

CHAPTER TWO

LITERATURE REVIEW

This chapter describes the literature review of four topics related to this study: (1) the content and design of academic library Web sites, (2) evaluation criteria for academic library Web sites, (3) research and related literature on the academic library Web sites, and (4) methodological problems due to different methods being used to evaluate academic library Web sites.

Literature searches included published and unpublished materials, such as books, journal articles, research reports, conference proceedings, and the Web.

2.1 Content and Design of Academic Library Web Sites

Web sites created by libraries or library consortia are generally information-rich and varied resources compared to other Web sites (Raeder, 1995). A number of studies on library Web sites have shown that the following information resources and services are being provided (Whalen, 1996; Clyde, 1996; Chisenga, 1998; Stewart, 1998; Harizan and Low, 1998; Kroeker, 1999):

- a) The most common feature of academic library Web sites is the general information on the library. The information includes an overview of the

library and its services such as opening times, instructions on how to travel to the library in person, library rules, library organisation, staff contacts (by email or telephone), what's new, facilities for feedback, welcome messages, mission policy statements, and a link to its parent organisation.

- b) A link to the library catalogue, allowing users to search for materials over the Web. Since all electronic information can now be accessed via a single common interface, link to online catalogue of the library through a telnet link or a gopher link has been replaced by a Web interface.
- c) Links to other Internet resources as users want Web access ideally to every other possible sources of information in the world. Academic libraries are beginning to organise "resource" sites for scholars to quickly identify selected resources rather than searching a general library catalogue.
- d) Interactive services offering an electronic reference desk for users. Many other services include ordering materials directly from the library's catalogue of holdings, borrower services such as reservations, renewals and payment of fines, and reading services such as reading lists for individual courses, and facilities for users to recommend books by email using a form.
- e) Internal electronic database services via the Web such as a link to a service that allows users to access exam papers for different subjects.
- f) Seamless access to external electronic databases created by people outside the library.

- g) English version or a short explanation in English for users to understand the content if the information on the Web page is in the non-English vernacular language.
- h) Technical service departments such as acquisitions, cataloguing, and preservation are embedded.
- i) The instructional materials and teaching techniques are incorporated into the academic library Web site through collaboration with faculty. This approach is to leave students and lecturers alike with more time for education as opposed to the dissemination of facts.
- j) The provision of a “way out” of the page, last update, and postal or street address for the library.

Users expect access to many information resources and other information-related services from their academic library. If the academic library is prepared to take a lead in Web development, then they should be encouraged to provide all the above information resources and services in their Web sites (Kroeker, 1999).

The presentation of information is as important as the information itself (Kroeker, 1999). This can be achieved with a mixture of text and images to effectively display the information resources and services of academic library Web sites. From the existing academic library Web sites around the world that

have been studied, two of them possess what is regarded as a good page layout worthy of note (Whalen, 1996):

- a) The Web pages of The University of Sheffield Library are extremely well laid out. Instead of presenting a page of daunting buttons to press “Resources” or “Services” as many other pages do, they actually explain what each page is. In addition, they provide online guides to help users make the most of library facilities. Sheffield also offers useful links to all the other Consortium of University Research Libraries (CURL) although this service actually seems to be supplied by Leeds University.
- b) The James Hardiman Library at University College Galway also has a good layout. The use of images is simple and effective; therefore, it does not take a long time to load. Furthermore, the welcoming message moves impressively across the bottom of the screen.

Since the academic library Web sites are not for entertainment, but for quick information finding, the loading time of images should not be longer than 30 to 60 seconds for a page to appear (Clyde, 1996).

The techniques of promoting the Web sites to the world have been discussed in the literature. If the content and design are aimed at competing for attention across an increasingly wide bandwidth, then a sensible title that includes the keywords likely to be used by people searching for the page would be useful

(Clyde, 1996). Moreover, meta tag description statements should be created for search engines such as Alta Vista, HotBot, and Infoseek to get the most important content indexed. In addition to these meta tags, a summary paragraph appearing in the first 250 characters of the Web site when the page loads, is important to be used by search engines that did not use the meta tags (Tillman, 1998).

2.2 Evaluation Criteria for Academic Library Web Sites

There are many continuous and comprehensive discussions on evaluating Web information resources and design. These discussions have suggested many evaluation criteria for Web quality such as accuracy, authority, currency, relevancy, and stability of information (Ciolek, 1996; Wilkinson, Oliver, and Bennett 1997; Smith, 1997; Tillman, 1998). However, special criteria to evaluate the library and information centre Web sites have not been available (Clausen, 1999).

Despite the absence of criteria for the evaluation of academic library Web sites, it is clearly not starting from scratch. The criteria for the evaluation of general Web sites can be adapted and new strategies devised to address its unique character (Trochim, 1996).

There are studies on academic library Web sites based on a number of general criteria of evaluation (Stover and Zink, 1996; Ueng, 1999; Clausen, 1999). These criteria recommended by the studies can be summarised into the following categories:

a) Content

- 1) A sufficient overview of the library and its services
- 2) A statement of purpose or a statement of goals and objectives
- 3) Information to support teaching and research
- 4) Links to other electronic resources of the library
- 5) The accurate, currency, and reliability of information
- 6) Free of grammatical, spelling, and other typographical errors

b) Links

- 1) A link to the main page of the university site
- 2) A Link to the main page itself in each page of the Web site
- 3) A number of three to nine of links in each page of the Web site
- 4) Links to relevant Internet resources
- 5) The stability of links
- 6) Quality of annotations

c) Graphics and multimedia design

- 1) Relevance and user-friendliness of graphics
- 2) The multimedia effects
- 3) Suitability of colours

- 4) Consistency of visual design
- 5) Less-than-10,000-byte graphics
- d) Structure of Internet resources categories
 - 1) Systematic approach
 - 2) Clear and logical structure
 - 3) Consistency of title and content
- e) Authority
 - 1) Organisation or author
 - 2) Identification of the author or organisation
 - 3) Contact information
- f) Currency
 - 1) Latest update of Web site
 - 2) Date Web site first placed on the Web
 - 3) Notification on any changes in the address of Web site or home page
- g) Information Management
 - 1) Copyright statement of Web site
 - 2) Visitors statistics
 - 3) Comments or feedback from users
 - 4) Target groups for the information.

The quality of information remains the most important issue. Clausen (1999) tried to measure the quality of information content. In his 40-quality criteria to evaluate academic library Web sites, 13 of them are used to evaluate the

quality of the information, the other 27 criteria are used to evaluate the design and structure, links and navigation, aesthetic impression, help function, server, user groups, and general assessment.

The general evaluation criteria of Web sites can be used to evaluate the quality of information content provided by academic library Web sites. Academic library Web sites provide two types of information. The first is the information produced by the library itself. The second, information from links to other sources that are beyond the control of either the library or any single information provider. The second one is a much more problematic feature for the library because it can be deleted or altered at any time without prior notification to the library (Kroeker, 1999).

In fact, the criteria for high quality Web information are not much different from the elements developed by Katz (1992). His famous basic criteria on evaluating reference resources---purpose, authority, scope, audience, cost, and format---have been recognised by the “dean” of Web quality evaluation, Tillman (1998), as the basis for Web information evaluation.

Alexander and Tate (1999) developed a checklist for evaluating information resources of Web page with the URL address frequently ending in .edu or .gov which is useful to apply in the academic library Web sites. The checklist helps

to determine whether the source carries information of high quality by answering “yes” to the following questions:

a) Authority

- 1) Is it clear who is responsible for the contents of the page?
- 2) Is there a link to a page describing the purpose of the sponsoring organisation?
- 3) Is there a way of verifying the legitimacy of the page's sponsor? That is, is there a phone number or postal address to contact the sponsor for more information? (Simply an email address is not enough).
- 4) Is it clear who wrote the material---and are the author's qualifications for writing on the topic clearly stated?
- 5) If the material is protected by copyright, is the name of the copyright holder given?

b) Accuracy

- 1) Are the sources for any factual information clearly listed so they can be verified in another source?
- 2) Is the information free of grammatical, spelling, and other typographical errors? (These kinds of errors indicate not only a lack of quality control, but also inaccuracies in information).
- 3) Is it clear who has the ultimate responsibility for the accuracy of the content of the material?

- 4) If there are charts and/or graphs containing statistical data, are the charts and/or graphs clearly labelled and easy to read?

c) Objectivity

- 1) Is the information provided as a public service?
- 2) Is the information free of advertising?
- 3) If there is any advertising on the page, is it clearly differentiated from the informational content?

d) Currency

- 1) Are there dates on the page to indicate:
 - a. When the page was written?
 - b. When the page was first placed on the Web?
 - c. When the page was last revised?
- 2) Are there any other indications that the material is kept current?
- 3) If the material is presented in graphs and/or charts, is it clearly stated when the data was gathered?
- 4) If the information is published in different editions, is it clearly labelled what edition the page is from?

e) Coverage

- 1) Is there an indication that the page has been completed---or is still under construction?
- 2) If there is a print equivalent to the Web page, is there a clear indication of whether the entire work is available on the Web---or only parts of it?

- 3) If the material is from a work which is out of copyright (as is often the case with a dictionary or thesaurus), has there been any effort to update the material to make it more current?

2.3 Empirical Studies

As regards to academic library Web sites, the number of studies is relatively small. Apparently, these studies are in search of quality, both in terms of design and content of the Web sites.

Stover and Zink (1996) carried out a study of 40 university education libraries in North America that pioneer the evaluation of academic library Web sites. This study is to quantify the relative quality of Web sites in terms of design and organisation. The results show that the most common failure of the studied Web sites is “the tendency to create pages that were too ambitious, whether in terms of the number of links or the size of the graphics” (Stover and Zink, 1996).

In another study, Chisenga (1998) analysed the contents of 13 Web sites of academic libraries in eleven sub-Saharan Africa countries. A special matrix was prepared to display the information about the sites. The items noted on the matrix include general library information, library Online Public Access Catalogue (OPAC), local electronic databases, CD-ROM databases, external

OPACs, external electronic databases, and relevant information resources and facilities. It concludes that libraries are mainly providing general information about the libraries and their services on their Web sites, and that there are no major "digital libraries" or related projects going on in Sub-Saharan Africa.

UK academic library Web sites have been surveyed by Webwatch robot (Kelly and Peacock, 1998). The Webwatch project, funded by the British Library Research and Innovative Centre (BLRIC) in Bath, has evaluated a number of Web sites created by UK communities, such as academic institutions and public libraries. In May 1998, Webwatch robot started to trawl 81 UK academic library Web sites. The average size of the sites was 3 Mbytes (range 4.3--39,039 Kbytes) in May and increased to 4.6 Mbytes (range 4--133,000 Kbytes) in June. The average number of links was 22 (range 0--140). A total of 935 dead links were found in 59 sites and the worst one has 220 dead links. Apparently, there was no correlation between the number of dead links and the size of the site.

The Webwatch survey provides quantitative data of UK academic library Web sites. From its findings, it concludes that the academic library Web sites are bigger, have more resources, and make more use of technically advanced features (animation, sound, and graphics) if compared to British public library Web sites.

Harizan and Low (1998) carried out a survey of twenty-eight academic library Web sites in the Asian region. They observed that there is a lack of information on the various departments in the library. This is in great contrast to the library Web sites found in America and Europe, where there is an abundance of information about the technical service departments in these libraries.

In Taiwan, Ueng (1999) studied the Web sites of university libraries. She analysed the content of 11 Web sites of university libraries and 5 of them are university libraries in Taiwan. She then surveyed the librarians and users of the 5 university libraries in Taiwan to identify the quality criteria of the Web sites. The findings show that the librarians and users choose currency, accuracy, and links as the most important criteria in evaluating university library Web sites.

In a study of Danish academic library Web sites carried out by Clausen (1999), a list of 40 quality criteria for evaluation of academic library Web sites was compiled after it has been tested in a pilot study. The 40 criteria were divided into six categories to survey 12 academic libraries. Fifty-two (52) information professionals of these libraries were asked to participate in the survey. The main conclusion is that the Web sites in question are above average compared with Web sites in general. However, they do not come up to expectations as virtual expressions of the quality levels of the libraries.

Finally, a study of non-academic library Web sites by Clyde (1996) is mentioned since there are points of similarity between the different types of library. Her quantitative analysis of 50 public and 50 school library Web sites in different countries found a great diversity in the features of library Web sites. Not all library Web sites in her study contained even basic information to identify the library.

One of her advice on the features of library Web sites concerns the fact that links to Internet resources should be checked regularly to ensure that they are operational and that the contents of the pages have not been altered substantially since they were chosen as links.

2.4 Methodological Problems

From the above empirical studies, it is noticed that various methods are being used to evaluate academic library Web sites. These methods can be divided into the following types:

- a) Technical procedures like Webwatch robot dealing with link statistics, HTML file and graphics sizes, and meta-elements

- b) Quantitative analysis where numerical values are assigned to evaluation questions (Stover and Zink (1996), Ueng (1999), and Clausen (1999) use this method in their studies)
- c) Qualitative measures where information is gathered inductively: It deals in words---and is guided by fewer universal rules and standardised procedures instead of by statistical analysis (Chisenga (1998), and Harizan and Low (1998) have applied it in their studies).

There is no single best plan for an evaluation (Cronbach, 1982). Quantitative and qualitative methods each has advantages and drawbacks when it comes to the evaluation design, implementation, finding, conclusion, and utilisation (National Science Foundation, 1997).

There are major differences between quantitative and qualitative techniques. The debate over the merits of qualitative versus quantitative methods is ongoing in the academic community, but when it comes to the choice of methods for conducting evaluation, it is most fruitful to combine quantitative and qualitative methods for data collection (Patton, 1990). This pragmatic strategy has been gaining increased support---and respected practitioners have argued for integrating the two approaches by building on their complementary strengths (Shadish, 1993). The advantages of linking qualitative and quantitative methods are the increase of the validity and reliability of data (Miles and Huberman, 1994).

When it comes to the mixed-method evaluation, one size, however, does not fit all. When designing a mixed method evaluation, the factors to be considered are as follows (National Science Foundation, 1997):

- a) Which is the most suitable data collection method for the type of data to be collected?
- b) How can the data collected be most effectively combined or integrated?