Looking from the outside in: An evidence-based model for website usability assessment

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Resumen

La evaluación de la accesibilidad de información en línea es un intento de ver la interfaz de un sitio web o una página web desde la perspectiva del usuario. Los profesionales de las bibliotecas especiales muchas veces crean sitios web que llegan a ser el punto de partida para acceso a servicios y recursos de parte de los usuarios. Como los bibliotecarios tanto como sus usuarios dependen más y más de información en línea es de importancia vital que estos sitios web puedan usarse exitosamente. Para poder encontrar, seleccionar y usar información del sitio web de una biblioteca satisfactoriamente es imprescindible que el portal o la interfaz sea lo más intuitivo posible. Con el desarrollo de la educación a distancias y un número cada vez mayor de usuarios remotos, cuestiones y problemas respecto de la accesibilidad aumentan porque los bibliotecarios muchas veces no están en contacto directo con sus usuarios y no tienen la habilidad de tener interacciones cara a cara con ellos.

La investigación de este estudio enfoca una muestra seleccionada de 50 sitios web de bibliotecas especiales de países de habla inglesa. En el curso de este proyecto de investigación los investigadores examinan los siguientes aspectos: determinar si los sitios están conformes a los criterios encontrados en la literatura actual, entrevistar a los
Abstract

Usability assessment is an attempt to see an online interface or website from the point of view of the user. Special librarians have constructed websites that have often become the primary gateways for clients to access their services and resources. As the librarians and their clients become more dependent on their websites, it is vitally important to question whether clients can use the sites successfully. In order to successfully find, select, and use information from a library website, it is vitally important that the portal or interface be as intuitive as possible. With the rise in distance education including global distance education and the increasing numbers of remote users, usability issues and problems are increased as librarians often do not see or have the ability to interact directly with the users of their sites.

This research project focuses on a purposive sample of the websites of 42 special libraries. During the course of this research project, the researchers are...
examining each website using criteria found in recent literature to see if the sites measure up to these known objectives, surveying the librarians involved in the creation of these sites to compile the best practices in usability assessments plus surveying a sample of users whose primary language is not English to see how comprehensible the site is to them. After follow-up interviews by telephone or electronic mail, the researchers will be developing a series of web-based templates or models that can be customized to fit the local situation. This paper is a report of ongoing research.

Introduction

In 1934 at the International Congress of Bibliographers and Librarians in Paris, Ortega Y Gasset spoke about the growing flood of information in book form and the impossibility for a single scholar to keep up with the knowledge in his or her field:

Man loses himself in his own wealth: his own culture, proliferating like tropical vegetation around him, ends by smothering him. What we call the historical crises are finally nothing but this. Man cannot be too rich; is an excess of facilities and possibilities are offered for his choice, he comes to grief among them; and confounded with possibilities, he loses the sense of the necessary(Ortega Y Gassett, 1961).

Ortega Y Gasset postulated that the librarian of the future would have to serve as a filter between man and the growing mountains of literature on book form (Ibidem, p.154).
Today we have many more formats for information, which coupled with the information overload, particularly the millions of pages on the World Wide Web, brings us to an even more critical period for library and information science. New means of selecting, collecting, and making information accessible are more than ever needed. Better author organization of material on websites and concern for their usability is one path to addressing the overall issue.

**Usability Studies from the Literature**

Nielsen, after performing many usability tests, determined that users do not come to a website for the “experience,” that is for the look and feel of the site, but rather for information. His studies show that two-thirds of users are looking for specific information on the Web (Nielsen, 1999). A study of the Dalhousie University website by Gulikson and others found that the way information was organized on the site, how concepts were labeled on the site, and the lack of navigational aids clearly impacted the use by students and faculty of the website (Gulikson, 1999). A great deal of the literature on usability concerns more the visual appearance of the site rather than the true information architecture such as how information is categorized, the use of symbols and icons or other labels, or the navigational tools that facilitate access. These studies indicate that there is much more to making a site usable than simply improving the visual appearance of the site.
Jared Spool did a study of nine popular websites to see what made a website usable. His findings include:

- Graphic design neither helps nor hurts
- Text links are vital
- Navigation and content are inseparable
- Information retrieval is different from surfing
- Web sites aren’t like software (in terms of usability testing) (Spool, 1998)
- Download times don’t matter if the user believes that their information will be on the page. Users do lose patience with non-content graphics and will start using links as soon as they load rather than waiting for images to load (Spool, 1998).

In other words, the information itself is what matters to most web site users. Visual appeal is much more important in web surfing than when users want specific information.

In 2002, the Digital Library Federation and the Council on Library and Information Resources published a study of the assessment practices of digital libraries. That study uncovered a number of problems with assessment including:

- Focusing efforts to collect only meaningful, purposeful data
- Developing the skills to gather, analyze, interpret, present, and use data
- Developing comprehensive assessment plans
- Organizing assessment as a core activity
• Compiling and managing assessment data
• Acquiring sufficient information about the environment to understand trends in library use (Covey, 2002, p.2).

All of the above problems are also applicable to library websites as well as to digital libraries. A great deal of the discussion centered on user studies which are helpful when there is a well-defined user base, but may not work nearly so well in a global web environment.

The literature is beginning to reflect a multitude of articles on the redesign of library websites. McMullen describes the process behind the redesign of the Roger William University Library (McMullen, 2001).

**Heuristic Evaluation of Usability**

Although one of the most basic methods of testing usability involves user studies, there are other methods that can be more easily used on sites where the client is remote and not easily surveyed. One such method of usability testing involves heuristic evaluation. Instone provides 10 usability heuristics with web-updated discussion of Nielsen’s original work on heuristics (Instone, 1997; Nielsen, 2002). These heuristics include:

• Visibility of system status
• Match between system and the real world
• User control and freedom
• Consistency with standards
• Error prevention
• Recognition rather than recall
• Flexibility and efficiency of use
• Aesthetic and minimalist design
• Help users recognize, diagnose, and recover from errors
• Help and documentation

Keevil provides a checklist of over 200 questions to measure the usability of a web site (Keevil). The questions can be used to create an usability index for your site and allows comparisons to be made among sites. This checklist has been mentioned in numerous articles as reflecting best practice for testing the usability of a web site. Raward describes a usability checklist developed for an academic library which is a modified version of the Keevil checklist (Raward, 2002).

Icons Use from the Literature

Ma and Diodato have examined icons as a visual form of knowledge representation to determine how icons are representative of the information to which they are linked (Ma; Diodato, 1999). At present, the development of icons in software and web interfaces has reached the stage at which most of the obvious functions which can be “pictured” by an icon are already accepted and in use. It is at the symbol level, that is the use of a graphic or image which has no inherent relationship between the object and its meaning that more development needs to occur. There are functions which do not have immediately suggestive pictorial icons. These are analogous to some
traffic signs which do not picture or illustrate anything but have become universally recognizable symbols, nonetheless. The shape of a stop sign has no relationship to stopping at an intersection, but it has become universally known and observed. Flags of countries are universal symbols for each country. These are being used in web pages to signify what language a web site or portions of a web site are displayed in. The most obvious and universal system of communication through symbols is international sign language. Indeed, there have been suggestions that signs from international sign language be incorporated into web interface design. We may be at the point in which we need symbols in the semantic definition of icons meaning symbols, which are abstract but become universally known and accepted for web site navigational use. That is, symbols, which are abstract but become universally known and accepted for web site navigational use. The use of such standardized symbols could greatly aid users in concentrating on content rather than navigation.

According to Cheng, globalizing a web site involves a formidable challenge on many levels, not the least of which have to do with delivering content across language barriers, cultural differences, and time zones (Cheng, 1999).(13) Taking a web site global means more than just the mere translation of words from one language to another. The content management for a web site is further complicated when the site has versions in multiple languages. As the quantity of work is multiplied, so is the complexity involved. Now content must be effectively delivered across cultural differences and time zones as well as language barriers. As the web becomes increasingly multi-lingual, web designers are left with the huge task of designing multi-lingual sites. Icons and symbols can be a component of a conceptual structure for the
integration of knowledge across language and cultural boundaries.

The use of icons on the Web has to this point been steeped in the conventions of the West and in the English language. It suggests that future work in the use of icons for web navigation investigate the use of symbols which will be learned within the context of the web rather than icons which may be culturally exclusive.

Methodology: Criteria Used in Evaluating Sites

- Creation of a site identity
- Clear and uncluttered interface
- Clear scheme for organizing information on the site (multiple approaches are preferred)
  < by keyword topic
  < by organizational structure
  < by spatial location
  < by chronology
  < by function
  < by user group
  < by frequency of use
- Easy navigational tools with consistent and predictable results
  < Ability to get to the top-level page from anywhere in the site
< Ability to determine easily where you are in the hierarchy of the site
< Ability to access any tools provided from any place on the site.

- Maintenance of design integrity throughout the site
- Icons to assist non-native speakers of the language of the website
- Enough redundancy to allow multiple paths to a particular resource
  < Search engine
  < Site map
  < Alphabetical index
  < Multiple categorical menu structures
- Adequate help and documentation
  < FAQ (Frequently Asked Questions)
  < Context sensitive help screens

A convenience sample of forty-two special library web sites was evaluated using the criteria above. The web sites were selected to reflect libraries from different environments and specialties. Three graduate students in the School of Library and Information Science performed the evaluations. These students had not seen the criteria previously and it was thought they would make knowledgeable and objective reviewers. The students were asked their opinion of the criteria as well as evaluating the web sites. An instructor in the School who is fluent in Spanish also evaluated the Spanish language web sites.
Evaluation Results

The evaluations were tabulated. The analysis is not by the individual sites but as the overall results. The results of the assessment are show in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Assessment of Special Library Websites by Usability Criteria</th>
<th># Yes</th>
<th># No</th>
<th># N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creation of a site identity</td>
<td>41</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Clear and uncluttered interface</td>
<td>37</td>
<td>4</td>
<td>1</td>
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<tr>
<td>Clear scheme for organizing information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/keyword</td>
<td>27</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>/organizing structure</td>
<td>31</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>/spatial location</td>
<td>7</td>
<td>26</td>
<td>9</td>
</tr>
<tr>
<td>/chronology</td>
<td>2</td>
<td>37</td>
<td>3</td>
</tr>
<tr>
<td>/function</td>
<td>38</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>/user group</td>
<td>11</td>
<td>28</td>
<td>3</td>
</tr>
<tr>
<td>/frequency of use</td>
<td>2</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Easy navigation tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/access to top-level page from anywhere</td>
<td>32</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>/ability to easily determine hierarchy</td>
<td>25</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>/ability to access all tools</td>
<td>18</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Maintenance of design integrity throughout site</td>
<td>33</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Icons to assist non-native speakers</td>
<td>8</td>
<td>33</td>
<td>1</td>
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<tr>
<td>Multiple path functionality</td>
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<td></td>
</tr>
<tr>
<td>/search engines</td>
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<td>/site map</td>
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<td>22</td>
<td>2</td>
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<td>/alphabetical index</td>
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<td>26</td>
<td>2</td>
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<td>/multiple categorical menu structures</td>
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<td>Adequate help and documentation</td>
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<td>/FAQ</td>
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<tr>
<td>/context sensitive help screens</td>
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<td>37</td>
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</tbody>
</table>
Overall, the special library web sites met the majority of the criteria. The areas in which a number of sites did not meet the criteria were in spatial location, chronology, user group, frequency of use, icons to assist non-native speakers, site index, alphabetical index, and both criteria under adequate help and documentation.

The criterion which the largest number of sites did not meet is that of a clear scheme of organization by frequency of use. That is, the areas which would receive the most frequent use should be the areas which are the easiest to locate for the user. These should be indexed or linked from the home page and obvious without the user having to look for them.

Another criterion that the majority of sites did not meet is that of icons to assist non-native speakers. Many sites are only in one language, but icons are a means to assist users in navigating a site and can be culturally independent. Although the use of icons is ubiquitous on the Web, this is an area that still needs development from the language/cultural viewpoint.

One of the most sophisticated navigational tools is organization by spatial location. Floor maps showing rooms enable the user to link to more information about a location by clicking on the map. Or the user is given a virtual tour with the capability of linking to more information about spots along the tour. This type of organization is used more frequently by art museums. It is an organizational scheme which is only appropriate to certain types of institutions.
A few other criteria had high numbers of sites which did not meet the criteria. These were the use of a chronology as an organizational scheme, the provision of FAQ’s for help documentation and context sensitive help screens. Not all of the criteria are appropriate for every web site. While there seven different criteria under “Clear Scheme for Organizing Information,” a web site that used all seven would probably be confusing! Thus the results in this category are probably more indicative of the most prevalent kind of organizational schemes rather than the absence of organizational schemes on the sample web sites.

**Conclusion**

The list of criteria developed for this research worked well for the evaluation of the chosen web sites. From this first application the criteria do not seem to need major revision. The researchers did find several areas which bear further research. One area of particular interest is the use of icons to assist non-native speakers, which seems to be low. Thus, this research project with the sample of special library web sites substantiates the need for further research with the usability criteria developed.

**Acknowledgments**

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References


GULIKSON, Shelley; Ruth Blades; Marc Bragdon; Shelley McKibbon; Marne Sparling; Elaine G. Tom. The Impact of Information Architecture on Academic Web Site Usability. The Electronic Library 17, octubre 1999, p.293-304.


