Chapter 2.39
Distributed Learning Objects: An Open Knowledge Management Model

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ABSTRACT

This chapter analyzes the emergence of learning objects as a dynamic and interactive relationship between technology and the organization. We examine the way that organizational objectives are embedded within selected technologies. In other words, how is the selected technology addressing the organization's needs? Further, we argue for a socially-constructed model of knowledge management. Specifically, we utilize Demarest's (1997) four-step process of the construction of a knowledge economy. From these processes, via a constructed technological system, a learning object economy emerges, which includes various constituents: the 21st century learner, the subject matter expert (university professor), vendors who support or enable knowledge management, and populaces that harvest and benefit from the collection of knowledge.

INTRODUCTION

As state and federal funds diminish and as higher education resources and university budgets become more restricted, postsecondary institutions are becoming increasingly entrepreneurial in pursuing and developing technological solutions. Meyer (2002) describes a changing marketplace, increasingly global in orientation, where technology enables the provision of adult education, executive training/retraining, competency-based programs, and education to remote geographical areas. Knowledge management,1 in higher education, is a way to retain and manage knowledge products. As higher education organizations increasingly interact with other organizational types, such as corporations, consortia, and other educational institutions, knowledge products become critical in the exchange process. Technological systems are designed to manage

knowledge and are situated in social systems with corresponding cultures, values, and beliefs. As such, higher education, as an organizational structure and a social system, must consider processes, policies, and embedded assumptions about technology, teaching, and learning, not only within their own institution, but also across those with which they interact.

The trend toward knowledge management is evidenced in the myriad of technological artifacts that have emerged to capture, categorize, and manage learning objects. During their evolution, learning objects have come to be defined in a number of ways, depending on the context and culture from which they emerge, for example, computer science, education, instructional technology, and so on. For our purposes, we define a learning object as any digital asset that is intended to be used to achieve a learning objective and can be re-used in different contexts. Learning objects may be data or data sets, texts, images or image collections, audio or video materials, executable programs, courses offered through Learning/Course Management Systems (L/CMS), or other resources that can be delivered electronically. Learning objects should be re-useable and re-purposeable over time and location and interoperable across systems and software (see Downes, 2002; Robson, 2001; Wiley, 2000). Additionally, learning objects can be combined or aggregated in different ways providing the potential for individualized learning experiences for specific learners in which their learning styles, prior knowledge, and specific learning needs are accounted for. They may also offer great value in terms of saving time and money in course development, increasing the reusability of content, enhancing students' learning environment, sharing knowledge within and across disciplines, and engaging faculty members in a dynamic community of practice (Bennett & Metros, 2001). Learning objects may be created by individuals or institutions and therefore require consideration of digital rights as well as storage and distribution.

How learning objects are stored and subsequently accessed has been primarily addressed through technology systems known as digital learning object repositories. Thomas and Home (2004) have identified four rationales, not only for the development of learning objects, but also for their storage in these digital containers.

1. The Efficiency Route: The more institutions work together, the less likely replication of efforts and therefore reduced costs based on the idea that learning objects "deliver industrial economies of scale" (p. 12).
2. The Teacher-Centered Route: The more that educators share resources and best practices, the more likely teaching will improve. In this manner learning object "creation [is] co-production" (p. 12).
3. The Pupil-Centered Route: Learners who have access to a variety of objects designed with different learning needs in mind, can be better supported. In this sense, learning objects become "scalable and networked" (p. 13).
4. The Freedom Argument: Educators should take ownership and be able to disseminate freely to the larger educational community without struggling with or against issues of institutional ownership, intellectual property or even censorship.

These rationales serve to illustrate the value structures within organizational cultures that determine how technology is used to make knowledge accessible and the reasons for doing so. Such positions are reflected in organizational policies and are particularly critical within cross-institutional interactions.

This chapter analyzes the emergence of learning objects as a dynamic and interactive relationship between technology and the organization. We examine the way that organizational objectives are embedded within selected technologies. In other words, how is the selected technology address-