Assessment of Museum World Wide Web Home Page Formats

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Introduction

In recent months, the use of the Internet as a communications tool has grown exponentially. Museum home pages are added to the World Wide Web daily. The WWW is the section of the Internet that allows people to display images as well as text (Dery, Frank, Hoffman, Pollack & Scott, 1996). Although the Internet has made a vast amount of information readily available to users, minimal research has been conducted about the scope and complexity of WWW home page design and the extent to which museums, using the Internet, might influence museum use in the future. A home page is the default introductory page in a set of Web pages (Johnston & Jones-Garmil, 1997).

This exploratory study was conducted from January to August 1996 to analyze museum home page format and suggest criteria for future assessment of WWW home pages and their effectiveness. A home page template was developed to analyze format and the presence of interpretive principles in home page design. Information discovered in this study has the potential to impact professionals, students, and others interested in the fields of interpretation, environmental education, museum studies, and non-traditional learning settings, as they create and develop WWW pages as either promotional or educational tools.

Background

The Internet

In October 1994, the number of Internet users worldwide, was estimated to be 13.5 million (Anderson, 1995). By October 1995, a

Commerce Net/Nielsen Internet Demographics survey indicated that the number of people older than 16 with access to the Internet was 37 million (Winn, 1996). This reflects the rapid growth in the numbers of individuals using the Internet. The Internet is defined as, "...the global interconnection of computer networks. Information from university, corporate, research, and government networks can be shared via phone lines" (Dery et al., 1996).

Much of the Internet's popularity arises from its distinct characteristics. First, a vast amount of information which can be accessed quickly and conveniently is available on the Internet. Second, as the WWW is multimedia in nature it uses text, graphics, audio, video, and animation to attract the attention of diverse users. Third, in addition to being a tool for communication, the Internet is also a medium for learning. Although the Internet is an important educational tool in formal education, non-traditional learning settings such as museums, nature centers, camps, zoos and aquaria, parks, visitor centers, historical villages, farms, and houses are also going on-line.

Museums and the Internet

Today, it is estimated that there are approximately 10,000 museums in the United States alone (Knudson, Cable & Beck, 1995). Worldwide, the number of museums is between 25,000-30,000 (Woodhead & Stansfield, 1994), 3,000 of which are on-line with home pages (Dery et al., 1996). "Web sites can provide information on a museum's operations, describe collections and include virtual exhibitions" (Johnston & Jones-Garmil, 1997). WWW users can, "...see the Smithsonian and the Vatican in the same day" (Noack, 1995). The National Museum of American Art receives 125,000 visitors per year, while on-line it averages 10,000 visits per day (Dery et al., 1996). According to Steve Dietz of the same museum, "We aggressively believe that making art available in this way only enhances people's interest in someday visiting us" (Dery et al., 1996).

Museum Communication Methodology

As museums strive to convey the meanings and relationships behind the treasures of the natural and cultural environment, a form of communication, called interpretation, is employed. Freeman Tilden was

elemental in defining interpretation and the accompanying profession. According to Tilden (1967), interpretation is "an educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information." With this definition in mind, "interpretation and interpretive exhibits are integral to virtually all museums" (Knudson, Cable & Beck, 1995).

Several principles of interpretation classify museum exhibits and programs as interpretive. These interpretive principles suggest that exhibits and programs:

- develop deeper understanding (Knudson, Cable & Beck, 1995)
- relate information to the audience (Tilden, 1967)
- capture attention and make a point (Ham, 1992)
- provoke the visitor into further study (Tilden, 1967)
- are pleasurable, organized, and have a theme (Ham, 1992)

Museum and Internet Audience Characteristics

Visitors to museums and users of the Internet share several characteristics related to the field of interpretation. These individuals are members of non-captive audiences (Vaughan, 1996), and as Ham (1992) stated:

- voluntarily view exhibits and presentations
- have no time commitment
- are not motivated by external rewards
- will switch attention if bored
- are not required to pay attention
- expect an informal atmosphere and non academic approach

Basically, visitors to museums, regardless of the setting, are intrinsically motivated, voluntary learners. In traditional settings, if they become bored they will move on to another exhibit. Likewise, on the Internet, if the visitor is not satisfied he/she will click on a link to a different web site with more appeal. Therefore, interpretive priciples are important in designing a WWW museum home page for retaining visitor attention and stimulating learning.

Methods

To meet the objectives of this study, a home page template with criteria was developed to review a sample of 100 museum home pages. This template was developed around specific interpretive principles and audience characteristics. After a review of criteria considered essential to home page format, these criteria were applied to museum home page criteria and separated into the categories of appeal factors, retention factors, and revisit factors. Although home pages are not museum exhibits, the authors suggest that factors that attract and retain visitor attention, and influence them to return to exhibits, can be applied to museum home pages.

Conducting a search on the Alta-Vista search engine, the word "museum" was typed in the search entry space. Search engines utilize tools called robots, or spiders, that scan the WWW for information related to keywords or phrases (Barlow, 1996). This search retrieved WWW museum home pages and their Internet addresses, or URLs (Uniform Resource Locators) (Dery et al., 1996). The number eight was selected from a random numbers table and a sample was drawn from the URL list beginning with the eighth museum home page URL listed and continuing with every subsequent eighth URL, until a sample of 100 museum home pages was reached.

This museum home page analysis was an exploratory assessment. Taking into consideration the dynamic nature of the Internet, every home page selected was assessed using the template a total of five times during the research period to allow for comprehensive analysis of each home page.

Museum Home Page Criteria

A museum's World Wide Web home page is like a museum's front desk. Both serve to welcome visitors and present them with information that enhances their museum visit. There are several essential components of WWW home pages that make the visit more effective for both the visitor and the museum. These attributes take into consideration interpretive principles and audience characteristics. They can be grouped

according to their function into three areas: appeal factors, retention factors, and revisit factors.

Appeal Factors

To attract WWW visitors, a museum's home page should display several attributes. First, it should take a minimal amount of time to download the home page. In his WWW Style Manual, Lynch (1996) indicates that 20 seconds is the maximum amount of time most visitors will wait for a home page or other web pages to download into their computer.

Museum home pages should be browser friendly (King, 1996). There are a variety of browsers available to view WWW graphics like Netscape Navigator and the Microsoft Internet Explorer (Udell, 1996). However, many visitors use Lynx, or other text-only browsers (Johnston and Jones-Garmil, 1997). Home pages should be designed as not to exclude the different browsers, or they may lose potential visitors (King, 1996). Furthermore, the authors believe that welcome statements on the home page invite visitors to explore.

Home pages should also be easy to read (Lynch, 1996). Dark text on a light background and high contrast colors enhance readability (King, 1996). In addition, the researchers judged that the inclusion of a visitor number tally and display of museum awards for home page design would appeal to visitors.

Retention Factors

After attracting visitors, maintaining their attention is necessary for conveying essential information. Because WWW visitors are part of a non-captive audience, certain retention factors are key to museum home page design. Lynch (1996) states that an *organized format*, consisting of a heading, body, and footing, are essential. The heading should include a title, with the content of the home page contained in the body. Footers should contain a museum's logo, author's name, affiliation, e-mail address, and a revision date (Lynch, 1996).

Furthermore, graphics displayed on the home page should be accompanied by defining text (King, 1996). Multiple entry points provide many pathways to information (Udell, 1996) through graphics and

hypertext, while giving the visitor more control over how to access information (Dietz, 1997). Maintaing the number of main points to seven, plus or minus two, enhances the organization of a home page (Ham, 1992) without overloading the visitor with too much information (King, 1996). Multimedia applications also allow visitors to select the medium that affords them optimal learning (Dietz, 1997). The use of multimedia applications such as hypertext, graphics, photographs, flashing text, animations, and audio clips and video clips creates an atmosphere of fun, adventure, and discovery (King, 1996). A search function allows visitors to look up the information they are seeking instantly (King, 1996).

Quality content also serves to hold visitors attention (King, 1996). Attributes, such as photographs of the museum or exhibits, floor plans, operation hours, admission costs, location maps, e-mail and geographical addresses, membership information, and museum history or mission statements, serve to provide useful and quality information (Olsson, 1996). This information should be either displayed directly on the home page or represented by a link to another Web page with such information (Johnston & Jones-Garmil, 1997). The home page should also contain timely exhibit and program information (Olsson, 1996). Finally, listing the URL allows visitors who print the home page to have the URL on a hard copy (Lynch, 1996).

Because interpretation should present information which *relates to the visitor's personal experience* (Tilden, 1967), a museum home page should accomplish this task as well. The authors feel that a Internet "guest book" on which visitors can sign in, leave comments, and read other comments, makes the visit more personal and relevant. The use of icon links as metaphors helps visitors make analogies and comparisons to material contained in the link (King, 1996). This serves to convey information to the visitor in a relevant manner (Ham, 1992). Finally, vocabulary that is active and personal will encourage visitors to explore the home page (Ham, 1992).

Revisit Factors

The final set of home page attributes concern revisit factors. These components persuade the visitor to return to a particular home page. Links to other WWW sites containing related information are provocative and educational to the visitor (Lynch, 1996). A "what's new" section allows

the visitor to zoom in on new information (King, 1996). A revision date indicates that museum staff update the home page with current information (Lynch, 1996). The authors speculate that in addition to attracting visitor attention, a visitor number tally encourages them to return to the home page later, i.e. high tally numbers may indicate popular sites to some users.

Results

After analyzing the 100 museum home pages with the home page template criteria (Appendix A), the frequencies at which each home page attribute occurred was assessed. A mean of 62 home pages contained appeal factors. Retention factors were broken down into the categories of organized format, quality content, and personal relevance, with an overall mean of 67. A mean of 50 home pages contained revisit factors (Table 1).

Appeal Factors

The vast majority of home pages had minimal download time (98), were browser friendly (81), and were easy to read (98). Over half included welcoming statements (60). However, very few contained a visitation tally (20) or displayed awards (12).

Retention Factors

All home pages contained a heading, body, and footer information (100). Nearly all included graphics with text (93) and multimedia applications (98). More than half had multiple entry points (58) and limited main points to 7 ± 2 (57). Only six home pages contained a search function.

More than threefourths displayed a picture of the museum or an exhibit (82), while few showed a floor plan of the museum (23). A majority of home pages listed hours of operation (97), admission cost (79), location (94), and addresses (99). Slightly more than half listed membership information (54). Eighty four home pages provided museum history or a mission statement and timely exhibit information. A small minority of home pages listed a URL (13).

Very few home pages contained a link to a "guest book" (15). A little over half used icons as metaphors (56). A majority of the home pages used active and personal vocabulary (89).

Revisit Factors

Most home pages contained links to other sites (71), while few contained a visitor tally (20) or a revision date (47). Over half contained a "what's new" section (63).

Discussion/Implications

This exploratory assessment of WWW museum home pages revealed that more than one half of the home pages evaluated contained material to appeal to and retain visitor attention. Closer examination of retention factors indicates that more than one half of the home pages included an organized format and quality content. However, close to one half of the home pages contained criteria that related to a visitor's personal experience. Exactly one half contained factors that may encourage subsequent visits.

This research is helpful in suggesting or reinforcing that the Internet is now part of the growing list of informal/non-traditional learning settings. In such a setting, intrinsically motivated visitors seek convenient and provocative sites for exploration and learning.

Suggestions for future research include: (a) testing template factors for appealing, retention, and return potential with actual WWW users, (b) employing these criteria to help museums and others design WWW home pages which best facilitate information gathering and stimulate learning, then testing to better understand the effectiveness of those criteria, (c) and tracking whether WWW visits detract from, enhance, or replace actual museum visits.

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Table 1
Frequencies of home page attributes (n=100)

Appeal Factors (μ=62)		Retention Factors (μ=67)	
Download Time <20 seconds	98	*Organized Format (μ=69)*	
Browser Friendly (not exclusive)	81	Heading, Body, and Footer	100
Welcoming Statements	60	Graphics with Text	93
Easy to Read (high contrast)	98	Multiple Entry Points	58
Visitor Number Tally	20	Seven ±2 Main Points	57
Awards Displayed	12	Multi-media Applications	98
		Search Function	6
		Quality Content (μ=70)	
		Picture of Museum or Exhibit	82
		Floor Plan of Museum	23
		Hours of Operation	97
Revisit Factors (μ=50)		Admission Cost	79
		Location	94
Links to Other Sites	71	Addresses	99
"What's New" Section	63	Membership Information	54
Revision Date	47	History or Mission Statement	84
Visitor Number Tally	20	Timely Exhibit Information	84
		URL Listed	13
		Personal Relevance (μ=53)	
		Guest Book	15
		Icons as Metaphors	56
		Vocabulary	89

Appendix A
Home Page Evaluation Criteria and Template

Museum Name _____

Museum URL _____

Appeal Factors

Check if present:

    ☐ Minimal Download Time   ☐ Easy to Read

    ☐ Browser Friendly   ☐ Tally

    ☐ Welcoming Statements   ☐ Awards

Retention Factors
Organized Format

Check if present:

    ☐ Heading, Body, and Footer   ☐ Multi-media Applications

    ☐ Graphics with Text   ☐ Search Function

    ☐ Multiple Entry Points

    ☐ Seven, Plus or Minus Two, Main Points

Quality Content

Check if present:

    ☐ Picture of Museum or Exhibit   ☐ Addresses

    ☐ Floor Plan   ☐ Membership

    ☐ Operation Hours   ☐ History/Mission Statement

    ☐ Admission Cost   ☐ Timely Information

    ☐ Location   ☐ URL Listed

Relates to Visitor's Personal Experience

Check if present:

    ☐ Guest Book   ☐ Vocabulary

    ☐ Icons as Metaphors

Revisit Factors

Check if present:

    ☐ Links to Other Sites   ☐ Revision Date

    ☐ "What's New" Section   ☐ Tally