



Integrating Information Literacy into Blackboard: Building Campus Partnerships for Successful Student Learning

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Learning management systems (LMS), such as Blackboard, make it possible to include information literacy in courses online. This survey assessed librarians' use of learning management systems. Results indicate that utilizing the LMS to enhance information literacy remains underdeveloped. The author recommends suggestions for campus-wide collaborations to improve student learning.

INTRODUCTION

Academic institutions have seen a steady increase in the use of learning management systems (also called course management systems or courseware), such as Blackboard, WebCT, Moodle, and Sakai. According to Market Data Retrieval statistics, 94 percent of college and universities had adopted a learning management system (LMS) by 2003.¹ Over the past five years, San Diego State University (SDSU) has seen more than a 442 percent increase of courses with an active Blackboard component and more than a 329 percent increase in instructors using Blackboard.² Currently, more than 26,000 (81.8 percent) students at SDSU use Blackboard in conjunction with at least one course³ and students frequently request the inclusion of Blackboard in a course's curriculum on end-of-the-semester course evaluations.⁴ While courseware was once primarily used for distance education, hybrid courses are gaining more popularity.⁵ Hybrid courses are those in which students and instructors meet regularly in-person in a traditional classroom setting, but also include online components in the LMS.

Learning management systems make it increasingly possible for faculty and librarians to collaborate on information literacy instruction and outreach to students. As the popularity of learning management systems continues to grow, librarians are rethinking their roles and developing exciting campus-wide collaborations. Nationwide, academic librarians are looking for ways to enhance student learning in this Web-based environment and ultimately increase the information literacy skills of college graduates.

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LITERATURE REVIEW

Information literacy skills are a priority in higher education and are included in the standards and requirements of many ac-

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crediting agencies, including the Western Association of Schools and Colleges (WASC) standards.⁶ Although LMS usage is on the rise, numerous experts note that LMS software vendors have not regularly treated information literacy or library resources as a priority for successful student learning.⁷ Steven J. Bell and John D. Shank describe the failure to include the library in a LMS as depriving "faculty and students of a convenient access path to valuable library content and services."⁸ Marianne A. Buehler points out that learning management systems are "deficient overall in developing a built-in academic library component. . . ."⁹ In 2005, Alison E. Regan and Sheldon Walcher asserted that the lack of library involvement in learning management systems could be attributed to both institutional bureaucracies and library-vendor relationships. They conclude that ". . . until libraries and [courseware] vendors agree on clear standards for library [resources] it may be unreasonable to expect off-the-shelf programs to plug into individual institutions' library resources."¹⁰ Thus, to a large extent, the seamless integration of library resources, information literacy, and librarian/faculty collaboration in the online classroom is lacking.

Technology is creating new roles for librarians that are arguably not dissimilar to current roles as partners in teaching with traditional classroom faculty. In 2002, Christopher Cox encouraged librarians to partner with faculty and gain access to courses on the LMS.¹¹ Both Kara Giles and Jill Markgraf describe their experiences as participants in online courses where they were able to upload library content and participate in discussion board threads.¹² On many campuses, IT professionals, not librarians, oversee the LMS. In 2002, David Cohen pointed out that "Academic librarians need not only to participate, along with faculty, administrators, and IT professionals, in course-management software development and adoption but also to influence standards for such software and to help train faculty and students in its use."¹³ Collaboration with the campus LMS administrator and with individual faculty members is essential to the successful incorporation of information literacy into online courses.

To make the most significant impact on student learning, experts encourage librarians to integrate library resources into the systems students use most. In their article about Blackboard and the learning styles of Generations X and Y, Barbara Costello, Robert Lenholt, and Judson Stryker assert that Generations X and Y want customized library instruction, expect to find information quickly, and "have no interest in learning how information is structured or organized."¹⁴ In 2003, this same trio of authors personalized library instruction by uploading hyperlinked Word documents into courses on Blackboard. They conclude that it is preferable for students to "spend less time struggling to locate Web sites and databases and more time doing actual research, utilizing critical thinking skills, and assessing the information and data they discover."¹⁵

Few studies have uncovered how faculty include information literacy and library content in their courses on the LMS. Linking to resources, such as subscription databases and journal articles, in a LMS can be difficult and time consuming. It is not uncommon for publishers and LMS vendors to circumvent libraries entirely by providing multimedia course content via cartridges containing resources that, in some cases, the library already owns.¹⁶ Amy J. Hatfield and Frances A. Brahmi conducted a study of all courses on their campus LMS.

They evaluated each course to uncover, among other things, how much library content a faculty member had added and conclude that "library resources are not well represented."¹⁷ In her study to determine faculty attitudes and practices on including the library in their courses on the LMS at Cornell University, Oya Rieger discovered that only 30 percent of faculty linked to subject databases and 6.5 percent said they "were unaware of how the library might further their teaching."¹⁸ It is clear that faculty and students would benefit from coordinated efforts to help integrate information literacy into courses on the LMS.

"It is not uncommon for publishers and [Learning Management System] vendors to circumvent libraries entirely by providing multimedia course content via cartridges containing resources that, in some cases, the library already owns."

BACKGROUND

The California State University (CSU) System includes twenty-three campuses with 405,000 students, taught by some 22,000 faculty and librarians.¹⁹ According to their Web site "The system awards about half of the bachelor's degrees and a third of the master's degrees granted in California."²⁰ In fall 2005, the CSU began a system-wide LMS strategic planning process. At the university system level, the CSU is trying to determine how to better implement and support technologies such as Blackboard. It makes sense that librarians demonstrate the library's commitment to important campus issues and help faculty incorporate learning activities in support of the Association of College and Research Libraries (ACRL) *Information Literacy Competency Standards for Higher Education*²¹ in courses on Blackboard and other learning management systems.

Libraries have been working to incorporate resources, such as links to electronic course reserves, databases, reference assistance, and subject guides onto the LMS. To include more library instruction, some librarians have embedded Web-based library tutorials into their LMS.²² However, coordinated efforts to partner with faculty to use the LMS for teaching and learning information literacy and critical thinking skills remain less common and needs to be developed.

METHODOLOGY AND SURVEY

The primary objective of this study was to assess librarians' understanding of the LMS as a teaching and learning tool for information literacy. In fall 2005, 171 CSU instruction, information literacy, and reference librarians were surveyed (see Appendix A). These librarians are responsible for public services and are the most knowledgeable about current information literacy instructional practices. On diverse campuses ranging in student enrollment sizes of approximately 7500 to 35,000 (with the exception of the CSU Maritime Academy at less than 1000), librarians in the CSU System have been active leaders nationwide on collaborative system-wide initiatives to encourage and support information literacy. While

it cannot be claimed that the CSU System represents all institutions of higher education, public and private, the CSU Libraries' commitment to information literacy and the CSU System's diversity in student populations, enrollment sizes, geographic locations, and ethnicity make their libraries a nice reflective sample for this survey.

Librarians were recruited via e-mail. Using CSU library Web pages, the author compiled e-mail addresses for librarians identified as working in the areas of reference, instruction, information literacy, and liaisons to academic subject major departments. In addition to individual e-mails, survey announcements were sent to two CSU librarian listservs.

The Web-based survey was hosted and maintained on a secure server via the Educational Center on Computational Science and Engineering (ECCSE) at San Diego State University. The *Sociology WorkBench*, a free online statistical package that works seamlessly with ECCSE's automated survey, was used to analyze data.

Survey research questions sought to uncover:

- Librarians' proficiency in working with learning management systems;
- Librarians' level of involvement with the LMS on their campus;
- How frequently librarians collaborated with instructors to infuse information literacy into courses on the LMS and what activities were included in collaborations; and
- Perceived barriers to the successful integration of information literacy into courses on the LMS.

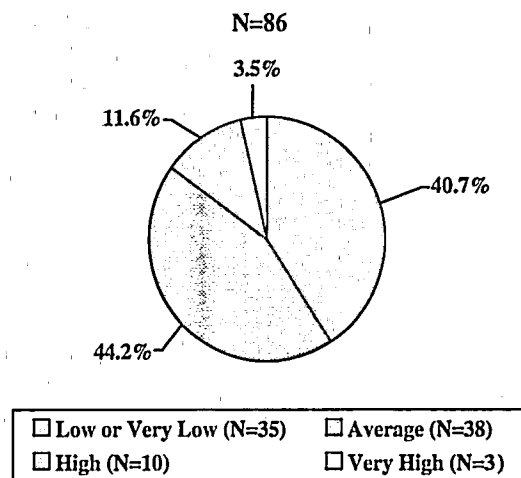
Eighty-six (50.3 percent) California State University reference, instruction, and information literacy librarians, representing twenty (87 percent) of the twenty-three campuses, responded to the survey. The anonymity of the survey allowed participants to respond candidly. Responding campuses are representative of the diversity in size, geography, and ethnicity of all CSU campuses surveyed. The three non-respondent campuses collectively represented the diverse geographic, ethnic, and enrollment size in the parent population surveyed, thus it is unlikely that their inclusion would have significantly impacted the results.

FINDINGS

WebCT and Blackboard were listed as the most popular learning management systems on CSU campuses. Fourteen (70 percent) of the twenty campuses participating in this survey use Blackboard and ten (50 percent) use WebCT, with many campuses using multiple systems. In fall 2005, Blackboard and WebCT announced their plans to merge,²³ suggesting that we may see close to 100 percent Blackboard usage over the next couple of years (again, with some campuses using multiple systems and continuing to explore other options, such as Moodle and Sakai).

When asked to rate their proficiency level in using a LMS, a slight majority of the eighty-six respondents declared themselves average while very few considered themselves high or very high (see Fig. 1). Since this question was based on personal perception of proficiency, more research is needed to determine what respondents would consider average proficiency. Librarians who had received LMS training were more likely to rate themselves average to very high in proficiency.

Figure 1
Rate Your Proficiency in Using a LMS

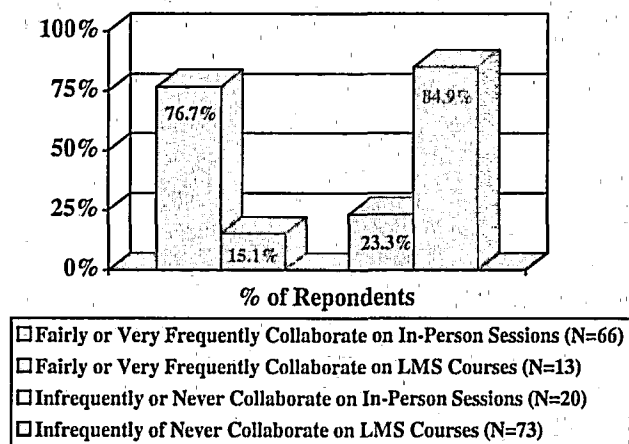


Thirty-six (41.9 percent) of the eighty-six respondents reported that a librarian on their campus was assigned to coordinate information literacy instruction endeavors for their LMS. Thirty-nine (45.3 percent) respondents stated that a librarian was not assigned, and 11 (12.8 percent) did not know if a librarian from their campus was assigned. However, on any given campus, one respondent thought a librarian was assigned while another respondent thought there was no library liaison to the LMS. As mentioned earlier, LMS usage is a growing academic trend. Librarians need to be keenly aware of the services offered in their libraries to help support information literacy and student learning within these collaborative online learning environments.

Librarians reported frequently collaborating with faculty to provide in-person library instruction, but almost never for courses on the LMS (see Fig. 2). Interestingly, librarians who received training on the LMS were not more likely to collaborate with faculty to include information literacy in courses on the LMS. Forty-seven (83.9 percent) of the fifty-six respondents who completed training on the LMS reported infrequently or never collaborating with faculty to include information literacy on the LMS (see Fig. 3).

Survey results indicate that little is being done to help support information literacy endeavors on the LMS. Of the eighty-six respondents, only twenty-eight (32.6 percent) reported that they engage in information literacy activities on the LMS. The most frequently reported endeavors included: helping faculty link to library resources, such as subject guides, databases, and reference assistance; providing Web-based digital learning objects for use in the LMS, most primarily referring to stand-alone library tutorials that are accessed via the LMS rather than via the general Internet; participating in discussion boards, all stating that the discussion thread was a generic library forum that encouraged students to ask general questions about research; and, offering assistance to faculty to help include the library, however, most noted that faculty never took them up on the offer. Surprisingly, a mere two (2.3 percent) respondents reported that the librarian's contact information was listed in a course on the LMS, arguably one of the easier methods for including

Figure 2
Frequency Collaborating with Faculty to Incorporate Information Literacy Into Courses on LMS versus Collaboration on In-person Instruction



an expert on information literacy and library resources (see Table 1).

“Survey results indicate that little is being done to help support information literacy endeavors on the [Learning Management System].”

The majority of respondents reported that their libraries do not have guides to help faculty include library resources in their courses on the LMS. Twenty-three (26.7 percent) of the eighty-six respondents did not know if such guides existed, begging the question, how can librarians help faculty include the library in their courses on the LMS if they are not aware of the resources available themselves?

Considering that, at best, only thirteen (15.1 percent) of the eighty-six respondents regularly collaborated with faculty to include information literacy in a LMS, it is not surprising that sixty-one (70.9 percent) of the eighty-six respondents reported

Figure 3
Lack of Frequency Collaborating to Include Information Literacy on the LMS Whether or Not Training Was Received

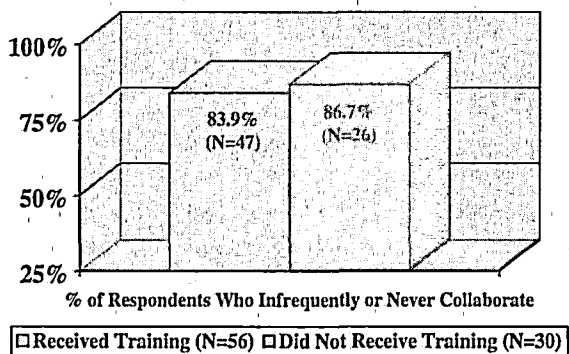


Table 1
Information Literacy Endeavors on the LMS N=86

Information Literacy Endeavor	No. of Respondents	% of Respondents
Link to library resources	10	11.6
Create Web-based library tutorials for use in LMS	8	9.3
Participate in discussion boards	5	5.8
Offer to help faculty integrate information literacy	3	3.5
List librarian's contact information	2	2.3
Do not engage in any information literacy endeavors on the LMS	58	67.4

having no marketing strategy. Most marketing strategies described consisted of individual librarians offering to help faculty link to resources. Again, however, very few faculty have taken librarians up on these offers.

The perceived barriers to incorporating information literacy into a LMS include: the librarian-faculty relationship, meaning faculty buy in, cooperation, and willingness to include information literacy; time, staffing, and funding for the library to create content; and the technology learning curve for librarians (see Table 2).

Although 7 (8.1 percent) of the respondents felt that successful student learning was compromised in an online learning environment, the majority said that librarians should be involved in providing information literacy support for the LMS (see Fig. 4). Respondents indicated that while they do believe librarians should be involved, they are looking for more guidance and leadership, and think that additional staff time and funding is needed to truly support the LMS.

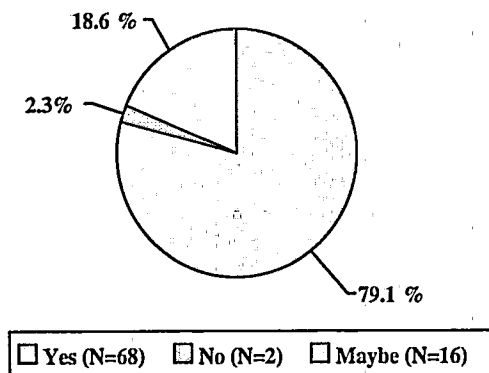
RECOMMENDATIONS

In collaboration with San Diego State University's Blackboard Administrator (part of the campus Instructional Technology Services division), SDSU Library and Information Access is exploring multiple options for the inclusion of information literacy into Blackboard. With any LMS, there are a variety of add-ons, plug-ins, and building blocks that integrate with the software. Thus, all universities may not use the same system.

Table 2
Perceived Barriers to Incorporating Information Literacy into the LMS N=61

Perceived Barrier	No. of Respondents	% of Respondents
Librarian-faculty relationship	28	30.4
Cost and time to develop content	21	22.8
Librarian learning curve	17	18.5
Technology barriers	14	15.2
Student motivation to use resources	5	5.4

Figure 4
Should Librarians Provide Information Literacy Support on LMS?



While some of the strategies presented here are specific to Blackboard, most of the ideas are transferable to other learning management systems.

Designate a Library LMS Liaison

While many libraries are already accustomed to having librarian liaisons to academic departments, liaisons to non-academic technology departments are less common. Appointing a librarian to serve as liaison between the library and the campus LMS administrator will facilitate better integration of library resources into the LMS. At an absolute minimum, this librarian should lead the development of guides to help faculty successfully and legally link to library resources. This librarian should have a strong commitment to information literacy instruction, the ability to converse with diverse groups of library and information technology professionals and administrators, and a penchant for quickly learning new educational technologies.

Create Campus Partnerships

On many campuses, the library does not manage the LMS. It is critical to develop a strong working partnership with the campus LMS administrator. The managing unit may have a variety of priorities in support of student learning, thus librarians should display sensitivity to their workload, while also garnering support and building excitement about including the library in the LMS.

Adding support for the LMS to the traditional librarian-department liaison role is another method to enhance collaboration. All subject librarians should be conversant enough with the LMS to help faculty integrate information literacy into their online courses. Librarians should be encouraged to pursue collaborative teaching opportunities and ask faculty to add them as a participant in a course, preferably as an instructor or teaching assistant. These access levels will allow librarians to upload library content to the online course and participate in discussion board threads.

Encourage Librarian Training

As higher education grows and changes so should librarians' roles and responsibilities. Librarians need to proactively engage students with information literacy in collaborative learning environments. However, as one survey respondent stated, "If librarians are not proficient in a LMS, it is hard to conceptualize how information literacy can be integrated into a LMS."

Collaboration with the campus LMS administrator provides librarian-specific LMS training and a test site to which all librarians have access. Training and access should help raise their comfort levels in using the software. Workshops might include basic skills in navigating the system and more specific skills, such as adding a variety of information literacy content to a course, conducting outreach to academic departments, and getting faculty buy in.

Package Information Literacy Content

Presenting information literacy content in a way that can easily be integrated into the LMS is critical. Most public services librarians have a variety of instructional content that they use with students in traditional in-person library instruction sessions. Handouts, activities, and Web pages can all be packaged for inclusion into a LMS.

One example is the *Information Literacy Student Learning Activity Packets* at SDSU.²⁴ Each learning packet includes educational handouts about an information literacy-related topic, activity worksheets, discussion forum prompts, and quizzes. The five currently available packets are Evaluating Information, Popular versus Scholarly, Primary versus Secondary Sources in the Sciences, Developing a Research Strategy, and Avoiding Plagiarism. Each packet is assigned student learning outcomes and matched to the Association of College and Research Libraries Information Literacy Competency Standards for Higher Education to enhance assessment and accountability to accrediting boards.

The Document Packager feature in Blackboard allows multiple zipped documents to be easily uploaded into Blackboard all at once. Thus, the zipped information literacy packets can quickly be integrated into any course on Blackboard. Librarians are exploring the packets as precursor assignments to the in-person library instruction session, and, in rare cases, assignments in lieu of sessions when in-person instruction is not possible.

Participate in Discussion Boards

Once successfully added to a course on Blackboard as a teaching assistant or instructor, librarians can participate in discussions online. One method for librarian participation is to moderate a library research discussion thread where students are encouraged to ask general questions about research. However, to enhance information literacy skills, the author recommends collaborating with instructors to create discussion topics that ask students to think critically about information and the research process. For example, a discussion topic could ask, "We constantly analyze information for reliability, accuracy, and ability to fill our current information needs. Discuss how you evaluated information to accomplish a purpose using an example from your life (it need not be related to academia or writing a research paper)."²⁵ Topics such as this require students to think of information in terms of their everyday lives, beyond the physical and virtual walls of the academic classroom, to proactively engage students in lifelong learning.

Add the Library to LMS Course Shells

Collaborate with the campus LMS administrator to include the library on the basic course shell. This starter page is usually given to every new course on the LMS and then customized by faculty to meet their needs for a specific class. Adding the library to the course shell can be accomplished in a couple of ways. First, either a generic or discipline-specific folder can be em-

bedded into all new courses on Blackboard. The subject-specific folder may contain librarian contact information, links to a resource guide for the major or course, a link to virtual reference services, and a list of databases for research in the subject area. While this method may be attractive to librarians, it may seem invasive to some faculty. An alternative approach is to include a library tab that lives outside of the course but is still constantly visible to the faculty and students in the Blackboard interface.

Participate in Blackboard Communities

Some departments have created student homerooms on the LMS as a way to push subject-related content, encourage student collaboration, and build a community. Concurrently, programs such as first-time freshman seminars may have faculty homerooms that serve as support pages for seminar instructors. These portals are ideal places to integrate discipline-specific library resources.

Explore Blackboard Building Blocks

There are numerous third-party software packages that integrate with Blackboard. Librarians should collaborate with the campus LMS administrator to learn about available building blocks and explore options that lend themselves to enhancing information literacy. Examples of building blocks that could assist librarians in supporting information literacy include: *Turnitin.com*, an online plagiarism detection service that uses specialized technology to compare student papers with information found on the Internet as well as their own databases of previously submitted papers;²⁶ *Respondus*, a software package that would allow librarians to create assessments and publish them directly into Blackboard;²⁷ social computing tools, such as WIKIs and Blogs, that can use Blackboard as a delivery tool; and, *Horizon Wimba*, an online conferencing system that allows audio and video demonstrations to be integrated into Blackboard.²⁸

Though technically not a building block, the Blackboard Academic Suite includes three parts: Learning System, Content System, and Community System.²⁹ The Content System is a full-scale knowledge management system that would allow libraries to manage resources, information literacy content, and electronic course reserves inside of Blackboard for easy integration of services into courses on the Learning System.

CONCLUSION

Results of this study make it clear that better integration of library resources and services into learning management systems is needed. In a time when librarians are usually limited to one-hour, one-shot in-person library instruction sessions with students, educational technologies can be harnessed to better integrate the library into the life of the student. Blackboard can be used to scaffold instruction and infuse information literacy activities throughout subject-specific courses.

"In a time when librarians are usually limited to one-hour, one-shot in-person library instruction sessions with students, educational technologies can be harnessed to better integrate the library into the life of the student."

In order to make the most significant contribution to student learning, librarians need to rethink traditional roles, explore a variety of emerging educational technologies, and build new campus partnerships. Librarian collaboration with the campus LMS administrator and with individual faculty members is essential to the successful incorporation of information literacy into online courses. While Web-based systems need not be a replacement for face-to-face contact with students, learning management systems provide another avenue to enhance student learning and set graduates on the path to lifelong learning.

APPENDIX A

INFORMATION LITERACY AND LEARNING MANAGEMENT SYSTEMS SURVEY

Pamela Jackson, Information Literacy Librarian at San Diego State University Library and Information Access, is conducting this survey about your Learning Management System usage (Blackboard, WebCT, etc.) as it relates to information literacy and library research. This survey should take about ten minutes to complete.

* This survey has been reformatted for publication.

1. At which campus are you a librarian?
2. What learning management system does your campus use? [Check all that apply]
 - Blackboard
 - WebCT
 - Moodle
 - Sakai
 - D2L
 - Other
 - None
 - I do not know
3. Have you attended training workshops on the learning management system at your campus?
 - Yes
 - No
4. Rate your proficiency level in using the learning management system.
 - Very Low
 - Low
 - Average
 - High
 - Very High

5. Is a librarian assigned to coordinate information literacy instruction endeavors for your learning management system?

- Yes
- No
- I do not know

6. Is the learning management system used for non-academic areas on your campus, such as residence halls, student clubs, departments, or research institutes?

- Yes
- No
- I do not know

7. If you answered Yes to Question #6, please explain.

8. How often do you collaborate with departmental faculty for in-person information literacy instruction?

- N/A
- Very Frequently
- Fairly Frequently
- Infrequently
- Never

9. How often do you work with your faculty to incorporate information literacy components into their learning management system courses?

- N/A
- Very Frequently
- Fairly Frequently
- Infrequently
- Never

10. If you work with faculty to incorporate information literacy components into their learning management system courses, please describe.

11. Do you personally provide information literacy instruction via a learning management system?

- Yes
- No

12. If you answered Yes to Question #11, please elaborate. For example, do you teach content in your own learning management system site? Have you collaborated with a departmental faculty member to team teach? Do you monitor Discussion Boards for learning management system courses in your subject areas? Do you broadcast messages to students via their learning management system course?

13. Are any of the following information literacy instruction tools seamlessly integrated into learning management system courses on your campus? [Check all that apply]

- Subject research guides
- Web-based tutorials or other modular digital learning objects
- Direct links from the LMS to databases or the library catalog
- Direct links to virtual reference services
- Evaluative information literacy quizzes
- Pre- or posttests for use in library instruction sessions
- Library research assignments for use by faculty
- LMS Discussion Board prompts either for use by faculty or for librarians to monitor
- Other
- None

14. Does your library have Web pages or handouts specifically designed to assist departmental faculty in linking to library resources from the learning management system?

- Yes
- No
- I do not know

15. Please describe your marketing strategy, if any, to encourage the inclusion of library resources and information literacy instruction into learning management system courses.

16. Have your departments mapped information literacy student learning outcomes to the online learning management system curriculum?

- Yes
- No
- I do not know

17. How effective do you think Web-based instruction is in teaching students information literacy skills?

- Not Effective
- Low Effectiveness
- Medium Effectiveness
- High Effectiveness
- Very High Effectiveness
- Do Not Know

18. In your opinion, what role should Web-based instruction play in teaching students information literacy skills? [Check all that apply]

- Introduce concepts
- Reinforce concepts
- Teach advanced skills
- It should not be used
- I am not sure

19. What do you perceive as barriers to the successful incorporation of information literacy into learning management system?

20. Do you think librarians should be involved in providing information literacy support in learning management systems?

- Yes
- No
- Maybe

21. Additional comments

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