

## Chapter III

# An Overview of Learning Object Repositories

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### ABSTRACT

Learning objects are systematically organised and classified in online databases, which are termed learning object repositories (LORs). Currently, a rich variety of LORs is operating online, offering access to wide collections of learning objects. These LORs cover various educational levels and topics, and are developed by using a variety of different technologies. They store learning objects and/or their associated metadata descriptions, as well as offer a range of services that may vary from advanced search and retrieval of learning objects to intellectual property rights (IPR) management. Until now, there has not been a comprehensive study of existing LORs that will give an outline of their overall characteristics. For this purpose, this chapter presents the initial results from a survey of 59 well-known repositories with learning

resources. The most important characteristics of surveyed LORs are examined and useful conclusions about their current status of development are made. A discussion of future trends in the LORs field is also carried out.

### INTRODUCTION

The evolution of information and communication technologies (ICTs) creates numerous opportunities for providing new standards of quality in educational services. The Internet is increasingly becoming one of the dominant mediums for learning, training and working, and learning resources are continuously made available online in a digital format to enable and facilitate productive online learning. Learning resources may include online courses, best practices, simulations, online ex-

periments, presentations, reports, textbooks, as well as other types of digital resources that can be used for teaching and learning purposes. They may cover numerous topics such as computing, business, art, engineering, technology and agriculture. They are offered by various types of organisations, in different languages, at different cost rates, and aim at different learning settings. In general, the potential of digital resources that can be used to facilitate learning and training, and which are available online, is rapidly increasing (Friesen, 2001).

Recent advances in the e-learning field have witnessed the emergence of the *learning object* concept. A learning object is considered to be any type of digital resource that can be reused to support learning (Downes, 2003; Wiley, 2002). Learning objects and/or their associated metadata are typically organised, classified and stored in online databases, termed *learning object repositories* (LORs). In this way, their offering to learners, teachers and tutors is facilitated through a rich variety of different LORs that is currently operating online.

The LOR landscape would benefit from the examination of the characteristics of existing LORs in order to formulate a general picture about their nature and status of development. The contributions in this direction can be considered rather sporadic so far, focused on very particular topics or restricted in coverage (Balanskat & Vuorikari, 2000; Haughey & Muirhead, 2004; Neven & Duval, 2002; Pisik, 1997; Retalis, 2004; Riddy & Fill, 2004). More specifically, most of these contributions have a different focus and just include a brief LOR review in their literature review (e.g., Haughey & Muirhead, 2004; Retalis, 2004). Others include some that focus on some particular segment of LORs such as ones using a particular metadata standard (e.g., Neven & Duval, 2002), some that study the users and usage (e.g., Najjar, Ternier, & Duval, 2003), or some that have restricted geographical coverage (e.g., Balanskat & Vuorikari, 2000). Thus, we believe that current

studies do not address largely enough interesting questions about today's LORs such as: what are the educational subject areas covered by LORs? In which languages are these resources available, and at what cost? Do LORs use metadata for classifying the learning objects, and, if yes, do they follow some widely accepted specifications and standards? What quality control, evaluation and assurance mechanisms do LORs use for their learning objects? How has intellectual property management been tackled?

This chapter aims to provide an introduction to the status of existing LORs, by reviewing a representative number of major LORs that are currently operating online and attempting to study some of their important characteristics. For this purpose, a survey of 59 well-known repositories with learning resources has been conducted. A selection of important LOR characteristics was reviewed and conclusions have been made about the current status of LORs' development. This chapter is structured as following: the next section provides the background of this study by defining learning objects and learning object repositories. The "LOR's Review" section provides an overview of the methodology followed to carry out the review of the LOR sample and presents the results of their analysis. In the "Discussion and Future Trends" section, the findings of the analysis are discussed and reflected on possible outcomes of LORs' development, in relation to the future trends arising in the LOR arena. Finally, the last section provides the conclusions of the chapter and outlines directions for future research.

## **BACKGROUND**

### **Learning Objects**

Long before the advent and wide adoption of the World Wide Web (WWW), researchers such as Ted Nelson (1965) and Roy Stringer (1992) referred to environments where the design of information and

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