Courseware and Library Services: Bridging the Gap for Distance Students

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Introduction

The last several years have seen academic librarians struggle for a framework to support research and instruction within commercial courseware such as Blackboard, WebCT or Prometheus. The promise of infusing resources within the students’ learning environment is the modern-day golden chalice within the library instruction world. Buehler outlines the advantages of library presence in course management software. These include:

- Ease of navigation: Navigating a library web site is complicated and time consuming, especially for distance students who are often not exposed to more traditional instruction sessions.
- Creation of a “level playing field” for all the students as they begin their research assignments.
- Incorporation of durable links to licensed databases and electronic articles.
- Inclusion of instruction within the context of the students’ assignment. (Buehler, 2004)

Indeed, when one considers the variety of resources which can be linked into course management software: durable links to e-books and articles, database links, writing resources, contact information, subject-specific pathfinders, handouts, quizzes, online reference services, and tutorials, it is easy to understand the excitement over the potential to target materials and provide students easy access to the information they need within their online course space. Because few courseware companies provide a means within their software for a library presence, however, librarians are left to their own devices to find ways of integrating resources for students. The challenge is not insignificant.
**Literature Review**

Library literature approaches the problem of integrating resources into course spaces from various angles. Some of the literature focuses on specific issues of electronic reserves, methods of linking to resources, or incorporating tutorials within the course space environment.

John Shank divides librarian efforts to incorporate resources into online courses into two distinguishable categories – librarian involvement at the “macro-level,” and involvement at the “micro-level,” depending on the librarian’s role in the development of the course and degree of interaction with the courseware software. Involvement at the macro-level is characterized by a “generic, global presence… (in)… the software” (2003). This would be equivalent to establishing a link to the libraries’ web page and online catalog. Information on these pages is updated independently of the course software, so no updating or editing within the courseware is necessary. Working at the macro-level is highly scalable. However, a “generic, global presence” does not provide any opportunities for targeted instruction or links specific to different research projects or assignments.

In Shank’s schema, librarian participation at the “micro-level” occurs when the librarian consults with individual instructors and participates in developing customized research instructions and resource access within the courseware. Micro-level participation is less scalable for numerous reasons. Working one-on-one with instructors or course developers can be quite time consuming. Moreover, working at the micro-level, and maintaining a steady level of involvement over time is also a
challenge when either of the collaborators discontinues their involvement. Nevertheless, the potential to enrich the students’ learning environment with assignment-specific instructions and resources within courseware is considered the most effective way to encourage students to use library resources, and adds to the legitimacy of the library (Shank, 2003).

What is clear from the literature is that library involvement within the online course environment is peculiar to each institution and to the staffing, networking, technical and political situation there. Lillard and Dinwiddie documented a wide variety of academic librarian participation strategies which range from full access to edit courseware space (Central Missouri State University and the Rochester Institute of Technology), to the integration of handout links into Blackboard (Stetson University), and the construction of online tutorials within WebCT (Alfred University). Lillard and Dinwiddie concede that there is no definitive model for making the best use of course management software from the library’s perspective (2004).

**Barriers to Integrating Resources into Courseware**

What then are the constraints that affect librarian involvement in courseware? Perhaps one of the biggest issues is access to the courseware. Without the capability to log into and use editing capabilities to add resources and text, the librarian is marginalized and left to depend on either the course instructor or course developer to edit the resources or to give the librarian access to the online space. Even if a collaborative relationship develops between librarian and the instructor or developer, there are no guarantees that the relationship will remain stable over time. If the
instructor changes from semester to semester (which seems to happen often with online courses) there is potential for miscommunication, changes in course objectives, and other unexpected issues. The likelihood of resources or instructions to become outdated and irrelevant over time is great. If librarians cannot manipulate resources within the online course environment, it is difficult to imagine how effective “micro-level” collaboration can be sustained over time.

Additionally, current courseware offers little functionality in management of links and citations across a collection of courses. To be useful in this respect, commercial software would need to offer the ability to view a table or database of links that have been set up, and provide the editor the capability of making global changes to information both at the macro- and micro-level. This simply does not exist. Without this capability, one would need to go into each individual course account and find links that were made perhaps a year ago, to check or edit them. Therefore, working collaboratively with instructors or developers within the courseware on a large-scale basis (with numerous research-oriented courses) simply is not realistic at this point in time.

Another consideration is how library resources interact with the courseware. Do both the courseware and the library system identify patrons by the same method? Can students log into the courseware and have access to the library, or is an additional log in necessary? Other articles have outlined the technical difficulties in integrating instruction tutorials into the courseware environment, in an effort to exploit the courseware’s administrative tools. Silver and Nickel recount the difficulties of integrating the functions present in most online courseware into a library instruction
tutorial. The promise of using the courseware to register and track student use of the online tutorial did not prove as easy as hoped, when the authors discovered that for each student to use the tutorial and track their performance, someone at the administrative end would need to individually register them in the tutorial course. Because this was not feasible, their tutorial saw fewer students (2003).

**Library Services to Distance Students at WSU**

The issue of library access has been a concern of the WSU Distance Degree Program since the mid-1990s, when the program began to witness tremendous growth. As the web became a viable tool for information and instruction, the WSU Libraries implemented the Distance Degree Library Services (DDLS) page for these students with policy information on requesting books, accessing articles and receiving reference help. The DDLS Services page (http://www.wsulibs.wsu.edu/ddls) has gone through many versions and used various Web technologies to provide services to students.

As the distance program grew, the Libraries’ support page developed into a resource for courses with research-intensive assignments. Distance library services developed “course pages” in consultation with teaching faculty, to help students identify resources for their assignments, and how to guide students in these resources. These course pages contained instructional information specific to student research assignments, including links to databases, search strategies, and information on finding specific resources. This approach proved especially effective in supporting more complicated projects, such as legal research in the Lexis Nexis database, finding government statistics, and accessing scholarly journal articles (see Figure 1). While these pages were not incorporated into courseware, all course syllabi pages contained
a link to the main DDLS page. After accessing the DDLS page, students could find pages corresponding directly to their course. For example, research information and instruction for students in Human Development 300, would find a link to a library support page entitled “Human Development 300.” Students had little trouble identifying the most helpful information for their assignment.

“take in Figure 1”

From 1996 to 2002 the DDLS course pages were maintained manually with HTML by the Distance Learning Librarian and student workers. This was manageable up to a point, but eventually proved too labor intensive to both maintain active links to resources and a consistent look and presentation of information to students. During this same time period, the distance program at Washington State University employed the use of several different courseware programs, including a homegrown tool entitled “The Bridge,” as well as the better known Blackboard and WebCT. The distance program is now exclusively using WebCT. Although our approach to creating these course pages was a bit labor intensive, in hindsight it was a good approach to take. If we had lobbied to incorporate this information directly into the courseware, the information would have had to be transferred from one courseware to another – perhaps even several times over the last five years.

Beginning in 2002, the site was recoded into a more dynamic site that incorporated standardizing tools such as stylesheets, templates, and a supporting Access database. Current course page components include the following (see Figure 2):

- Course name, prefix and number
• Greeting with generic instructions to consult the Libraries’ Online Tour for distance students, how to contact the Libraries, etc.
• Special instruction section where either the instructor of record or the librarian can provide specific information the library resources and services and their connection to this course.
• Resource category headings under which links and link descriptions are organized (e.g., databases, electronic journals, articles, books). It is also possible for the course page editors to add new resource category headings as they see fit.
• Icons which demarcate various types of resources (book, article, reserves, etc.). These icons help accentuate the categorization established through the resource type headings.
• Links to databases, articles, pre-programmed searches, catalog records, e-books, online tutorials and any other kind of library resource.
• Descriptions/Instructions of each resource offering information about the scope of the resource, how to use the resource and any specific connections to the curriculum of the course.

“take in Figure 2”

Currently there are sixty-eight courses with a DDLS resource page, a number which continues to grow by five or six a year. Distance students appreciate being able to access a course resource page that is relevant to their assignments because it allows them to spend less time determining the appropriate database, or accessing substandard information from the Internet, and more time working with indexes, web sites, and other resources which provide quality content that meet the approval of their instructors. Links to electronic reserve items free students from the task of manually searching our catalog for their course or instructor. While using the catalog to locate reserves is not particularly difficult, there can be ambiguities between various course sections. The Libraries thought it more beneficial to link to these resources, rather than frustrate the student and use librarian time to teach them how to do this.

This is not the approach we take in instructing students located on campus, although the line separating these two types of courses are blurring rapidly. Students in
residence receive more face-to-face instruction and immediate help on the reference desk if they are having trouble finding information appropriate to their research projects. Our distance students learn about the libraries in an entirely online environment. We feel that the course support pages inform and promote information literacy by reducing the amount of frustration and wasted time students would otherwise experience. In turn, they become more effective and more frequent library users, and hopefully learn that there are many specialized research tools that can make things easier for them in the future.

With the dynamic elements in place to help create and render these course pages, the Distance Learning Librarian can spend more time gearing the content to the instructor’s learning objectives and the students’ needs. The instructor’s syllabus and assignment objectives guide the design and organization of the material in the course support pages. Finally, the dynamic pages afford the DDLS librarian more time to collaborate with instructors on these important pedagogical issues, and on developing effective durable links to resources, rather than toiling with HTML coding to create and maintain these pages.

**Technical Information about the Course Administrative Tool**

ASP or “Active Server Pages” is one of several programming languages used to create dynamic content web pages on the Internet. In the course module associated, ASP 3.0 is used to drive data in and out of a Microsoft Access database. This module’s database consists of three tables that are used to store course information, course resources, and user statistics. The user statistics table is simply a hit counter for each page that stores the number of hits and the date the page was last viewed. To simplify
things, we will discuss the course page module in terms of its “administrative” component and a “display” component.

“Take in Figure 3”

The administrative component (See Figure 3) enables the librarian to add, remove, or modify both course pages and course page resources. Librarians are able to alter all information that describes the course such as the course title, prefix, and the number associated with it. Assignment-specific instructions, especially helpful to students conducting more sophisticated legal and business research, are easily added in one of the text-fields provided by the administration tool. A course can also be demarcated as “flex” or semester-based, thus helping the libraries track and schedule the updates of electronic reserves for these two types of course schedules.

Additionally, each course page can have a practically unlimited number of resources, each of which can be assigned its own attributes. These attributes include the resource’s URL, the text which links to the resource location (i.e. database name, article title, etc.) and a two or three sentence description of the item. Each resource can be assigned to a “category” which is manifest on the course page in the form of a header or bold title, as well as a graphical icon which indicates to students the type of resource they are looking at. (In Figure 2, we see the category “Reserves.”) These categories can be customized to the instructor’s specifications to match the course’s unit titles or any other schema to help students match resources to assignments. Among the icons currently used are article, book, ILLiad (our interlibrary loan system), Acrobat, Database, Web Source, Handout, and Electronic Journal. To keep human error to a minimum, JavaScript is used to validate each form element before submission. Pages
can be previewed both before and after changes are made. Finally, the librarian can track and view which courses use reserves and the number of hits each course has received over a period of time.

The “display” component of the course page module extracts information from the Access database and organizes their presentation to create a uniform look to all the pages. Resources appear in alphabetical order with a text description of the resource, sometimes with instructions on how to use the resource. In addition, if it is necessary to add elements to the page which don’t correspond with the formula set up for displaying resources, the librarian editor is free to add HTML coding to introduce those other elements. Simply put, each course page presents a uniform look, but can also be edited with HTML tags to add other elements such as graphics or embedded tutorials.

Security is also an important element of this tool. To prevent unauthorized users from manipulating data in a malicious manner, a user name and password is required to access the administration component of the module. Cookies and session variables are used in the background to authorize and retain authorization as a user moves back and forth through sensitive pages. Therefore, an instructor must have cookies enabled on the computer being used to access this section.

The administration page, which is the tool used by librarians to manage the course page content, contains the following functions:

1) **Preview** course page displays the existing information on the page and which sections can be edited.
2) **Add** course page adds a new record to the Access database and lets the librarian record pertinent information about the course.
3) **Add resource** allows a new hyperlink added to the page, along with text about the resource.
4) **Delete course** removes a course record from the Access database.
5) **View courses that use e-reserves** generates a list of courses that have materials in the WSU Libraries eResdoc system.

**Integration of Course Pages into the Online Courseware**

If we consider the WSU Libraries’ Course Page approach within Shank’s framework of Macro- and Micro-levels of involvement, it’s not immediately clear that it would fit exclusively in to one model or the other. The WSU Distance Degree Programs uses a syllabus template which provides a uniform set of resources for all of their course offerings. These include links to a) technical support, b) library support, c) the Online Writing Lab, and d) the student handbook. In effect, then, students can always access the WSU Libraries from their course syllabus, if they know no other way. Clearly, this would be considered a macro-level link to the Distance Library Services page.

We know from anecdotal evidence, that some instructors do link directly to their DDLS course support page from within their WebCT course space, although it would be quite difficult to know exactly how many do this. The Libraries have discouraged this practice for several reasons, suggesting instead that any links made be to the main page (http://www.wsulibs.wsu.edu/ddls/). Linking to specific pages, even those maintained as fastidiously as these support pages, is dicey for several reasons. There may be some need to change the page URL, the course may be cross-listed with another, the site may need to be reorganized at some point, or other situations may lead to confusion if students are not first guided to the main Distance Library Services site.
Once students follow the macro-link from the course syllabus, they are greeted by a prominent message on the Libraries’ site inviting them to “Find Their Course.” Clicking on this link takes them to an extensive menu of course pages (see Figure 4). Once they locate their page of interest, they can select it, and get access to the micro-level links and information that pertain to their research assignment or readings. This work models Buehler’s criteria of infusing links to library resources within the context of course assignments - enriching student research, and leveling the playing field for students.

“take in Figure 4”

**Linking to Resources from the Course Pages**

A key aspect to making a model like this work is the ability to skillfully link resources within commercial databases, and within the library catalog. There are many reviews and discussion of how to create Open URLs, the use of Digital Object Identifiers (DOI) and other linking methods that may be specific to any given database. However, because there are many ways of confirming the identity of valid users of licensed databases, the construction of links can be quite individual to each institution. The WSU Libraries use a proxy script to pass users into commercial databases, so this script must be included when establishing links to articles or resources within these databases. Because the proxy script authenticates the students as valid users of the licensed databases, copyright is not an issue. If someone from outside the institution clicks on an article link, they cannot access it. Students enrolled in the institution, have the right to access those articles, and database vendors track usage for their own dealings with publishers.
Librarians should understand the issues of accessing resources off campus, and what mechanisms their library uses to verify user access to their resources. A link that works on campus, or from within the library building, may not work off campus. Simply copying and pasting the URL of a full text article or that of an item in your catalog may not be enough. In addition, links that work initially can become stale for a variety of reasons. An example of this can occur when copying and pasting the URL that is the result of a keyword search in an Innovative Interface (III) catalog, such as WSU’s Griffin catalog. Because the result of a keyword search changes over time, with new catalog records being added, or subtracted, establishing a link to a record accessed by this method is not a stable, long-term method. In contrast, using the URL generated from an ISBN search is much more reliable. Understanding the dynamics particular to your campus is essential. In the end, testing and tracking links over time may be the only way to be sure that you are creating the links effectively.

Understanding how to create effective links contributes to effective management of the course pages. If students are using your pages to help fulfill assignments, they will tell you when a link goes bad. Our experience has shown that this user input (which also comes from the teaching faculty) combined with the administrative component for quickly repairing the link bolsters the reputation and responsiveness of library services. If a broken link is reported, any librarian familiar with establishing links can log into the administrative module, and fix the problem. If an immediate fix is not apparent, at the very least the librarian can put a note up that the link is being worked on. This editing can be done from anywhere if the administrative tool is set up to be password protected or by the use of some other security measure. Within the course of an academic year,
repairs of this type are made perhaps a dozen times by WSU Librarians – often as a result of license changes among vendors, or a database altering their journal offerings.

**Summary and Future Directions**

As a matter of opinion, we are skeptical that any kind of large-scale micro-level involvement within commercial courseware is going to be a possibility for librarians in the near future. Reasons for this are numerous, and some have been discussed already – administrative access to the course space is difficult to obtain, sustained relationships and understandings between librarians and instructors are fleeting, and current commercial software is not designed to give librarians the management tools necessary to maintain resources in any organized way.

In January 2006 the Indiana University Libraries, in partnership with the University of Michigan University Library, received an Andrew W. Mellon Foundation grant in the amount of $438,000. The grant partners will be working to better facilitate online learning by integrating electronic library-provided resources into their courseware system, Sakai. The August 1, 2006 project update (Sakai, 2006) of grant recipients illustrates the complexity of the task, and outlines the comprehensiveness of their approach. Efforts to design modules that will provide communication between the courseware and federated search engines such as Metalib highlight the importance of resolving stark environmental differences of these applications. Additionally, the report states, "On the user end, instructors will be able to create a citation list within the Sakai Resources tool. Upon completion of a search, instructors will select citations and save
citations, providing students will OpenURL links to retrieve the full-text or physical location information.”

We watch with interest how this project will develop. This type of grant is a first for libraries and should set a standard for online courseware products in the future. We are hopeful that the recently obtained grant by Indiana University and the University of Michigan will play a role in solving some of these issues and helping librarians become more integrated players in the world of online courses. Still, librarians should realize that Sakai is but one courseware program. While the IU grant project may provide a model for library inclusion, the model will need to be picked up and incorporated into commercial courseware before libraries can feel integrated into the online learning environment.
Lillard, L. and Dinwiddie, M. (2004), “If you build it, they will come, but then what: a look at issues related to using online course software to provide specialized reference services”, Internet Reference Support for Distance Learners, Vol. 9 No. 138, pp. 135-145.


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Figure 1 – Conceptual Diagram of Course Page

Figure 2 – Bridging the Gap for Distance Students

Below are links to resources that will help you access information for your course assignments. If you are not familiar with library services for WSU DDF students, please take the time to go through the WSU Libraries’ Online Tour for DDP Students. If you have questions that are not addressed by the Tour or the DDSLs home page, please contact us. We’ll be happy to help.
Figure 3 – DDLS Course Administration Interface

DDLS Course Administration

- Preview A Course Page: Please Select  
  Edit A Course Page: Please Select

- Add a Resource to an Existing Course
- Add a New Course
- Remove an Existing Course
- View Courses that use Reserves
- Course Statistics Information

Figure 4 – Course Page Menu