

# Preface

The increasing growth in the use of e-learning environments, in which education is delivered and supported through information and communication technologies, has brought new challenges to academic institutions. E-learning through virtual environments could be defined as the use of the Internet to access learning resources, interacting with contents, instructors, and other learners, in order to obtain support during the learning process, with the aim of acquiring knowledge, constructing personal meaning, and growing from the learning experience. From all the current definitions of e-learning, it can be seen that learning contents are one of the key issues for a successful e-learning experience. This is the reason why there is a real need for academic staff, managers, and librarians to rethink the whole process of delivering courses, information resources, and information services.

E-learning systems involve, therefore, users, services, and contents. All these elements cannot be independently managed, as the learning process is a complex combination of all of them. With respect to contents, some authors point out that traditional content management systems applied to learning resources try to reproduce the traditional learning process where contents are transmitted (or, in this case, delivered) from teachers to learners, following a producer–consumer model (one-to-many). But the concept of learning itself has changed, shifting from a content-centered paradigm to a learner-centered one, where contents are no longer the most important element in the learning process. On the contrary, it is much more important to focus on the interaction between the learner and the contents (wherever and whatever they are). We live in an age of content abundance, so the problem now is not finding contents, but organizing them and selecting the most appropriate ones for a given learning objective. Recent initiatives such as Open Education Resources or OpenCourseWare are making quality contents publicly available, so contents are no longer confined to a single educational institution. In this sense, learning object repositories (as a specialization of digital libraries) are becoming a common element of educational institutions, allowing both teachers and learners to build true learning communities around a common subject or field of interest. Furthermore, the apparition of the web 2.0 has promoted a new create-remix-share model (many-to-many) where all users (experts and teachers but also learners) are potential authors of new kinds of contents. Therefore, the concept of content management applied to e-learning needs to be rethought.

Nowadays, the term content management has been widely accepted and commonly used, and there are hundreds of products that offer solutions for several areas of application, including education. For this reason, this book tries not to focus on specific product solutions but rather offering on the one hand, a conceptual framework that comprises what is content management and the relationship with knowledge management together with providing perspectives on how the semantic web could complement content management and also how to deal with copyright restrictions, and how to describe information competences and skills required and acquired by teachers and students in virtual environments. On the other hand, the book also provides case studies and practical solutions for designing a project for managing content, standards for content e-learning management, a review of existing experiences of learning repositories, and a survey of available platforms for delivering courses and providing access to information resources.

This book attempts to address content management in the elearning sector from mainly two approaches; one theoretical and the other, a more pragmatic one.

The 11 chapters explore the areas and issues that are highly important in relation with content management for e-learning. The chapters are organized in three parts. The first one includes the conceptual framework, the second outlines the case studies and pragmatic issues and the last one is a chapter with the perspectives and the conclusions.

The conceptual part of the book starts with a background on content management and the role of the content management systems and the social software, beyond the technological solutions, in the disciplines of knowledge management and e-learning. This chapter revises the idea of implementation of content management systems in relation with the context of e-learning and the different types of knowledge involved.

Chapter 2 sets out how the methodological changes imposed by the European Higher Education Area and the technological changes derived from Web 2.0 have modified the requirements of content management systems in educational institutions. This chapter also describes the learning process in virtual learning environments as something that is much more than just providing learners with digitized content. The chapter also explores the relationships of traditional content management systems and the broader scope of virtual learning environments, including aspects of metadata standards, content personalization, the use of semantic web techniques and ontologies, the use and annotation of learning resources and the possibilities offered by the use of web 2.0 technologies.

The concept of the learning object is deeply studied in Chap. 3. This chapter tries to establish basic definitions around the learning object with the aim of promoting findability and retrieval which are two basic requirements of any educational scenario dealing with learning objects. In order to do so, a list of assertions and implications related to learning objects are discussed, raising several important issues with respect to context of use, metadata, instructional design and automation. These assertions establish a minimum set of requirements that should be taken into account when designing any educational experience based on the use of learning objects.

The following chapter explores the relationship between pedagogical design and content management in the creation and use of online learning resources. A strong relationship between the two concepts is presented and in particular that the strategies and considerations around content management in e-Learning systems impose a number of constraints on the variety of pedagogical designs and methods that are available to teachers using these technologies. For instance, it exposes the problems that arose when changing from one Virtual Learning Environment (or Learning Management System) to another one. It also outlines the issue of reusability which is a crucial factor of many aspects of e-learning content management and pedagogy.

The aspect of the competences required for searching and using information for learning is addressed in Chap. 5. First of all, the chapter explains the concept of “information competence” and how important it is to develop such competence in the context of workplace skills required in a knowledge society, and specially, in an e-learning environment. Being competent in the use of information is a requirement for life-long learning. In that sense, the information competence development has been a controversial aspect since their implications on the learning and teaching process makes it difficult to see it as an isolated concept. The components of these competencies are explained, such as skills, attitudes, and all other aspects linked to information seeking and use process. Finally, some recommendations of the aspects of information competence are laid out and which must be taken in to account in order to design systems that help teachers and students to be more competent in their use.

The last chapter of the theoretical part of the book is about copyright as for a successful and peaceful production and exploitation of e-content, one needs to take into account any possible pitfalls that may exist under the legal systems and adopt the best contractual practices to avoid them. This chapter outlines the several legal issues involved in the production and exploitation of e-learning contents, copyright, and intellectual property, which deserve special attention not only because of their strategic and economic importance in any e-learning project, but mainly because of the intricacies that may result from the different national laws that may be affected as a result from the ubiquitous nature of the Internet. This chapter will identify these issues and examine the existing legal framework from an international perspective.

The second part of the book presents a more practical perspective and provides case studies to illustrate the issues presented.

The first chapter of this second part provides a more technical view provided through a review of the LCMS (Learning Content Management System) with regard to its functionality for content management, which is classified in four categories: creation, management, publication, and presentation. Content creation provides creators that do not have technical knowledge in building web pages with the necessary tools to focus on the contents. Content management puts at one's disposal the mechanisms to store all documents in a central database where the rest of the web page data, users, preferences, and structure are also stored, in order to facilitate the work flow and the communication among all the participants. Content publication provides the automated mechanisms so that an approved page can be presented, applying the established patterns, which once expired, can be filed for

future reference. Finally, content presentation in a LCMS can manage automatically the accessibility of the web site, with the support of international rules like WAI, and adapt itself to the preferences or needs of each user.

In Chap. 8, an introduction to e-learning technical standards, where the principal actors in e-learning standardization efforts are presented, together with the main areas of standardization and the most important initiatives in progress is offered. This chapter describes the most relevant standards for content management within the e-learning context. The first part of this chapter is devoted to the concept of the Learning Object, which is presented and studied as a way of management learning content within e-learning environments. The final part describes the most popular content management standards and specifications, such as IEEE LOM (Learning Object Metadata), SCORM (Sharable Content Object Reference Model), and IMS Content specifications (IMS Content Packaging, IMS Question & Test Interoperability Specification and IMS Digital Repositories Specification).

Apart from the interoperability and reusability of the learning objects, one of the key issues in learning repository design is the quality of the content. Chapter 9 presents a peer evaluation process that was developed for and trialed on learning objects and funded by the LEARNet project in Hong Kong. The chapter begins with a discussion of learning objects and why there is a critical need for evaluation of them. It then outlines methods of evaluation, the rationale for choosing peer evaluation in the Hong Kong context, how the peer reviews were conducted, the obstacles faced, and the resulting recommendations for future evaluation.

There are many critical issues around quality, access and the costs of information and knowledge over the Internet, as well as the provision of content and learning material. As it becomes clearer that the growth of the Internet offers real opportunities for improving access and transfer of knowledge and information from universities and colleges to a wide range of users, there is an urgent need to clarify these issues with a special focus on Open Educational Resources initiatives. This is the aim of the last chapter of the section. This work addresses the need to define the technical and legal frameworks, as well as the business models, to sustain these initiatives. That is the background to the study which has aimed to map the scale and scope of OER initiatives in terms of their purpose, content, and funding.

Finally, the last part of the book, offers an e-learning management strategic perspective as a conclusion. Content management is not an issue most senior administrators in educational institutions will be familiar with. In this chapter, a strategic view of content management, especially for those institutions that have or are about to make a major commitment to the development and delivery of online teaching and learning materials.

Although content management is probably most likely to be implemented from the bottom up, through small projects initiated at a departmental or divisional basis, there will come a point at which the institution needs to look at content management as a whole. This chapter will not provide definitive answers to these questions since these answers will vary from institution to institution. However, the chapter will discuss some of these questions and suggest a process for dealing with the management of content.



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