Toolkit Approach To Integrating Library Resources Into The Learning Management System

By Elizabeth L. Black

As use of learning management systems (LMS) increases, it is essential that librarians are there. Ohio State University Libraries took a toolkit approach to integrate library content in the LMS to facilitate creative and flexible interactions between librarians, students and faculty in Ohio State University's large and decentralized academic environment.

INTRODUCTION

As course management systems or learning management systems (LMS), such as Blackboard and WebCT, gain an increased foothold in the academic life of the students and faculty at the university, it is essential that the academic librarian also have a place there. The need for library involvement in the learning management system is well documented in the literature.[1] Some have noted that integration would be challenging and called for experimentation in the library field.[2] The article that follows outlines the work at the Ohio State University (OSU) to integrate library content into the Desire2Learn Learning Management System used by the University. The approach taken at OSU was one of building a toolkit of systems and options to facilitate creative and flexible interactions between librarians, students and instructional faculty in Ohio State University's large and decentralized academic environment.

LITERATURE REVIEW

Need for Integration of Library Resources into the Learning Management System

The OCLC E-Learning Task Force summarizes the dramatic growth in the use of learning management systems (LMS) between 2000 and 2003,[3] coming to the conclusion that the number of students affected by a LMS is growing rapidly. Their report further observes that courseware environments have the potential to bring resources, including library resources needed by students, into a single Web space. This finding is echoed by other reports, including the Digital Library Federation's report on digital library content and learning management system interoperation issues[4] and the articles written by David Cohen on behalf of the CLIR Academic Library Advisory Committee.[5] All of these authors agree that the integration of library resources into the learning management system has the potential to significantly enrich the educational experience of students and to increase the use of library materials.

Challenges

The call to enrich the educational experience through integration of library materials into the LMS is compelling. However, the challenges are also formidable. These challenges exist in several areas including technical, political and organizational cultures. The white paper by Neil McLean and Clifford Lynch and the DLF report provide excellent outlines of the technical challenges to integration of library resources and learning management systems.[6] The library electronic resources themselves offer significant technical challenges because they are organized by supplier interests and sources with each service offering different access characteristics. The library resources typically say little about themselves to potential users so they require significant advance knowledge of what is available within each resource.[7] Both within and beyond the scope of resources purchased by libraries, the universe of systems containing materials useful in teaching and learning is highly diverse. This combined with instructors with very limited technical expertise and limited time within which to increase that expertise leads to very high barriers to finding and reusing digital materials in a course context.[8]

The political and cultural challenges are equally daunting. The learning management systems at many institutions are purchased and managed by university Information Technology (IT) departments. Often selection of the learning management system at the campus is made by a committee of information technology or academic computing administrators joined by a few faculty members. Rarely is the library involved in this process.[9] The lack of library involvement is due to a variety of reasons, such as change anxiety, overlapping missions, scarce funding and institutional histories, which all lead to less harmonious relationships between university IT departments and libraries.[10] The result is that the institutional technologists who manage the learning management system and the librarians have little contact with one another.

Proposed Methods for Integration

Shank and Dewald[11] suggest two different methods of integrating library resources into the learning management system: the macro method and the micro method. The macro method integrates a generic library presence into the system by adding the same message to all courses, items such as descriptions of virtual reference services and global pathfinders. The benefits of this method are that it is easier to maintain and increases visibility of library resources. The shortcoming is that it can be too broad and may not seem relevant to the students and instructors. The micro method focuses on specific courses and relies on individual librarians working with individual faculty members and instructors. Shank and Dewald describe this as a supplement to the in-class library instruction rather than a replacement and expects the librarian to be active in the course. The benefits are that students are more likely to access the library materials when they are shown how they relate to the assignments in their course and the learning experience is enhanced by the librarian interaction. The shortcomings of this method are the amount of time and effort it requires and the lack of willingness of some faculty to involve another person in their course.

What Other Libraries are Doing

In the last few years, several libraries have attempted to overcome the challenges and to add library resources to the learning management systems at their universities using one of the

micro or macro methods described previously. These libraries usually focus on integrating one service or type of resource. The two most commonly found in the literature are electronic reserves and information literacy instruction. The learning management system seems a natural place for delivery of electronic reserves. When the University Libraries of Notre Dame sought to implement an electronic reserves service, they did a comprehensive evaluation of the tools available, including various commercial electronic reserves systems, freeware options and building a system in-house. They chose WebCT, the learning management system in use on campus.[12] They found that WebCT offered the necessary features, supported the convergence of electronic reserves and course tool software missions, and most importantly was easier for faculty and students who were already using the WebCT system. Ryerson University had a similar experience to Notre Dame. They were just beginning their electronic reserves system in 2004 and also found the learning management system, in this case Blackboard, was the best system within which to deliver the service.[13]

Northwestern University's experience[14] better matches that of OSU. They were already offering electronic reserves through their library catalog system, Endeavor's Voyager, but they began to receive requests from faculty to deliver their electronic reserves in the learning management system instead. Through an effective collaboration with their Academic Technologies division, Northwestern Library moved the delivery of their electronic reserves to the Blackboard system. The Northwestern library now promotes the electronic reserve service as part of the two-hour Blackboard training offered to faculty by the Northwestern Academic Technologies division. The OSU Libraries did a similar implementation, moving delivery of electronic reserves to Desire2Learn, the learning management system used on campus.

Northwestern and OSU shared the same motivations for moving the delivery of the electronic reserves to the learning management system, specifically, to make the items easier for students to locate and use and also to better meet copyright regulations by delivering documents through a password-protected system. Northwestern continues to use the catalog and library servers to hold and manage the materials and provide only links to them in the learning management system. They also rely on the instructor to put the link to the item into the course because they do not have the proper authorizations to do so. This is where Ohio State and Northwestern's experiences differ; OSU stores the items on the learning management system and adds the links to the resources within the LMS course pages for the faculty.

Another area in which librarians have integrated content into the learning management systems is in instruction. Cox[15] outlines the key features of Blackboard and describes ways in which librarians can use these tools to extend the one-hour in-class session. The options include adding bibliographies to the books section and library assignments to the assignments area and all assume a good working relationship with the instructor since they are each micro level options. St. Mary's College created an information literacy course offering in Blackboard that was available to all students once they logged into the system.[16] They found that the learning management system offered a convenient point of entry to students to their information literacy modules.

New York University created a series of web pages describing library resources by goal, instead of by subject, and gathered them into a Blackboard module.[17] This was then offered to the entire campus through Blackboard. They found that the usage was extensive and that the exercise helped them to rethink the library website and to prepare for future micro-level offerings within their learning management system and elsewhere.

As noted above, many libraries are experimenting with the learning management system

in a variety of ways. However, this work is just beginning to scratch the surface. Jackson found that "to a large extent, the seamless integration of library resources, information literacy, and librarian/faculty collaboration in the online classroom is lacking." [18] In order to encourage better integration of library resources, she suggests pursuing multiple strategies of integration at the same time. At Ohio State, this approach proved to be most useful; it was labeled the "toolkit approach."

TOOLKIT APPROACH

OSU is a large, decentralized institution. The university enrollment for autumn quarter 2007 was 60,347 students, who are taking an estimated 12,000 courses in 167 undergraduate majors, 130 Masters degree programs and 103 Doctoral degree programs.[19] The OSU Libraries also are decentralized; in order to meet the diverse needs of the university each librarian is encouraged to meet the needs of their specific disciplines as they see fit. The university uses the Desire2Learn learning management system and so the work done at the Rochester Institute of Technology (RIT) to link specific areas of their library website to courses in their Desire2Learn system[20] seemed especially relevant. In January 2006, the Libraries and the Technology Enhanced Learning (TELR) department, the department within the CIO's office that manages the learning management, formed a joint task force whose initial goal was to integrate library resources into the OSU LMS based on the RIT model. It soon became apparent, however, that this model would not work in the decentralized environment of the Ohio State University. There were several reasons, but the primary one was that the libraries' Web site and organization did not match seamlessly with the organizational structure of the LMS as RIT experienced. A more flexible approach would be required.

The task force identified several areas on which to focus to provide integration of library resources with the learning management system. Electronic reserves, seamless authentication, and flexible library resources placed inside course shells, became the focus of three sub-groups within the task force.

Tool in the Toolkit: eReserves

The first library content to be integrated into the LMS was Electronic Reserves (eReserves). As described previously, other libraries also found that the LMS offers a better delivery of electronic reserves,[21] with Ryerson University and Notre Dame University starting their eReserves services by offering them in the LMS from the start. What was unique about the OSU implementation of this idea was the use of the Learning Object Repository (LOR) in the learning management system as the storage place for the eReserve files themselves. This streamlined the work of the eReserves staff by allowing them to work with the files in one system and also enhanced security by limiting access to this section of the LOR only to those involved with the eReserve work process except through links within the LMS course pages. Another unique aspect of the OSU model is the special role given to key staff in the eReserves office to facilitate placement of items inside course shells, which also includes the power to turn on the course for access by students. This power makes it possible for the library to move the delivery of all eReserves to the LMS without requiring the instructor to interact with the LMS in order to make the eReserves available to students. Close collaboration and a trust based relationship with TELR were essential to these aspects of the integration. The benefits are

significant for all involved. The Libraries now better meet the requirements of copyright law by limiting access to eReserves to only those students in the course and can remove access to the files easily. The students benefit because they no longer need to go to another place to access their electronic reserves; the items are now inside the learning management system. Furthermore, the service is essentially the same for the instructors as it was before, they simply complete a request form listing the items they want included and drop off any paper materials that need to be scanned. Instructors then just tell the students to access the course in the LMS to view the files, instead of providing directions for the students to find the files in the library catalog. The instructor is not required to use the LMS themselves in order to use the eReserves service. However, TELR reports that instructors who previously did not use the LMS have discovered its usefulness due to the eReserve service and are now using the LMS for more than eReserves alone.

Tool in the Toolkit: Seamless Authentication

The second tool in the toolkit to be implemented was seamless access to paid resources from links within the learning management system. The OSU campus uses the Shibboleth authentication and authorization framework for both the LMS and EZproxy, the system through which the Libraries authenticate for off-campus access to paid resources. Shibboleth is a suite of open, standards-based solutions that enable the exchange of information about users in a secure manner.[22] Seamless linking to paid resources required passing the Shibboleth credentials from the LMS to EZproxy. This was accomplished by placing a URL string in the front of all links to paid resources to send the user to the proxy first when a resource was selected. EZproxy would check for the credentials and if they were present pass the user on to the resource without requiring an additional login. This authentication method requires an extra step for those adding links to resources within the courses, specifically adding the proxy string, but for the users it provides a seamless experience.

Tool in the Toolkit: Librarian Role

The third tool in the toolkit for integrating library resources into the learning management system is the creation of a special role for librarians within the LMS, titled Librarian. It has all of the powers of the instructor role, except for the grade book portion. The role must be granted in a course by the instructor. This tool enables easy collaboration between librarians and instructors in the teaching of specific courses and facilitates the integration of library content at the micro level as described by Shank and Dewald. Other institutions also have models of giving librarians roles with content powers within the LMS but few label them Librarians, instead insisting that the existing roles serve the purposes of librarians. All involved with the course in which a librarian has this role see the name with the title Librarian beside it. This clearly states this person's role so it will not be confused with course support provided by graduate assistants and program coordinators within academic departments. Librarians at OSU Libraries have used this role to add bibliographic instruction to courses, to add quizzes based on that instruction, to add supplementary content for courses, to hold office hours, and many other things. Some librarians have reported that this allows them to be involved in the course beyond the one class session of instruction and in some cases to replace it all together.

Tool in the Toolkit: Library Resource Page

The fourth tool in the toolkit is a library resource page within the LMS. The content of the page is developed at a variety of levels of customization and was originally planned for both instructors and students. As part of the exploration of this part of the toolkit, the Libraries and TELR conducted two different pilot tests. The most extensive pilot, where the idea was tested, was in the autumn quarter of 2007. Nine librarians participated and created content pages for specific courses, for academic departments or for academic colleges. The pages created were delivered in 345 courses. The librarians created two versions of each page; one for instructors and one for students. For each of the courses in the pilot, a link labeled "Library" appeared in the navigation bar. When this link was clicked the application developed for the pilot determines if the user is an instructor or a student and then looks for a library page for that type of user. The application (see Fig. 1) looks first for a page at the course level, if one is not found it looks for a page at the academic department level. If there is no page customized for the department, the application looks for a page at the college level. If there is no page in any of those levels, a generic page would be delivered. This serves as a failsafe; so users will always get some library content when they click the library link. The library resource page is meant to be a single page pointer to appropriate library resources available elsewhere, either on the web or in the physical library. The page is not meant to replicate those sources. The application gives the librarian options to create library resource pages for the level most appropriate to the circumstances.

Figure 1 Library Resource Page Application Flow Chart
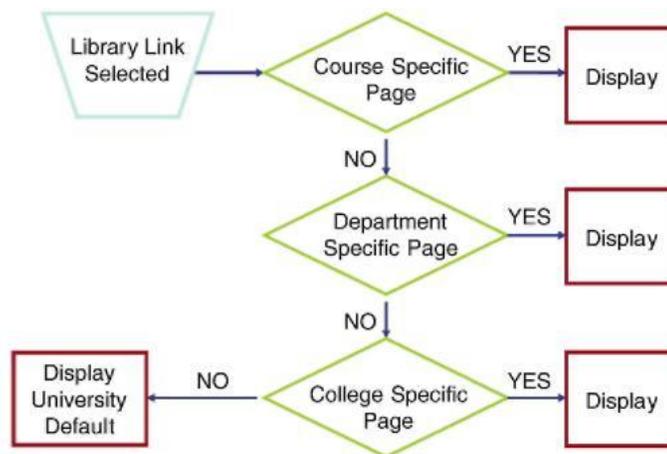
During the autumn quarter 2007 pilot the working group gathered usage statistics and conducted two surveys of participants: one for students and a different survey for instructors. The survey sought to explore the viability of placing a library resource page in the course: would the page be used by students and instructors? If they clicked the link, would they find the information contained there useful? (See Appendices A and B for the list of questions asked in the survey.) The results were mixed. The instructors for the most part did not click the link. They reported having other means by which to access library resources and did not see how a page in the learning management system would help them. They did report excitement at the idea of such a page for their students, with 41% of the instructors who completed the survey reporting that they would like a customized library resource page for their courses. The students were much

more likely to click on the link. Half of the participants saw the link and of those half clicked it. Those who clicked it found the content useful but reported it was "a little boring". In the open ended portion of the survey several students expressed interest in getting help with selecting materials for their coursework and that the learning management system would be a convenient place for them to get this assistance. The working group interpreted the results of the pilot assessment as an affirmation that the library link project should continue but should focus on creating pages for students only, not instructors.

The second pilot took place during winter and spring quarters 2008. This pilot focused on content gathering and content display and involved several different methods to gather the required information. The task force worked with an existing grant program of the Libraries that pairs librarians and faculty for course enhancement with library materials. The grant recipient pairs were invited to participate in a workshop at which they would create a library resource page that would be delivered in the LMS for that course. Six of the ten pairs eligible to participate in this pilot chose to create pages. They worked together to select the content elements and to design the layout of their page. At the same time, the task force held a series of open meetings with the staff and faculty of the Libraries to gather input on the content elements to be included on the library resource page. A third element of the content gathering portion of this pilot involved another library program, the Peer Library Assistants (PLA) program. Participants in the PLA program, knows as PLAs, are undergraduate students who receive special training so they can assist at the reference desks and provide enhanced library assistance to their undergraduate peers. The PLAs were invited to join the pilot to both offer content suggestions and to interview librarians to gather the content for library pages targeted at either the academic department or college level.

Since the pilot was still in progress at the time of this writing, the exact outcome is unknown however it is expected that the second pilot will produce a list of the possible content types, the template to be used to display the information on the library link page and the interview questions to be used by the Peer Library Assistants to assist librarians in creating content pages targeted at department and college levels. These pieces of information will be essential to the programmers charged with creating an application to gather and deliver the content in the learning management system. The task force expects to have the application operational and to offer library link pages to all librarians for autumn quarter 2008.

Benefits of the Toolkit Approach

The toolkit approach of offering multiple methods of integration to be used alone or in conjunction with one another provides the essential flexibility for working in a dynamic academic environment. This approach implements both the macro and micro methods suggested by Shank and Dewald and successfully answers the call of the DLF and OCLC task forces and Jackson for libraries to pursue multiple strategies for integration with learning management systems. The toolkit approach provides a variety of mechanisms for the librarian to interact with students and faculty in order to enhance the learning taking place both within and beyond the classroom. By offering a variety of tools, librarians can be present in the LMS in the manner most appropriate for the situation at hand. Each option within the toolkit places the resources in the known and safe environment of the LMS, where the students are more likely to "discover" them. The research done at Ohio State during the pilot to test the concept showed that students were likely to click on the Library link in their course and that they expected to find library

resources to help them with that course.

The toolkit approach further enhances the opportunities for librarians to reach out to the broad variety of students and courses on campus. Some courses require only pointers to the library for the one or two sources used most frequently. Others involve detailed research. Furthermore, the toolkit approach can serve as a building block to further collaboration between instructional faculty and library faculty. The librarian can begin with the non-intrusive library link that offers targeted resources at the academic department level. When these prove useful to the students, the librarian can approach the instructor to inquire about interest in customized pages for specific courses or even the use of the Librarian role to add detailed content. The opportunities will increase as the variety of tools in the toolkit expands.

CONCLUSION AND FUTURE DIRECTIONS

The next steps at Ohio State are to make it easier for the librarians to enter content for the library link pages and to explore ways to reuse this content. The Libraries and TELR will also explore increased marketing of the tools to help get the word out to the campus, specifically the instructional faculty, to increase the use of the most collaborative tools. The assessment of the toolkit will also be a focus for the 2008–09 academic year as the Libraries and TELR shift from deciding if and then how to implement the parts of the toolkit toward measurement of and enhancement of the shared goal of enriching the educational experience and increasing access to library resources.

The learning management system is heavily used on college campuses and rapidly becoming an essential extension of the physical classroom. It is important that libraries and librarians are present in this learning management system. The methods to accomplish the integration will vary within institutions so a variety of options offers the best chance of success. The toolkit approach explored at the Ohio State University is recommended to provide the best chance of reaching the most students.

APPENDIX A. SUPPLEMENTARY DATA

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.acalib.2008.09.018.

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