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Content and Design of Academic Library Web Sites for Distance Learners: An Analysis of ARL Libraries

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SUMMARY. College and university libraries use the Web to communicate with distance learners about library services. How easy is it for distance learners to determine which library services offered by their home institution are available to them? Do academic libraries provide a comprehensive Web page intended specifically for distance learners? This study evaluates the Web pages of Association of Research Libraries member libraries for content and design of pages intended for distance learners.

KEYWORDS. Academic libraries, distance learners, Web sites, design

Distance students expect to remotely access multiple services and resources from their academic institution's library. For nearly a decade college and university libraries have utilized available technology to develop a Web presence. Librarians are continuously refining library Web sites to make them more content-rich and navigable.

The purpose of this research is to identify the content and design of library Web sites serving distance learners. Of particular interest to the researchers are libraries' distance education home pages, the beginning point for many distance learners interested in library resources and services. How easy is it for distance learners to determine which library services are available for them? Do academic libraries provide Web pages intended specifically for distance learners? Or, are programmatic services for distance learners blended with those for campus-based students? To ensure a Web presence for distance learners that communicates information clearly and with details (but not exhaustively), libraries need to examine the content and design of their Web sites. Findings from this study should be of interest to distance education coordinators, Web page developers, and libraries that provide services to distance learners.

The population studied is the Association of Research Libraries (ARL) member libraries, a not-for-profit membership organization with over 120 members from the United States and Canada. ARL libraries are geographically dispersed, and include both public and private institutions. Since they are large and complex institutions, it was expected there would be a variety of approaches in Web pages that present services to distance learners.

The research builds upon earlier studies that evaluate the design and content of university and academic library home pages, applying other researchers' methodologies and findings to distance education services. Among the design elements studied are institutional and library logos, graphics, colors, screen lengths, number and types of links, and link headings. Hypertext links have been analyzed for content of services and resources provided by each library for distance learners. Data collected from the distance education Web pages of each library have been tabulated in order to compare similarities and differences.

REVIEW OF THE LITERATURE

Academic library Web sites have become a significant topic of discussion in the literature. Stover and Zink (1996) studied forty academic library Web home pages to ascertain trends, patterns, and anomalies in both design and organization. They noted that "the home page has become an important navigational device in the organization of information at individual Web sites" (p. 16). King (1998) examined the home pages of ARL libraries to compare design similarities and differences. Cohen and Still (1999) identified core content common to academic library Web sites at research level universities and two-year colleges. They identified four major purposes of a library Web site:

informational, reference, research, and instructional. Medeiros (1999) observed that second generation Web design, with its flatter structures and common "look" predominating, is meant to assist users. McGillis and Toms (2001) and Battleson, Booth, and Weintrop (2001) reported on usability studies of academic library Web sites.

Some authors have looked at selected services as links on academic library Web sites. Dewey (1999) studied access, reference, information, and user education services as described on the Web pages of thirteen member libraries of the Committee on Institutional Cooperation (CIC). Dewey's emphasis was on the findability, or ease of locating services, on the libraries' Web pages. Bao (2000) looked at how academic libraries provide links to commercial databases and remote access to those resources. Coffta and Schoen (2000) examined Web sites from four- and five-year colleges and universities to find out about interlibrary loan policies, contact information, and holdings. Stacy-Bates (2000) examined design characteristics of ready reference and e-mail reference pages from ARL libraries. Stacy-Bates noted that "librarians must carefully plan the site content and design to serve patrons for whom the Web has become a central source of information" (p. 61).

Osorio (2001) studied Web sites of science-engineering libraries at forty-five universities, using a prototyping model to access content and design. A list of 66 elements was developed consisting of design features such as navigation bar, library photograph/logo, screen lengths, and colors, and content features such as "search this site," electronic resources, user education program, subject guides, and electronic reference. Osorio also identified predominant design features represented in the science-engineering libraries studied. This approach forms the starting point for the authors' methodology regarding distance education pages.

From the distance education literature, Linden (2000) recommended the type of content to include when designing Web sites for distance learners. Buckstead (2001) discussed the essential components of a Web site for off-campus library services, addressing both content and design features that should be included. The ACRL *Guidelines for Distance Learning Library Services* (rev. 2000) at http://www.ala.org/acrl/guides/distlrng.html briefly mentions Web pages as part of virtual communication with distance learners. The topic of Web pages specifically for distance learners is not well developed in the literature. This study analyzes the distance education home pages of ARL libraries and the relationship with their respective institutional home pages. The authors of this study analyzed current design features and assessed content of the distance education pages.

DEFINITIONS

For this study the terms *distance education* and *distance learning* are used synonymously. According to the ACRL *Guidelines for Distance Learning Library Services* (rev. 2000), *distance learning library services* refers to "those library services in support of college, university, or other post-secondary courses and programs offered away from a main campus, or in the absence of a traditional campus, and regardless of where credit is given" (Association of College & Research Libraries, 2000, para. 4).

Librarian-administrator, referred to in this study as *distance education coordinator*, is a "librarian, holding a master's degree from an ALA-accredited library school, who specializes in distance learning library services, and who is directly responsible for the administration and supervision of those services" (Association of College & Research Libraries, 2000, para. 8).

A *library home page* is a "Web page meant to serve as the primary gateway to a library Web site" (Stacy-Bates, 2000, para. 18). This welcome page is the first or "front" page of the library's Web site.

METHODOLOGY

The population considered for the study consisted of all 123 members of the Association of Research Libraries (ARL) as listed on the ARL Web site in September 2001. Criteria for final selection included that the institution be an academic library, and that the library Web site have links to distance education services for library users. Ten ARL members did not meet the first criterion and were eliminated from the study. These included Boston Public Library, Canada Institute for Scientific & Technical Information, Center for Research Libraries, Library of Congress, National Agricultural Library, National Library of Canada, National Library of Medicine, New York Public Library, New York State Library, and Smithsonian Institutions Libraries. Sixty-five other ARL libraries did not contain a distance education home page. The library Web sites of the remaining forty-eight ARL institutions were studied in depth.

The two aspects of data collection were design characteristics of the distance education home page and content of the distance education and main library home pages as reflected by hyperlinks. Design elements reflected the form and structure of the Web site, while content elements covered the subjects or topics. Evaluative criteria were not included in this study nor were measurement scales.

The authors adapted the list of 66 elements that Osorio (2001) presented in his study of science-engineering libraries' Web sites. Some elements were

added to Osorio's list while others were deleted. The final list of 43 elements in this study was comprised of 15 design elements and 28 content elements (see Appendix).

A preliminary check of ARL libraries' Web sites was conducted in September 2001. The authors searched library home pages using site searches and site indexes as needed to locate the distance education pages. The list of elements was modified based on the preliminary searching. Final data collection occurred in November 2001.

A spreadsheet containing home page design and content elements was developed using an Excel program. As each home page was examined, the presence or absence of each element was noted with a "y" for yes or "n" for no. Selected elements, such as the number of colors found within the home page, were counted. Additional notes concerning the home pages were entered into a Word file. Printouts of library and distance education home pages were made for ease of use. Data for each library's Web site was entered into an Excel spreadsheet and manually compiled using raw numbers and percentages. Data were tabulated using simple averages (and medians in several instances).

RESULTS

The ARL libraries use various terms to refer to distance learners and to the services offered to them. The most frequently used term was distance learners. Other terms used included distance students, off-campus students, distance education students, extended-campus students, and off-grounds or continuing education students. The most frequent terms used by libraries to describe services to this population were distance learning, off-campus, or distance education services.

Design elements comprised one portion of the study. Two design elements consistently appeared on each of the 48 distance education pages analyzed–variation in font size and links present on the home page. A white or neutral-colored background was found on the majority of distance education home pages. Wallpaper was found on only two libraries' distance education home pages. Just 12% of distance education home pages contained a text only option. However, the text only feature was sometimes available at the library's home page.

Nearly all of the distance education home pages displayed at least one navigation bar with multiple links such as the library's home page. Thirty-one distance education home pages (65%) used a top navigational bar, 25 (52%) a side bar, and 20 (42%) a bottom navigational bar. Seventeen percent of the home pages used all three types of navigational bars.

Ninety percent of distance education home pages contained at least one graphic. The logo or banner from the library's home page was repeated in 75% of the distance education home pages. Oftentimes, graphics were small photographs or illustrations. At other times the graphics appeared to be completely unrelated to library or university logos. Ruffini (2001) stated that Web pages communicate effectively when visuals convey one basic idea; multiple visuals are confusing and lead to misinterpretation. Most of the libraries in the study have one small photograph or small illustration. This suggests that libraries are trying to give the page a visual identification with the library (Osorio, 2001).

The number of links available on distance education home pages ranged from 5 to 81 with an average of 28 links and a median of 23 links. This average is slightly lower than the 34 found in Osorio's (2001) study of engineering and science library home pages. The number of different colors on the distance education home pages ranged from 3 to 13 with an average of six and a median of five. Those distance education Web sites with graphics generally used more colors.

The Print Preview command was used to determine the length of the distance education home page. The screen length of the home pages was two pages in length for both average and median, although actual length varied from one to eight screens. A very short home page may not present essential links and information for distance users. A lengthy home page may lead to navigation problems and may cause users to lose interest (Osorio, 2001).

The number of screen levels from the library home page to the distance education home page was both an average and median of two, although the range varied from 1 to 4. This design element was measured by mouse clicks from the library's home page.

Of the distance education pages analyzed, few could be considered "one-stop" or standalone pages. For example, two distance education pages were very brief. One contained only proxy information, while the other presented only information regarding the distance library card. Many distance education pages contained links for services, with fuller descriptions of those services elsewhere on the library's Web site. Most distance education pages did not duplicate full descriptions of library services and resources. For this reason, the authors chose to combine counting the content elements as found on distance education pages with the libraries' home pages.

About one-third of the content elements studied related to the distance education home page while two-thirds related to elements found on the library's home page. Links to the library's home page were found on 96% (all but two) of the distance education home pages. Osorio (2001) found a much lower percentage of science-engineering libraries (17%) with links to their main library. Ninety-four percent of the distance education home pages contained links to the university Web site. However, a much lower figure, 60% of distance edu-

cation home pages, contained a direct link to the university services for distance learners.

All distance education home pages in the ARL population provided links to the library's online catalog. Most distance education home pages (87%) listed a mission statement or explanation of services offered to distance learners.

Eighty-three percent of the ARL libraries' Web sites analyzed listed some kind of contact information for their library distance education services. Frequently, however, the description of library services lacked the name of a distance coordinator. The name of a coordinator librarian-administrator appeared on only 29 Web sites, or 60% of the sample. Contact information for generic library distance education services appeared on 40 of the sites, or 83% of the sample. The description of distance services often does not mention either a distance librarian or librarians at all.

One element had a surprisingly low ranking. Fewer than half (44%) of distance education home pages contained links to library services specific to distance faculty.

All 48 libraries provided links to journal indexes and to electronic journals. A smaller percentage of libraries (69%) provided access to electronic books. Links to electronic reference materials such as online encyclopedias were available from 90% of the library home pages. The same percentage of library home pages (90%) contained links to Web search engines. Ninety-four percent of library home pages had links to the online catalogs of other libraries or associations. Links to proxy instructions for remote access into licensed databases were found on 94% of library home pages.

A significant number of library home pages (85%) contained a search, site search, or site index feature. Cohen and Still (1999) noted the value of site search engines, which provide users with "the opportunity to locate materials of interest without needing to navigate through the site" (p. 278).

Ninety-two percent of the 48 libraries' home pages provided the library's address. A contact link for the Webmaster or Web committee was available on 90% of home pages.

Specific library resources or services available to distance students were also analyzed. The following resources or services were available from the library home pages studied: electronic reference assistance (98%); interlibrary loan forms (96%); library instruction (96%); lists of subject specialist librarians (92%); guides to using the Internet (87%); guides to conducting library research (81%); list of reciprocal borrowing institutions (73%); and electronic reserves (71%). The study found that 96% of ARL libraries with distance services have links to subject guides or pathfinders. This compares to Cohen and Still (1999) who found pathfinders on 60 percent of the 50 research libraries studied (p. 283).

DISCUSSION

The authors urge distance librarians to collaborate with Web developers to present distance learning services in a more accessible fashion. Design elements are crucial to the success of distance education home pages. Distance education Web pages should be reviewed to determine the degree to which they are visually appealing and well designed. These sites should contain "user friendly" design and content along with a current freshness date. Ruffini (2001) suggests that "the top vertical four inches are the most valuable real estate in your Web site [and] should be the densest area in your site." Good design is essential for effective presentation of content.

As more and more library users access the library remotely, the library Web site has become increasingly important as a communication tool. Library users "expect customization, interactivity, and customer support" (Library and Information Technology Association, 1999, para. 4). This is particularly important to distance learners, whose primary contact with libraries is through a Web page.

In order for distance learners to become aware of available library services and resources, it is essential that the distance education home page be easily accessible, or findable. This study showed that while the distance education home page on average was two screen levels below the top page, some were several levels down, and these pages were effectively hidden. Terminology is another barrier to findability. For the ARL libraries studied, there were half a dozen descriptors for distance education students and distance education services. While the terminology used to describe distance students is often institution-wide rather than library-driven, it is important for libraries to use terminology that distance students recognize.

A related findability issue is jargon. Distance students often are non-traditional students, who are returning to academic study after several years away from campus. They may not be familiar with new or enhanced library services with names that they may perceive as unfamiliar jargon. These services call for some explanation. Linden (2000) recommended spelling out the services and resources so that it is clear to distance students what is available. Also, Linden suggested creating multiple approaches to the same information, while keeping redundancy to a manageable amount.

Only twenty-one of the 48 distance education home pages provided information on services to distance faculty. The authors believe that services specific to distance faculty should be further developed on distance education pages. Faculty who are well informed about library services for distance learners and resources will likely refer their students more often to the library. Also, seventeen percent of the ARL member libraries studied lacked a direct link to

the university's Web site for distance education services. This is another useful link for distance learners.

"It's time to put a human face on the virtual library. What do libraries emphasize on their Web sites? Resources, collections, facts with no human guidance or presence" (Library and Information Technology Association, 1999, para. 6). The authors of this study believe it is essential that the distance education librarian be identified, along with contact information for this individual.

CONCLUSION

Distance education home pages are a primary venue to reach distance learners. Librarian-administrators and Web developers should collaborate to make distance education pages easy to locate from the library's home page. The content of distance pages should be reviewed for inclusion of links useful to distance learners. These strategies will help ensure that distance students are able to navigate available library services and resources.

REFERENCES

Association of College & Research Libraries. (rev. 2000). *Guidelines for distance learning library services*. Retrieved December 3, 2001, from American Library Association, Association of College & Research Libraries: http://www.ala.org/acrl/guides/distlrng.html.

Bao, X. (2000). Academic library home pages: Link location and database provision. *The Journal of Academic Librarianship 26*, 191-195.

Batteleson, B., Booth, A., & Weintrop, J. (2001). Usability testing of an academic library Web site: A case study. *The Journal of Academic Librarianship 27*, 188-198.

Buckstead, J. R. (2001). Developing an effective off-campus library services Web page: Don't worry, be happy! *Journal of Library Administration 31*, 93-107.

Coffta, M., & Schoen, D. M. (2000). Academic library Web sites as a source of interlibrary loan lending information: A survey of four- and five-year colleges and universities. *Library Resources & Technical Services 44*, 196-200.

Cohen, L. B., & Still, J. M. (1999). A comparison of research university and two-year college library Web sites: Content, functionality, and form. *College & Research Libraries 60*, 275-289.

Dewey, B. I. (1999). In search of services: Analyzing the findability of links on CIC university libraries' Web pages. *Information Technology and Libraries 18*, 210-213.

King, D. L. (1998). Library home page design: A comparison of page layout for front-ends to ARL library Web sites. *College & Research Libraries 59*, 458-465.

Library and Information Technology Association. (1999, January). *Top tech trends*. Retrieved December 4, 2001 from American Library Association, Library and Information Technology Association: http://www.lita.org/committee/toptech/trendsmw99.htm.

Linden, J. (2000). The library's Web site *is* the library: Designing for distance learners. *College & Research Libraries 6*, 99-101.

McGillis, L., & Toms, E. G. (2001). Usability of the academic library Web site: Implications for design. *College & Research Libraries 62*, 355-367.

Medeiros, N. (1999). Academic library Web sites: From public relations to information gateway. *College & Research Libraries News 60*, 527-529+.

Osorio, N. L. (2001). Web sites of science-engineering libraries: An analysis of content and design. *Issues in Science and Technology Librarianship 29*, Retrieved December 3, 2001 from http://www.library.ucsb.edu/istl/01-winter/refereed.html.

Ruffini, M. F. (2001). Blueprint to develop a great Web site [Electronic version]. *T.H.E. Journal 28*(8), 64-73.

Stacy-Bates, K. K. (2000). Ready-reference resources and E-mail reference on academic ARL Web sites [Electronic version]. *Reference & User Services Quarterly 40*, 61-73.

Stover, M., & Zink, S. D. (1996). World Wide Web home page design: Patterns and anomalies of higher education library home pages. *Reference Services Review 24*(3), 7-20.

APPENDIX

Content and Design Elements Included in the Study of Library Web Sites for Distance Learners

Design Elements

The following elements related to the *Distance Education Home Page*:

> Presence of a distance education home page
> Text Only Option available on distance education home page
> Links present on home page
> Font variation
> Top navigation bar
> Bottom navigation bar
> Side bar
> Bar similar in appearance to library's home page
> Presence of graphics
> Library's logo or banner reflected on distance education home page
> Presence of wallpaper
> Number of links on the distance education home page
> Number of colors on the distance education home page

Home page screen length–number of pages
Number of screen levels from library home page to distance education
home page

Content Elements

The following elements related to the *Distance Education Home Page*:

Freshness date on distance education home page
Distance education coordinator's name
Contact information for library distance education services
Library services for distance faculty
Mission statement or explanation of services offered to distance students
and/or distance faculty
Link to library home page
Link to the library online catalog
Link to university Web site
Link to university services for distance education

The following elements related to the *Library Home Page*:

Search, Site Search, or Site Index on library home page
Library (institution) address
Electronic journals
Journal indexes available electronically
Electronic books
Electronic references materials (such as encyclopedias)
Web search engines
Online catalogs of other institutions, associations, etc.
Proxy instructions
Lists of Subject Specialists or Liaison Librarians
Subject guides or pathfinders
Library instruction
Guides to library research
Guides to using the Internet
Electronic reference
Interlibrary loan forms
Electronic reserves
Reciprocal institutions
Contact link for Webmaster