Chapter 10
LeMill:
A Case for User-Centered Design and Simplicity in OER Repositories

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ABSTRACT

LeMill is an open source OER repository where the emphasis has been placed on designing a service to meet the actual needs of teachers preparing for classes. The development of LeMill has utilized open, collaborative, and iterative design methods and many features have been refined or redesigned during the process. Emphasis on design work has helped LeMill avoid and fix problems that generally pester OER repositories because of their origins as learning object repositories. The authors recognize that LeMill, as an open source project, has had the rare benefit of a long, structured dissemination phase incorporating actual teacher training. Even when developers and designers try to keep teachers in mind, actual behavioral patterns and needs appear only after the service has been in use. Therefore systems should initially be flexible enough to allow changes resulting from new findings.

INTRODUCTION

This chapter starts with a short history of open educational resources (OERs) and the repositories supporting them. The authors will show how current OER repositories are still based on earlier models of disseminating learning objects through learning object repositories. The shift from learning objects to OERs, however, has created new challenges that OER repositories have not yet fully tackled. They will briefly describe these challenges. Then they will explain the design process of LeMill and give a short overview of its features. Finally, the authors will return to the general challenges in fostering collaborative OER creation and show how some of these have been met in the development of LeMill.

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The Library Model of a Learning Object Repository

Between 1997 and 2001, various projects involved in digital educational resources created a common standard for Learning Objects (LOs). In this standard, a LO was vaguely defined as "Any entity, digital or non-digital, which can be used, re-used and referenced during technology-supported learning" (IEEE, 2002). Standardization enabled the moving of LO metadata across repositories. Along with the general optimism related to the Internet, there was a proliferation of Learning Object Repositories (LORs) and related projects. LORs were seen as having potential for providing a cost-effective way to share reusable learning resources with a wide audience (e.g. Downes, 2001).

Because of the initial vagueness of the LO definition, there was room to rethink and redefine learning objects and how they should be used. Wiley (2000) linked them with instructional design and instructional theory, assuming that the creation of learning objects was a task best left to instructional designers. Bannan-Ritland et al. (2000) in turn linked them with constructionist learning. The publishing and brokering of learning objects was seen as a growing new market (Johnson, 2003). Much effort was put into various brokerage systems to ensure that publishers could control their resources (Anido et al., 2002; Van Assche & Massart, 2004).

Learning objects were understood to be discrete entities that needed to be stored and protected, and repositories were modeled after the existing workflows between the publishing industry and libraries. In the library model, learning objects are acquired from publishers and catalogued into a repository by curators. The curators write descriptive metadata if it is not already provided by the publishers. Repository users search by using metadata fields and select interesting LOs from the results. The selected LOs are then retrieved for use. Collis and Strijker (2004) separate the process into five phases: *Obtaining*, *Labeling*, *Offering*, *Selecting*, and *Using*.

Some of the foundational projects that were instrumental in developing the learning object standard are not repositories in the sense that they store learning objects onsite. Some, like MERLOT[1] only provide metadata and links to actual objects. The ARIADNE project provides a federated search over many 'knowledge pools' and passes the requested learning objects to the user as archived file sets (Duval et al., 2001; Forte et al., 1997). McGreal (2007) analyzed 58 repositories and categorized them into either content repositories, linking or metadata repositories, or hybrid repositories based on whether they store content inside the repository or not. This categorization displays the importance of metadata in the LOR discussion; whatever LORs are, at least they have metadata.

Although early repositories designed their infrastructures to support paid content, the majority of their content was free from the beginning, coming from schools, academia, or the public sector. In Duval et al. (2001) 88% of ARIADNE content was reported to be free, and at the end of 2003 only 1.8% of MERLOT linked resources had been marked as involving costs. Instead of joining existing repositories, commercial operators often attempted to create their own repositories and user communities around their products.

Criticism on Learning Objects and Repurposing Repositories

The labeling of just about anything as a 'learning object', in addition to the unfounded promises made about them, received criticism from learning technology theorists. Wiley (2003), McCormick (2003) and Friesen (2004) based their critique on the contextual nature of learning and the decontextual aspirations of LOs. Wide-scale personalized learning would require automation, and automation would require decontextual, machine-readable, Lego-like learning objects. The result