes taken by the course developer and observations he made. These records account for the progression his course development work followed from an initial trial-and-error course design phase to a much more structured, deliberate, and final design phase.

3. DISCUSSION

In general, (Akker, Gravemeijer, McKenedy, & Nieveen, 2006) caution, the objects' assembly process usually involves team players working following a collective approach, an educational strategy that many academics are not used to nor are they comfortable with (Cabero, 2006). Thus, the success of a learning objects approach to course design lies on the abilities and the motivation of many key institutional players working together (Canales, 2014). In comparison, the entire success of the Master's Program in Educational Research and Methodology under development at the University de las Americas in Tijuana, Mexico, rested on the shoulders of a one university professor handling all relevant technical and academic course development tasks. The success of this endeavor and the fact that this online Master degree program has successsfully been taught for several years now underscore the importance and reliability of the "template and learning objects" approach to course design using a course management system. In particular, it underscores the importance of lessons learned based on this approach and the developer's experience.

Designing a Course Template

The course "skeleton" the course designer fashioned through a period of trial and error helped him gain a sense of design perspective and uniformity. The template this course developer adopted was structured to encompass directories, blank files, titles, labels, forums, chats, labels, and finally the necessary hyperlinks connecting key course features. This Moodle course shell acted as a "parent" structure on which they proceed to add content course per course. The developer chose a theme designer approach, looking for uniformity between repeated key elements to maintain a sense

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of familiarity from one course to another. The study guide stood out as the central element in the template design. It reflected the essence of the instructional design, occupying much of the designer's attention (Morales, García, Campos, & Astrosa, 2013). The developer took advantage of the Moodle course design features to follow a social constructionist pedagogical approach. The template aimed to help students learn autonomously as much as possible. This design nevertheless tried to maintain an adequate relation between the teachers and the students through a blended learning approach allowing students and their professor to communicate in class or online through chats, asynchronous seminaries, and other methods of communicating. The final course structure provided students information regarding their graduate program, course related information, a schedule of learning progress to follow, instructions, learning activities, and reference material.

A key aspect of this course structure was the study guide. It provided students a clear orientation to the course, it also helped students make sense of the learning process they were required to follow, section by section, learning objective by learning objective. It helped them make sense of the printed or digital resources they were asked to consult. The study guides highlighted course requirements, recommended study material and activities, and directed students to optional readings and resources (Maldonado, Carvallo, & Siguencia, 2015). Importantly, it provided students information about ways to study alone, with other students, or ways to communicate with their professor about course-related matters. The final course template assembled using Moodle was flexible enough to allow a course instructor to modify it in the future according to his or her needs. Part of the course structure could simply be hidden from view until a learning object or learning activity was added to fill in an empty space. This template's key structural aspects are summarized in Chart 1.

1. General documents section, including documents, software and multimedia.

   a. Program objectives.
   b. Grade profile.
   c. Course requirements.
   d. Learning outcomes
   e. Course bibliography.

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f. General-purpose content – static information.
g. General-purpose content – interactive or multimedia information.

2. Study Guide

a. General information
b. Course Units
c. Learning activities
d. Learning schedule
e. Reference material

3. Course Evaluation

a. Assignments
Group and Individual tasks
b. Final Exam

Chart 1 – Graduate Course Template

The course developer credits the clarity of this template development process using Moodle to overcoming structural obstacles in the initial course design. Using a template to design graduate courses following a repetitive content development approach, he concluded, enabled him to pay less attention to technical aspects of the course design. It freed him to focus more on the quality of the didactical process inherent in this design and to the quality of academic content he included in each course using a learning objects assembly process. This approach, he concluded, provided uniformity in the course development.

Selecting Learning Objects

The ongoing success of the Masters' program in Teaching and Educational Research at the University of Las Californias in Tijuana, Mexico, demonstrates that a non-specialist in the field of educational research could effectively design a program of graduate courses using a learning objects assembly approach. The course developer credits the "stand alone" quality of the learning objects he located to design these courses. The information he retrieved from a similar program developed at the University of Cienfuegos, Cuba, and from online repositories was universal enough in nature to adapt well to a new educational context (Acker, Pearl, & Rissing, 2003) (Zapata, 2005) (Cabero, García, & Barroso, 2016) (Tovar, Bohórquez, & Puello, 2014). Text documents and audio or video recordings he located and used in this assembly process not only emphasized pedagogical concepts

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and research methodology in education. They helped introduce lesson topics and reinforced the topic through remedial study exercises and documents for further study. Following the design template, course titles, lesson topics, information about prerequisites, lesson objectives, study recommendations, activities and practice and teaching and technical support all appeared following common themes and navigation links. A typical course thus consisted of a well-structured study guide complemented by digitalized resources as MS Word documents. PDF files, Power Point presentations and other complex resources as videos, animations, recordings enhanced the quality of the online learner's experience. The process of selecting and adapting content to blank course templates is summarized in Chart 2.

1. Collecting or preparing corresponding files, including Power Point presentations, PDF files, digital books, external hyperlinks to internet sites, animations, audio and video files, software, etc.

2. Login in to MOODLE with the necessary administrative privileges to create a new course by uploading the course template and assigning corresponding course attributes.

3. Transferring content to template sections

4. Planning forums, chats, task-related or interactive learning activities, and self-evaluations or questionnaires,

5. Preparing a study guide as an integral part of the course or as a stand-alone file.

Chart 2 – Graduate Course Content

This course design approach enabled the developer to work rapidly and efficiently under time constraints towards a program opening date. The course developer credits the ease of the learning objects assembly process using Moodle and the availability of relevant content to the quality of the learning experience he was able to design in these graduate courses. He also acknowledges using Moodle in a learning objects assembly approach with creating

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a familiar learning and teaching environment that students, teachers as well as he, the developer, could relate to. In spite of his lack of academic training in the field of education, he was satisfied that he gained tremendous insight and knowledge about this field of study both at the graduate program, course, and lesson levels through this course assembly process. As well, he is confident that his experience can be replicated by other professionals, if only they give this approach serious consideration and effort. He guides them to consider instructional design based on a sound pedagogical approach and a good course template as the initial point a course program development process using Moodle.

STUDY LIMITATIONS

The design research undertaken in this study aimed at developing knowledge about the production means that support the course development process for online education in a cross-cultural educational context. Such a research approach focusing on course design is valid in itself because its findings may provide design relevance if they are perceived by others to be widely relevant (Van Acker, 2006). A particular limitation of this study is that it highlights key design-related decisions the course developer took to rapidly develop a graduate program of courses. However, it does not provide much information about the progressive or cyclic development process of design initiation, evaluation and revision that lead to the adoption of a "final" course template or the selection of some learning objects in comparison to other types of objects that were rejected for this design. Engaging in design research nevertheless does not preclude examining online the corresponding process of learning and teaching online that occurs online in the learning environment designed for this purpose. Future research should thus try to establish empirically-founded findings linking course design to online instructional and learnings practices as well.

4. CONCLUSION

This study made explicit key decisions taken by a course

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developer about the design he adopted for online course delivery. It highlighted the learning objects assembly method he followed and the design of a Moodle course template he produced to rapidly and effectively develop a program of graduate courses for a Master's program in Educational Research and Methodology. Importantly, this study demonstrates that this course design and assembly approach can be successfully undertaken by a course development professional from another academic area than one usually reserved to content specialists.

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