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Embedded Library, Embedded Librarian: Strategies for Providing Reference Services in Online Courseware

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Distance education programs have been offered by academic institutions since long before the birth of the Web, but they did not really become a mainstream educational option until the technologies available to support them matured. While twenty years ago people in geographically isolated areas were the primary users of distance learning, it is now utilized by people all over the country; even those who happen to live close to academic institutions. The convenience of online learning allows people to balance work, family, and education much more easily than many face-to-face programs. With the rapid improvements in social technologies, the negatives associated with online learning—such as lack of community and tacit learning—are decreasing every day.

The growth of online learning in the past few years has been extensive. According to the Sloan Consortium report, *Making the Grade: Online Education in the United States 2006*, in 2002, approximately 1.6 million students were taking at least one online course. By 2005, that had almost doubled to 3.18 million (Allen and Seaman 2006, 5). Some of these students are in completely online programs, where they may never visit a campus during their education. Others take part in hybrid programs that offer a mix of online and face-to-face courses. The opportunities for online education are increasing with the demand. Approximately sixty-three percent of institutions surveyed offered at least some online courses (8). In addition to online courses, many face-to-face classes offer an online component through course management systems.

For online students, the central unit of their learning experience is the course management system they use. This system could be considered the online equivalent of a campus, as it is the space in which students take their classes, submit their papers, and socialize with their peers. While their program may also have a Web site, the real work goes on in the course management system and often, this is the only space online students visit.

Libraries have a long tradition of providing outreach. Whether they are driving a bookmobile, staffing a booth at a consumer health fair, or providing assistance inside the classroom, librarians frequently provide traditional library services outside the walls of the library. In an age when our patrons often access library services online, rather than at a physical location, it becomes all the more important to think about outreach. Many libraries have worked hard to develop a Web presence and to translate traditional library services into the online medium, but some have ignored the importance of providing outreach to online learners.

The Association of College and Research Libraries (ACRL) drafted *Guidelines for Distance Learning Library Services* in 2004 to ensure that equitable library services are provided for all students and faculty. The Guidelines outline the responsibilities of libraries and academic institutions for providing services and allocating funding and personnel to serve the information needs of distance learners. The document is quite comprehensive, but can be summed up in this sentence: "Effective and appropriate services for distance learning communities may differ from, but must be equivalent to, those services offered on a traditional campus" (ACRL 2004). Thus, librarians need to seriously consider how to provide services to online learners and how to make those services just as accessible to them as they are to on-campus students.

This chapter explores the possibilities for embedding library services in online course management systems, including the creation of portals to library services for online learners. While technology is always an issue, many of these strategies are decidedly low-tech, but "high-touch," putting a human face on what was before a faceless edifice. Embedding the library within the course management system streamlines access for online learners, making it more likely that they will utilize library resources and services.

Background on Course Management Systems and Services to Distance Learners

As mentioned before, online learners primarily interact with colleges or universities through a course management system. A course management system (CMS) may also be referred to as a learning management system, a virtual learning environment, or online courseware. It is essentially a piece of software or a suite of software tools that enables every aspect of course management and delivery. They include the ability to post readings, announcements, assignments, quizzes and learning objects, take part in synchronous and asynchronous discussions, use automated grading tools, and much more. These systems can be more or less full-featured, and there are open source options in addition to those offered by large corporate entities.

While there were virtual learning environments in existence before the graphical Web, the CMS as we know it was first introduced in the mid-1990s. Initially, many colleges and universities were engaged in developing their own CMSs, but by 2000, much of the development was occurring in the corporate sector. These systems were usually commercialized versions of the most successful university CMSs, such as *WebCT* (built at the University of British Columbia) and *Blackboard* (built at Cornell University). While some academic institutions still use their own homegrown systems and there are dozens of commercial systems, the market is dominated by six major players: *Blackboard* and *WebCT* (which merged in 2005), *Angel*, *Moodle*, *Desire2Learn* and *Sakai* (Gibbons 2005, 7-10).

While these systems were being developed, most libraries were not waiting for opportunities to provide reference and instruction services to online learners. Although some libraries did not alter their services as their school's distance

learning opportunities grew, there are examples in the literature of libraries that were on the cutting edge in providing support services to distance learners in the 1980s and 1990s.1 The Distance Learning Section of ACRL was formed in 1990, a recognition of the importance of providing services to this growing population. By the mid-1990s, most libraries offered reference services via e-mail, and later in the decade, some were also providing synchronous online reference assistance through commercial tools and instant messaging. Other libraries were providing instruction using video teleconferencing, which was in its infancy at the time. Information literacy instruction and course materials were also provided via CD-ROM and the Web. As the number of databases available online increased, librarians had to learn how to provide assistance and instruction in using these new tools.

At the same time, librarians were also exploring how to personalize online library services for different populations. The late 1990s saw the growing popularity of portals, which in the library world manifested as the MyLibrary movement. MyLibrary was a system developed at North Carolina State University that allowed libraries to create customized user-interfaces for different populations. These interfaces usually included listings of books, journals, databases, and Web sites that were useful to that population. Many other libraries developed similar database-driven systems which made it far easier for librarians to create subject pathfinders and course guides. A few of these systems even allowed users to create their own personalized pages of resources. Libraries without the technology support developed similar subject pages using HTML, but they were not as easy to create or update (Gibbons 2005, 33-37).

While CMS developers and librarians were both engaged in building new technology-driven strategies for providing services to online learners, the groups rarely collaborated. In the 2002 article, "Course Management Software: Where's the Library?" David Cohen presented the results of a study which indicated that CMS vendors did not consider libraries or their resources in development because "libraries were generally not involved in the software-purchase decisions made by their institutions" (Cohen 2002, 13). The fact that the integration of library resources and services was not a priority made it technically difficult for library resources to be integrated into the CMS. This separation created two separate silos of information for students—the library Web site and the CMS. If the CMS is the virtual equivalent of a campus, then the library should have a presence. If a student is required to leave the CMS to find the library, then this is the online equivalent of requiring a student to drive across town to get from the classroom to the library. Students are far more likely to utilize library resources if access to them is seamless.

Creating Portals to Library Services within the Course Management System

Colleges and universities spend significant amounts of money on library collections. Librarians spend significant amounts of time developing online library

services, such as synchronous virtual reference and subject guides. If students do not know that these resources and services are available to them, or if they cannot easily access them, then no one is getting much value for their investment. It is crucial for libraries to make their resources and collections as visible as possible, and to make access seamless for all service populations. In the case of online learners, this likely requires creating a library presence in the CMS. While it can take significant effort to achieve library integration with the CMS, the benefits to both the online learner and the library are undeniable.

In their seminal work on this subject, Shank and Dewald (2003) outlined two different models to embed libraries in the CMS. The first, Macro-Level Library Courseware Involvement (MaLLCI), requires the creation of a single global library presence for all online courses. In this model, every online learner sees the exact same library presence (39-40). Macro-level involvement could be as simple as providing a link to the library Web site or to specific resources, such as the online databases, the catalog, a virtual reference page, and research guides. Many libraries have special pages on their Web site designed just for distance learners that provide information unique to their circumstances. While the information provided is valuable, it does not make as much sense to provide this information outside of the CMS. Some libraries have developed unique library Web sites for distance learners that live in the CMS. Sometimes this presence is placed in a content repository where it can be linked to every class. At other times, libraries are given their own online classroom to develop, and the students are all enrolled in this library class. While the latter option certainly gives the librarians more ability to develop learning modules, assessments, and mechanisms for communication, the former option does not require the student to leave his or her primary classroom.

The second model is Micro-Level Library Courseware Involvement (MiLL-CI), which involves a customized library presence at the program or course level. This approach means that each program or course has a list of library resources in its subject area, subject-related tutorials or some other method of instruction, as well as all of the elements that go into a global library presence. Some libraries already have subject guides and micro-level tutorials on their Web sites, so linking to these or moving the content into the CMS is all that is needed (40-41).

There are pros and cons to both models. Obviously, the macro approach requires far less effort and maintenance because there is a single library presence. Librarians do not need to work closely with faculty members in each discipline. As the number of programs and courses offered online grows, a universal presence ensures that the library can continue to provide the same level of service to all programs. On the other hand, the services and resources are not targeted to specific disciplines. A student may look at a long list of databases and have no idea which ones are the best to use for their specific research. Considering how differently research is conducted in each discipline, having a global presence with generic tutorials may not adequately meet the needs of anyone. A lack of subject or course-specific tutorials and resources may lead to more work for the library in the form of individual reference questions from students.

The micro-level approach better meets the needs of students by offering resources and services tied to what they are studying. Librarians can provide research help and instruction that mirrors what is offered to on-campus classes. However, this approach requires significantly more time and effort to develop and update resources for every discipline or every class. The micro-level approach also requires librarians to collaborate more closely with faculty, since faculty members are the true content experts. This collaboration can be an excellent opportunity to make the library a more visible player in that discipline and to integrate information literacy instruction into the curriculum. On the other hand, if a faculty member is not interested in collaborating, the librarian may have a difficult time achieving the micro-level approach. Some faculty members may not see the value of library services in their courses. They may even see the librarian as trying to take over their instructional role. Librarians need to make a strong case for the involvement of the library and make clear what role they play and how that differs from the instructor's role. Sometimes librarians can build relationships at the program level, where department heads and program administrators ensure that the library gets the access and cooperation they need. In other cases, librarians need to build relationships with every individual faculty member that they work with. While this can be time-consuming, a good relationship with faculty ensures not only that the library has access, but that the faculty member understands when to recommend that students seek help from the library.

In his article "Vision and Strategy Towards the Course-Embedded Library" (Sabharwal 2005), Sabharwal articulates a third option: the nano approach. This approach "would target the information architecture" of each individual course. This means that library services are tailored to individual courses based on a thorough assessment of the instructional design of each course. It requires a great deal of collaborative work with both the instructor and the instructional designer working on the course. While this is a noble goal that ensures library resources and services are available at the point of need, it can be too time-consuming for most librarians to take on in every course. This approach does, however, highlight the importance of understanding the design of a course, or group of courses, in order to seamlessly integrate the library presence.

Some libraries adopt a hybrid approach when it comes to building a library presence into the CMS. At Norwich University in Vermont, every classroom links to the same library portal in a WebCT content repository. However, within the portal, there are subject specific database lists, Web links, and tutorials; all accessible from drop-down menus. Much of the information that students need—such as the database access FAQ, instructions for making an interlibrary loan request, or information on how to contact a librarian—is common to all disciplines. While that information could be placed into separate library portals for each subject or course, it would require more effort to maintain. With the hybrid approach, if the protocol for requesting materials via interlibrary loan changes, the information only has to be changed in one place, instead of in every class or discipline. When determining which approach to adopt, it is important to consider not only how

much effort it will take to create the materials, but what the future maintenance burden might be.

Any of the above approaches require a good relationship with the technology staff who administer the CMS and develop the courses. The instructional technologists control access and will likely only grant administrative access to individuals they trust. At some institutions, the librarians must send content to the technology staff instead of uploading it themselves, which can create a bottleneck in updating content. In settings where there are no librarians with Web design skills, it is possible that the instructional developers can take over the role of developing the library presence, which necessitates an even closer working relationship. Librarians need to build a solid relationship with the technologists so that they can understand the needs of the library and the capabilities of the librarians.

Embedded Librarian Concept

Librarians who have worked for years with students in specific courses or programs are often aware of common problems that crop up as students complete assignments and do research. Usually, however, the librarian must wait for the student to contact the reference desk to be able to provide assistance, and many students do not feel comfortable asking questions of the librarian. Having a librarian embedded in the classroom allows them to provide course specific reference assistance and instruction at the point of need, or even before the need, and really ties the reference services to the curriculum.

There are a variety of ways that this embedded model can take shape. Markgraf (2004) described a "lurking librarian" model, where the librarian scans the discussion threads in the online classroom and provides assistance on the discussion board when an information need presents itself. This model does not require the student to actually ask a question of the librarian, but it does require the librarian to do a great deal of work in identifying points where intervention would be beneficial.

Matthew and Schroeder (2006) describe several ways that a librarian can provide assistance within the classroom. One common way is to create an "Ask a Librarian" discussion board. This virtual space gives the students a single space in which they can ask research-related questions (63). In addition, the librarian can use the discussion board to provide instruction by addressing some of the issues students may encounter in their research. In a history course where students are about to choose their research topics, the librarian may discuss the value of pre-research to determine if there is an appropriate amount of information available on their topics. This intervention may lead to questions from students about the appropriateness of their topics. Librarians can provide instruction on the best resources to use for assignments, how to search specific databases, and much more. They can also avoid answering the same common questions from students over and over again, because everyone in the classroom will be able to view the answers. This practice is valuable for those students who may have the same questions, but do not feel comfortable asking the librarian.

In some classes, the instructor creates weekly *Ask a Librarian* discussion threads where students can ask questions. On the one hand, this indicates to students that the instructor places value on the involvement of the librarian, which might make students more likely to ask questions. On the other hand, in a class where there is not a great deal of research every week, students may not have questions to ask. Matthew and Schroeder describe how some instructors have required students to ask a question of the librarian each week, which led to frivolous questions unrelated to the course material. They also, however, describe courses where the instructor creates *Ask a Librarian* threads only during the weeks where students are required to do research, or only for specific assignments (63-64). The approach chosen for embedding reference services into the classroom really depends on how research intensive the course is and what the instructor expects from the librarian. It is important for faculty members to highlight the value that the librarian brings to the class, because students take their cues from their instructor. If the instructor suggests that students run their paper topics by the librarian before they are approved, the students will be more likely to do so than in a class where the professor never mentions the librarian.

Probably the biggest problem with any of the embedded librarian models is the amount of time required to provide the service. Librarians embedded in online classrooms may need to check each one at least once a day and answer questions. Markgraf's lurker model and classes where the students are required to ask weekly questions of the librarian are likely going to be the most time-consuming. If time is a factor, it may make sense to only have *Ask a Librarian* discussion threads in specific weeks where students would likely need the librarian, such as when they are choosing a topic, doing their initial research, creating a bibliography, and writing the paper.

Future of Libraries and Librarians in the Course Management System

Looking at most of the popular CMSs, it is apparent that library resources and services were not considered in their design. While there are modules for the easy integration of many aspects of a typical academic course, ingenuity is required on the part of the librarian and instructional designer to actually integrate library resources and services into the CMS. At many universities, where librarians either do not have the requisite tech-savvy or access, there is no library integration, and online learners must simply visit the library Web site to get what they need. In an increasingly saturated distance education market, one thing that can set a program apart is its library's resources and services. However, if these are not well-integrated into the CMS, it is almost the same as not having the resources at all. In the future, it is likely that most colleges and universities will demand (or build their own) extensions to the traditional CMS, which will better integrate library resources and services.

One current barrier to librarian involvement in course management systems is the lack of granular permissions. For librarians to be able to add and edit library content in the CMS, they often need to have full administrative access to the

course. While some systems offer user roles with limited access, in many cases, access is an all or nothing proposition. If the instructional designers or faculty members do not feel comfortable with a librarian having that level of access, they will lose the opportunity to provide quality library services within the CMS. With some systems, librarians need to be registered for the class as an instructor to staff their own discussion board. This level of access is something not every faculty member will be comfortable with, and it may also be confusing for the students who will be unsure to whom they should direct their questions. Newer iterations of popular course management systems have more user roles available, but only a few have made it easy for librarians to provide services in the CMS.

Course management systems are likely to be more fully integrated with library resources in the future. Until now, universities have had to develop their own tools to better link library resources into the classroom. *RefWorks* and North-western University worked to create a *Blackboard* extension that links *RefWorks* to *Blackboard* (Gibbons 2005, 25-26). Penn State University has developed tools that automatically link electronic reserve readings and subject or course guides in the classroom, making access far more seamless for students. These tools have made it easier for librarians to get this material into the CMS without high-level technology skills (Snavely and Smith 2003, 1-3). Just as commercial CMSs grew out of homegrown systems, course management systems will probably adopt these CMS "extensions" for wider use. For CMS vendors to stay competitive, they will have to make it easier for librarians to develop portals to library resources and services and for instructors to use library resources in the classroom.

Libraries will also continue to adapt to changes in the online learning land-scape. Many libraries are only starting to provide services to online learners that are distinct from those provided to their on-campus students. Providing services to online learners requires a re-imagining of library services. For example, libraries that have traditionally provided reference services during "business hours" will find that most online learners are doing their research on nights and weekends. Many libraries have responded to the growth of distance learning by hiring librarians specifically to work with that population. In 2004, a survey of Association of Research Libraries institutions that provide services to distance learners found that twenty-one percent had a full-time distance learning librarian and thirty-five percent had someone for whom distance learning support is a part of their job duties (Yang 2005, 93-4). At schools where distance learners make up a significant portion of the population, a full-time distance learning librarian is needed to provide equitable services to these students.

In addition to hiring distance learning librarians, libraries have made the hiring of librarians with higher-level technology skills a priority. These days, librarians are graduating from library school with skills in Web design, database administration, and network administration. When librarians have both library and technology skills, they are better able to develop online services for distance learners. Some librarians or library support staff can even develop applications to extend the functionality of library resources or the CMS. These librarians can

often act as liaisons to the instructional designers and information technology staff, because they often have similar skill-sets and "speak the same language." If instructional designers know that librarians are proficient in Web design, they will likely feel more comfortable giving them access to the CMS.

Over the past few years, social software has become a mainstream part of many individuals' online lives. By 2006, people were posting 1.6 million blog posts per day and more than fifty million blogs had been created (Sifry 2006). Wikis, instant messaging, and social networking software are not only used by young people to communicate and collaborate, but also by businesses and non-profit institutions. It has become far more common to see social software in use in educational contexts as well. Faculty are using blogs, wikis, RSS, and podcasting in order to provide a richer learning experience. Online learners who are geographically distant from one another are building communities outside of the CMS using tools such as *Facebook* (www.facebook.com), *Google Groups* (groups.google.com), and *LiveJournal* (www.livejournal.com). People are finding that the CMS does not always provide the functionality that they need to create the collaborative environment and sense of community that many want from an online course.

The creators of popular course management systems have started looking at how they can integrate social software tools into the CMS. *Elgg* (elgg.org) is an open source social networking tool that includes profiles, blogs, wikis, RSS and more. In 2006, they worked with one of the founders of *WebCT* to integrate their product with the CMS. *Blackboard* opened up its API (Application Programming Interface) to some developers of complementary products so that they could better integrate their products with *Blackboard*. As a result, Learning Objects (www.learningobjects.com) developed a *Blackboard Building Block*—a for-pay add-on to the basic *Blackboard* package—which provides blogs, wikis and podcasting support within *Blackboard*. In 2007, *Angel* announced that ANGEL LMS 7.2 would also provide blogs, wikis and podcasting support, but as part of their basic software package.

Conclusion

As libraries begin to adapt to providing services for distance learners, and CMS developers adapt to the demand for better integration with library resources and social software tools, embedding library services into *WebCT* and other systems will become easier. When social tools begin to be more closely integrated into the CMS, libraries will no longer need to depend on outside tools to communicate with and push information to their online patrons. As librarians develop stronger technology skills, they will be better equipped to work closely with instructional designers to ensure that the library is an integral part of every online classroom. They may also be able to design their own creative solutions when their CMS does not provide the functionality they need. Technologies notwithstanding, librarians will still need to build rapport with faculty members and instructional designers to ensure that library presence is considered when courses are developed. Librarians

need to be talented marketers of library resources and services in order to ensure that they are able to provide the best possible services to online learners.

Sources for Additional Research

Cohen, D. 2002. Course management software: Where's the library? *Educause Review* 37 (3): 12-13.

> Cohen shares findings from an Academic Library Advisory Committee survey which found that CMS vendors generally overlooked the library during software development. He suggests that this disconnect between the library and the online courseware can lead to decreased student usage of library resources.

Gibbons, S. 2005. Library course-management systems: An overview. *Library Technology Reports* 41 (3).

> In this fifty-two page technology report, Gibbons presents a comprehensive look at course management systems and the issues involved in building a library presence for online learners—whether in the CMS or outside. The author surveys the possibilities and barriers involved in embedding library resources into the course management system, both technical and cultural, and offers many concrete examples of libraries that have successfully integrated the library into the CMS.

Markgraf, J. 2004. Librarian participation in the online classroom. *Internet Reference Services Quarterly* 9 (1/2): 5-19.

> Markgraf chronicles her experiences as a "lurking librarian" in the distance learning classroom, and discusses providing reference services at the point of need on class discussion boards. The importance of faculty-librarian cooperation is highlighted in this article, as are the author's insights into the needs and expectations of distance learners.

Matthew, V. and A. Schroeder. 2006. The embedded librarian program. *Educause Quarterly* 29 (4): 61- 65.

> Matthew, the instructor, and Schroeder, the librarian, describe how they shaped the successful embedded librarian program at the Community College of Vermont. The authors describe the various models for librarian involvement in the classroom, suggest ways that this collaboration can be most successful, and suggest things to avoid. The article also discusses the use of videoconferencing in providing information literacy instruction.

Sabharwal, A. 2005. Vision and strategy towards the course-embedded library: New possibilities for a "virtual carrel" initiative. *MLA Forum* 4 (1). http://www.mlaforum. org/volumeIV/issue2/article3.html.

> This article provides an excellent review of the literature on the subject of embedding library services into online courseware. Sabharwal discusses Shank and Dewald's (2003) macro- and micro-level models of library presence, and suggests his own nano-level strategy for seamless library integration in the CMS. In his approach, library presence is designed on the course level, but requires a keen understanding of the information architecture of the classroom so that the library design is consistent with the course design.

Shank, John and S. Bell. 2006. A_FLIP to courseware: A strategic alliance for improving student learning outcomes. *Innovate: Journal of Online Education* 2 (4). http://www.in-novateonline.info/index.php?view=article&id=46.

> The authors discuss the difficulties involved in developing a library presence within the CMS. They also suggest a model for building cooperation among librarians and courseware administrators called A_FLIP (Administrators, Faculty, Librarians Instructional Partnership). Finally, they describe the importance of working collaboratively with instructional designers and faculty members to create either a global library presence in the CMS or a presence designed for specific courses.

Shank, J. D. and N. H. Dewald. 2003. Establishing our presence in courseware: Adding library services to the virtual classroom. *Information Technology and Libraries* 22 (1): 38-43.

> In this seminal work on the topic, Shank and Dewald suggest two models for building a library presence in online courseware in order to increase the visibility of library resources and services. They describe the macro- and micro-level approaches, which prescribe a global presence and a course-based presence respectively, and discuss the pros and cons of each approach.

York, A. 2006. The embedded librarian service at MTSU. *Tennessee Libraries* 56 (2). http://www.tnla.org/displaycommon.cfm?an=1&subarticlenbr=65.

> Published as part of a presentation entitled "Distance education and its impact on the academic library," this article offers a practical view into one library's attempt to embed library services into the online courseware. York discusses the problems libraries face in trying to provide quality services to online learners, and presents the embedded librarian service as a solution.

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Yang, Z. Y. 2005. Distance education librarians in the U.S. ARL libraries and library services provided to distance learners. *The Journal of Academic Librarianship* 31 (2): 92-7.

Notes

1. An excellent bibliography that covers many of the papers presented in the 1980s and 1990s at the Off-Campus Library Services conference is at Reiten, B. A. and J. Fritts. 2006. "Distance Learning Library Services Potential Literature bibliography." Paper presented at The Twelfth Off-Campus Library Services Conference, Savannah, Georgia, April 26-28, 2006. http://e-archive.library.okstate.edu/ocls/3/ (accessed November 6, 2007). Reiten and Fritts also compiled a bibliography of historical core literature on distance learning library services from the 1970s and 1980s, which can be found at the following URL http://e-archive.library.okstate.edu/ocls/5/ (accessed November 7, 2007).