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# Developing an Enhanced Pace Library Website

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## Abstract

*The Pace University Library website is in the process of being enhanced. The purpose of the enhancement is to better serve its users and to motivate students to utilize it to access their main search engines and other resources for their research projects and assignments. We are assisting in this process and conducting the work in two phases. The first phase is working with the library staff to conduct a survey of the library users to determine what they need and would like to see added to the website. This includes students at the undergraduate and graduate levels, staff, and faculty. The second phase consists of developing three redesigned prototype websites based on the suggested feedback obtained from the survey responses. The survey indicated that the library website needs an attractive layout design with new features that can contribute to the educational needs of its users.*

## 1. Introduction

Today's librarians recognize the importance of making sure library websites are easy to navigate so users can quickly find their way to e-resources. As universities and colleges continue to evolve, students are facing many new challenges and complex situations that need to be addressed. One of the new challenges is how to get students to use the school library website as their main resource for their research studies. At present, students prefer to use public online search engines such as Yahoo and Google. The information on these search engines tends to be too broad and unspecific and does not enable them to fully research their topics in an efficient manner. Most universities have decided to enhance their library websites to become sources of information that are relevant, concise, and reliable.

The Pace University library website has not been updated for more than two years. The staff feels that the library website is not adequately serving the university community and is seeking areas of improvement. The approach taken toward the resolution of this issue was to survey the library users and get their suggestions and feedback. The objective was to gain information about the current library website and solicit suggestions for future improvement. To accomplish this task, the following basic questions were asked of students, faculty, and library staff:

- What they need in they website?
- What they want from the website?
- What is good about the current site?
- What is not good about the current site?
- What might be added to the current site?

To meet the objectives of this project our team took the following approach. The work was accomplished in two phases. The first phase was to evaluate the current library website by conducting a survey of the university community and soliciting suggestions for improvements and new ideas for an updated website. The goal was to get as many students, faculty members, and staff to participate in the survey so that a broad range of opinions would be available. Faculty and staff cooperated in the online distribution of the survey and a representative sample was taken. The second phase was to develop three redesigned prototype websites based on the responses and feedback from the user survey.

The website that is uploaded to the library server must conform to Pace University's Customer Management System (CMS) in which all university websites must operate. Our Team developed one prototype that completely conforms to these limitations. Two other prototypes that may not be able to run on the server at the present time but may include a broader range of features were also developed. The new prototypes have many of the necessary features and tools that the survey users recommended. If the library staff approves the new prototype it might be uploaded to the Pace University server before the new school year. We believe that this would be an innovative and productive improvement for the website.

## 2. Relevance in the context of other work

Most libraries, regardless of size and type, now have their own websites. Public and university libraries from all around the country utilize the World Wide Web for both internal and external use. Aside from their initial development projects, these websites must be periodically updated to reflect the changing needs of the library users. Facilitating access to journals, catalogs, and databases is a crucial mission of library webmasters everywhere if they wish to keep their websites relevant. As technology progresses, many new features can be added that can augment the library website experience. The professionals who work in the library can also benefit from updates to the website and the databases that accompany them.

The Pace Library Website project is relevant in respect to current trends in the computing field that seek to incorporate new means of communication, data access, and data sharing. Many aspects of computing have become more social in nature and less technical. This is the driving force behind many of the new features that libraries are adding to their sites. By means of user surveys and staff questionnaires, the goal is to find out what aspects of the current site can be improved to better meet the needs of its users. According to, Library Webmaster Resources, a web site dedicated to supporting the IT needs of library staff, "hosting a Poll or survey on your Library website can offer instant feedback for assessing user needs" [1]. Our survey was posted on the Pace Library website as well the Web link being forwarded to over 1,200 students, faculty, and staff. The information gathered from the survey was evaluated and used to create several prototypes to present for possible installation. Our survey would also be relevant to other library projects because of the nature of the questions. It would be a useful fact finding resource for any library website that was used for academic purposes.

A major issue that faces many web redesign projects is that of change versus stability. Many regular users get used to accomplishing tasks in a specific and repetitious manner. Consideration must be taken not to alter components so radically that it disturbs the efficiency of the regular user. For this reason, we felt that it was important to keep the same general design features of the original website. According to Jakob Nielsen, author of Designing Web Usability, there are three major categories to consider when evaluating the issues of change and stability [2]:

*1) Technological improvements: Better browsers, faster bandwidth, or other beefed-up technologies make a particular design idea easier to stomach.*

*2) Behavioral adaptations: As people grow accustomed to certain interaction techniques, they adapt their behavior, making the techniques easier to use.*

*3) Designers exhibiting restraint: A design element might remain problematic in principle, but Web designers learn to avoid its most obnoxious forms. The element thus causes fewer problems, simply because it's being abused less often.*

We attempted to take all of these factors into consideration. Although the client side technology has vastly improved over the past several years, the server side technology and the implementation policies have lagged behind. The limitations of the CMS environment and some justifiable security concerns have placed strict limitations on what improvements can be implemented on the website. According to the results of the user survey there is significant interest in technologies such as Pod casting, RSS feeds, and streaming video. In instances where it may not be possible to house these technologies on the existing web server, an attempt was made to use hyperlinks to take users off-site to satisfy the demands for services.

In our attempt to improve on the structure of the website, we researched the area of standards in producing library websites. We discovered that there is no specific guideline or policy that a library professional would use to standardize a website. According to Walter Minkel, renowned librarian and author, "There are no recognized standards dealing with how to design and build a library Web site, and it shows. We should develop a consistent design for youth-oriented Web sites; just the way libraries have a consistent way of shelving books. People expect librarians to present resources in a logical, organized way" [3]. We are attempting to make the website more youth oriented in response to the survey that showed over 60% of the users are between 18 and 30 years of age. Since there are no definitive standards, there is much room for innovation in both design and function.

We examined several library websites for ideas with our design. We searched for pages that were geared toward younger users so we included high school library websites in our findings. The following examples were interesting and helped us to decide how to proceed and how not to proceed. The time limitations of the project restricted our team to review a relatively small sample of other library site.

The homepage of the Springfield Township Library [4] shown in figure 1 was an example of an immature and non-professional design. In their zeal to attract the young students, we felt that the design became comical and lost any sense of academic appeal. Although the links are embedded in the pictures and it is a fully functional site, this type of homepage does not lend itself well to an academic

website at a High School level, and it certainly would not command the dignity required by a university website. In our estimation, it was more suited to an entertainment site.

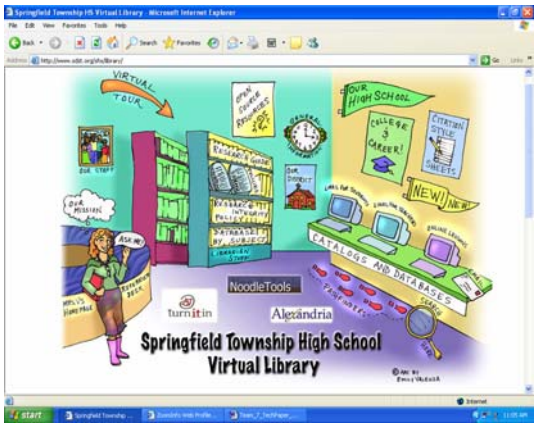



Figure 1. Springfield Township Library Homepage [4].

The library homepage shown in figure 2 is a better example [5]. This layout was organized, thorough, and professional in appearance. We considered some of the same design features in our own prototypes. The homepage had enough visual appeal to avoid what we considered to be a boring look and was formatted in an easy to understand and user-friendly layout.

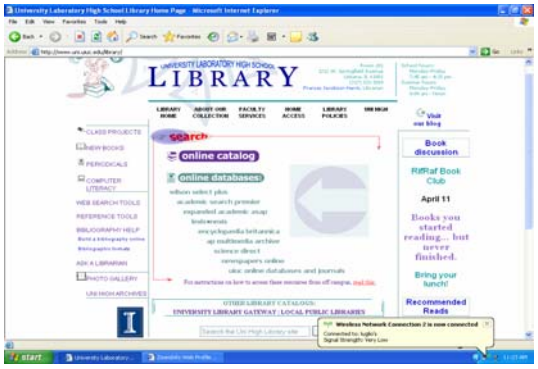



Figure 2. University Laboratory High school Library homepage [5].

Our team reviewed the Brooklyn College Library homepage [6] displayed in figure 3. The layout was easy to use and similar in many ways to the new Pace website. The library schedule was posted on the homepage as opposed to under a link. The links were easily accessible and useful. One criticism we had was the inclusion of too many graphics. It made the homepage look crowded and too busy.

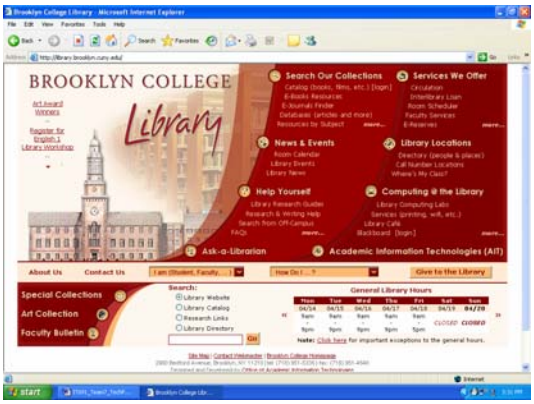



Figure 3. Brooklyn College Library Website [6].

The Yale Library homepage as displayed in figure 4 is a good example of a well-designed page [7]. The links on the page are similar to the Pace website in their content and their layout. The graphics and the layout offered a pleasing visual effect without a gaudy appearance. We found it unusual that there were no links to any videos pertaining to the library. Unlike the Pace website, XML and JavaSbcript technologies are enabled.


Figure 4 Yale Library homepage [7].

## 3. Methodology

### Survey

The process of the Pace Library website upgrade was broken down into two major stages. The preliminary stage consisted of several incremental procedures dedicated mainly to gaining essential information. These procedures involved the creation and distribution of a survey, a client interview based on a questionnaire, an analysis of the survey results, research directly related to the survey, and the inspection of other related work.

The client was interviewed to better understand what information was to be obtained from the survey results. The survey was created with three main areas

of interest: demographics, website layout, and future interests. After creating the survey, it was distributed to the students, staff, and faculty, and stayed open for approximately one month in order to gather a broad response. An online, random sample survey was used, and according to Dennis List of SYSurvey White Papers, the random sample or probability sample is the most accurate survey available [8]. The reason for the high level of accuracy of this type of survey is that no favor is placed on any one group. The company that was used for both creation and analysis was a popular online survey website named Survey Monkey [9]. The survey received 143 responses. It consisted of 18 relevant questions with multiple response types (Appendix A) and several areas for individual comments.

**Data Analysis**

After it's closing, the data collected from the survey was analyzed in order to detect any interesting and useful data patterns. Certain trends did exist and the team carefully documented them. The first section that was analyzed pertained to general demographics. 50% of the survey respondents were graduate students between the ages of 23 and 30. Further analysis showed that females had a slightly higher participation level than males with a rate of 54%. These statistics matched up well with the general demographics of typical Library website users. (See Appendix B Figure 5)

Another important aspect of the survey was that Broadband, DSL and high-speed cable were used by 79% of the survey responders. The significance of these demographics is that they allowed us to better understand who the users are and how they access the site. In particular, the high-speed access of the majority of users allows for many new technologies such as video feeds and pod casts to be implemented. If the majority of users were accessing the site using traditional dial-up technology, these services would be pointless to implement. Finally the survey showed that thirty seven percent of students were sporadic library users normally accessing the website only once a month. What is significant about this fact is that the average user is not likely to make several visits to the site in a short time. In view of this statistic, the site must be designed in a manner that gets the attention of the user right away. It should accommodate user needs, be easy to navigate, and alert the user to any special features and any library news.

In the area of website layout, the survey also revealed some interesting trends. Search options, layout and organization were the most important areas polled in the survey. Survey responders overwhelmingly answered that the appearance, layout and organization needed to be improved. All three of these areas received no less than 30% of the votes, with appearance coming in at 42%. One person surveyed stated, " It's really not user-friendly. Accessing the right information is difficult, accessing the databases is difficult" [10]. Another responder commented "I like the down loadable tool bar " [10]. This further emphasized the need for an easier access to research services. The add-on toolbar is very effective in allowing users to quickly find resources and complete research assignments. The survey results, when analyzed closely, show a significant desire for a better appearance while still maintaining a strong organizational structure. The majority of users are interested in research related services when accessing the library site. This can be understood from the fact that journals, databases and catalogs were ranked as the most used and important services provided. Databases had the highest level of interest at a rate of 67%.

Lastly, in the area of new features, the survey showed that most new web innovations were highly desired. One of the most telling questions in the survey was the one asking for the level of interest in various services [10]. Both RSS feeds on library news, and web blogs were rated at medium interest. While on the other hand, RSS feeds on recommended resources, quick search box, catalog search and online book reservations were answered mainly with high levels of interest. The young age level of respondents probably accounted for the high interest in such things as web blogs and pod casts and the overwhelming results in favor of these technologies were convincing. Based on the analyzed data shown in figure 6 (Appendix B), the focus of the library website should be adjusted to meet the requirements and desires of the majority of its users. (See Appendix B Figure 6)

**Other University Library Websites**

After understanding what the Pace Library users wanted, research was conducted on the websites of other university libraries. The purpose was to find out how other institutions were attempting to meet the needs of their users in these same areas of interest. Among the library websites that were looked at were MIT, NYU, NJIT, HAVARD and YALE. The majority of universities were implementing their library websites differently than Pace University. The general trend in university libraries is to focus on research. They are designed to facilitate better research habits and easier access to information for their students at all levels. Many websites contained multimedia links explaining how to use the resources provided both online and on the campus. The overall layouts were consistently simple and easy to

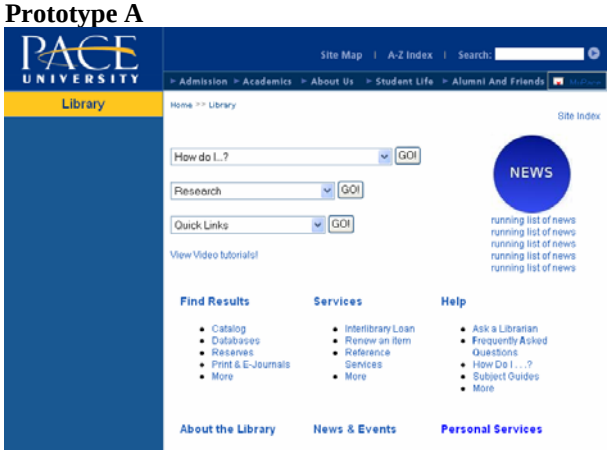
navigate. It was easy to access research based resources on most websites. The underlying theme in almost all the websites we researched matched consistently with the surveyed results we obtained. Our research indicated that students desire the same resources and tools no matter what school they currently attend.

## 4. Improved Pace Library Website Prototypes

### CMS Environment

Pace University currently uses an old version of EmPower. This is a web content management system (CMS) for ColdFusion. ColdFusion is a product suite that includes an application server and software development framework. It can be used for the development of computer software and dynamic web content. The current version of the CMS system being used is version 3, which is several years old. Version 3 has many significant limitations such as no flash multimedia and no advanced web programming support. One the recommendations we are suggesting is to upgrade the whole Pace University web content management system to the newest version of EmPower. It is because of these limitations that we have created three different prototypes displaying a variety of upgrades. The first prototype will conform to the current web content management system and its limitations. It is not possible to implement all the survey ideas due to the old technology being used. All of the improvements and upgrades that were suggested by the survey can be implemented if a new web content management system were deployed. Some of the key features that would be included in the new system are RSS server feeds, blogging tools, full flash multimedia support and newer scripting technologies like ASP, PHP, and Javascrpt.

**Prototype A**




The first prototype was created with limited changes in mind. In addition to the limitations of the web content management system, the first prototype was also designed to conform to the basic Pace University template layout. This template layout forced the prototype upgrades and suggestions to be based entirely in the body of the homepage. The goal of this prototype was to produce simple upgrades that were compatible with the current CMS system. Given the fact that this CMS was extremely limiting, no dynamic and vibrant content were added. This prototype relied heavily on HTML upgrades that focused attention on research, and ease of use.

The basic Pace Library website layout was not changed. URL links were added to outside services that the survey suggested the students wanted. These services could be provided by the Pace website or a free outside company. We chose, at the request of the library staff, to use free outside companies. These services were Wiki group sharing, personal blogs and RSS news feeds. The website already had a news feed, but its layout was confusing. A more basic and simple news feed section was created. We found that drop down menus for quick access and easy organization were popular in most other university library websites. Based on this fact, basic drop down menus for links to heavily used features were created. Another drop down menu was added to the site for all research specific links. Resources like Google scholar and Google books were included under this additional drop down menu. Site indexes are often useful when trying to find a key service and were present in all researched university websites. They were also added to the prototype. The last dropdown menu was created for quick answers to common questions. A link to the Pace University Library video tutorials was placed in a convenient location for easy access. The tutorials were fairly difficult to find on the original site.

**Prototype B**


The second prototype was created without the limiting factors of the current web content management system and the Pace university template

layout. This prototype also includes all the upgraded features of prototype A. The ultimate purpose of this prototype was to show how upgrading to a new CMS would facilitate a more accurate implementation of the surveyed and researched results. The current Pace Library website layout was designed as a site index. Our team chose to change the direction of the organization away from this cumbersome layout. Although in some cases this type of layout can be a positive feature, it does not accent the libraries services.

Normally in layouts of this nature, key features remain hidden and obscured in long lists of links. In most of the websites we surveyed, we did not find this type of layout. For a more visually pleasing and navigationally friendly feature, a JavaScript based toolbar menu was added. This toolbar contained links to all areas of the website. Multimedia content, although currently present on a small scale, plays more of a prominent role in this prototype. Flash based research tutorials are a new and productive way of getting current information to users. A few of the researched sites had flash based research videos for users. This is the reason for its inclusion in this prototype. All video content was converted to flash based video for ease of use. An introductory video tutorial was included on the site's front page. This tutorial covers the basic information about the Pace University library and its online system.

**Prototype C**


The third prototype was also created without regard for the current limitations imposed by the server. This prototype represents a more visually pleasing model in response to the survey. Since the average age of the website user is between 18 and 30, the idea of prototype C was to include a more colorful design and some more up to date technologies. In addition to many of the enhancements included in prototype A, prototype C offers a user-friendly design and links to some practical tools. The tutorial videos are available in a You Tube window but could eventually be included on the Library server itself. A search feature for MapQuest was also added to this prototype. Links to services such as You Tube and MapQuest may not seem useful at first but we believe that the imagination of the student body may ultimately create a practical use for these types of features.

## 5. Conclusion and Recommendations

The major implications of this project are mainly gathered from the results of the user survey. For example, the age of the majority of users is an important fact that leads to several conclusions. These young users are interested in what can be termed “young” technologies. Even the emphasis on appearance and color is a reflection of the average age of the typical website user. The Pace library website is only one of many sites that these users visit. As the survey revealed, they do not usually access the Pace site that often. When they do visit the site, it is either consciously or subconsciously compared to everything else they encounter on the Internet. Although it is not an entertainment site, appearance as well as technological functionality will make a positive difference in the user experience.

Our recommendations follow the survey results and the recommendations of the Library staff. One of our prototypes will be able to be implemented on the existing server and the other prototype will be for possible future use. The inclusion of blog creation tools, wiki’s for group collaboration, news feeds, pod casts, and informational videos will be the primary functional changes we would like to implement. All of this must be undertaken in a tasteful manner that is fitting for an academic website. Changes can be made over the course of time as technological advances take place on the server side of the site. We also recommend that the website be given a better appearance. Even something as small as a couple of photos on the homepage can make a big difference. There is no reason that the site cannot be both functional and attractive. Also, once the new design is implemented, a new survey should be taken after a sufficient amount of time has passed, to reevaluate the changes that have been made. Websites are constantly changing to keep up with advances in hardware, software, and user trends.

To summarize, the Pace Library Website as it exists today is by no means a poorly organized or designed website. It functions well and is certainly professional looking. We believe that we can take something that is already good and turn it into something that is even better. It would be a great benefit to the website users and the university to

update the site to reflect the current technologies that are available. Future projects can easily build on the work that we have accomplished. We recommend a constant reevaluation of the needs and wants of the faculty and student body. A schedule should be designed for future surveys to keep information current and relevant. It would also be useful to keep the server technology up to date. This would enable many features to be added to the website in addition to making the maintenance of it easier and more efficient.

**References:**


[1] Library Webmaster Resources, http://librarysupportstaff.com/4surveys.html, accessed March 15, 2008.
[2] Nielson, Jakob , Change vs. Stability, http://www.useit.com/alertbox/guidelines-change.html, accessed February 28, 2008
[3]Minkel, Walter, http://www.themonkeyspeaks.com/library_web.html, accessed March 21, 2008
[4] Springfield Township Library homepage, http://www.sdst.org/shs/library/ accessed March, 23 2008
[5] University Laboratory High school Library homepage, http://www.uni.uiuc.edu/library/ accessed March 28, 2008
[6]Brooklyn College Library, http://library.brooklyn.cuny.edu/ accessed April 05, 2008
[7]Yale University Website, http://www.library.yale.edu/ accessed April, 02, 2008
[8] List, Dennis, Research Tips and White Papers, http://www.sysurvey.com/tips/whitepapers.asp, accessed March 16, 2008
[9] SurveyMonkey, http://surveymonkey.com/, accesses February, 24 2008
[10] IT691 Team 7, Pace Library User Survey Results, www.SurveyMonkey.com accessed March 27, 2008


**Appendix A**

| Category | Response Percent |
|---|---|
| Undergraduate Student | 35.9% |
| Graduate Student | 50.0% |
| DPS | 4.9% |
| Faculty | 8.5% |
| Staff | 0.7% |

| Category | Response Percent |
|---|---|
| Undergraduate Student | 35.9% |
| Graduate Student | 50.0% |
| DPS | 4.9% |
| Faculty | 8.5% |
| Staff | 0.7% |

| Gender? | Response Percent |
|---|---|
| Male | 45.7% |
| Female | 54.3% |

| Survey Location | Response Percent |
|---|---|
| Birnbaum Library | 7.2% |
| Mortola Library | 0.7% |
| Graduate Center | 5.1% |
| Law Library | 0.7% |
| Computer Lab | 2.9% |
| Other/Off campus | 83.3% |

| Typical visit location | Response Percent |
|---|---|
| Home | 79.0% |
| Library | 30.4% |
| Work | 42.8% |
| Dorm | 6.5% |
| Computer Lab | 13.8% |
| Other (please specify) | 1.4% |

| Home internet speed | Response Percent |
|---|---|
| None | 1.4% |
| Dial up (28.8 or 56K modem) | 8.7% |
| Cable Modem/DSL/Broadband | 87.7% |
| Other (please specify) | 2.2% |

| Preferred learning style | Response Percent |
|---|---|
| Trial and error | 39.1% |
| Asking for help | 23.2% |
| Following a printed guide | 34.8% |
| Other (please specify) | 2.9% |

| Frequency of use | Response Percent |
|---|---|
| Frequently (Once or more a day) | 4.2% |
| Often (About once a week) | 23.2% |
| Sometimes (About once a month) | 38.0% |
| Occasionally (About once a semester) | 30.3% |
| First Time User | 4.2% |

| Had library instruction | Response Percent |
|---|---|
| Yes | 29.0% |
| No | 71.0% |

| How website used | Response Percent |
|---|---|
| Reserves | 21.7% |
| Journals | 53.6% |
| Databases | 67.4% |

| | |
|---|---|
| Help | 6.5% |
| Catalog | 40.6% |
| Interlibrary Loan | 9.4% |
| Guides | 4.3% |
| Other (please specify) | 2.9% |

| Features you like | Response Percent |
|---|---|
| Layout | 29.0% |
| Organization | 29.7% |
| Appearance | 15.9% |
| Subjects | 30.4% |
| Colors | 9.4% |
| Updates | 6.5% |
| RSS Feed | 4.3% |
| Search options | 41.3% |
| Help | 11.6% |
| Other (Why) | 10.9% |

| Features don't like | Response Percent |
|---|---|
| Layout | 33.3% |
| Organization | 24.6% |
| Appearance | 42.8% |
| Subjects | 8.7% |
| Colors | 31.2% |
| Updates | 8.7% |
| RSS Feed | 8.7% |
| Search options | 17.4% |
| Help | 14.5% |
| Other (Why) | 14.5% |

| Features desired | Response Percent |
|---|---|
| Podcasts | 42.0% |
| Library blogs | 43.5% |
| RSS feeds for information and events announcements from the library | 33.3% |
| Watch online video tutorials to help find information or search our resources | 53.6% |

| Level of interest in | Low | Medium | High | None |
|---|---|---|---|---|
| Web Blog: | 39 | 47 | 36 | 15 |
| RSS feed on library news: | 38 | 50 | 27 | 18 |
| RSS feed on recommended resources: | 21 | 49 | 56 | 9 |
| Quick search box: | 5 | 20 | 110 | 3 |
| Catalog search: | 5 | 24 | 103 | 2 |
| Online book reservation: | 11 | 38 | 73 | 10 |

| Unclear terms | Response Percent |
|---|---|
| About the Library | 3.8% |
| Ask a Librarian | 11.3% |
| Catalog | 10.0% |
| Databases | 18.8% |
| Displays | 7.5% |
| Events | 6.3% |
| Find Resources | 10.0% |
| Frequently Asked Questions | 3.8% |
| Help | 2.5% |
| Hours | 2.5% |
| How Do I . . .? | 7.5% |
| Interlibrary Loan | 21.3% |
| Learning Commons | 42.5% |
| Locations | 8.8% |
| More | 5.0% |
| News & Events | 2.5% |
| Newsletters | 0.0% |
| Print & E-Journals | 11.3% |
| Reference Services | 13.8% |
| Renew an item | 6.3% |
| Reserves | 6.3% |
| Services | 7.5% |
| Staff | 5.0% |
| Subject Guides | 13.8% |
| Why | 10.0% |

| Resources used | Response |
|---|---|
| Government resources, archives, faculty publications and research | 43.0% |
| Search books, journals, articles, databases | 90.1% |
| Library policies, services, news and events, hours, programs | 25.4% |
| Course guides, subject guides, class reserves | 56.3% |
| Browser configuration - help for off campus access | 18.3% |
| Group study information | 35.2% |
| Library employment, volunteer programs<br>Interlibrary loan | 16.2% |
| Contribute funds to the library | 4.2% |