Chapter 3

Integration of Libraries and Course-Management Systems

Course-management systems have not revolutionized education overnight. Rather they are a single step in the ongoing evolution of learning and education. Most commonly, the introduction of new technology is first met with a period of reduced productivity or "trough of disillusionment" (De Rosa, Dempsey, and Wilson 2003, 49) before pre-adoption levels of productivity are regained and then hopefully surpassed:

> Like all other technology sagas in the history of higher education, the introduction of course-management systems has ushered in a new round of struggle between the propensities of technologies to define their own paths and faculty's appropriate desires to subordinate the technologies to the values and traditions of the academy (Katz 2003, 56).

Therefore, when a campus introduces a new CMS, early faculty complaints about the system should not serve as an indication that the CMS project will inevitably fail. The number of successful implementations, coupled with the students' expectations for some degree of online learning, suggests that course-management systems are more than a passing phase.

To remain relevant, academic libraries must go where the students and faculty are. More to the point, libraries need to be where the learning is happening, even if this is the virtual environment of a CMS. To resist is to cede additional ground and in essence invite alternative services and resources into the void.

Course-management systems should be viewed as another means for academic libraries to become more engaged in the learning and teaching missions of their institutions. CMS are:

> providing new opportunities for libraries to design and disseminate new services. At the same time that libraries create these new services, they also will need to highlight their expertise, abilities and irreplaceable resources quickly in order to take a learning role in the new (e)learning and course-management environment (OCLC E-Learning Task Force 2003, 1).

Unfortunately, what is almost universally absent from the glossy promotional literature of any CMS is any mention of libraries. For reasons to be articulated below, the services and resources of libraries were not considered in the early designing periods of most courseware. Now that these courseware products have grown into enormous, complex, and intricate systems, it is nearly impossible to remedy the initial oversight without a complete reconstruction.

Since 2001, when Cohen first brought public attention to the absence of libraries in courseware products, various initiatives have been undertaken to rectify the problem. An excellent example is the alliance between the IMS Global Learning Consortium—which promotes the adoption of open specifications for e-learning technologies—and the Coalition for Networked Information (CNI). However, as the following two sections will illustrate, there is still a great deal of work to be done.

IMS Global
www.imsglobal.org

CNI
www.cni.org

The major barriers to the seamless integration of library resources and services into course-management systems can be placed into two broad categories: technical barriers and cultural barriers.

Technical Barriers

Within an academic library a patron does not find a seamless world of information. A comprehensive literature search requires the execution of numerous queries across potentially hundreds of resources, each with its own unique interface and search protocol.

Students can identify and locate books and journals with metadata that resides in the online catalog. Relevant articles are found through the searching of abstracts, indexes, and article databases. Add to this maps, data sets, conference proceedings, technical reports, dissertations, and patents, and the list is still far from exhaustive.

While there has been significant interest in a library metasearch tool (essentially a Google-like box that can search across all of a library's resources) libraries are far from fully realizing this vision. In spite of initial hopes, metasearch tools, such as ExLibris' MetaLib and Endeavor's ENCompass, have failed to live up to expectations. This is due in part to the fact that the information suppliers (database vendors) must make significant changes. The vendors need to coordinate their protocols and standardize their data so that information from disparate sources can be normalized, controlled, and manipulated in a consistent manner.

This, of course, costs money, and consequently the vendors are not willing to invest in the changes until user demands for it are evident. Furthermore, vendors fear a loss of identity and brand recognition when their content is taken from its unique native interface and mixed seemingly indiscriminately with the content of competitor vendors. For an examination of complexity of the metasearch problems, see Bowen et al. (2004).

NISO's MetaSearch Initiative
www.niso.org/committees/MetaSearch-info.html

MetaLib
www.exlibrisgroup.com/metalib.htm

ENCompass
http://encompass.endinfosys.com

The silos of information within a physical and virtual library remain just as separate when transported into a CMS. In fact, adding a courseware system to the equation makes the solution just that more complicated.

In order to illustrate many of the current technical barriers to the seamless integration of libraries and CMS, some case scenarios will be employed.

Case 1: An instructor pulls together a list of articles relevant to next week's lesson and wishes to provide links to the online full-text of each within her course site. (For the sake of simplicity, we shall assume that the articles are all available as online.)

While it appears that every article within an article database, such as EBSCOhost, has a URL, as indicated by the presence of an "http" string in the address bar of the browser, not all of the URLs are enduring and reusable.

For example, when searching EBSCOhost for a particular article from the *New Statesman,* the URL in the address bar is:

http://web35.epnet.com/citation.asp?tb=1&_ug=sid+D4FF9D94%2D3BAD%2D48A6%2D91EE%2DB5C63A665784%40sessionmgr4+dbs+mfh+cp+1+7B4C&_us=hd+False+hs+False+or+Date+fh+False+ss+SO+sm+ES+sl+%2D1+ri+KAAACB6C00074268+dstb+ES+mh+1+frn+1+2C6F&_uso=hd+False+tg%5B2+%2D+tg%5B1+%2D+tg%5B0+%2DSU+st%5B2+%2D+st%5B1+%2D+st%5B0+%2Dsars+db%5B0+%2Dmfh+op%5B2+%2DAnd+op%5B1+%2DAnd+op%5B0+%2D+mdb%5B0+%2Dimh+EC44&cf=1&fn=1&rn=14&

This monstrous URL includes information specific to the time period, or session, when this article was located, as indicated by the "sid" (session id) and "sessionmgr." Once the session is over, the URL will no longer work. In other words, the URLs are time dependent.

Fortunately, EBSCO provides a persistent URL for this same article, which is simply http://search.epnet.com/login.aspx?direct=true&db=mfh&an=15423784. All of the session-specific information has been stripped from the URL, and authorized individuals can use it to retrieve the article, indefinitely.

Unfortunately, only some database vendors make use of persistent URLs. For a list of those databases that do, see http://library.nyu.edu/services/persistent.html, compiled by the New York University Libraries.

Even when a persistent URL is available, it is not always easy to identify or generate it. For example, the same New York University Libraries Web site provides the following eight-step process for how to generate a persistent URL from WilsonWeb:

1. Retrieve a full-text article, or mark a series of full-text articles from the Brief and/or Full Display data set.
2. Click Print Email Save.
3. Click Save Options.
4. Under Records, choose either article by number or marked articles.

5. Under Fields, choose "All, including full text and images, if available."
6. Under Format, choose HTML.
7. Click Save. Another window will open with the citation followed by the full text. The link appears after the citation, but before the Full Text.
8. Copy the Full Text Link(s)' URL Address.

As evidence this level of complexity is not limited to the New York University campus, see help guides created by Northumbia University (www.unn.ac.uk/central/isd/bbguide1.ht), Wayne State University (www.lib.wayne.edu/services/instruction_tutorials/etoolbox/index.php) and University of Montana (www.lib.umt.edu/research/guide/pdf/fac_bbguide.pdf).

Therefore, in this case scenario, for the instructor to compose a list of links to a series of full-text online articles within her course site, those articles would have to reside within databases that provide persistent links. Moreover, she would require the knowledge and perseverance to generate those links.

As described by Long, as instructors and students who are "able to draw on digital assets from any resource, or repository, that strikes them as useful—even if the rationale is serendipity—at the exact moment when the learning activity calls for it," this is far from the ideal (Long 2004).

Supposing that the instructor is successful in creating the list of links, the next set of difficulties arises from issues of authentication. Generally, only the instructor and those students enrolled in a course have access to the course site within a CMS. Appropriate access to the course site is ensured through a login and password.

However, a licensed article database is restricted to use to the members of a subscribing community, be it an entire university or some subsection, such as a single campus. Proper access to the licensed database is often controlled by IP range (for example, 128.151.244).

Authorized members of the university's community only can access the licensed materials from outside the university's IP range through the use of a proxy server, virtual private network (VPN), or some related authentication system. Consequently, students using off-campus computers may find they have to work through multiple logins as they move from within the course site out to the article databases and back.

Rieger et al. describe the current situation at Cornell as follows:

> A CourseInfo user first needs to use his/her BlackBoard user ID and password and then NetID if there is need to access any of our networked resources. Voyager's [library online catalog] requirement of a student ID in order to access e-reserves is a further complication (Rieger 2004, 209).

Although a good percentage of library resources are digital and available online, issues with persistent URLs and authentication can be significant barriers to their integration into a CMS. These barriers are problematic because many faculty and students are unaware of them. The common process of locating an item on the Web, copying its URL, and providing it to others rarely works with library licensed content, and this aberration is quite unexpected to most.

Case 2: A librarian, in consultation with the instructor, has created a list of article databases and online journals that can best provide students with the two or three scholarly articles needed for an upcoming research paper and wishes to push these resources into the course site.

In this case scenario, it is unlikely the librarian will truly be able to push the library databases and online journals into the CMS in a way that Net Gen students would expect. Most online library resources do not come with equivalents to the Google toolbar that can place a Google search box into an Internet browser frame (see figure 1).

Instead, each time the students wish to search a database or online journal, they must link out from the CMS to the library resource or toggle between the CMS and library resource windows. In essence, the librarian's contribution will be relegated to a list of URLs that will pull the students into environments beyond their course site.

Ideally, and certainly not beyond the expectations of today's students, the recommended sources should be combined under a single search box. Rather than navigating to and learning about the search interfaces and protocols for each resource recommended by the librarian, the student could search across all of them by simply typing in some search terms.

For a visual example, see figure 2, an ENCompass metasearch instance tailored specifically for a Studio Art class, although not hosted within a course-management system.

Essentially, this is the importing of a library metasearch tool (described above) into the CMS. Several institutions have contributed some work toward achieving this goal. For examples, see University of Maryland (Hanson 2004), Purdue University (Freeman & Geahigan 2005), and the JISC-funded OLIVE Project (2004). Unfortunately, the searching is still limited greatly by the

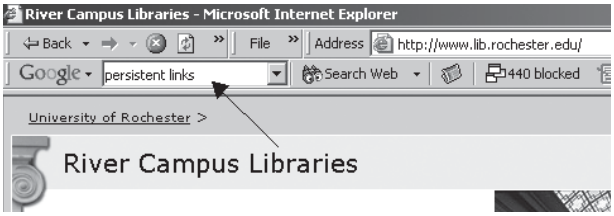

Figure 1
Google Toolbar within Internet Explorer, http://toolbar.google.com

low number of library resources compatible with current metasearch tools.

When students move between their course sites and the licensed library materials, authentication will be a problem in this scenario as it was in the first. As this case scenario illustrates, the library's presence within the CMS often can be limited to mere surrogates, which falls far short of the expectations of the Net Gen users.

Case 3: The instructor wishes to provide course reserve materials from within his course site, rather than placing the materials on reserve at the library.

The reserve reading rooms of decades ago were the places within the library instructors placed physical, paper copies of articles and books they wished their students to read. Students knew that the materials placed on reserve by their faculty were required or strongly recommended readings.

Today, some portion of a professor's reserve reading list is available digitally. These can be articles available in full-text databases or online journals, as well as monographs from the corpuses of e-book vendors, such as netLibrary and Books24x7.

E-reserve materials also can take the forms of paper copies of an article, book chapters, or excerpts that have been scanned and digitized with appropriate copyright clearance.

netLibrary
www.netlibrary.com

Books24x7
www.books24x7.com

Copyright Act
www.copyright.gov/title17

However, in spite of the availability of digital materials, often some portion of a reserve list continues to reside only in paper format. And it's the blend of paper and digital content that makes inclusion of reserve reading lists into a CMS so difficult. How can the physical items, such as books, videotapes, and audio recordings, be represented within the CMS when copyright guidelines indicate the material cannot be digitized? A link to the item's record in the library's online catalog is a poor substitute for the actual material.

Reserve readings are in a messy transition period. While course-management systems are pulling them toward a fully digital future, the realities of copyright law and limitations of digitization tether them to their paper-based past. Today's students must contend with the need to move between their virtual course sites and the physical library reserve rooms constantly.

Returning to the case scenario, it's unlikely the instructor will in fact be able to provide *all* of his reserve materials from his course site. Those items he is able to post in the course site on his own, however, represent another potential problem.

A portion of the work done by library staff as they pull content together for electronic reserves is to obtain copyright clearance. Librarians may accomplish this task through direct communication with the publishers or by outsourcing this to a commercial service, such as the Copyright Clearance Center.

If the instructor posts reading materials to his course site on his own, the library cannot assist with copyright clearance easily. Faculty members unfamiliar with the copyright clearance process may inadvertently violate copyright laws, for which they would be personally liable.

On the other hand, the instructor, aware of the need for copyright clearance, could create a personal account with the Copyright Clearance Center, submit his reading list, secure permissions, pay the royalties, and be reimbursed by the

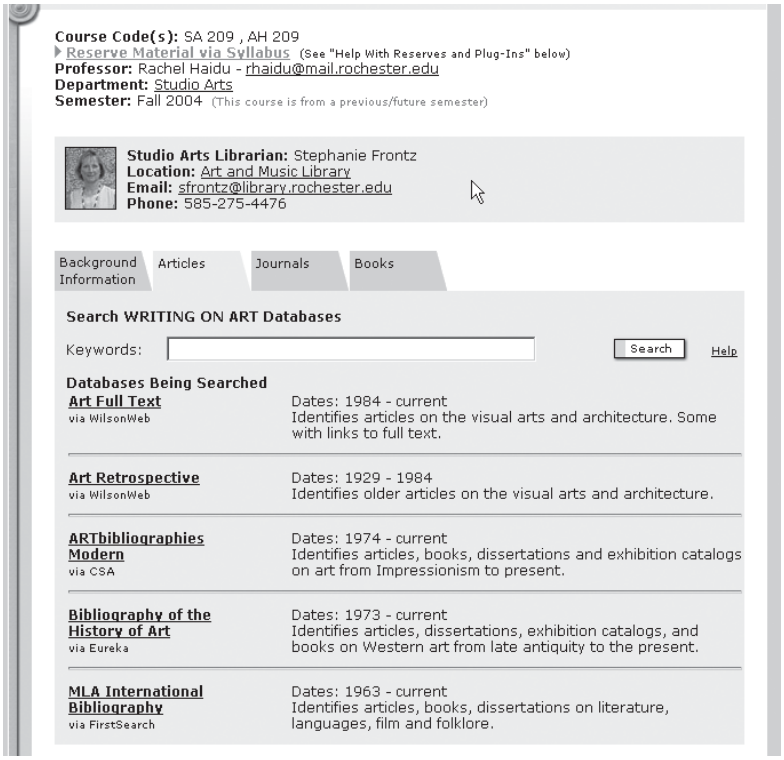

Figure 2
ENCompass metasearch tool tailored to a specific class at the River Campus Libraries, University of Rochester. *Reprinted with Permission.*

institution or his students. Unbeknownst to the instructor, however, the library already may have a current license for online access to several of the articles on the list. Consequently, the institution has now paid twice for access to the very same materials.

While CMS have made the activity of posting and sharing digital materials easier, they have made more complex the process by which digital rights are managed,

Copyright Clearance Center
www.copyright.com

and it's the faculty that bear the burden of this added complexity and the consequences of any mistakes.

Case 4: An instructor has created a learning object for her course that uses simulations to demonstrate the process of photosynthesis. At the end of the semester, she would like to move the learning object from her course site, archive it in the institutional repository, and make it available for other biology professors to use.

First, a brief explanation of learning objects: Learning objects are small, self-contained units of learning that can be reused. In the courseware world, learning objects often take the format of digital simulations, animations, and tutorials that teach a particular unit of learning.

Here are some learning object examples taken from the Multimedia Educational Resource for Learning and Online Teaching (MERLOT) registry:

- DNA from the Beginning—An animated tutorial on DNA, genes, and heredity. The learning object was created by the Dolan DNA Learning Center's Biomedia group from Cold Spring Harbor Laboratory using Shockware and is appropriate for college-level biology classes.
- Crisis at Fort Sumter—An interactive historical simulation and decision-making program by Richard B. Latner of Tulane University. Appropriate for high school and college level history classes studying the Civil War era.
- Fugues of the Well-Tempered Clavier—An interactive multimedia analyses of Johann Sebastian Bach's fugues from Books I and II of his *Well-Tempered Clavier*. Created by Timothy Smith of Northern Arizona University and David Korevaar of the University of Colorado.
- Cameroon Balloon Factory—An interactive, online business case study of the Cameroon hot air balloon factory in Bristol, United Kingdom. Created by the University of Bristol. Appropriate for college-level business classes.

Learning objects are reusable teaching tools. Other instructors with the inclination and expertise may chose to design and create their own learning objects, which become a by-product of the course site that merits discovery and reuse. Others may opt not to create learning objects, but instead locate and use those that are available already.

In this case scenario, the instructor has decided that her learning object on photosynthesis is worthy of reuse and wishes the library to archive it in the institutional repository that runs, hypothetically, on DSpace software.

Many academic libraries have undertaken the challenge to provide institutional repositories for their communities. One reason is the desire to provide stewardship for works of enduring value created by the community, in the same way that the library provides stewardship of materials purchased for the community's use. Unlike traditional library collection development, however, it is often the members of the community (faculty) who determine what should be deposited into the repository.

Learning objects, however, are far more complex than dissertations, technical report, preprints, and other materials that one often finds within an institutional repository. As an illustration, DSpace uses a qualified Dublin Core metadata set, which is an insufficient substitute for the current learning object metadata standard, the IEEE Standard for Learning Object Metadata (LOM.)

While certainly not equivalent to the tome that is MARC and the Anglo-American Cataloging Rules, LOM is far from simplistic. It consists of nine base metadata categories: general, lifecycle, meta-metadata (*sic)*, technical, educational, rights, relation, annotation, and classification. The IEEE LOM standard includes twenty-seven pages of tables to explain how to apply LOM-conforming metadata properly to any given learning object.

MERLOT
www.merlot.org

DSpace
www.dspace.org

Dublin Core
http://dublincore.org/

IEEE Standard for Learning Object Metadata
http://ltsc.ieee.org/wg12/files/LOM_1484_12_1_v1_Final_Draft.pdf

Obviously, the vast majority of faculty authors of learning objects are unfamiliar with LOM. And while it would be advantageous for the creators of learning

objects to have a greater awareness of the benefits of good metadata, it would be unreasonable to expect that faculty will have the time, inclination, and expertise to create standard-compliant metadata to any degree beyond perhaps title and author.

One can see a similar situation in the recent institutional repository movement. While institutional repositories initially were conceived as vehicles for the self-archiving of preprints, working papers, technical reports, and other materials of enduring scholarly value, the "self" in "self-archiving" is rarely achieved. On the contrary, the majority of institutional repository submissions are done by proxy by administrative assistants, teaching aids, graduate students, and library staff on behalf of the faculty author. An anthropologically based study on the work practices of faculty found issues of time to be a strong barrier to self-archiving (Foster and Gibbons 2005).

Regardless of whether the items are submitted into the institutional repository by the faculty or by someone else as proxy, rarely is the metadata provided upon submission of sufficient quality (for example, name and subject authority controlled) or quantity (such as nothing beyond author, title, and date created). Yet, without good metadata, the chance of discovery and reuse of the materials is lessened. This is a significant problem because discovery and reuse were highly compelling factors for submission of the material into the institutional repository in the first place.

All of this is calling into question the viability of institutional repository self-archiving in its truest sense. The same can be said for the self-archiving of learning objects.

Learning object metadata is certainly a problem space into which most would welcome the entrance of academic librarians. The expertise of catalogers is required for any attempt to achieve the standards set out by LOM. However, it is not yet clear how instructors use learning objects in their teaching, and in turn how they desire to go about locating and obtaining learning objects. Therefore, to catalog a learning object in the same way that a monograph or video DVD is cataloged might make the learning object of indiscernible value to an instructor, even if cataloged in accordance with accepted standards.

Over a ten-month period in 2002–2003, the UK Joint Information Systems Committee (JISC) funded a number of projects to "explore the technical, pedagogical and organizational issues of linking digital library systems and VLEs," under the auspices of the Linking Digital Libraries with Virtual Learning Environments (DiVLE) Program (from DiVLE Web site). A formative evaluation of all of the projects within the DiVLE program found that metadata was one of the most significant challenges:

> A mismatch emerged . . . between the librarian's perceptions of metadata as describing the properties of objects and the tutor's [instructor's] perceptions of metadata as describing its context or use, its underpinning pedagogy. This called in question who could best device the necessary high quality metadata, or if expertise from both cultures would be needed (Markland 2003b, 90).

In spite of metadata standards and the increasing focus on the need for institutional stewardship of locally created scholarship, the steps required to archive a learning object remain substantial. As this case scenario demonstrates, in the absence of numerous processes and procedures, there are a number of potential problems along the way that could cause the learning object not to be archived or rendered undiscoverable.

All four of these case scenarios demonstrate that current capabilities and practices have not yet caught up with expectations. The technical barriers that stand in the way of the integration of a CMS with library resources make the online-learning environment appear rudimentary when compared to the seamless Web as presented by Google.

Working It Out

Through the development of standards, specifications, and best practices, several organizations have been working toward a resolution of some of the technical problems. As discussed previously, IEEE created a standard for learning object metadata. The complexity of LOM led to the development of CanCore, an instantiation of LOM that recommends simplifications and interpretations of the LOM standard.

JISC
www.jisc.ac.uk

DiVLE
www.jisc.ac.uk/index.cfm?name=programme_divle

The Advanced Distributed Learning (ADL) Initiative—which works with government, industry, and academia to establish interoperability of online learning tools and course content—has developed the Sharable Content Object Reference Model (SCORM). SCORM "defines the interrelationship of course components, data models and protocols so that learning content objects are sharable across systems that conform with the same model" (from Web site). Essentially, SCORM is a suite of standards and specifications, including LOM, that, when packaged together, determine how learning objects can be found, imported, exported, described, and reused.

The IMS Global Learning Consortium has been very involved in the courseware and digital content problem

space since the organization's inception in 1997. This consortium's particular focus is on the creation of open technical specifications to facilitate interoperability and reuse within learning technologies.

A short list of IMS specifications related to the course-management systems and libraries include:

- IMS Enterprise Specification 1.1—Released in 2002, this specification consists of an information model, XML binding specifications, and a best practices and implementation guide to "define a standardized set of structures that can be used to exchange data between different systems" (IMS Global Learning Consortium 1999, 1). Included within a university's typical enterprise system are human resource management systems and student administrative systems as well as library and course-management systems, and this specification helps determine how data can be shared between them all (www.imsglobal.org/enterprise).
- IMS Learning Resource Meta-data Specification—IMS produced a learning object metadata standard of its own. However, with version 1.3, this specification was brought into alignment with the LOM metadata standard (www.imsglobal.org/metadata/index.html).
- IMS Resource List Interoperability—This specification is a bundling of information and data models, XML bindings, Web service interfaces, best practices, and conformance requirements (Hoebelheinrich & Maljkovik 2004). Together they outline how tools can be built to facilitate the creation of resource lists (such as course reserve lists) within a course-management system (www.imsglobal.org/rli).

CanCore
www.cancore.ca/en/index.html

ADL
www.adlnet.org/index.cfm?fuseaction=home

SCORM
www.adlnet.org/index.cfm?fuseaction=scormabt

IMS
www.imsglobal.org

One of the more than fifty contributing members of IMS is the Open Knowledge Initiatives (OKI). Initially funded by an Andrew W. Mellon Foundation grant to MIT, OKI "develops specifications that describe how the components of an educational software environment communicate with each other and with other enterprise system" (from Web site).

The OKI specifications, called Open Service Interface Definitions (OSIDs), deal with all aspects of courseware products, ranging from assessment and grading to authentication and authorization.

Also with funding from Andrew W. Mellon Foundation, "an *ad hoc* group of digital librarians, course-management system developers, and publishers met under the aegis of the Digital Library Federation to discuss the issues related to the use of digital library content in content-management systems" (Flecker & McLean 2004, 1).

The group was divided into two working groups. The first focused on the services and features that digital repositories should provide in order to expose and make accessible its content to tools, such as a CMS. The result of this working group is a checklist of "general design principles that repository services should follow in order to be accessible in useful ways from [sic] learning applications" (Blinco 2004, 3). The design principles fall into categories of "desirable," "optimal," "required," and "essential."

The second DFL work group explored the users' experiences in the CMS and digital library spheres through the use of case studies. Tools needed to support the users seamless experience with CMS and library content must support three functions—gather, create, share:

> . . . to gather a wide range of cultural and scientific digital objects from many different repositories, to create teaching and learning products that can be shared with, and reused by, others inside and, in important cases, outside of the higher education community (Hoebelheinrich, Greenbaum, and Fern 2004, 3).

In 2003, IMS began a working alliance with the Coalition of Networked Information (CNI) for the purpose of exploring:

> potential interactions between information environments and learning environments, with emphasis on work that needs to be done involving standards, architectural modeling or interfaces (as opposed to cultural, organizational, or practice questions) in order to permit these two worlds to co-exist and co-evolve more productively (McLean & Lynch 2004, 1).

The resulting White Paper (McLean & Lynch) focuses specifically on the interactions of digital libraries with course-management systems and the existing barriers to interoperability.

The IMS/CNI White Paper, as well as the Digital Library Federation report, ends with a call for demonstration projects. The problem space is now well defined. There are numerous use case scenarios by which

to measure potential solutions and adopted standards and specifications in place. What we need now are "experimental implementations, test beds, and other deployment efforts to validate and refine the standards and architecture work" (McLean & Lynch 2004, 15). The solutions to the technical barriers to the seamless integration of library content and course-management systems are now within reach.

Cultural Barriers

While the technical barriers to the integration of libraries and CMS can be significant, the correct combination of Øs and 1s can be overcome all of them. The cultural barriers, however, are not so simple. To quote the IMS/CNI White Paper, "Stakeholder groups have very different views of both the problem space and potential solutions; there are political and cultural issues, not to mention issues of control, that need to be considered alongside the technical questions" (McLean and Lynch 2004, 1).

It is not uncommon for there to be some level of friction between a campus's library and information technology services (ITS). The once well-defined goals, services, and tools of these two departments increasingly are blurred as libraries become more IT-centered, and the use of library resources seeps beyond the physical walls of the library.

On some campuses, the library and IT organizations have formed strong collaborations and alliances. Moreover, an increasing number of higher education institutions have decided to merge the library and ITS into a single, cohesive department. This merger can be a benefit to both faculty members and students, who "are often unable to distinguish clearly between tool and content, and they are increasingly confused about whom to consult for help in accomplishing their work" (Ferguson, Spencer, and Metz 2004, 39).

At other organizations, however, change anxiety, overlapping missions, scarce funding, and institutional histories have created less harmonious relationships. Often the CMS is in the hands of the ITS division, while the scholarly content resides in the hands of the library. Consequently, without a positive working relationship between the library and ITS, the task of library and CMS integration is nearly insurmountable.

OKI
www.okiproject.org

OSIDs
www.okiproject.org/specs

Digital Library Federation
www.diglib.org

An informal survey conducted by Bell and Shank highlights the pervasiveness of the chasm between ITS and libraries. Bell and Shank sent inquiries about course-management systems to two electronic discussion lists, one for computing staff responsible for courseware and another for college librarians. Responses from the computing staff revealed "they largely had little contact with campus librarians, and that librarians had virtually no presence in the administration and management of the courseware" (Bell and Shank 2004, 2). The college librarians provided corroborating reports.

CLIR
www.clir.org

Similarly, research for a March 2003 article in *The Chronicle of Higher Education* found "most courseware administrators at institutions contacted . . . are not putting library resources on course sites, although the notion of doing so has occurred to many of them" (Carlson 2003, A33). The article goes on to quote a Blackboard administrator for Grinnell College, who explained, "We're so eager to get the faculty pages up that we overlook the library . . . our people aren't inside the library. We actually have to go out of our way to deal with librarians" (ibid).

A meeting in January 2002 between CMS vendors and members of the Academic Library Advisory Committee of the Council on Library and Information Resources (CLIR) revealed that the vendors overlooked the potential for the integration of library resources "because librarians generally were not involved in the software-purchase decisions made by their institutions" (Cohen 2001, 13).

As one would expect, the CMS vendors respond to customer need in accordance with whom make the purchases. Consequently, because librarians are often not involved in the CMS purchases, their voices, needs, and requirements are neither heard nor incorporated into CMS development.

This same pattern continues to occur, as seen by the Sakai project (discussed in chapter 2). Only after more than a year of planning and development, as well as the rollout of the system at two core developer institutions, will there be a formal meeting between librarians and Sakai to discuss integration (Thorin 2005). Repeatedly, libraries are not seen as primary players within the courseware arena. This evidences a lack of understanding of libraries, as well as the narrow view of courseware as teaching tool as opposed to learning environment.

Librarians must share the blame for the current state of things. The notion of students obtaining library services without actually visiting the physical library was, and for some, continues to be, a radical idea forced upon them by the rise of the Internet.

Content-management systems push the envelope even further. A seamless integration of library resources within a CMS means that the student might never have to visit the library's physical or virtual site (Web site) to benefit from the resources and services it offers.

Will students and faculty continue to recognize and appreciate all that their academic libraries provide in the absence of overt library branding on its resources? Will the CMS be mistaken as the provider of the access to the digital library content? Will this all lead to diminished political and economic support for the library on campus?

The inability to predict the answers to these questions and several like them accurately has delayed the response of librarians to the growth of content-management systems. Only within the last year or so have librarians begun to work on the real task at hand, which Long described as follows:

> Librarians need to think hard about what services they wish to deliver to online environments and clearly articulate how they might be accessed from courseware systems. . . . Until libraries begin to think in terms of services they can offer courseware developers, it is not likely they will find a home in these tools (Long 2002)

As the OCLC E-Learning Task Force has suggested, the solution is not necessarily the combining of organizational units, but rather a service convergence:

> Identifiable common values and terminology are required to facilitate much more imaginative service solutions that transcend traditional organizational boundaries. A clearer articulation of service from the student viewpoint is necessary based upon the notion of easy, convenient access to services at the point of use—service convergence. (OCLC E-Learning Task Force 2003, 8)

However, even a user-centered service convergence of library and ITS is not accomplished easily. Traditionally, these two organizations have service and support philosophies that differ at a fundamental level. Hill and Wedaman (2004) nicely contrast the philosophies by applying "Teach them how to fish" to IT staff and "Fish for them" to library staff.

To apply this metaphor to a CMS example, should faculty be taught how to scan reserve readings and upload them into their courseware sites, as was done at Brandeis University (Hill and Wedaman 2004), or should the library reserve staff do this service for the faculty? Library and IT staff have very different answers to this question.

Library and ITS collaboration around a course-management system is not an option—it is a requirement. Simply put, one owns the content, while the other owns the technology. Without both, you cannot build an effective online-learning environment. University administrators, faculty, and students don't care about the cultural differences that make this integration so difficult and will grow increasingly impatient with the delay.