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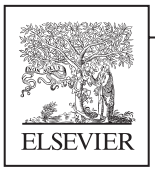

Library Connect
Partnering with the Library Community

How to Design Library Web Sites to Maximize Usability

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Produced by
Library Connect, in collaboration with the Elsevier User Centered Design Group

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INTRODUCTORY COMMENTS

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Today's librarians recognize the importance of making sure library Web sites are easy to navigate, so users can find their way quickly to e-resources. But where's a busy librarian to begin?

This pamphlet offers a short set of simple-to-implement guidelines to help librarians design usable library Web sites. The guidelines are based on a survey of literature on library website design and usability testing, results of usability reviews conducted by Elsevier for library customers, and established best practices in website usability.

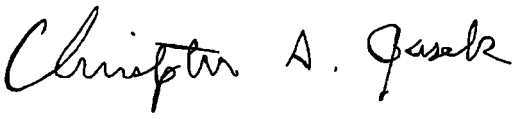
Working with library website usability is at the core of the business of Elsevier's User Centered Design Group. Whether we are reviewing usability of specific library Web sites to help individual customers, or assisting in design of electronic services and products offered by Elsevier, usability is our mantra.

Since 2003, Elsevier's User Centered Design Group has conducted usability reviews of several academic library Web sites including the University of Manchester's library Web site (**http://www.man.ac.uk/**) and Hawaii Medical Library's site (**http://www.hml.org**). Elsevier's information-technology experts headquartered in Europe are also performing usability reviews of selected library Web sites, such as the Servidor de Información de la Red de Bibliotecas del CSIC site (**http://www.csic.es/cbic/cbic.htm**) and the University of Pretoria site (**http://www.ais.up.ac.za**).

In all usability reviews Elsevier conducts on behalf of library customers, we use heuristic evaluation. In this technique, usability experts review a Web site according to established usability heuristics and identify positive and negative factors influencing usability of the site. Each expert does an independent analysis and then results are combined into a single report. To learn more about the technique, you can visit Jakob Nielsen's site at **http://www.useit.com/papers/heuristic/**

Our library customers have let us know our usability reviews deliver real value. Given our customers' appreciation and that we can only provide a small number of in-depth reviews of library Web sites per year, we have decided to offer you this pamphlet.

As you read on, you'll discover how to be your own usability expert. Common sense and proven guidelines, such as those listed here, can help you evaluate the design of your own library Web site and improve it.



Chris Jasek
User Centered Design Group Lead, Elsevier, Miamisburg, Ohio, USA

BACKGROUND

CHRIS JASEK earned his BS in computer science and a master's degree in human factors engineering from the University of Illinois, and then started his career with Reed Elsevier. For the past nine years, while working for LexisNexis and Elsevier, he has helped design and ensure usability of ScienceDirect, nexis.com and other information products. Today Chris leads Elsevier's User Centered Design Group, which he helped form.

ELSEVIER'S USER CENTERED DESIGN GROUP aims to:

- Understand users, their tasks and their work environments.
- Design user interfaces that enable users to achieve their goals efficiently.
- Evaluate product designs with users throughout the lifecycle of the products.

Composed of about 15 staff members from a variety of disciplines, this group works extensively and collaboratively with colleagues across Elsevier and at academic institutes across the globe.

Each year, the User Centered Design Group involves hundreds of end-users and librarians — invited from academic institutes worldwide — in testing Elsevier's electronic products in lab or office settings. During 2002, the group worked with visually impaired end-users at the Library of Congress in Washington, DC, and evaluated accessibility of ScienceDirect — which continues to comply with accessibility guidelines of the World Wide Web Consortium and meet needs of visually impaired users. (See page 13.)

Beyond hands-on or lab-based usability testing of Elsevier products, the User Centered Design Group performs usability testing of library Web sites via the heuristic technique. Further, the team conducts usability research to make sure Elsevier's e-products of the future continue to meet customers' high standards and changing needs.

LIBRARY CONNECT is Elsevier's initiative focusing on partnering with librarians and supporting their roles in today's changing library environment.

This initiative offers the quarterly Library Connect newsletter and practical-assistance pamphlets, such as this one. These publications are available in print, as well as online at **http://www.elsevier.com/locate/libraryconnect**

The Library Connect initiative also offers events such as seminars and workshops.

Please send ideas regarding Library Connect to **libraryconnect@elsevier.com**

> *"Some people may not understand the difference between a guideline and a standard. A standard is something that is 100 percent firm, and a guideline is something that is usually right — that's why it's called a guideline."*
>
> — Jakob Nielsen (2002), "Got Usability? Talking with Jakob Nielsen," **http://www.boxesandarrows.com/archives/got_usability_talking_with_jakob_nielsen.php, ¶18**

CONSISTENCY

Provide a Help link on every page

Place a Help link in the upper right corner of every page. This way, when users need help, they know where to find it.

Use consistent design elements

Across all pages of your Web site use fonts and colors consistently for a uniform and professional appearance. Also strive to be consistent in other areas like layout of pages, use of terminology or wording, and how your site allows users to interact with it.

"The Elsevier offer to evaluate our library website was very helpful. This was the 1st time we have done something substantial to evaluate our website (although we know our site is not perfect). No other vendor does, or has offered to do something of this kind for us. The review was free, which was very welcome of course (we would normally have expected to be charged for something like this). We are very happy with the professional manner in which the review report was presented, via an online meeting, as well as the subsequent follow-up presentation by Elsevier's Regional Sales Office IT staff member, Eric Mulder. He informed us of library solutions including Endeavor and other non-Elsevier solutions."

— Agnès Ponsati (2004), CSIC Libraries Coordination Unit Director,
Consejo Superior de Investigaciones Científicas, Madrid, SPAIN

ORIENTATION AND NAVIGATION

Link to your library Web site directly from your institute's home page

Never underestimate the importance of a direct link from your institute's home page to your library's home page. In a study conducted in 2000, Bao surveyed the home pages of 143 institutions. He found that while only 57% of the institutes' home pages offered links to their libraries' home pages, such links can be very important.

A link to the institute's library home page appears on the Vrije Universiteit Amsterdam's home page at **http://www.vu.nl/english/index.cfm**

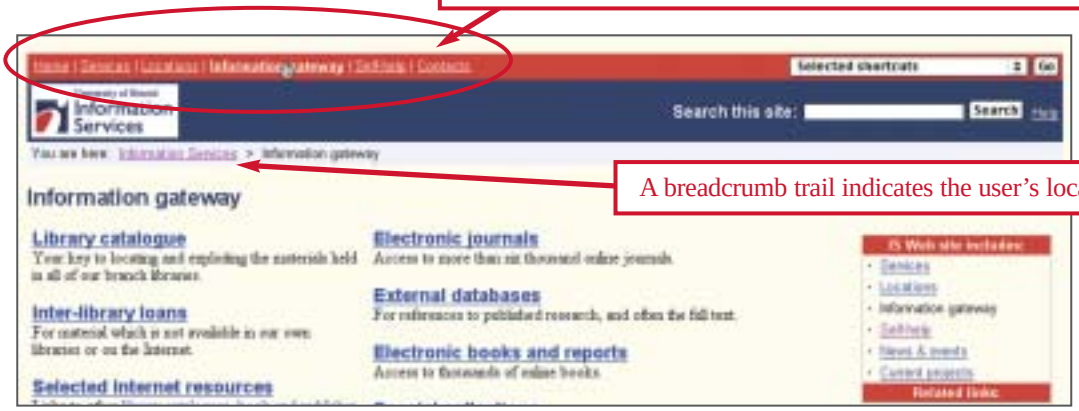
> *"The location of a library home page link on its parent institution's home page will determine the visibility of a library and will affect the effective use of the library's online, Web-based resources."*
>
> — Xue-Ming Bao (2000), "Academic Library Home Pages: Link Location and Database Provision," p. 195

Use one navigation bar

To orient users to your site's resources, use one navigation bar, use it consistently and use it well. Usually a navigation bar appears at the top of every page, as a series of buttons or tabs. By highlighting the tab or button correlating with the user's current location on your library Web site, you provide a visual clue and keep the user from getting lost.

To give another clue to the user's location on your site, you might also include a "breadcrumb" trail indicating the location of the page the user is currently visiting relative to the home page (e.g., Home > Resources > eJournals). For more on breadcrumb trails, see "Breadcrumb Navigation: An Exploratory Study of Usage" by Bonnie Lida, Spring Hull and Katie Pilcher (2003), at **http://psychology.wichita.edu/surl/usabilitynews/51/breadcrumb.htm**

The University of Bristol consistently uses one navigation bar throughout the Information Services site at **http://www.bristol.ac.uk/is**



A breadcrumb trail indicates the user's location

HYPERTEXT AND LINKING

Treat links according to conventions

Underline links, and use a different color to indicate links users have visited. Following these conventions helps users identify clickable links and any already visited.

> *"People get lost and move in circles when websites use the same link color for visited and new destinations. To reduce navigational confusion, select different colors for the two types of links."*
>
> — Jakob Nielsen (2004), "Change the Color of Visited Links," **http://www.useit.com/alertbox/20040503.html, ¶1**

PAGE LAYOUT

Use page real estate wisely

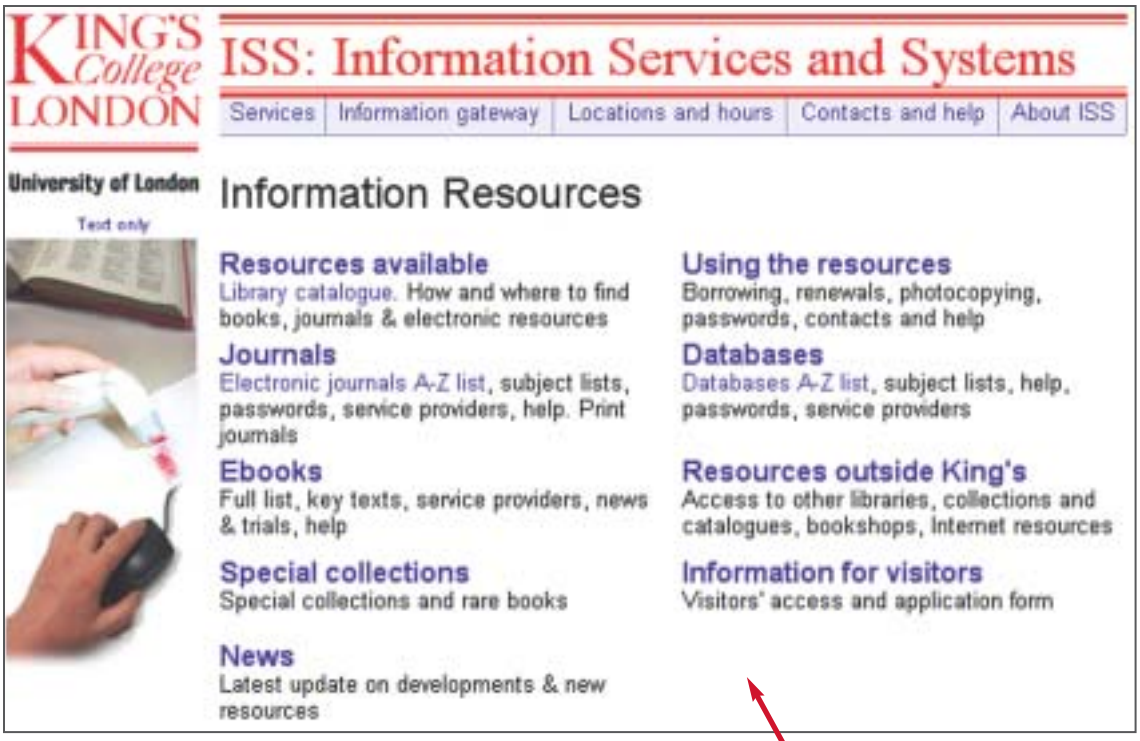
Make sure the main content of each page on your Web site gets as much real estate as possible. Try to minimize the amount of space the site's logo and navigation bar occupy on the top of the page, so users can see more of the page's main content without scrolling. The University of Toronto Libraries keep their site's navigation area comparatively small, allowing more space for each page's main content.

The largest area goes to the main content, when page real estate is used wisely as on the University of Toronto Libraries site at **http://www.library.utoronto.ca/**

AESTHETICS AND GRAPHICS

Use few colors and minimal graphics

Use only three or four matched colors in the design of your Web site to make it more aesthetically pleasing and prevent a circus-like appearance. Avoid or minimize use of animated or flashing or scrolling text, as many users find it annoying and distracting. By using complementary colors and few graphics, a library Web site can enhance its appeal.



The Information Services and Systems site of King's College London uses few colors and minimal graphics, as shown at **http://www.kcl.ac.uk/depsta/iss/library**

> *"We know our library website is essential for researchers and students as a main point-of-entry to access electronic journal resources and that the usability of the website is instrumental in helping users find information they need. That's why we're so delighted to see simple guidelines, offered by experts such as those with Elsevier."*
>
> — Monica Hammes and Hilda Kriel (2004), Academic Information Service, University of Pretoria, Pretoria, SOUTH AFRICA

FLEXIBILITY AND EFFICIENCY OF USE

Organize information in multiple ways

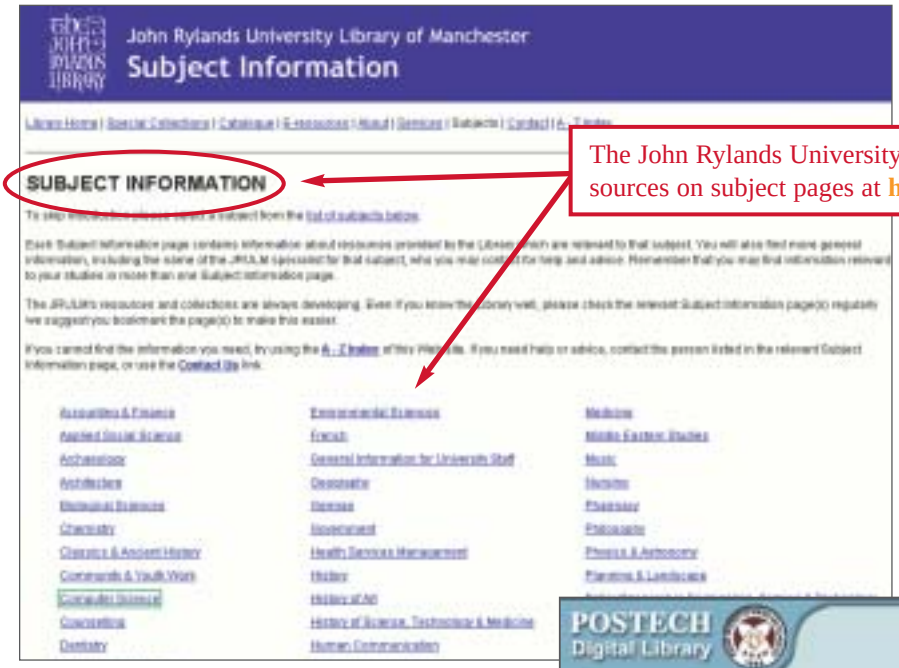
Make it possible for users to find information by following a few clear paths. This increases the likelihood your users will be successful when using your library Web pages.

Organize information by type of material

Many users come to library sites knowing the type of content they are looking for. For example, graduate students and professors often want to search only for journal articles because they may be more important in high-level research than books or reference materials. Labeling resources by content type, such as "journals, databases and indexes, books, links," guides users to materials they want.

Organizing material by subject helps users get a quick overview of resources available in particular areas and can provide good starting points for people in specific fields. For example, you might provide a "Computer Science" page listing your library's databases, selected free Web links, key reference works, and journals for this area. Or, on your main e-journals page, you could list all journals in a specific subject area.

Providing subject-specific pages can guide your users to diverse sources relevant to their searches. Providing a subject guide to your e-journals can add to your library Web site's usability.



The John Rylands University Library of Manchester includes diverse information sources on subject pages at **http://rylibweb.man.ac.uk/subject.html**

Korea's Postech Digital Library offers a subject guide to its e-journals at **http://www.postech.ac.kr/library/english/e_index.html**

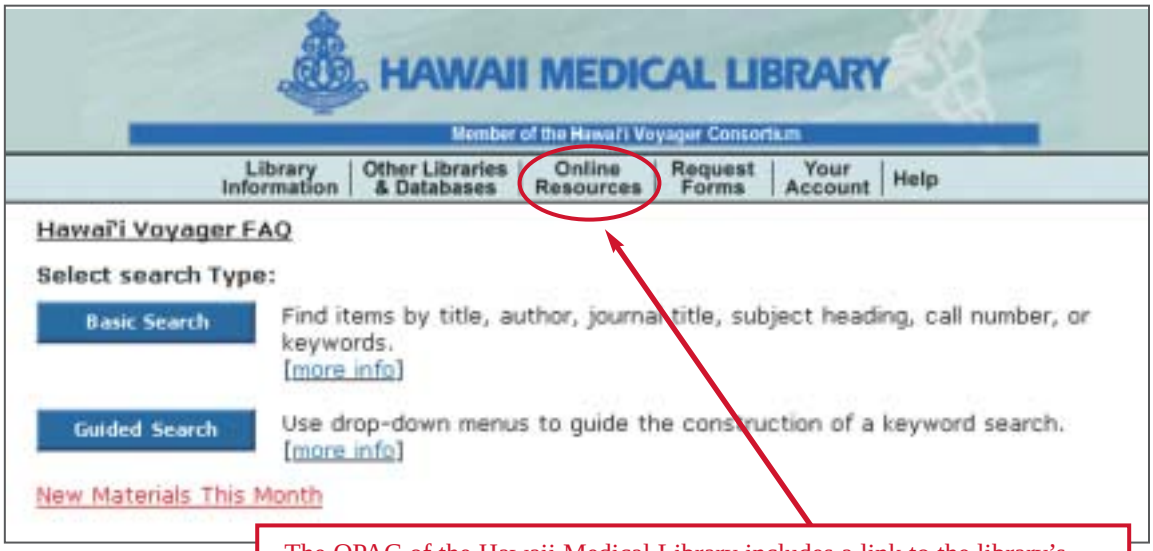
FLEXIBILITY AND EFFICIENCY OF USE

Cross-link information when possible

Cross-linking different types of information helps users find what they are looking for.

What's a real-life example of a situation calling for cross-linking? Sometimes users enter an Online Public Access Catalog or OPAC, thinking it searches journal or magazine articles.

- If your OPAC uses a federated search tool, users at this point may be in good shape.
- If your OPAC doesn't search across your library's proprietary databases, by including in your OPAC a link to your library's main e-journals page, you help users find what they want. For more about cross-linking, see "How do I find an article? Insights from a web usability study" (Cockrell & Jayne, 2002).



The OPAC of the Hawaii Medical Library includes a link to the library's online resources. The library Web site appears at **http://hml.org**

> *"Subject areas constitute the main approach to seeking information. Organizing by library function or library organizational structure, although logical to librarians, may not be very useful to library users, particularly remote users."*
>
> — Lesley M. Moyo (2002),
> "Collections on the Web: Some Access and Navigation Issues," p. 11

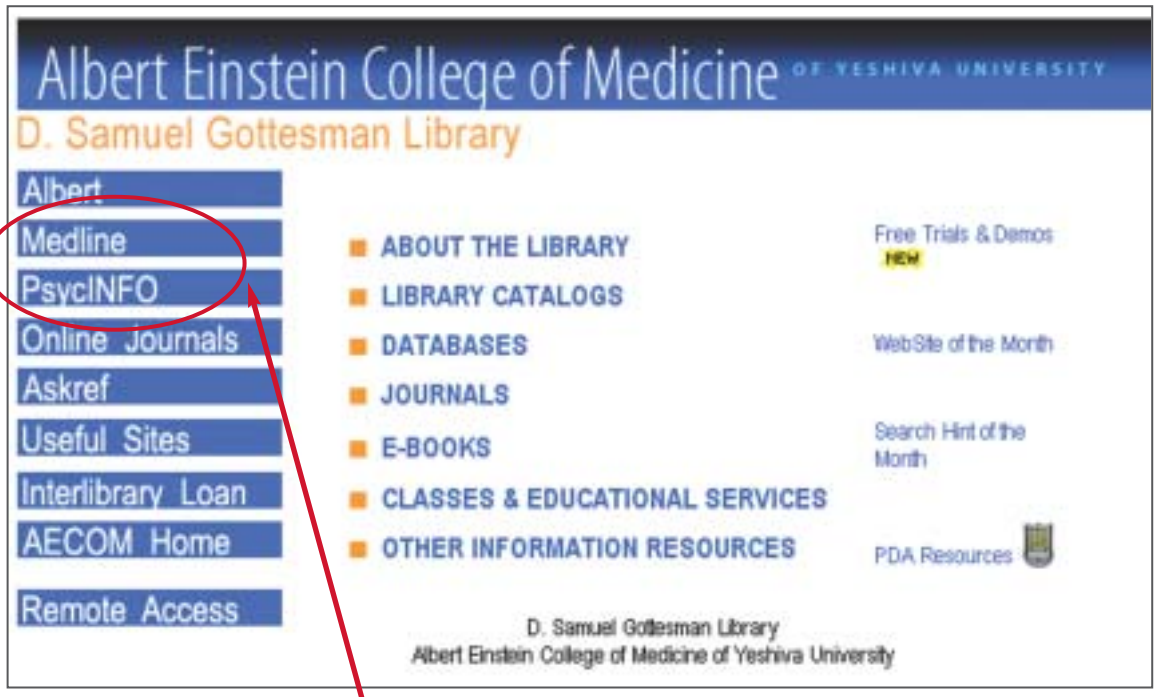
FLEXIBILITY AND EFFICIENCY OF USE

Minimize the number of clicks users must make

Place links to different types of research materials and sources (such as electronic journals, abstracting and indexing databases, or OPACs) right on the home page of your library Web site. Most users come to a library site wanting to do research, and the shorter their paths, the happier they are.

In 2001, a survey of 105 academic library Web sites showed 67 offered home pages linking directly to lists of e-journals available through the libraries (Rich and Rabine, 2001). It's good news for users that on 64% of the home pages examined, e-journals were just one click away. But it's too bad that over one-third, 36% in fact, of the library Web sites could have offered users a shorter path.

Beyond offering direct links from your library home pages to lists of e-journals, you might even want to offer links to frequently used databases (Crowley et al., 2002).



Helping shorten researchers' paths, the home page of the D. Samuel Gottesman Library offers links to Medline and PsycINFO. The page appears at **http://library.aecom.yu.edu**

> *"Basically all we wanted to do was keep the clicking to a minimum and maintain the look appearing throughout the medical school's Web pages. The fewer the clicks the better."*
>
> — Nancy Glassman (2004), IT Librarian,
> D. Samuel Gottesman Library, Albert Einstein College of Medicine,
> Bronx, New York, USA

> *"Users will never need to go more than 3 links beyond the homepage to locate the information they are seeking."*
>
> — Christopher Hollister (2001),
> "The Fundamentals for Creating an Academic Library Web Site,"
> **http://www.marylaine.com/exlibris/xlib100.html, ¶3**

FLEXIBILITY AND EFFICIENCY OF USE

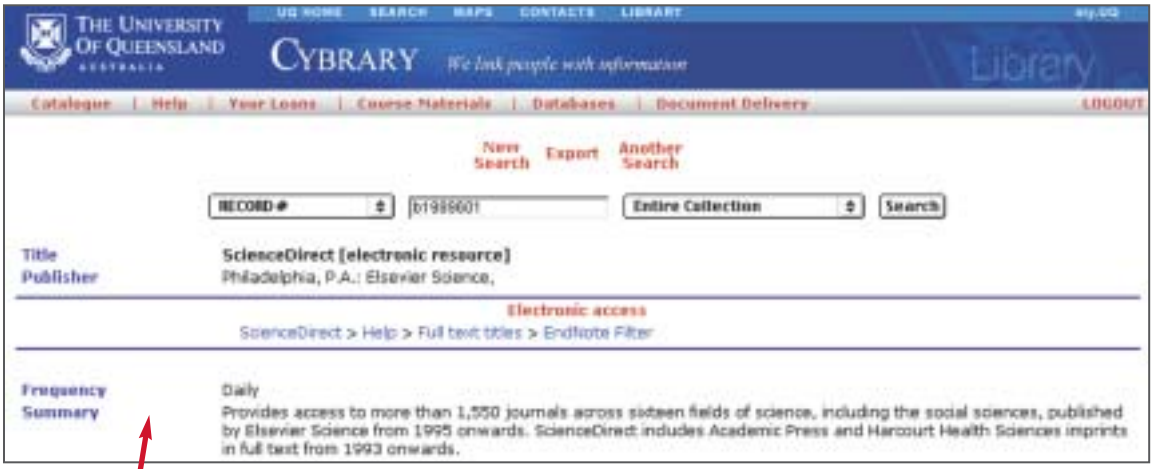
Explain details to help users select and access resources

Offer a good description of each digital database and what it covers (Crowley et al., 2002). Listing databases by name only is not enough. Most users are not aware of exactly what type of content a specific database contains. Hampered by lack of knowledge, users experience difficulty quickly deciding which databases are good resources to meet particular research needs.

Offering brief but excellent descriptions can help speed researchers on their way and keep them happy with your library's site.

Users like to know how they can access materials. Is the full text available electronically? If so, from home or campus only? Is a password needed? Explain up front the most critical details about access, and you help users obtain needed content.

Hokkaido University's library site offers vital details about available online serials via a page at **http://www.lib.hokudai.ac.jp/item/e_journal-e.html**



Brief descriptions of available databases, such as ScienceDirect, appear on the University of Queensland's Cybrary site at **http://library.uq.edu.au/**

MATCHING THE SYSTEM AND USER ACTIVITIES

Organize your site based on users' tasks and their frequency

Organize your library Web site as a "one-stop shop" to meet users' research needs and not to reflect the administrative structure of the library (Crowley et al., 2002). Too often library Web sites are organized from the perspective of librarians, who know the structure of their libraries' sites in great detail.

Research conducted by Elsevier's User Centered Design Group suggests a library Web site should be organized around the following user tasks. These are listed according to their importance to users or the frequency with which users engage in these tasks.

1. Conducting research to find materials such as journal articles, indexes and books.
2. Finding course materials such as lecture notes, reserved books, suggested links or other materials related to certain classes.
3. Finding information about libraries such as locations and hours of operation.
4. Getting help in using a library and library Web site.

An academic library Web site designed to facilitate tasks listed above would assign the most space and prominence to the first task, conducting research. The design of the University of Rochester's library Web site at **http://www.lib.rochester.edu/** shows the number-one priority is helping users meet their research needs.

Most users visit a library site to find articles, journals, books or other materials. Devoting most space on your library's Web site to helping your users find information and perform research shows you understand their needs.
The University of Rochester's library site demonstrates such understanding at **http://www.lib.rochester.edu**

> *"The biggest mistake library Web sites make is not giving enough space to the task 85% of people come to the library Web site for — finding research materials like journal articles."*
>
> — Chris Jasek (2004), User Centered Design Group Lead, Elsevier, Miamisburg, Ohio, USA

MATCHING THE SYSTEM AND USER ACTIVITIES

Make your website search clear

Be sure users can easily see and understand what materials or content your search facility searches. If your search facility only searches pages of your library Web site and does not cover other sources like journal articles or the Web, explicitly indicate this is the case.

Do not use librarian terminology

Try to use terms meaningful to users and clearly distinguishable from other terms. For example, you might want to use the term "online catalog" versus "OPAC." Another strategy is to offer a short description of a term, e.g., "Electronic Journals – electronic full text of journal articles."

Usability studies have shown many users do not understand simple library terms and concepts like catalog, resources, online databases, citation, reserves, reference or special collections (Crowley et al., 2002; Dickstein & Mills, 2000). Users also have difficulty differentiating between "electronic journals" and "databases and indexes" (Cockrell & Jayne, 2002). Your users might not really understand that "electronic journals" offer the full text of journal articles online and "databases and indexes" provide searching across journal abstracts.

Perhaps the best way to ensure you are using meaningful terminology is to do some usability testing with your own users. This means you need to see what happens when researchers use your library Web site.

Ensure good performance

To increase the likelihood your library Web site won't suffer from poor performance, regardless of the power or reliability of your hardware, keep an eye on good page design.

Don't place too much content on pages, making them excessively large and slow to download. For example, you might steer clear of listing your whole e-journals collection on one page, because it might contain hundreds or thousands of journals.

To help users accessing your library Web site from their homes or via dial-up connections, avoid overloading individual pages.

While you're designing your library's website pages, you may have at your fingertips very fast connections. But keep your users' perspectives in mind.

ACCESSIBILITY

Make your site accessible

Follow the W3C's recommendations for making Web sites accessible. For more on the World Wide Web Consortium and its recommendations, see **http://www.w3.org/WAI/**

When you improve usability for visually impaired persons or users with disabilities, you also make your site more accessible in a wide variety of environments, like dark rooms or bumpy airplane rides.

> *"When it comes to accessibility for the blind, ScienceDirect is really in very good shape. I feel that the long-term support of these issues will advance the educational and career opportunities in areas where the blind had previously limited options."*
>
> — Judith Dixon (2002), Consumer Relations Officer,
> National Library Service for the Blind and Physically Handicapped,
> **http://www.info.sciencedirect.com/sd_updates/press/access/index.shtml, ¶4**

> *"ScienceDirect does appear to be a pretty accessible place and is certainly very user friendly — I was able to get done what I wanted to get done. It would be a great thing to have ScienceDirect here, to really demonstrate that blind people can improve their scientific research using this tool."*
>
> — Robert Jaquiss (2002), Treasurer,
> National Federation of the Blind Science and Engineering Division,
> **http://www.info.sciencedirect.com/sd_updates/press/access/index.shtml, ¶5**

USABILITY TESTING

Test your site for usability

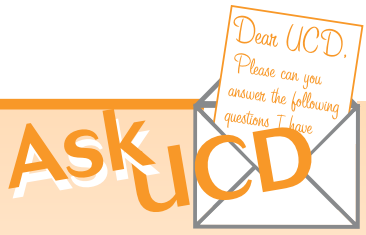
Conduct a usability study and you can make sure your library site is meeting your users' needs.

The preceding guidelines — backed by usability studies and based on best practices — can help improve usability of your library Web sites. But nothing compares to observing your patrons as they navigate your own sites and seeing first-hand where they encounter difficulties.

Informal usability studies can take little time and money and yet provide valuable data. See *The Handbook of Usability Testing: How to Plan, Design, and Conduct Effective Tests* by Jeffrey Rubin (1994) or *Usability Engineering* by Jakob Nielsen (1993) for more information.

Tracking usage and repeating usability testing, after website changes have been made, should indicate if improvements contribute to a better experience for your users.

> *"The most common usability test is often called the walk through or talk aloud, where the user is observed performing certain tasks and asked to share his thought process with the observer who is taking notes. He is asked to tell what he might click on next and what he expects to see. This frequently reveals where users are stumped, whether by unfamiliar terminology, unclear navigation or poor screen layout.*
>
> *"… usability testing does not have to be an elaborate process. It's better to have informal 'checks' throughout the development cycle than to wait till the end to 'test' the final product, when any redesign is costly. Usability testing ideally is conducted early and often as an integral part of the design process."*
>
> — Judy Luther (2004), "User Centered Design = Successful Products,"
> **http://www.charlestonco.com/features.cfm?id=143&type=np, ¶8 & 10**



In the summer of 2003, librarians attending Library Connect presentations posed questions about usability of library Web sites. Since then, the Library Connect newsletter has featured an "Ask UCD" column. Anyone with usability questions may drop a line to **libraryconnect@elsevier.com**

Chris Jasek, with Elsevier's User Centered Design Group, answers incoming questions.

To view "Ask UCD" questions and answers covered so far, please browse Library Connect newsletter issues available at **http://www.elsevier.com/locate/libraryconnect**

Anyone wishing to "Ask UCD," please email **libraryconnect@elsevier.com**

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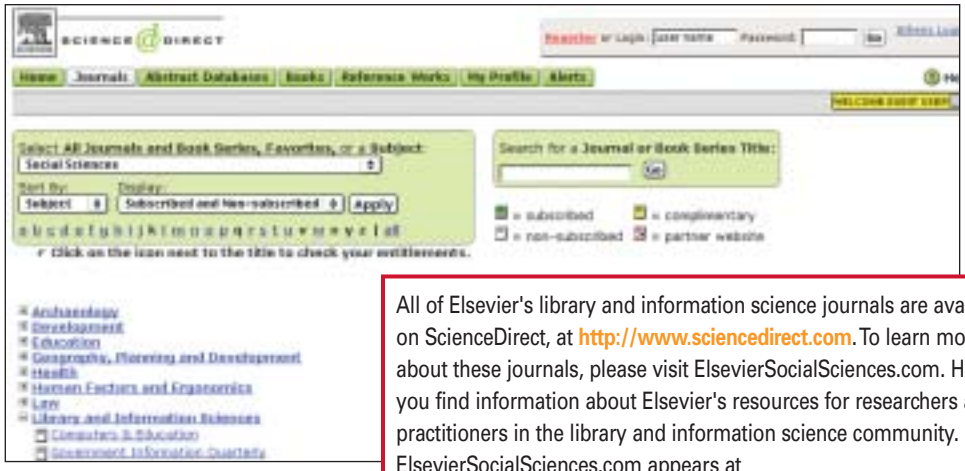

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