Communication on the World Wide Web: Designing an Effective Homepage

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Abstract

The purpose of this study was to examine the content and structural features of a World Wide Web homepage with the explicit goal of making recommendations for how a homepage should be designed. Nine focus groups were conducted to uncover perceptions about a state university's homepage and elicit suggestions for improvement. This study revealed several general principles for designing effective homepages that may apply regardless of the particular institution or target public.

Statement of Purpose

The World Wide Web offers unprecedented opportunities for communication professionals. Every day, hundreds of new organizations join the Web by announcing their homepages. Yet, despite the Web's phenomenal growth, little systematic research has examined the factors that make Web sites informative and appealing to visitors. Thus, the purpose of this study is to explore the content and structural features of a World Wide Web homepage

with the explicit goal of making recommendations for how a homepage should be designed.

Although this analysis is an in-depth look at the homepage of one organization—UF—other institutions will benefit from the insights offered. Many of the findings and recommendations may apply to other situations. In other words, the homepage features identified here as effective or ineffective may not be particular to any one organization or target public.

Literature Review

Society and Technology

Computer technology has changed the way society communicates both socially and professionally. Over the past few decades, the proliferation of interactive technologies has brought people and organizations within range of convenient communications regardless of the distances between them. Interfacing with government, social and commercial entities never has been easier. Given the enormous impact new technologies have on modern communication, it is no surprise that communication professionals are among the first to venture onto the information highway.

The Internet is revolutionizing information exchange. The development of the World Wide Web (the colorful, illustrative, multimedia dimension of the traditionally text-based Internet) has accelerated interest in the Internet and resulted in new challenges for those who wish to access resources and provide information on the Web ("Guilford Plans Course," 1995).

A growing number of people spend their most productive hours sitting in front of a computer terminal. Through on-line services or other links to the Internet, a vast array of information including—but certainly not limited to—press releases and "sponsored" communications is easily accessible. To communicate more effectively, individuals and organizations are taking advantage of e-mail, broadcast fax, video and audio teleconferencing, one-on-one multimedia presentations, on-line databases and World Wide Web homepages. Growing numbers of people now have access to information that may reside on mainframes several continents away. "With individuals logging on everyday, Internet hosts are expected to hit 100 million by the first quarter of 1999," said Kim LaSalle, an independent public relations practitioner who is the author of an Internet primer (Bovet, 1995, p. 33).

The Internet as an organizational communication tool is still so new that a body of theory explaining this phenomenon has yet to develop fully. Research on new communication technology, however, is progressing quickly. Several articles in the winter 1996 issue of *Journal of Communication* address research on "the Net." For example, McLaughlin (1996) identifies emerging research issues for art-related sites on the World Wide Web including demographics of Web users, copyright problems, and technical obstacles to presenting art on line. McChesney (1996) raises issues related to communication policy-making in the United States. He discusses the dollar-driven development of the World Wide Web and questions the benefits of the Web as a forum for promoting democracies. On a more micro level, Parks (1996) cites studies suggesting the possible benefits of Cyberspace as a medium for building interpersonal relationships with fewer ethnic and distance barriers than traditional media.

Morris and Ogan (1996), December (1996) and Newhagen and Rafaeli (1996) also participated in the "Net" symposium featured in *Journal of Communication* and made suggestions for forwarding relevant theory. These theorists developed many interesting questions for future researchers to consider such as whether we can consider the Internet a mass medium and whether Internet research should be driven by its characteristics as a medium or its effects on society.

University Homepages

Colleges and universities, the source of much of the developing theory relevant to new communication media, must remain up-to-date on a variety of computer systems including state-of-the-art software, news databases and the Internet. Furthermore, organizational presence on the World Wide Web is becoming increasingly imperative, with Web addresses promoted everywhere from the bottom of jeans ads to movie billboards and television advertisements.

Along with government defense operations, colleges and universities were the hubs of advancement for the infantile Internet. Now, as colleges and universities continue to recognize the growing importance of technological innovation, several have begun offering or even requiring courses designed to teach students how to effectively explore the Internet. As universities continue to search for new and effective communications strategies, homepages have become increasingly significant. In the past year, the information contained on university homepages has grown considerably.

Edinburgh University was the first institution to have on its homepage an on-line directory aimed primarily at the media, consisting of a user-friendly, fully searchable, hyper-text document (Calder, 1995). Numerous other institutions soon followed Edinburgh's lead. An August 14, 1995, an article in the *Chapel Hill Herald* described the University of North Carolina's homepage as enabling students, faculty and staff, as well as a global audience, to locate information about the school's academic areas and centers. Other information at the site includes continuing education offerings, newsletters, admissions policies, student services, historical items, and general community information (Sharo, 1995).

Such homepages are effective because information is updated regularly and presented in an interesting and informative manner. Clearly, taking advantage of the Internet and the Web homepage is increasingly essential for communication practitioners. This study focuses primarily on a university homepage's internal audiences and encourages further research directed at understanding external audiences in the future.

Methodology

With this background in mind, the researchers, in conjunction with the University of Florida's Office of University Relations, conducted nine focus groups—three faculty, three staff, and three student sessions. The goal was to uncover perceptions from internal audiences about UF's homepage and elicit suggestions for improvement. Each focus group was scheduled for a maximum of one hour, with most lasting between 40 and 45 minutes. Focus groups are a potent method for exploring issues in depth (Grunig, 1990; Morgan, 1988; Stewart & Shamdasini, 1990). This technique also provides the opportunity to observe reactions to stimuli, in this case color overheads and print-outs of UF's homepage and homepages from six other universities.

The limitations of focus groups have been outlined well by Broom and Dozier (1990). They note that focus groups are weak in external validity. This was a limitation the research team considered. Though the findings from these focus groups are not generalizable and are based on information from internal groups, the data gathered about homepage content and structural features still may be helpful to other organizations striving to design an effective homepage.

External publics are important audiences for any organization's homepage. Yet, the Office of University Relations had identified

that, at least so far, most use has been internal. During fall semester 1995, the homepage was receiving on average about 102,000 "hits" per week. Of those, 75 percent came from computers located on campus. Thus, these focus groups provided the office with key information about the university's internal users.

Sampling

A purposive sample of "Web-literate" faculty, staff and students was recruited. Subjects were selected to maximize representation from a variety of colleges and departments. The goal was to determine similarities and differences in Web preferences among several audiences.

Approximately 150 people agreed to take part in a focus group; 79 participated. An almost equal number of participants from each of the three categories were represented.

The disadvantage of sampling current Web users only was that the research team was unable to determine why other publics do not use the university's Web site. The research team recommended to the Office of University Relations that a follow-up survey of these publics might be appropriate.

Data Collection

Before each session, attendees were asked to complete a background questionnaire that asked several general questions about their Web use.

Focus group attendees next were asked a series of open-ended questions about effective characteristics of Web sites in general followed by questions specific to UF's homepage. Several questions addressing participants' specific needs (e.g., student employment postings and employee benefits information) also were posed.

To promote further discussion, several homepages from other universities were displayed. Respondents were asked to comment on what they liked about these pages in comparison to Florida's page. The homepages featured were selected by officials from the Office of University Relations. Several of the pages had been mentioned favorably by the university president. The sessions ended with the moderator asking if participants had additional comments or suggestions.

Data Analysis

Research team members watched all nine videotapes and transcribed respondents' comments either verbatim (when direct

quotation was necessary) or in summary form. The information collected from faculty, staff and student groups was reviewed together to uncover both common themes and divergent opinions. Themes and opinions specific to faculty, staff and students were noted as were ideas common to all groups. As recommended by Broom and Dozier (1990), "brief exemplary statements" made by participants were used in writing the final report of results (p. 329). These statements illustrate key findings as made evident in the extensive review of tapes. The limited numerical data collected in this study (from the preliminary questionnaire) is reported next followed by the key qualitative information collected from the nine groups. No formal coding was conducted. Finally, several general principles for designing homepages are discussed based on the results.

Preliminary Questionnaire Results

The preliminary questionnaire was completed by all 79 of the focus group participants. Questions posed included the following:

- **Do you have access to a computer somewhere other than at home (i.e., work)?**

  Among participants, 95 percent did have access to a computer other than at home.[1] This is an important statistic to consider when designing an effective Web site. Knowing the environment from which visitors access a Web page can help information providers better understand audiences' needs.

- **What type of Web browser do you use?**

  Of those questioned, 76 percent said they currently use some form of the Netscape Web browser. The number of people using a text-based browser in the sample was low—only two respondents.

- **How often do you access the World Wide Web?**

  An impressive 75 percent of respondents said they access the Web at least several times a week. This statistic underscores what a potent communications vehicle the Web has become.

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[1] Again, the data reported here are based on a purposive sample of internal groups so generalizability is limited.

- **How is the World Wide Web most useful to you?**

  Sixty-three percent explained they use the Web as an information resource or research tool. Entertainment was mentioned 13 percent of the time.

Findings

Before discussing the University of Florida's homepage, some questions were posed regarding Web sites in general. Clearly, one of the main concerns expressed was related to information content. One faculty member was clear in asserting, "It boils down to the content and its relevancy to what you're doing." Besides relevance, faculty members expressed a demand for information that is current and accurate. The staff and student participants also cited the importance of content. As one staff member stated, "Usually the thing that attracts me to a site is good information."

Graphics also were deemed important, although comments regarding the importance of graphics usually were qualified with concerns about content. Students, faculty and staff stated they prefer not to have graphics interfere too much with information. Yet, all seemed to appreciate visually appealing pages.

Balance was a key principle raised in discussions about content and graphics. "I go to a homepage to get information, but graphics keep me coming back," said one student. A faculty member suggested avoiding "extra stuff that doesn't really add anything" in terms of information. The main drawback to visually appealing graphics is that they take too long to load, especially on older computers or computers with slower modems.

Web page structure was mentioned as another important aspect of site design. Good structure includes easy access to relevant information, made possible through well-organized sites and key-word search tools. Respondents liked the idea of hierarchical organization. "I think the main mistake you can make is putting too much information on the front pages," one staff member said. "The end point should be where all the information is."

The issue of correct spelling and grammar was raised. Simply put by one faculty member, "People judge you by the words you use."

Examples of other university Web sites (including Carnegie Mellon, Delaware, Florida State, Georgia Tech, Illinois, Michigan and Penn State) were presented. Michigan's homepage drew the most

praise. Participants thought the exemplary features were the graphics (including Michigan's recognizable school colors and marching band), the text-only parallel option for content, the "welcoming" sense it offers and the bold concise headings that appear on the first page in the form of "drawers." "When you look at the Michigan page, you know that it is Michigan," said one staff member. Many felt Michigan combined the right amount of graphics and text: "the best of both worlds."

Penn State's page was also popular for many of the same reasons including the "drawer" effect and an inviting picture of campus. The page drew comments about the appeal of presenting an audio or video message from the president on a university homepage. Some faculty members, though, felt the page provided too much information up front and looked too much "like a financial report."

Delaware's page also drew praise for its graphically appealing aspects, showing the "warmth" and beauty of the campus. The page features a single image from the Delaware campus at the top. "It really invites you in," said one student. Faculty liked the interactive setup that allows visitors to access university databases. Loading time was a concern, though, as it was with nearly all pages recognized for graphic quality.

The Georgia Tech page, featuring a concise drawer-style graphic with major headings all listed on the first screen, received mixed reviews. Although some liked its direct, simple structure, others found it too "no-nonsense" and not creative. One staff member pointed out, however, that the page has a small "bee" for the pointer tool that helped the page stand out among others on the World Wide Web.

Other university homepages presented to the groups drew comments which highlighted characteristics to avoid. Participants did not like the "deep tree" structure of some pages that make it difficult to reach information. They did not like pages that appeared "incomplete," forcing users to immediately scroll down the document. Text readability is also important. Homepages that contained small-font text or text that blended into the backgrounds were criticized.

Participants expressed few accolades for Florida's homepage. Most agreed that the page needs improvement. The first thing mentioned among faculty, staff and student groups was the palm fronds as the page's dominant graphic element. A few liked the image, seeing it as easy to load and Florida-like. Most expressed

disdain. "I don't think the palm tree logo reflects the fact that we are a member of the Association of American Universities," said one student.

Participants in all groups felt the page did not represent the university well. Some said the page lacked organization and was redundant. Many did not like the three screens of primary information, forcing the user to scroll down to access much of the important content (Figure 1). Participants generally found it difficult to quickly locate information and thought the page made users work too hard.

Staff members felt the Florida's homepage should promote the university better. "Other institutions have ranking and general information on top." This information could be important to high school and graduate students who may be looking for information on how the university stacks against the rest, said one staff member.

Others criticized the page for not effectively using technology. "It looks like the top part of one of our catalogs," observed one faculty participant. "This is not effective when working on-line," stated a staff member—"The work must be far more visual."

Many constructive suggestions were offered. Faculty recommended a brief welcome statement for visitors just "surfing" the Web, a keyword search mechanism, and promotion of the homepage in other media such as brochures. The staff participants also proposed a search mechanism and better promotion, as well as a hierarchical index. Students recommended the page use basic bold words such as "Students," "Faculty" and "Search," and avoid using long phrases to identify information.

Discussion and Conclusion

Many more similarities than differences were uncovered among the three audiences examined in this study. Although these findings are somewhat limited by the purposive sample, this revelation suggests that several general principles may exist for designing homepages.

All of the focus group attendees agreed that a homepage should reflect the organization accurately. In other words, an effective page provides users with pertinent and current information; it also contains graphics and text that promote what the institution offers.

Most suggestions for constructing and maintaining an effective site fell into one of three categories: design/aesthetics, content and interactivity.

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Design and Aesthetics

Menu Bar:

A menu bar was the most frequently mentioned recommendation. Participants indicated that a graphic similar to the drawer-like structure of the Michigan or Georgia Tech homepages is helpful. Many suggested the use of image maps or clickable buttons to provide direct, quick access to information. Also suggested was including several lines of text for users without access to graphic-based World Wide Web browsers.

Figure 1.   Participants in all groups felt the old homepage did not represent the university well. Some said the page lacked organization and was redundant. Many did not like the three screens of primary information, forcing the user to scroll down to access much of the important content.
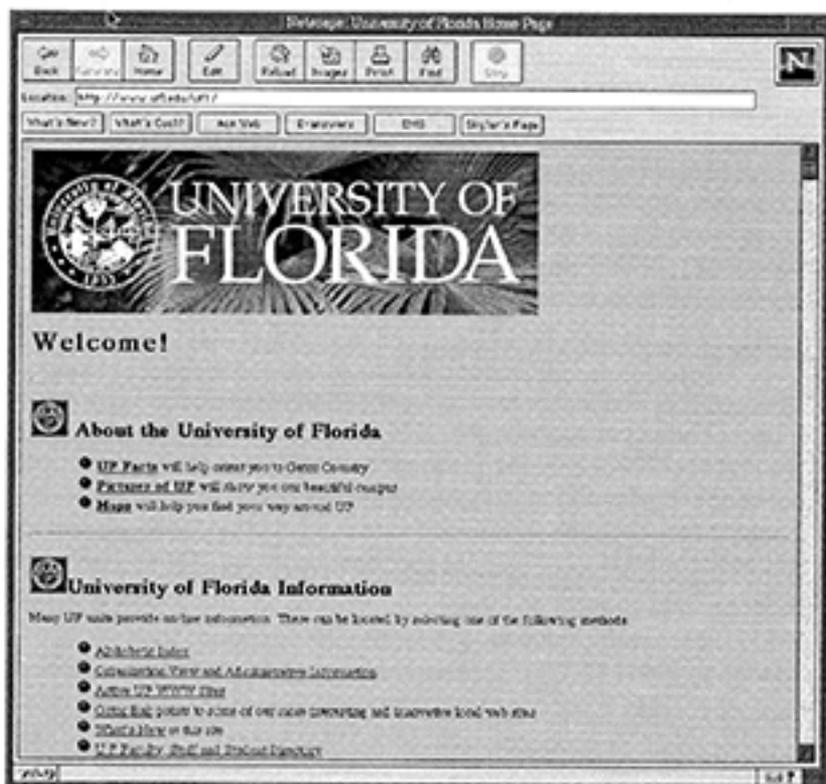
Structure:

Suggestions here included easy access of relevant information, which is made possible through well-organized sites. Many participants also mentioned homepages should be one screen only.

Pictures and Graphics:

The general reaction was that homepages must convey a "warmth" that invites viewers to stay and browse. Recommendations for doing so included posting pictures that would be changed periodically.

Figure 2. The new homepage reflects many of the suggestions discussed. In response to numerous comments regarding the "look" of the page, the graphical aspects were completely changed. Florida's homepage graphic now includes "drawers" leading to the main areas of information,

Participants stressed that, whatever the graphics, the homepage should convey the image the organization wants to project.

Grammar and Punctuation:

Participants emphasized that homepages should be free of grammatical and punctuation errors because they are an official publication of the institution.

Content

Balance:

One of the most common recommendations was for balance between graphics and text. Participants from all groups said that, although they appreciate visually-appealing pages, they will not remain on a site if downloading takes more than a few short moments.

Timeliness:

According to these focus groups, homepages must be up-to-date and revised regularly. Suggestions included incorporating new graphics every four to six months and reorganizing information into new topics to make the page more user-friendly.

Interactivity

Internal Search Engine:

Many participants said a homepage needs an internal search engine that allows users to type a key word, subject or title to locate information on a topic. This device saves valuable time and eliminates frustration . Database Access: Participants also suggested that user-friendly databases be accessible through the homepage. The information should be tailored to the needs of all target audiences.

Instant Feedback:

An on-line survey or suggestion/comment form was another recommendation. This survey would provide homepage administrators instant feedback on viewer opinions regarding improvements for current sections or new subject categories.

Initial Results

The above recommendations were submitted to Florida's Office of University Relations for consideration in the design of its revised homepage. The new homepage reflects many of the suggestions

discussed. In response to numerous comments regarding the "look" of the page, the graphical aspects were completely changed. Florida's homepage graphic now includes "drawers" leading to the main areas of information, Florida's recognizable colors and logo, and "warmer," more university-oriented pictures that rotate from day to day (Figure 2). The homepage offers equally simple access to the main areas of information for visitors using text-only software.

The structure of information categories on the homepage also was revised to be simpler and more user-friendly. In addition, a search function was added as an alternative to working through the hierarchical structure of the web site to find specific information.

Initial (and unsolicited) feedback to the Office of University Relations has been mainly positive. A marketing and retail manager at the student union remarked, "Excellent work on the new UF home pages! They are very clean and sharp and work very well. I especially like the search feature!" Other positive comments included, "Now we have a web site that joins the mid 90s. The old look appeared staid and unimaginative." Another described the new site as "very easy to read and follow the links." Only one brief comment was negative, referring to the new page as "sterile."

Perhaps the most encouraging feedback, however, came from the university president:

> The new UF home page is terrific. It is clear, effective, and useful. I think we have a page that matches well against any others out there.... A home page is clearly an evolving form of publication, and I expect you will find many ways to improve this version, but it is currently very nice and I am delighted to see it appear. The ability to see it clearly with or without graphics is especially welcome.

Indeed, this "evolving form of publication" will continue to demand attention and effort if it is to be used most effectively. As participants from all focus groups agreed, though, homepages are a resource worthy of sizable investment. As more people gain access to the Internet, the value of the homepage for communicating with publics will continue to increase. The homepage has become an unrivaled communications tool for reaching new audiences, disseminating information, and promoting institutions. This research represents one step toward increasing understanding of the content and structural features that make homepages meet their potential.

References

Bovet, S.F. (1995). Guideposts for going on-line, *Public Relations Journal*, *51*, (5), 32-35.

Broom, G.M. & Dozier, D.M. (1990). *Using research in public relations. Applications to program management*. Englewood Cliffs, NJ: Prentice-Hall.

Calder, D. (1995, Sept. 5). A bluffers guide to the Internet, Part 26, Bank site adds up to a net profit for Microsoft. *The Scotsman*, p. 23. Available: Lexis*Nexis (Mead Data Central, Inc.) Library: News File: ALLNWS Keyword: .

December, J. (1996). Units of analysis for Internet communication. *Journal of Communication, 46*, (1) 14-38.

Grunig, L. (1990). Using focus group research in public relations. *Public Relations Review, 16*, (2), 36-49.

Guilford plans course on exploring the web. (1995, August 20). *News & Record* (Greensboro, NC), p. 14. Available: Lexis*Nexis Library: NEWS File: ALLNWS.

McChesney, R.W. (1996). The Internet and U.S. communication policy-making in historical and critical perspective. *Journal of Communication, 46*, (1), 98-124.

McLaughlin, M.L. (1996). The art site on the World Wide Web. *Journal of Communication, 46*, (1), 51-79.

Morgan, D.L. (1988). *Focus groups as qualitative research*. Newbury Park, CA: Sage.

Morris, M. & Ogan, C. (1996). The Internet as mass medium. *Journal of Communication, 46*, (1) 39-50.

Newhagen, J.E. & Rafaeli, S. (1996). Why communication researchers should study the Internet: A dialogue. *Journal of Communication, 46*, (1) 4-13.

Parks, M.R. & Floyd, K. (1996). Making friends in cyberspace. *Journal of Communication, 46*, (1) 80-97.

Sharo, J. (1995, Aug. 14). Public health school starts home page, *Chapel Hill Herald*, p. 3.

Stewart, D.W., & Shamdasini (1990). *Focus groups. Theory and practice*. Newbury Park, CA: Sage.