RESEARCH FOR DESIGN

Exploring Student and Instructor Attitudes toward Accessing Library Resources and Services from Course Management Systems (CMS)

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ABSTRACT

The authors conducted a study concerning student and instructor attitudes toward accessing library resources and services from within course management systems (CMS). In spring 2008, the authors held semi-structured interviews with a small population of students and instructors at the University of California, Berkeley (UCB) and at Colorado State University (CSU). They asked participants to respond to examples of library integrations in course management systems at other institutions and to report their local experiences with both the campus CMS and library services. Participant responses frequently challenged and altered the authors' preconceptions about best practices in integrating a library presence and library services in CMS. The interview findings are discussed thematically, in relation to higher education and library literature, and can help librarians to integrate an effective library presence in a campus course management system. This study can be readily adapted for implementation at other institutions.

INTRODUCTION

Study Background

In spring 2008, the authors conducted semi-structured interviews with a small population of students and instructors at two institutions—Colorado State University (nine instructors, five students) and the University of California, Berkeley (four instructors, four students)—with the intent of exploring student and instructor attitudes toward the integration of a library presence and library services within course management systems (CMS). Because neither university library had yet integrated a comprehensive library presence in the institution's CMS, the authors saw an uncommon opportunity to explore student and instructor attitudes before launching more extensive library–CMS integration efforts. Interview questions asked participants to report experiences with both their campus CMS and the library, but also to respond to seven concrete examples of library–CMS integrations already implemented at other U.S. institutions. The authors analyzed thematically the full set of interview responses from participants at both institutions and considered their findings in relation to higher education and LIS literature, in order to contribute to future library–CMS integration efforts by their libraries.

The authors elected to conduct semi-structured interviews in hopes of obtaining richer insights into student and instructor perspectives and behaviors than they could expect to gain from conducting a survey. The authors were also very eager to approach the project as a learning opportunity. Neither of them had previously conducted research interviews. Because interviews are time- and effort-intensive, they necessarily limited their study population. As a result the findings cannot be generalized, but the richness of the collected responses and the unexpected rewards of interacting with instructor colleagues and students in this context affirmed the decision to use interviews. The participants' responses altered the authors' preconceptions about potentially desirable and innovative ways in which to integrate a library presence and library services in CMS. This reemphasized for the authors the relevance and value of directly exploring student and instructor attitudes and behaviors, and of piloting and assessing small-scale integrations during design and before substantial time and effort is invested in deploying a comprehensive library presence in a CMS. In addition, the semi-structured format of the interviews facilitated participants' comments on topics beyond the scope of the set questions. Students and instructors revealed interesting, potentially fruitful insights into their learning and teaching behaviors and preferences, as well as their attitudes towards scholarly information, libraries, and librarians.

Context and Rationale

Course management systems are now widely used on college campuses and are gaining a core pedagogical presence in higher education. In the 2007 EDUCAUSE Current Issues Survey report, campus IT leaders for the first time rated course/learning management systems as one of the top ten issues of strategic importance for higher education (Camp & DeBlois, 2007, p. 14) and the CMS/LMS remains a ranked issue in the 2009 survey (Agee, Yang, & the 2009 EDUCAUSE Current Issues Survey Committee, 2009, p. 56). The 2009 ECAR Study of Undergraduate Students and Information Technology reported that 88.9% of responding students "have taken a

course that used a course or learning management system" (Smith, Salaway, & Caruso, 2009, p. 16). This is a significant increase from previous years: the same study conducted in 2005 found that only 69.7% of students reported using a CMS (Salaway & Caruso, 2007, p. 12). Librarians interested in engaging with students and instructors clearly need to include the CMS among venues for their outreach efforts and consider that "in an age where a growing number of students do not see a difference between what is offered by library resources and Web search engines, seamless linking of course Web sites and libraries becomes even more crucially important" (Rieger, Horne, & Revels, 2004, p. 205).

Studying CMS users will help librarians customize embedded library services according to users' needs and behaviors, raising the library's profile and keeping students and instructors engaged with the library's resources and services. In the course of this study, the students and instructors told the authors much more than expected about how they experience the library in relation to the CMS, how they might use a library presence and functions embedded in the CMS, and how librarians might improve on existing library–CMS integrations.

LITERATURE REVIEW

The higher education literature includes a relative wealth of research on course management systems, including literature concerning faculty and student CMS perspectives and experiences (Caruso, 2006; Jafari, McGee, & Carmean, 2006; Landry, Griffeth, & Hartman, 2006; Lonn & Teasley, 2009; Malikowski, 2008; West, Waddoups, & Graham, 2007). Barr, Gower, and Clayton (2008) and Hammoud, Love, Baldwin, and Chen (2008) summarize the

current state of research on faculty and student responses to CMS as teaching tools, but do not specifically address library integrations with CMS. Other authors, including Solis and Hampton (2009) and Gibbons (2005) provide useful reviews of more than a decade of library literature concerning librarian interest in library–CMS integrations. However, there are only a few published surveys of users of library tools and resources integrated into the course management system. Jackson (2007) offers an overview of approaches to integrating information literacy instruction into the CMS, but focuses on surveys of librarians, rather than on faculty and students. Similarly, York and Vance (2009) surveyed librarians regarding their "embedded librarian" participation in online courses delivered with a CMS but did not explore faculty or student experiences. Hightower, Rawl, and Schutt (2008) and Rieger et al. (2004) summarily surveyed faculty concerning their integration of library links and resources in course sites, but did not more comprehensively explore faculty interests and attitudes concerning library–CMS integration. Recently Washburn (2008) surveyed students regarding the perceived utility and ease of use of librarian-authored course research pages integrated with the CMS, presenting helpful findings for librarians considering similar integration or assessment efforts. Additional, future assessments of faculty and student expectations and perceptions of library–CMS integrations will assist librarians in embedding the library in ways that will be promoted by faculty, and welcomed by students.

METHODOLOGY

Institutional Context

The authors' different positions at two

institutions—each using a different CMS—made it practical and productive to conduct interviews at both sites. By sharing the research process, the authors leveraged their time and effort to obtain a broader snapshot of user preferences than they would have been able to obtain individually, and were able to compare and contrast the responses of interviewees from the two different institutions.

Colorado State University, with 25,011 students and 1,518 faculty members (Colorado State University, 2008) uses WebCT, nicknaming it RamCT. During the fall 2008 semester there were 2,246 active RamCT course sites and 113,262 active RamCT users. The University of California, Berkeley, with 35,409 students and 2,028 faculty members (University of California, Berkeley, 2008), uses the open source Sakai system and nicknames it bSpace. During the Fall 2008 semester, there were 2,391 active bSpace course sites and 41,402 active bSpace users.[1]

CSU's RamCT is run and managed by Academic Computing and Networking Services, which was a separate campus unit at the time of the study but has since been integrated with the CSU Libraries. Berkeley's bSpace is run and managed by the Educational Technology Services unit, which partners with other universities and colleges to develop the open-source system and has a close and collaborative relationship with the Library. Librarians are not directly involved in designing or programming the system at either institution. Two CSU librarians serve with other academic department liaisons on a RamCT coordinators' committee and at UCB librarians have been invited to serve on bSpace tool development advisory teams.

Recruiting Participants

The authors' different positions also influenced the individual approaches to recruiting participants. Merinda McLure is the Applied Human Sciences Librarian at Colorado State University Libraries and was at the time of the study the liaison to the School of Education, the School of Social Work, the Department of Occupational Therapy, and the Department of Human Development and Family Studies. She recruited graduate students, undergraduate students, and instructors affiliated with these departments in an IRB-approved message to each department's designated faculty liaison to the Libraries. These individuals in turn shared word of the study with students and colleagues. Merinda also directly recruited by email select students and instructors with whom she had worked previously, using a second approved text.

Karen Munro was at the time of the study the E-Learning Librarian at the University of California, Berkeley Libraries and had connections with instructors and students through her instruction to university courses and her work on the Libraries' reference desks. She solicited the names of potential participants from librarian and campus educational technology colleagues and then directly invited the suggested individuals to participate. In addition, she emailed faculty contacts who in turn announced the study to their classes, and she recruited through the bSpace course space for the University of California, Berkeley's McNair Scholars program. Because the UC Berkeley Libraries has a standing IRB agreement for research conducted for the purposes of investigating and improving library services, specific language was not mandated for these invitations.

No tangible incentives or benefits to participation were offered, but neither of the authors had any difficulty recruiting participants. Many participants expressly indicated that they were glad to "give back" to the research process. The student and faculty participants also readily and positively associated the research efforts with the libraries, expressing enthusiasm for the research and appreciation that librarians were concerned with the CMS as a teaching tool.

The authors sought participants from a variety of disciplines, in recognition of differences in scholarly culture and instruction across fields of study. Participant demographics and participants' prior uses of CMS are summarized in Table 1. Discipline of study has a significant effect on faculty and student behaviors, as Malikowski (2008) notes. Through multiple studies, Malikowski investigated factors that might impact CMS feature adoption and usage habits, including class size, course level, and college of origin. He found that "the college in which a class was offered was the only external factor that showed a statistically significant relationship to the [faculty member's] adoption of individual CMS features" (p. 82) and that "the most prominent factor in predicting the use of individual CMS features was that faculty members from different colleges used CMS features in significantly different ways" (p. 82). The authors sought to include as many disciplines as possible in their demographic sample.

Because the authors conducted the interviews themselves, they inevitably affected their participants' responses. Several of the CSU participants had pre-existing relationships with Merinda due to her role as the liaison librarian for their departments, and even though none of the

UCB participants had such a relationship with Karen, there was nonetheless a clear and unavoidable association with the library as sponsor of the study. The authors attempted to counter this by clarifying during the interviews—when appropriate— that they were not personally responsible for the design of the library's services in the CMS, nor did they manage the campus CMS. They also indicated to the participants their efforts to protect their identity and described related measures and limitations in the participant consent forms. Nonetheless, the methodology is vulnerable to researcher influence on participant responses, and to participant self-censorship.

Incorporating Examples of Existing Library–CMS Integrations from Other U.S. Institutions

Participant profile forms (Supplementary Files A and B) and interview questions (Appendix A and B) explored four areas: participant demographics; individual experience of the library in the CMS; preferences for certain features or functionalities integrating the library and the CMS; and ideas for making the library presence in the CMS better. To stimulate the participants' ideas and judgments,the authors arranged to show them seven concrete examples of library–CMS integrations already implemented at other U.S. institutions (Figures 1-7.2). The authors chose examples that, while interesting and diverse, could feasibly be implemented at their institutions. These examples proved very important in the interviews: participants gave thoughtful, specific, and comprehensive feedback when presented with each example and when asked to identify and explain their favorite example. They struggled, however, to imagine useful library–CMS integrations

TABLE 1 — SUMMARY OF PARTICIPANTS AND PARTICIPANT PRIOR CMS USE	
Profile Elements	**# Study Participants**
All Instructor Participants by Rank	#
Adjunct Instructor	4
Assistant Professor	7
Associate Professor	2
Total Instructors	13
All Student Participants by Standing	#
Undergraduate: Sophomore	2
Undergraduate: Junior	1
Undergraduate: Senior	2
Graduate: Masters	4
Total Students	9
Academic Affiliations: UCB Participants	#
Chemistry	1 instructor
College Writing	1 instructor
History	1 instructor
International & Area Studies	1 instructor
Political Economy of Industrialized Societies	1 sophomore student
Psychology	1 senior student
Sociology and Social Welfare	1 junior student
Undeclared	1 sophomore student
Total UCB Participants	4 instructors; 4 undergraduate students
Academic Affiliations: CSU Participants	#
Human Development and Family Studies	3 instructors; 1 senior student
Occupational Therapy	1 Masters student
School of Education	4 instructors; 2 Masters students
School of Social Work	2 instructors; 1 Masters student
Total CSU Participants	9 instructors; 4 Masters students; 1 undergraduate student

TABLE 1 (CONTINUED)	
Have used CMS in # courses between fall semester 2006 and present.	
University of California, Berkeley: Instructors (Profile Form Q5)	#
None	0 instructors
1-3 courses	2 instructors (instructors taught a total of 1-6 courses in same time period)
4-6 courses	2 instructors (instructors taught a total of 4-10 or more courses in same time period)
7-9 courses	0 instructors
10 or more courses	0 instructors
University of California, Berkeley: Students (Profile Form Q3)	#
None	0 students
1-3 courses	0 students
4-6 courses	2 students (students were enrolled in a total of 10 or more courses in same time period)
7-9 courses	2 students (students were enrolled in a total of 10 or more courses in same time period)
10 or more courses	0 students
Colorado State University: Instructors (Profile Form Q5)	#
None	2 instructors (instructors taught a total of 4-6 courses in same time period)
1-3	1 instructor (instructor taught a total of 1-3 courses in same time period)
4-6	1 instructor (instructor taught a total of 4-6 courses in same time period)
7-9	1 instructor (instructor taught a total of 7-9 courses during this time)
10 or more	4 instructors (instructors taught a total of 10 or more courses in same time period)
Colorado State University: Students (Profile Form Q3)	#
None	1 student (student was enrolled in a total of 7-9 courses in same time period)
1-3	1 student (student was enrolled in a total of 10 or more courses in same time period)
4-6	1 student (student was enrolled in a total of 10 or more courses in same time period)
7-9	1 student (student was enrolled in a total of 10 or more courses in same time period)
10 or more	1 student (student was enrolled in a total of 10 or more courses in same time period)

beyond the examples shown to them.

Capturing and Analyzing the Interviews

The authors pre-scheduled their interviews and audio-recorded the interviews in private spaces. Merinda recorded her interviews using a laptop, a USB microphone, and the open source software Audacity. CSU participants appeared entirely at ease with this set up and indeed several instructor participants expressed interest in using this approach in their own future research. Karen used a handheld digital recorder with proprietary software that allowed her to transfer the recorded interviews to her workstation computer.

To analyze the interview data, the authors co-designed an Excel workbook and agreed on common worksheets, columns, and rows. Rather than transcribe each interview verbatim, they transcribed the interviews in bullet form. The audio recordings allowed them to review complete responses whenever necessary. The authors tagged their participants' responses by theme and shared the worksheets frequently, in order to keep the tagging practices consistent. They took a much looser approach to the thematic analysis of content than a formal coding process would do, because they were most interested in the sum of themes revealed by the analysis and in unique, idiosyncratic content rather than in carefully correlating responses with demographic factors, for example. Despite their small number of interviews, the authors caution that their looser approach to analysis was still extremely time- and effort-intensive. Their analysis allowed them to discern patterns, and also to uncover unique participant observations that cannot be readily clustered together with others. They anticipated and acknowledge this variation across participants' responses.

EXPERIENCING THE LIBRARY AND THE LIBRARIAN IN THE CMS

The authors began by asking both students and instructors to describe the existing connections between their CMS course sites and the library. The questions on this topic were intentionally broad, as the authors expected that participants might already be integrating (instructors) and encountering (students) library resources in their course sites in various ways, independent of librarian-driven efforts. Hightower et al. (2008) found in their survey of 29 faculty with WebCT course sites that 24% were independently linking to library resources or services (p. 545), and that 77% of those not yet linking to the library were interested in doing so in future (p. 548). Indeed, many of the student and instructor participants commented that their course sites included links to library web pages, library-produced online guides, or other library resources such as journal articles and subscribed databases. Several participants specifically mentioned using links to librarians' contact information.

At UCB, most participants (both students and instructors) commented that they had used links to the library web site in their course sites. However, student participants elaborated that many of their course sites had no library presence whatsoever, and attributed this to the lack of a research component in those courses, or to their perception that the instructor simply didn't use the course site in this way. Interestingly, UCB instructors and students both discussed the information literacy implications of providing journal articles in course sites, as opposed to requiring students to learn to use the link resolver to retrieve required course readings.

On the whole, UCB students favored greater library–CMS integration, especially on models that would provide support independent of the specific course or instructor. For example, students favored a general library course site that they could elect to join, or a persistent, system-level library tab that would appear in all course sites. UCB students also emphasized the importance of in-person (librarian or instructor) promotion of CMS–library integrations. Several students were participants in a fellowship program that devoted class time to pointing out library resources in the course site, and explaining how and why to use them. These students strongly emphasized that this in-person classroom experience had helped them understand the resources and use them more effectively, and had helped them do better research.

Most CSU instructors also indicated that they embed library resources and links in their course sites. Those who schedule face-to-face instruction with Merinda reported posting Merinda's handouts in their course sites following in-person instruction. Instructors elaborated that they promote the library—and specific resources such as relevant databases—either verbally, or in the course syllabus, or in assignment descriptions. Several instructors described creating a "library folder" within their course sites, where they cluster library links and materials such as library instruction handouts. Others described simply adding library links to the course site as student questions arise. Several instructors emphasized that for posting and organizing course readings they preferred the CMS to the library's e-reserve system.

CSU students had not, or had only infrequently, perceived a library presence in their course sites. If they recollected any

library integration at all, it was instructor-embedded links to the library's e-reserve system, or to specific databases, or (most commonly) to journal article PDFs. Interestingly, most students understood that these journal article PDFs had been uploaded to or linked from the course site by their instructor, yet they also perceived them as library resources.

Participants at both UCB and CSU mentioned librarians in relation to the integration of the CMS and the library. Several UCB students noted that they preferred face-to-face over virtual interactions with librarians. One UCB instructor expressed the opinion that undergraduates use face-to-face librarian consultations rather than build their own research skills with online tools. Librarian help via chat was not mentioned widely and when it was, approval for it was usually qualified at best.

Generally, UCB instructors indicated their willingness to collaborate with librarians within their course sites, showing little territoriality. It may be that the CMS can help level the playing field between librarians and instructors, as it encourages attention to pedagogy, necessitates different considerations of course content, and requires technological savvy that not all instructors may possess and that librarians might step in to provide. The UCB instructors were all voluntary CMS adopters with evident interests in pedagogy; this may partly explain their openness to collaborating with librarians and their readiness to imagine potential time and effort efficiencies. Several UCB instructors commented that time management was an ongoing challenge that well-designed library services could help them overcome. UCB instructors also indicated that they defer to librarians for copyright expertise when

distributing journal articles and other course materials in the CMS.

At CSU, comments regarding librarians were undoubtedly influenced by Merinda's liaison librarian relationship with participants. Most instructors indicated that they encouraged verbally, in their syllabi, or in their assignment descriptions the research assistance available from Merinda and other CSU Libraries staff. This was not surprising since prior to the start of each semester Merinda has suggested that instructors introduce her in course syllabi and provides suggested text to do this, via a postcard sent to all faculty in her liaison departments. CSU instructors and students commented positively on how face-to-face library instruction had influenced student awareness of the role of the librarian and student use of library resources. On this basis they suggested that they would expect an increased librarian presence in the CMS to be beneficial to students.

WHAT THE USERS WANT

To spark conversation, the authors showed the study participants seven examples of library services integrated into CMS at other institutions. The authors shared these as color printouts of screenshots provided by the institutions in question. In some cases they modified the screenshots to include an explanatory note, visible as a yellow text box overlying the image, which helped clarify the function or context of the feature in a consistent manner. These screenshots are reproduced below, in the order in which they were presented in the interviews.

Participants expressed strong approval of some features, mixed approval of others, and uncertainty about, or disapproval of, a few. Participant responses are summarized in Table 2, and elaborated in the following sections.

TABLE 2 — SUMMARY OF LIBRARY–CMS INTEGRATION EXAMPLES AND OVERALL RESPONSES	
Example Feature	**Overall Response**
Instructional web page (Figure 1)	Mixed.
Persistent library tab (Figure 2)	Approval.
Librarian-moderated discussion forum (Figure 3)	Mixed, with stronger approval from CSU participants.
Librarian-vetted web site lists (Figure 4)	Mixed, with stronger approval from students than instructors.
Librarian-vetted RSS feeds (Figure 5)	Mixed, with stronger approval from UCB participants.
New book feeds (Figure 6)	Disapproval.
Embedded course reading lists (Figures 7.1 and 7.2)	Mixed.

Figure 1 — Feature: Instructional Web Page
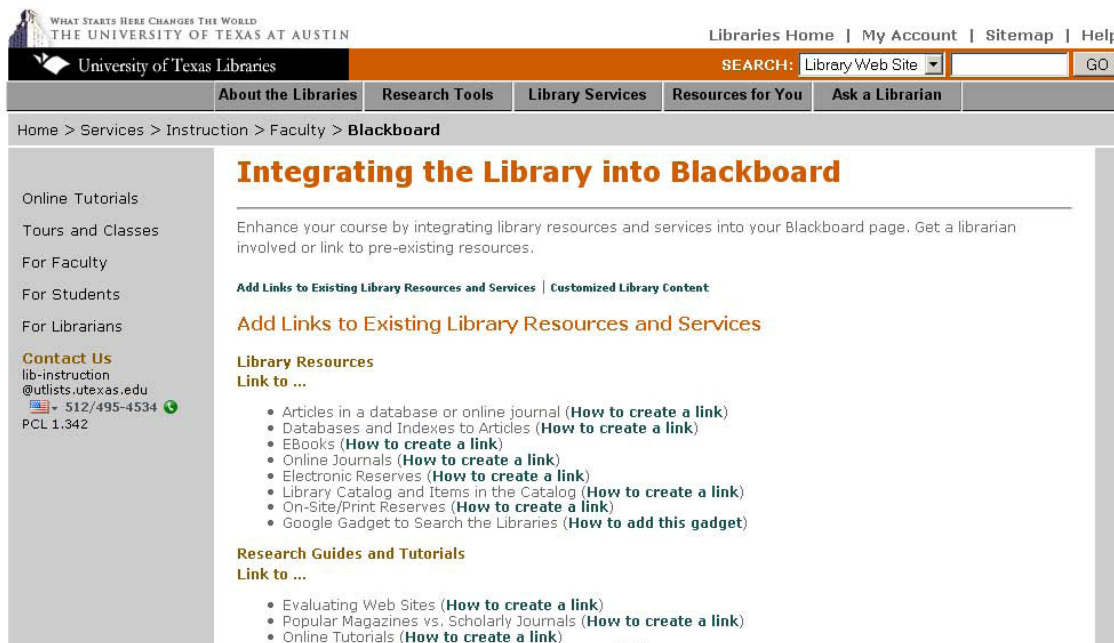
Library web page that provides instructors with how-to assistance on linking the campus Blackboard CMS and the Libraries. From The University of Texas at Austin Libraries, 2008. Reprinted with permission.

Feature: Instructional Web Page

Participants gave mixed responses to an instructional web page explaining how to embed library services and collections in the course site. UCB instructors approved the idea in principle, but were skeptical that they would use it in practice, citing the inconvenience of both seeking out an instructional site separate from the CMS itself, and of following detailed instructions. There was also concern that the page included too much information, and that it was formatted in a way that made it hard to understand and use. UCB Berkeley students recognized that this feature was aimed more at instructors building course sites than at themselves, but approved its potential for making instructors better informed about, and more active in, the CMS. CSU instructors generally approved of an instructional web page, although some expressed preference for a face-to-face tutorial with library staff instead of, or in addition to, this web-based instruction.

While an instructional web page supporting CMS integration is undoubtedly a good strategy for overcoming some of the hurdles of a complex CMS, our participants' responses reflect findings in the literature that users ultimately want a simpler, more intuitive, and better-integrated system. Jafari et al. (2006) note that "tools provided within an L/CMS are not, in general, utilized to their fullest capacity….The amount of time needed to use many tools demands too much of both learner and instructor" (p. 52).

Feature: Persistent Library Tab

Participants gave strong approval to a tab or link to a library web page that is independent of the actions of instructors and

FIGURE 2 — FEATURE: PERSISTENT LIBRARY TAB
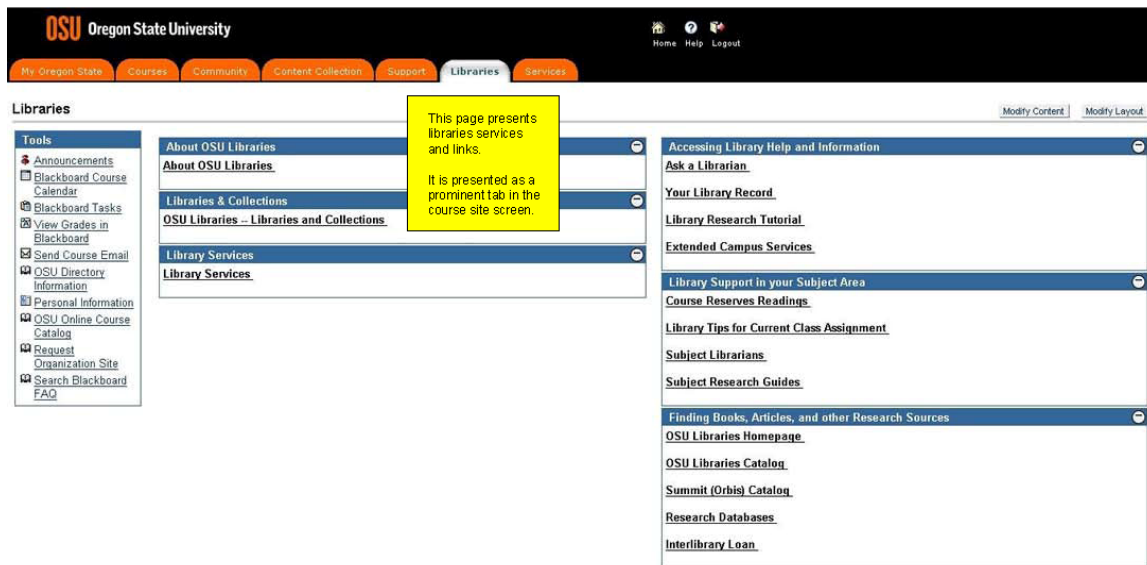
System-level (versus course-space level) Libraries tab in the campus CMS, presenting services and links. From Oregon State University, 2008. Reprinted with permission.

students. One CSU instructor described this as a "no-brainer" and there was a general feeling that this was a simple, low-threshold way to raise awareness of the library's presence within the CMS.

The authors were somewhat surprised to find that instructors approved this feature as readily as students. No instructor expressed concern or a sense of territoriality about the insertion of a library link into every course site. One CSU instructor commented that this feature would be a welcome time-saver and would be one less thing for the instructor to remember to include. Students commented that they would appreciate this feature because it would give them reliable access to library resources within the CMS, independent of the individual instructor's initiative. Some students also suggested that the link to the library should not lead directly to the library's home page, but to a specially designed page with resources chosen to appeal to them. This was

interesting and useful supplementary information, leading in a few cases to a discussion of students' perceptions of the library's home page as too complex and too unfocused to be easily navigated.

Feature: Librarian-moderated Discussion Forum

Participants gave ambivalent approval to the idea of librarian-monitored discussion forums on course research topics. The screenshot presented to participants displays a future implementation envisioned by Matthew and Schroeder, that would create discussion forums at the disciplinary level, rather than for individual course sites. While the intended focus for this example was librarian-moderated discussion forums generally, rather than specifically disciplinary level forums, several study participants incorporated comments about the disciplinary level structure into their

FIGURE 3 — FEATURE: LIBRARIAN-MODERATED DISCUSSION FORUM
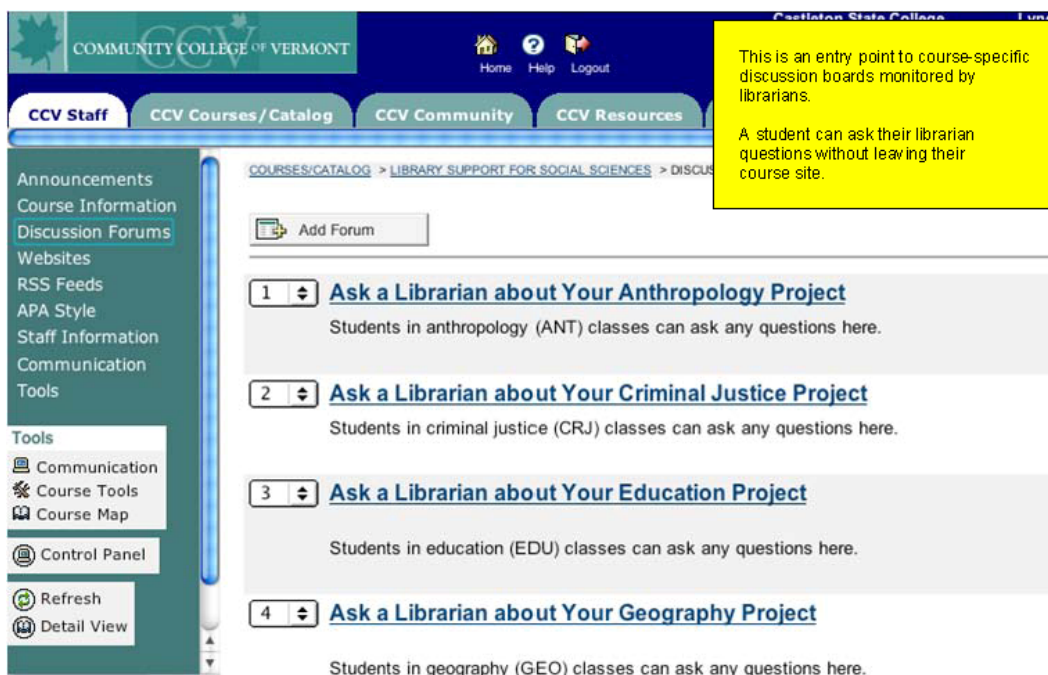
Discipline-specific, librarian-moderated discussion forum. From the Community College of Vermont, 2008. Reprinted with permission.

responses In many cases, participants expressed concern about the discoverability and relevance of disciplinary discussion forums, which may speak to prior experiences with required participation in online discussion, rather than to the potential of librarian-mediated discussion boards. Caruso (2006) reports that in the 2005 ECAR study of students and information technology, online discussions were the CMS feature least valued by students and that "students complained when the online discussions were perceived as busy work" (p. 6).

When asked to focus on the idea of discussion forums for individual course sites, UCB instructors commented that discussion forums permit archiving of responses, which in turn allows students to search to see whether a question has already been answered. Instructors also commented that as a help mechanism forums are easier

to maintain and manage than instant-message chat services, for example, because forums don't create an expectation of instantaneous response from the librarian. At the same time, some instructors saw the lag in response time as a possible deficit of the feature. Both students and instructors at UCB expressed a preference for face-to-face interactions with librarians over online discussion forums.

CSU participants found the discussion forum feature more appealing. Instructors commented that the feature would be most useful if the forum were designed around particular assignments. They also suggested that librarians and instructors would need to collaborate closely to be sure they were "on the same page" when responding to student questions and comments in the course discussion forum. CSU students commented that they were familiar with discussion forums from other contexts, and that they

FIGURE 4 — FEATURE: LIBRARIAN-VETTED WEB SITE LISTS
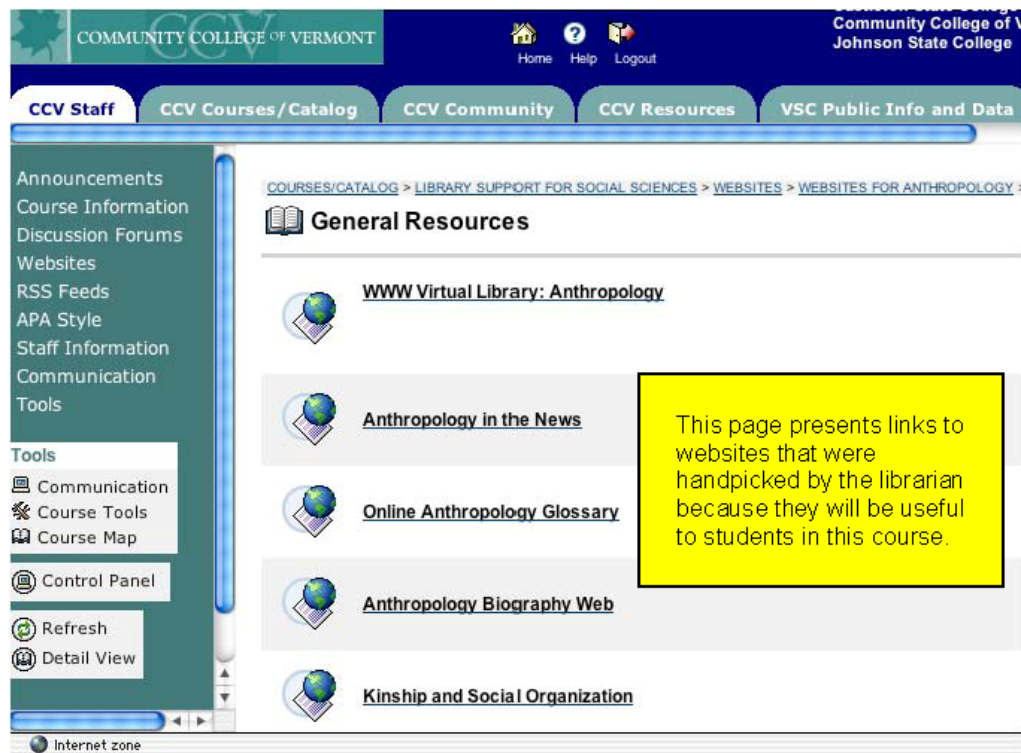
Categorized clusters of topic-specific web sites, selected by the librarian and embedded in a specific course site. From the Community College of Vermont, 2008. Reprinted with permission.

liked being able to view and learn from each other's posts. Neither students nor instructors were concerned with potential privacy issues presented by discussion forums, although students did suggest that anonymous posts would be a welcome feature.

Matthew and Schroeder (2006) document the success of librarian-monitored discussion forums in the CMS, noting that overall faculty and student responses were strongly positive at the Community College of Vermont and that this embedded librarian service was most effective for courses involving research-based assignments (p. 63). This underscores the importance of doing user research to determine local context and user preferences: a successful approach at one institution may be less

successful at another.

Feature: Librarian-Vetted Web Site Lists

Participants gave interestingly mixed responses to the idea of lists of librarian-vetted web sites intended to support student research. UCB instructors expressed general disapproval of the idea, based on concerns about site selection. Some commented that such a list would only be useful if it were highly selective, and that if it were used, brief annotations should be provided to indicate the strengths and credibility of the sites. While instructors were generally willing to allow librarians to vet sites, more than one instructor cautioned that it would be very difficult to create any sort of authoritative or persistent list of useful

FIGURE 5 — FEATURE: LIBRARIAN-VETTED RSS FEEDS
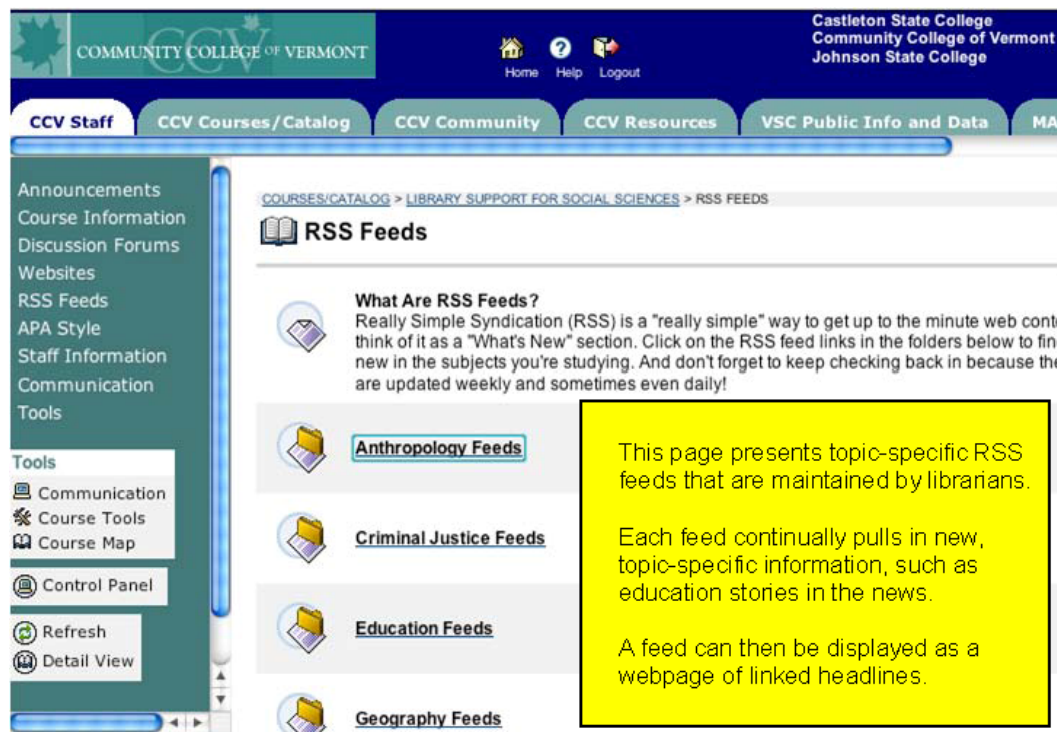
Categorized clusters of topic/discipline-specific RSS feeds, selected by the librarian and embedded in the CMS at the system level. From the Community College of Vermont, 2008. Reprinted with permission.

resources, because scholars at UCB were unlikely to agree about what these should be. Finally, instructors acknowledged that students have difficulty evaluating Internet resources. Some instructors suggested that a list of vetted sites could therefore be a useful tool for some students, despite the fact that presenting such a list seemed a "dated" way of approaching web searching and site evaluation.

UCB students were much more positive in their responses to this feature, mainly because of their difficulty in determining what their instructors consider to be high-quality Internet sources. Most UCB students approved of this feature, commenting that a vetted list of sites was highly preferable to the results of a Google search. Overall, UCB students seemed frustrated and perplexed by their efforts to navigate the online research environment—not

surprising, considering that UCB instructors readily admitted to their own lack of consensus in this area.

CSU instructors showed slightly more approval of this feature, although they too voiced concerns about how sites would be selected for inclusion in the list, and how they would be categorized. It was mentioned that students regularly cross disciplinary lines in their research, which would challenge discipline-based selection. CSU students commented on the difficulty of evaluating web resources, but also pointed out that instructors' standards for quality are highly idiosyncratic, and that librarians' selections may not meet those standards any better than students'. Some CSU students were also concerned that if a vetted list of sites were provided, all students in a class would use only these sources, and wouldn't develop their own

FIGURE 6 — FEATURE: NEW BOOK FEEDS
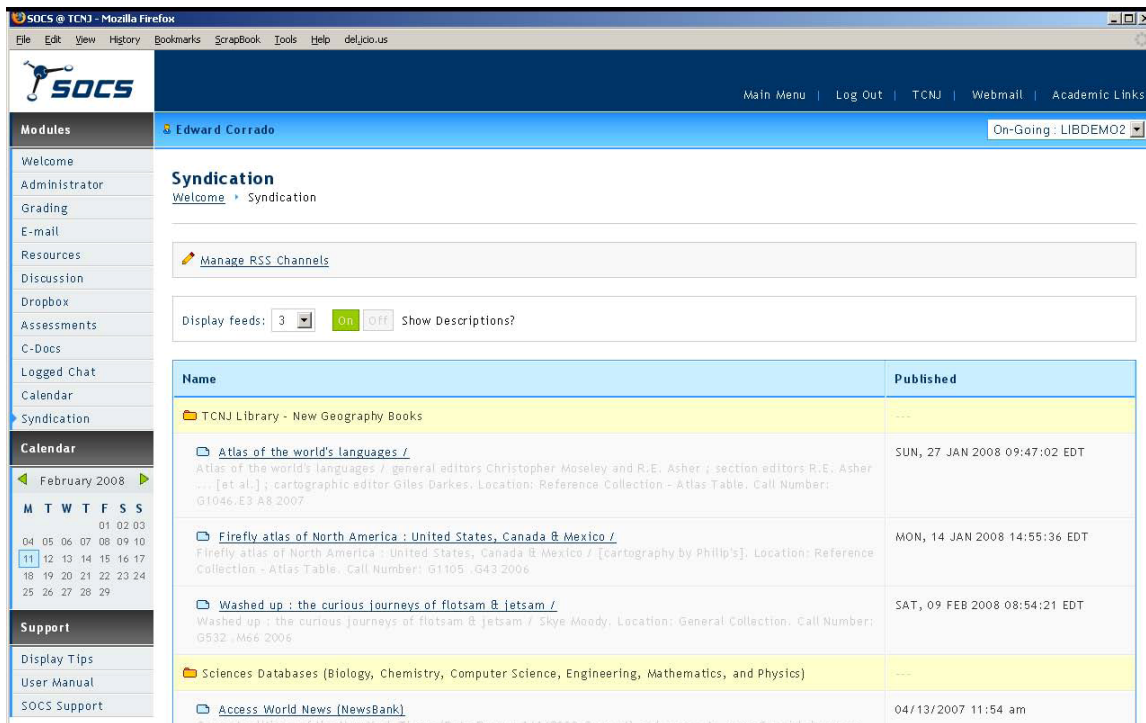
Discipline-specific RSS feeds showing new books in the library's collections. Embedded in the CMS at the system level and available for instructors to embed in their specific course sites. From The College of New Jersey, 2008. Reprinted with permission.

skills in web searching and evaluation. Students who did see this feature as potentially useful were still concerned that it be situated in a common-sense structure so they could find it, understand it, and use it. In some instances these comments led into a discussion of the importance of making features like this easily discoverable within the course site, revealing students' concerns that course sites can feel too busy and can engender student anxiety that they will miss important functions or content.

Feature: Librarian-vetted RSS Feeds

Participants gave mixed approval to disciplinary RSS feeds drawing in current news, blog posts, or scholarly journal articles. Interestingly, only one participant in the entire study had prior familiarity with

RSS technology, suggesting that for both faculty and students, RSS technology was still relatively unknown at the time of this study. UCB participants nonetheless largely approved the idea of RSS feeds, which they saw as contributing to student enrichment and acculturation in a discipline. Students were interested in using RSS feeds to follow news and scholarly publication in a field of interest, and saw RSS feeds as a means of learning how to communicate in a discipline. Some noted that highly current, constantly updated information was not particularly valuable to their specific field of study. UCB instructors also approved RSS feeds as a way of staying up to date on news from outside their fields of study, and from non-scholarly sources. Several instructors commented that they could use RSS feeds in their personal lives to stay current with general news.

FIGURE 7.1 — FEATURE: EMBEDDED COURSE READING LISTS

Linked and formatted course reading lists embedded within a specific course site. Instructors set up lists by uploading PDFs and other files, and by using an embedded Google Scholar search to create persistent links to licensed electronic content, via the institution's link resolver. From The University of California, Berkeley, 2008. Reprinted with permission.
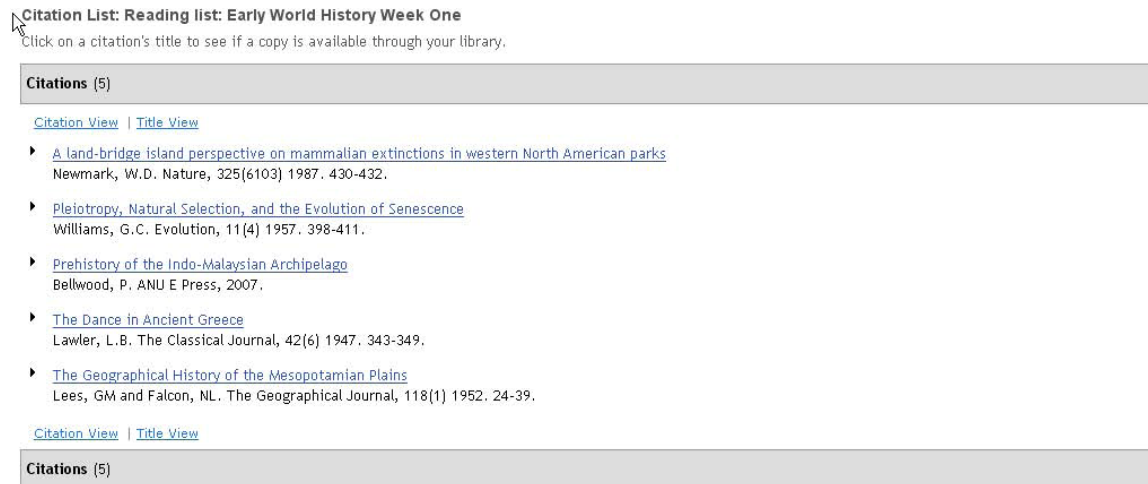
Among CSU participants, RSS feeds met with mixed approval. Several instructors commented that they did not imagine that RSS feeds would be useful to undergraduate students, although they might be useful to instructors themselves, or to graduate students. In general, instructors seemed to doubt whether undergraduates required or could make good use of the information supplied by RSS feeds. In some cases instructors were concerned that RSS feeds would overwhelm students, or that the feeds would be neglected if they were not tied to a specific assignment. There was also concern that providing feeds may constitute scholarly approval of the feed content, with one CSU instructor emphasizing that instructors need to be accountable for the resources they are providing to students and for teaching critical thinking skills. CSU students generally approved RSS feeds,

although they did not see them as particularly useful for building current awareness in their field of study. Rather, they saw them as most useful for specific assignments requiring them to track specifically current information.

Feature: New Book Feeds

Participants gave largely negative or at best neutral responses to this feature, which was a surprise to both authors. At both CSU and UCB, instructors were concerned that new books feeds would lead to information overload for users. They were also skeptical that the feeds could point to truly relevant titles, both due to the limits of the underlying technologies and to the changing, interdisciplinary nature of researchers' interests. Some instructors

FIGURE 7.2 — FEATURE: EMBEDDED COURSE READING LISTS

Citation List: Reading list: Early World History Week One
Click on a citation's title to see if a copy is available through your library.

Citations (5)

Citation View | Title View

▸ A land-bridge island perspective on mammalian extinctions in western North American parks
Newmark, W.D. Nature, 325(6103) 1987. 430-432.

▸ Pleiotropy, Natural Selection, and the Evolution of Senescence
Williams, G.C. Evolution, 11(4) 1957. 398-411.

▸ Prehistory of the Indo-Malaysian Archipelago
Bellwood, P. ANU E Press, 2007.

▸ The Dance in Ancient Greece
Lawler, L.B. The Classical Journal, 42(6) 1947. 343-349.

▸ The Geographical History of the Mesopotamian Plains
Lees, GM and Falcon, NL. The Geographical Journal, 118(1) 1952. 24-39.

Citation View | Title View

Citations (5)

View of the reading list shown in Figure 7.1, formatted with full citation information and links leading through the Libraries' link resolver to licensed electronic content available through the Libraries' collections. From The University of California, Berkeley, 2008. Reprinted with permission.

disapproved of this feature because they design assignments around research articles, rather than books. Others commented that they consider books to be too broad and varied in their topical scope to be mapped to student assignments in this way. For their own work and for graduate-level study, some CSU instructors saw some potential value in this feature. Generally speaking, a few instructors saw value in current, ongoing information about the library collection, and some suggested that a feed like this might be useful to them outside of the CMS.

At both institutions, student opinions largely mirrored those of instructors. Students were concerned about information overload and questioned the relevance of a new books feed to their work. Some students, like some instructors, suggested that a feature like this might be useful for graduate-level work conducted on a longer timeframe. One CSU graduate student pointed out, however, that even for graduate-level work the catalog serves as an adequate tool for identifying recently published books.

The largely negative responses to this feature suggest the possibility of some disconnect between librarians' and users' expectations. Both authors saw this feature as an interesting and creative addition to the CMS, and were surprised to see widespread disapproval of it from users. However, this disjuncture may also offer a useful jumping-off point to consider users' changing research habits, changing attitudes toward print books, and the importance of local contexts to the success of any feature.

Feature: Embedded Course Reading Lists

Represented by the combination of Figure 7.1 and Figure 7.2, this was the most complex feature the authors showed to participants, and the one that required the most imagination to understand its function

within the CMS. Responses to this feature were complicated and multifaceted.

UCB instructors showed ambivalent approval of this feature, with some concern over using Google Scholar, rather than licensed databases, as the embedded discovery tool for adding items to the citation list. There was concern that Google Scholar couldn't provide the necessary depth or breadth for research-level searching for many disciplines. A second concern for UCB instructors was the link resolver (SFX), which was seen as a complicated extra step in the item retrieval process. Instructors and students both asked that the item list link directly to library-owned PDFs of articles, rather than to the link resolver. Simultaneously, some instructors worried that simplifying the research and retrieval process to this degree would discourage students from learning research skills and engaging more fully with the library's collections.

UCB students liked seeing key citation information (date of publication, journal title, etc.) in the search results list, rather than the article title alone. They commented that seeing this information up front would help them make quick decisions about which items to pursue.

CSU participants' responses focused on the e-reserves aspect of this tool, rather than on its specific composition. Both CSU students and instructors were enthusiastic about the idea of lists of e-reserves embedded in the CMS; many respondents saw this as the most useful feature we showed. In part this was a response to the e-reserves system at CSU, which at the time of the study placed all e-reserves for a students' many classes into one unsorted and unsortable list. The more orderly and flexible directory structure suggested by the UCB example was very

appealing by comparison. Students and instructors both approved the feature's ability to format citations in different styles. Several CSU instructors expressed empathy for students' difficulties with citation formatting, and commented that they saw value in a tool that would allow students to simply copy and paste correct citations to course readings.

MAKING IT BETTER

After aggregating responses from the study participants in both locations, the authors examined the data for common features. Often these common themes were expressed as preferences, suggestions for improvement, or concerns about possible misdirection. To the extent possible, the authors have grouped and framed these in terms of principles for libraries to consider in implementing services within the CMS (Table 3). It's important to recognize that while some of these principles may apply broadly to other institutions, they are drawn from research with the authors' particular users within their institutional contexts. Where possible, the authors use findings from the literature to amplify or illustrate their principles and strategies. The authors encourage other librarians to compare these ideas with those generated by their own user research studies at their home institutions.

Principle: Plant the Library's Flag in the CMS

Strategy: Make the library discoverable in the CMS.
There was overwhelming approval for embedding the library visibly within the CMS, both for convenience and for acculturating students to recognize and use the library's services through repeated and varied exposure. Participants strongly

TABLE 3 — SUMMARY OF PRINCIPLES AND STRATEGIES FOR IMPROVING LIBRARY/CMS INTEGRATION	
Principle	**Strategies**
Plant the library's flag in the CMS	Make the library discoverable in the CMS
	Think of the CMS as an alternative route to library access and use
	Make the librarian's presence in the CMS personable
Principle	**Strategies**
Think beyond the library's virtual walls	Integrate the library with external tools
	Support pedagogy and collaborate with faculty
	Meet Millennials on their own turf
Principle	**Strategies**
Design features to meet users' needs	Provide digital content
	Customize the library's presence in the CMS
	Avoid overwhelming students
	Recognize that users value design considerations

favored embedding e-reserves within the CMS, where this was not already the case. In general there was a sense that e-reserves and access to licensed library content within the CMS is not intuitive, simple, or user-friendly. Several participants suggested that CMS should make it simpler for users to discover, access, organize, move, label, and prioritize lists of library content. Students at UCB commented that they would join a library bSpace site if one existed (either a general site or one created to serve their discipline). For many of the features we showed, participants took pains to note that however they might be implemented, features must be easily findable, well-promoted, and persistent across course sites if they are to be used at all. Some participants touched on the question of

metadata for CMS features, suggesting that they should be tagged with keywords to make them findable in a search of the system.

Strategy: Think of the CMS as an alternative route to library access and use. Even though instructors and students both acknowledged that they can and should learn to use the library's web site, they also suggested that making the library and librarians more visible and accessible in the CMS could help increase usage of library services and resources, particularly by students who might not otherwise broach the library's web site. Their comments reflected Collard and Tempelman-Kluit's (2007) suggestion that in contrast to "the link-heavy library homepage model where

relevant research resources are often hidden several tiers below the homepage" (p. 55), integrating the library in the CMS locates "library information within the life and goals of the learner" (p. 57). Likewise, Solis and Hampton (2009) observe that at the University of North Carolina, Chapel Hill, "even the more intuitive library services and resources, to say nothing of these difficult-to-use ones, were almost invisible from the Blackboard course page" (p. 84), and recommend organizing resources to correspond to specific courses and assignments.

One CSU instructor commented, "...from my perspective, the more you see and hear it, the better chance you're going to get it and learn it." A UCB student suggested promoting library events and drop-in library classes in the CMS, commenting that it was hard to know when these were taking place because the campus is so busy. Several UCB student participants commented that they only knew about and used the library's resources in their course site because the instructor took time in class to point out these resources and emphasize their importance.

Strategy: Make the librarian's presence in the CMS personable.

Several participants commented that personal interactions with library staff, and promotion of library services by a known and trusted individual such as an instructor, were key in helping them make full use of the library's resources. On this basis, they encouraged making the librarian's presence in the course site individual, personal, and approachable. One CSU instructor suggested that tutorials embedded in the course site should incorporate the librarian's personal online presence and another suggested including "about the librarian" sections in course site pages, with brief

biographies and photographs similar to those the instructor might plant in the course site. Still another CSU instructor suggested including a library IM presence as a "library buddy," and then extrapolated to how other academic support units, such as the campus writing center, might do the same. In cases where participants had very meaningful or useful in-person pedagogical experiences, they often looked for ways to translate these to the CMS. For example, a CSU student reflected on her service learning experience and wondered how this could be amplified or supported in a course site. A UCB participant remembered a useful hands-on research preparation experience with a librarian, and suggested that this model could be scaled more widely through the CMS. Participants repeatedly emphasized the importance of their in-person classroom experiences and relationships with library staff, implicitly suggesting that these same experiences would be valued in the CMS. These responses are in line with consistent findings in the 2005, 2006, and 2007 iterations of the ECAR Study of Undergraduate Students and Information Technology, which have shown that a majority of respondents "prefer only a 'moderate' amount of IT in their courses" (Salaway & Caruso, 2007, p. 13). Students "do not want IT to eclipse valuable face-to-face interaction with instructors," (p. 13) nor—our participants suggested—with library personnel.

Principle: Think Beyond the Library's Virtual Walls

Strategy: Integrate the library with external tools.

Instructors commented that integrating the library within the CMS was a "no-brainer" and that it should be a high priority for libraries to pursue. Going further, participants suggested not only integrating

the library seamlessly with the CMS, but also with other external discovery and networking tools such as Amazon and Facebook. Practically speaking, participants recommended that the exchange of information between tools be seamless, with nothing "lost in the shuffle" when moving content between providers, and that there should be a single log-in for the CMS and library services/resources such as interlibrary loan and licensed databases. It is worth noting that sharing patron information between third-party vendors, licensed resources, and institutional tools such as the library web site currently poses logistical and legal challenges that are not evident to patrons. However, as electronic systems proliferate in higher education, libraries might continue to evaluate how they can work with other campus units to reduce the number of discrete accounts that users must manage.

Strategy: Support pedagogy and collaborate with faculty.

Several participants commented that they sometimes find the CMS to be predetermined and rigid, and that it does not support meaningful teaching and learning experiences. In brainstorming alternatives, one UCB participant envisioned a system that would support embedded presentations and slideshows using a generic file type (not requiring specialized software for instructors or students) and offering the ability to add lecture notes, comments, tags, links to library content, and more. It was suggested that a more pedagogically ideal CMS would allow users to combine content in new and different ways, and it was observed that the course management features (i.e. grade book) of existing CMS are currently more robust than their pedagogical features. One UCB participant suggested that librarians could help contribute to more pedagogical content in

course sites, as well as to building a robust pedagogical framework around the CMS itself.

These observations are well supported in the literature. Piña (2007) comments that courseware systems "were designed to function primarily as a repository of materials and do not contain tools for the development of rich multimedia-based instruction…. Compared to engaging and customizable environments of social software, such as MySpace, Face[b]ook, YouTube and Second Life, a CMS interface can seem inflexible and boring" (p. 8). Elsewhere, Jafari et al. (2006) suggest that users want to work with smart systems that make their experiences less rigid and fixed (p. 56) and Salaway and Caruso (2007) note that for student respondents to the 2007 ECAR study of undergraduate students and information technology, "positive CMS experience is most strongly associated with the outcome 'IT in my courses allows me to take greater control of my course activities' " (p. 82).

Strategy: Meet Millennials on their own turf.

One CSU instructor noted that it is important for the library to maintain a presence in the CMS, in order to tap into students' increasing tendency to be "on their PDAs or laptops doing virtual research." In this way, the library can make itself "more relevant to millennial students." This participant noted that students tend to want quick access to resources, multiple options, and the ability to multitask. The study by Jafari et al (2006) reflects this observation: "[The students] wondered why there is so little incorporation of the tools they use everyday [*sic*], tools that they know are available (for free, they pointed out), but that instructors don't use" (p. 60). Agee et al. (2009) also emphasize that, "there is

continual pressure for the LMS to utilize and integrate with many of the Web 2.0 tools that students already use freely on the Internet and that they expect to find in this kind of system" (p. 56).

Principle: Design Features to Meet Users' Needs

Strategy: Provide digital content.

Student and instructor participants, across disciplines, repeatedly expressed their interest in and preference for digital content for reasons of convenience, portability, and better integration with the CMS and other teaching tools. One UCB instructor freely admitted to overlooking print books for some research projects and actively preferring resources available in electronic copy, particularly when on sabbatical and traveling abroad. In response to the feature showing new books in the library's collection via RSS feeds, one participant said the tool would be more useful if clicking the links led not to the catalog record, but to the fully digitized books themselves. Overall, participants looked ahead to a future when books would be offered digitally on-demand, or when book digitization would have penetrated the market more fully.

These comments revealed that although users valued digital books, some were not aware of the libraries' existing digital book collections, or were aware that not all of their resource needs could yet be fulfilled by electronic formats. As libraries increase their electronic book holdings, they should pursue ways to expose these holdings to users through clear and up-to-date catalog records, metasearch and link resolver search results, and links in the CMS. Some libraries may wish to expose the holdings of free online book digitization projects such as Project Gutenberg in similar ways. In any

case, libraries should be aware of users' growing preference for digital books, should create systems to improve the discoverability and ease of access of existing digital book collections, and should promote these collections to ensure users are aware of them.

Strategy: Customize the library presence in the CMS.

One CSU instructor summed this up neatly when responding to the proposed library tab feature: "If this was a standard tab on RamCT and I could customize it but I didn't have to, I'd love that." Participants explicitly valued the individual attention they receive from face-to-face interactions with library staff and frequently commented that they would prefer course-level customization of library services within the CMS. For instance, a CSU instructor re-imagined the library tab feature as a menu of library links that could be selectively turned off and on through the course of the term. These findings accord with those of Jafari et al. (2006), who conclude that users want systems that will remember them as individuals, and that will "behave 'more like Amazon' in remembering who they are, what they like, and where they left off in their work" (p. 53). Separately, West et al. (2007) note that instructors commonly wanted Blackboard to be more customizable and flexible for their individual needs (p. 20).

Strategy: Avoid overwhelming students.

Both student and instructor participants noted that when adding information and functionality to the CMS, there is the potential to overwhelm students and negatively influence their perception and use of library services. In many cases participants commented that library web sites are overly complex and hard to navigate, and that a simplified portal

designed to meet individual needs would be welcome. In other instances, participants cautioned that library integration features would not be used if they could not be easily found in the CMS/course site due to poor design or complex information architecture. In general, participants tended to prefer simpler-looking features rather than more complex ones, and were particularly critical of long lists of links or features suggesting the potential for user "information overload".

Strategy: Recognize that users value design considerations.

Throughout the study, participants were quick to notice and refer to the design elements of the features we showed, separate from their functionality. Participants commented when design seemed cluttered or lackluster (one student said that a given feature looked "dead"), and looked carefully for evidence of how information was prioritized and distinguished. They noticed design features such as color schemes, white space, headers, buttons, links, and bullet points. They even commented on the aesthetics of functional features such as Help links and search boxes. Participants commented that visual cues such as text showing "last updated" information for e-reserves lists would be helpful and welcome, and one student said that in a CMS environment she was anxious about missing cues like this, and losing track of new readings as they were posted. Participants were highly opinionated about design considerations and generally quick to make judgments about good and bad design decisions, as well as to let design help them choose their tools. One student commented semi-facetiously that "the reason I came to Berkeley was that it [i.e. the campus] was pretty."

While librarians have many reasons for concentrating on content and systems rather than design issues, it is useful to know how significant design decisions are to the user experience. Knowing this, libraries may choose to engage professional designers to help evaluate, advise, and direct projects as they are under development. It may also be helpful to engage end users in this process through focus groups or other means, in order to understand how the design of a tool or feature will affect users' experiences of it.

Strategy: Recognize that users want time and effort efficiencies.

Participants repeatedly emphasized how much they valued anything that saved time and energy. In some cases this was unsurprising if gratifying, as when a UCB student praised off-campus access to databases via the proxy server, saying, "fifteen minutes spent walking to campus [to go to the library in person] could be spent downloading the perfect article for my research." In other cases this was startling, as when a CSU student panned the bSpace e-reserves feature because clicking through the links to load the PDFs looked to be "too much work". Another student suggested that it would be helpful to be able to "preview" PDF articles in HTML before having to open them. Other features, such as RSS feeds and well-organized lists of e-reserves, were praised as having the potential to save users the effort of navigating confusing relationships between e-reserve lists, link resolvers, and other library resources.

These findings are in line with the literature, which emphasizes the importance of time savings to users. Piña (2007), summarizing from Kvavnik and Caruso's 2005 ECAR study, states that "these findings support the notion that students place the highest value in those features that make their lives easier and their learning more convenient" (p. 8).

West et al. (2007) comment that instructors who independently and freely adopt a new teaching tool generally do so because they expect an "efficiency benefit" (p. 13). They also point out that instructors adopting a new tool need a genuine or expected "efficiency payoff" (p. 15) if they are to commit to learning and using the new tool.

Instructional librarians may use these findings as an opportunity both to understand better their users' needs, and to discuss information literacy with students and faculty. Like most academic libraries, both UCB and CSU offer instruction in library research methods to all departments, provide subject specialist librarians offering a range of consultation services, and sponsor a wide range of other activities and partnerships to promote information literacy and research skills across the curriculum. Focused library instruction may help users overcome frustration with library systems by explaining the underlying rationales and demonstrating best strategies for their use.

CONCLUSION

While the study population was small, the participants' responses nonetheless modified the authors' own preconceptions about desirable and innovative ways in which to integrate a library presence and library services in the CMS. As professional librarians and experienced users of library systems, with a deep understanding of those systems' underlying policies, requirements, and rationales, the authors came to this study with inevitable preconceptions about library resources and user needs. Participants' responses occasionally surprised the authors, and continually reemphasized the value of directly exploring student and instructor attitudes and behaviors on even a small scale.

Participants' articulate reactions to concrete examples of library–CMS integrations suggest starting points for focusing efforts to develop, pilot, and assess small-scale integrations en route to deploying a comprehensive library presence in the CMS. For example, whereas the authors were enthusiastic about the College of New Jersey's RSS feeds showing new books in the library's collections (Moulaison & Corrado, 2007), participants were largely negative—or at best neutral—about this feature. In contrast, participants overwhelmingly approved a persistent library tab consistently planted in the CMS. In addition to responding to specific library–CMS integration examples, participants readily provided thoughtful, broader reflections on their own learning and teaching behaviors that may valuably inform the development of other library services such as face-to-face instruction.

Because participants did not actually experience the library–CMS integrations used as examples in the interviews, the authors would recommend that future studies go further and make live, pilot library–CMS integrations available to study participants. While the authors expected that participants would easily imagine and suggest library–CMS integrations that had not yet been considered, most participants had difficulty imagining these integrations. However, participants readily suggested adaptations or alternate approaches to the examples the authors showed, and the authors speculate that showing live integrations might help participants propose new and innovative features.

The participants' interest in library–CMS integrations suggests that librarians should continue to pursue creative efforts to make library resources and services present in the CMS. The instructor participants expressed

little territoriality over their course sites and clear enthusiasm for library–CMS integrations that could save them time and effort while also strengthening their students' course learning experiences. Whereas face-to-face library instruction requires class time that could otherwise be used for course content delivery, library–CMS integrations can support students at their point of need while also saving instructors time and effort connecting students to library resources.

The student participants indicated that they value visible, consistent, user-friendly access to library resources and would welcome integrations that specifically assist them in achieving course outcomes. Not surprisingly, students and instructors alike expressed their expectation that library–CMS integrations should be thoughtfully designed, flexible and customizable, pleasurable and intuitive to use, and should interact seamlessly with other tools. Instructors are wary of overwhelming students, and students are aware of their tendency to feel overwhelmed in their course sites. These perspectives emphasize the importance of integrating library services in ways that directly support core teaching and learning outcomes, and that offer students and instructors clear time and effort efficiencies.

As course management systems become more prevalent in students' educational experiences, librarians have an exciting opportunity to support teaching and learning by locating the library "within the life and goals of the learner" (Collard & Templeman-Kluit, 2007, p. 57). Participants suggest that these efforts must be intelligently and thoughtfully designed and—if they are truly useful—may be more enthusiastically received than librarians might expect. A friendly, personable,

specifically *librarian* presence is also welcome.

ACKNOWLEDGEMENTS

NOTES

1. The presented statistics were requested from the offices coordinating the course management system at each institution. Course space and CMS user counts are differently defined and tabulated at each institution.

    The reported 2,246 active CSU RamCT course sites are all associated with credit-bearing courses (non-credit bearing lab sections associated with credit bearing courses are included in this count, for example). This total excludes some instances of CSU WebCT activity: course sites associated with CSU MBA program (which uses a separate WebCT implementation) and Continuing Education course offerings, for example.

    The reported 113,262 enrolled CSU RamCT users count includes users enrolled with student, instructor, teaching assistant, or course designer

status. Each instance of enrollment is counted, rather than unique users. Of the 113,262 enrollments counted, 105,226 are users enrolled with student status.

Of the reported 41,402 active bSpace users, 30,193 were users with student status.

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APPENDIX A

Interview script for use with instructor participants.

_____

INSTRUCTOR INTERVIEW SCRIPT

PI and Co-PI record before participant arrives:

This is [interviewer] interviewing [participant code_____] for the Libraries in Course Management Systems Study, on [date].

BEGIN INTERVIEW---------------

Hello, and thanks so much for taking the time to meet with me. Just to remind you, this interview is part of a research study I'm conducting with a colleague at [the University of California, Berkeley/Colorado State University], on student and faculty perceptions of how library resources and services can be used in [bSpace/RamCT] course sites.

I expect that this interview will take 45 minutes to an hour. I'll be audio-recording it because we value all your comments, and want to be able to review them later.

During the interview I will avoid saying your name. If I say your name, I will later delete it from the recording.

Before we begin, I'd like to explain two terms that I will be using.

You'll hear me use the term "**course management systems**." Our course management system is nicknamed [bSpace/ RamCT]. Other universities and colleges use different systems, but most systems have similar functions.

You'll also hear me use the term "**course site**." A course site is the specific [bSpace/ RamCT] online space that an instructor and students use for a single course.

Are these terms clear? Do you have any questions before we start recording?

I'm going to start recording.

BEGIN RECORDING-------------

1. What are some of the most useful online services and resources that the library offers to you and your students?

2. Now I'd like you to think about courses for which you maintain a [bSpace/RamCT] course site.

Can you please describe for me how you've used or promoted library resources or services in the courses you've taught? Please talk only about courses where you've used [bSpace/RamCT] to support or deliver the course, and please be as specific as possible.

3. Have you run into any obstacles when including or using library resources or services in your [bSpace/RamCT] course sites and if so, what kinds of obstacles?

> If no obstacles:
> 3a. So it sounds like you've found [bSpace/RamCT] to be fairly easy to use. Is that right? Are there particular features you've found that make it easy to use library resources and services in your course sites?

4. Beyond the online library services and resources you've already used in your course site, are there others that you would

like to build in that are not currently there? [If participant needs prompting, add "... like being able to IM or chat with a librarian online?"]

5. We've talked about courses where you use [bSpace/RamCT]. Do you teach any courses where you don't use [bSpace/RamCT] at all?

   IF YES:
   5.a. Are there ways in which you use or promote library resources and services in these courses that you would like to see adapted for use in your courses that use [bSpace/RamCT]?

   IF NO:
   5.b. Are there reasons why you don't use [bSpace/RamCT] to support or deliver these courses?

6. At other universities and colleges, library resources and services are included in course management systems in different ways.

I'm going to show you a number of examples. I'm going to ask you to speak out loud your reaction to each example. Please say anything that comes to mind.

EXAMPLE 1

This example shows [x].

What's your reaction to this example?

Do you think a similar approach in [bSpace/RamCT] would be useful in your instruction and why/why not?

[repeat for all examples]

7. We looked at [#] examples of ways in

which library resources and services are included within course management systems at other colleges and universities. Which example appealed to you most, and why?

8. Which example seemed like it would be most useful to you in your classes, and why?

9. Would you like to make any other suggestions or comments about linking library services and resources with [bSpace/RamCT]?

Thank you very much for your participation today.

This is [interviewer] closing my interview with [participant code_____] on [date].

STOP RECORDING--------------

APPENDIX B

Interview script for use with student participants.

_____

STUDENT INTERVIEW SCRIPT

PI and Co-PI record before participant arrives:

This is [interviewer] interviewing [participant code_____] for the Libraries in Course Management Systems Study, on [date].

BEGIN INTERVIEW--------------

Hello, and thanks so much for taking the time to meet with me. Just to remind you, this interview is part of a research study I'm conducting with a colleague at [the

University of California, Berkeley/Colorado State University] on student and faculty perceptions of how library resources and services can be used in [bSpace/RamCT] course sites.

I expect that this interview will take 45 minutes to an hour. I'll be audio-recording it because we value all your comments, and want to be able to review them later.

During the interview I will avoid saying your name. If I say your name, I will later delete it from the recording.

Before we begin, I'd like to explain two terms that I will be using.

You'll hear me use the term "**course management systems**". Our course management system is nicknamed [bSpace/ RamCT]. Other universities and colleges use different systems, but most systems have similar functions.

You'll also hear me use the term **"course site"**. A course site is the specific [bSpace/ RamCT] online space that an instructor and students use for a single course.

Are these terms clear? Do you have any questions before we start recording?

I'm going to start recording.

BEGIN RECORDING-------------

1. What are some of the most useful online services and resources that the library offers you?

2. Now I'd like you to think about courses in which you've used a [bSpace/RamCT] course site.

Can you please describe for me how you've used library resources or services in these course sites? Please talk only about courses where you've used library resources or services in [bSpace/RamCT], and please be as specific as possible.

3. Have you run into any obstacles when using library resources or services in your [bSpace/RamCT] course sites and if so, what kinds of obstacles?

> IF NO OBSTACLES:
> 3a. So it sounds like you've found [bSpace/RamCT] to be fairly easy to use. Is that right? Are there particular features you've found that make it easy to use library resources and services in your course sites?

4. Beyond the online library services and resources you've already used in your course sites, are there others that you would like to see included that are not currently there? [If participant needs prompting, add "... like being able to IM or chat with a librarian online?"]

5. We've talked about courses where you use [bSpace/RamCT]. Have you taken any courses where you don't use [bSpace/ RamCT] at all?

> IF YES:
> 5.a. Are there ways in which you've used library resources and services in these courses that you would like to see adapted for use in your courses that use [bSpace/RamCT]?

6. At other universities and colleges, library resources and services are included in course management systems in different ways.

I'm going to show you a number of examples. I'm going to ask you to speak out

loud your reaction to each example. Please say anything that comes to mind.

EXAMPLE 1

This example shows [x].

What's your reaction to this example?

Do you think a similar approach would be useful in courses you take that use [bSpace/ RamCT] and why/why not?

[repeat for all examples]

7. We looked at [#] examples of ways in which library resources and services are included within course management systems at other colleges and universities. Which example appealed to you most, and why?

8. Which example seemed like it would be most useful to you in your courses, and why?

9. Would you like to make any other suggestions or comments about linking library services and resources with [bSpace/ RamCT]?

Thank you very much for your participation today.

This is [interviewer] closing my interview with [participant code_____] on [date].

STOP RECORDING----------------