

**Design Strategies for Need-Based Internet Web Sites
in Counseling and Career Services:
Technical Report Number 28**

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Dedication

This report is dedicated to the many practitioners and support staff in counseling and career service organizations who are working to make quality resources and services available to clients on the World Wide Web.

How to Use this Document

This document is designed to be accessed in three ways. First, the sections can be read in order as the report moves from general to specific topics. Second, specific sections of the document can be reviewed that meet identified needs which are described below. Third, individual topics can be accessed through the Table of Contents. A companion piece *A Process for Developing the Structure of Need-Based Web Sites: Technical Report 29* (Panke, Carr, Arkin, & Sampson, 2001) is also available at <http://www.career.fsu.edu/techcenter>.

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Design Strategies for Need-Based Internet Web Sites in Counseling and Career Services

Abstract

This report reviews and discusses Web site design strategies for organizations providing counseling and career services. The authors put forth a model of Web site development based on fulfilling the information needs of specific users. A distinction is drawn between need-based and resource-based Web sites and their advantages and disadvantages are reviewed. It is stated that Web sites designed around user needs and learning principles may be able to promote more efficient and effective user outcomes. The authors also provide a six step process for information use to provide a context for Web site development. Furthermore, the role of an organization's social and political environment in Web site development is discussed and an integrated team approach to site design is encouraged. The report also provides guidelines for the development of site content, design, and navigation, and reviews site evaluation issues. A brief discussion of technical, ethical, budgeting, and staffing issues is included. The paper then concludes with a 7-step model for implementing Web sites within counseling and career service organizations.

Introduction

Over the past five years, the number of Internet Web sites has increased dramatically. Service delivery organizations, such as counseling centers and career centers, are developing Internet Web sites to deliver information to prospective and current clients. The design, size, and currency of these Web sites varies considerably. While many general resources on Web site design exist, few resources are available to assist staff in designing Internet Web sites in counseling centers and career centers. This paper is intended to help staff members in counseling centers and career centers select design strategies for proposed or existing Web sites that will help organizations to best serve their clients. Although this paper emphasizes a particular "need-based" design strategy, readers are encouraged to select the portions of this paper that are most useful for the requirements of their particular organizations. Rather than providing a single, lock-step approach to design, this paper aims to stimulate critical thinking and provide help in initiating or continuing Web site design. The paper begins with a brief review of general principles of Web site design, followed by a description of resource-based and need-based Web-site designs, the use of instructional design strategies, the use of staff collaboration in Web-site design, the selection of Web-site design features, and conclusion.

Goals and Outcomes of Web Site Design

Two goals of a good Web site include providing easy access to relevant, high quality links that users understand how to use, and promoting the effective use of relevant resources and services (rather than promoting comprehensive access to all possible resources and services). When these two goals are met, specific outcomes become apparent. These outcomes are summarized in Table 1.

Table 1

Outcomes of Effective Web Site Design

As a result of good Web site design, the user should be able to quickly:

- perceive who would potentially benefit from using the Web site.
- develop a mental model (or schema) for site navigation.
- locate resources and services that meet their needs.
- understand what to do with resources and services they receive.

Web Site Design Strategies to Avoid

There are several design strategies that are best avoided in Web site design. It is best to avoid long lists of resources, external links and Frequently Asked Questions, as these can often be overwhelming and hard to remember for users. Instead, links should be organized around a need-based approach or intuitively categorized. Home pages with organizational information and slow-loading graphics should also be avoided. While this may be

good information, it is being presented at the wrong time (Sampson, 1999). Busy pages with little empty space should also be avoided, as this creates visual clutter which is likely to also be overwhelming to the user. While the above strategies are helpful for good design, more explicit strategies and the specific implications of resource- and need-based approaches are discussed in the following section.

Web Site Design Options: Resource-Based vs. Need-Based Sites

Resource-Based Web Sites

Resource-based Web sites are organized on the basis of the content provided (e.g., assessments, information, or instruction) or the structure of the organization sponsoring the Web site. This kind of site comprises the vast majority of Web sites in existence today. A resource-based site usually contains lists of resources and/or external links, with or without accompanying descriptive statements, which users must match without assistance to their self-perceived needs. Resource-based Web sites are most appropriate for expert or experienced users.

There are potential advantages associated with resource-based designs (see Table 2). First, expert or experienced users who are familiar with resource or external link titles or accompanying descriptions can quickly find needed resources or external links. Second, development costs are lower and completion times are shorter given the reduced staff time required to conceptualize and organize site content. However, potential disadvantages are also associated with resource-based designs. The first potential difficulty is with users locating and selecting the correct resources and external links to meet their needs. A resource-based site assumes that a resource's title provides adequate information for users to determine if their needs will be met by that resource. Furthermore, this title is assumed to communicate to users the potential outcome of following the link and using the resource. The process of assessing and matching user needs to resources in order to maximize learning potential often takes a skilled counselor several years of training and practice to develop. However, Web site users are often expected to master this practice in a matter of seconds. If users do not find the resource or link which matches their needs in a short period of time, they may become frustrated. This frustration can lead to random linking through a Web site or to a premature exit from a site that could have delivered beneficial resources.

Table 2

Advantages and Disadvantages of Resource and Needs Based Web Sites

Web Site Design	Advantages	Disadvantages
Resource-Based	<ul style="list-style-type: none"> Fast access for experienced users Lower development costs Shorter time required for development 	<ul style="list-style-type: none"> Difficulty for novice users in selecting resources, services, and links that meet their needs Assumes the ability of the user to link resources with needs Difficult to predict outcomes of following links Uncertainty about when help is needed May lead to random linking and site hopping Becoming overwhelmed with options
Need-Based	<ul style="list-style-type: none"> Users only view resources and services related to their needs Web site appears smaller and easier to navigate Users are less likely to be overwhelmed with information Users better understand how to use resources available Users better understand when assistance is needed 	<ul style="list-style-type: none"> Higher development costs Longer time required for development Difficulty in applying the expert knowledge of counselors to linking resources with learning outcomes and recommendations for effective resource use Absence of a sitemap or index may frustrate experienced users.

Given the limited contextual information that accompanies resource or link descriptions, users are less likely to accurately predict the outcomes of using a resource or external link, to understand how to use and sequence the resource or link they find, or to know when difficulty in using a resource necessitates assistance from a practitioner. Furthermore, resource-based sites often provide a long list of external links. This can quickly present an overwhelming amount of information making, it difficult for users to identify which external links will meet their needs. Using a schema to organize external links into conceptually related categories can minimize this limitation. However, the user is then confronted with the possibility of learning an often new, and potentially complex, classification system.

Need-Based Web Sites

A need-based Web site is organized on the basis of a three-part hierarchy where resources and external links are related to identified needs for specific categories of users (Sampson, 1999). In this paper, a need is defined as the gap between what individuals know and what is necessary for them to know to solve a problem. Another way of conceptualizing the need-based approach is to term the approach “user-centered,” focusing on the perceptions of the user about themselves and the appropriateness of the resources to meet their needs. The top level of the site, the index, is a list of potential kinds of users (level 1). For each type of user (or audience member), there is a link to potential needs associated with the type of user specified (level 2). For each user need there are one or more resources (assessments, information, or instruction) identified to potentially meet the need (level 3). For the purposes of this paper, an audience is defined as a group of users with similar set of needs who may potentially benefit from related information or services.

For each resource identified (and in some cases, external links as well) a description is provided along with a statement of the potential outcome associated with using the resource or following the external link. In a fully-developed need-based site, the user can access a description of how to use and sequence the information obtained, as well as identify the circumstances where the user may need assistance from a practitioner in order to meet their needs. The number of external links available is limited in order to decrease the possibility that users are overwhelmed with information. Furthermore, links are prescreened by the design team for quality, to further enhance the user experience. Need-based Web sites are most appropriate for novice users and are thus more appropriate for clients and individuals seeking self-help resources, or resources assigned as homework in counseling.

Potential advantages and disadvantages of need-based Web sites are also summarized in Table 2. One potential advantage associated with need-based designs is that users view only those resources that conceptually relate to their needs. This creates a site which appears smaller and more easily navigable. Thus, users are more likely to quickly find needed resources and are less likely to be overwhelmed by extraneous information (e.g., external links or frequently asked questions [FAQ's]) not related to their needs. User success in navigating the site and clarifying needs should motivate continued site use to obtain resources and services. The intention of this design is to provide well-supported access to carefully selected, high-quality external links as opposed to providing “every” resource or external link the designers could locate on various topics. Otherwise stated, effective use is valued more highly than comprehensive access. Furthermore, the design seeks to create an environment, through the proactive prompting provided, which will encourage users to seek help from a practitioner when needed.

Possible problems associated with need-based designs include the assumption that users are capable of accurately identifying their user category. Furthermore, if a site map or other resource-based navigation tool is unavailable, expert users may be frustrated by the time required to work through need-based dialogs in order to access resources. A greater amount of time is also required of counselors when developing a need-based site who must help conceptualize user categories and related user needs for the Web site. Development costs can also be higher and completion times longer given the increased staff time required to conceptualize site resource content to meet previously unmet needs. The process of operationalizing the expert knowledge of counselors is not an easy task. Disagreements (on theoretical or philosophical grounds) among staff about matching user needs to resources may occur. However, if handled properly, such disagreements can lead to growth not only for the Web site, but for the organization as well. As staff members increase their familiarity with the need-based design process, they may find that the work becomes less difficult. The operationalization of expert knowledge is a learning function and is influenced by the instructional design concepts described in the following section.

An outcome of the need-based approach is that users perceive that the Web site has face validity as they are able to successfully relate themselves to an audience and subsequently find information which fits their needs. By viewing a smaller list of needs predetermined on the basis of expert knowledge and related resources, the user

should conclude that the site is appropriate for continued use. The design and content should further encourage the user to engage the site.

However, merely creating a subjective impression of validity within the user is not sufficient. The designers must also explicitly establish the content validity of both the need-based dialogue and the resources they include in their Web sites. Designers should ask themselves questions such as, "What evidence is available that shows the right audiences are identified on the home page? What evidence exists that the needs are appropriate for the audiences identified? And what evidence is available that the resources are appropriate for the needs identified?" The answers to these questions form the basis of policy by which the design team chooses to grow and maintain site resources and need-based dialogues. It is important that this policy is explicitly documented on the Web site in a manner that is understandable to the users.

It is also possible to combine the need-based and resource-based models through the use of resource based tools, such as a site map, index and search mechanism, within a need-based Web site. Combining these models helps address some of the disadvantages that each model holds individually, and provides users with the option to choose methods that support their needs and level of Web site expertise. This idea will be further explored in the section concerning selecting Web-site design features.

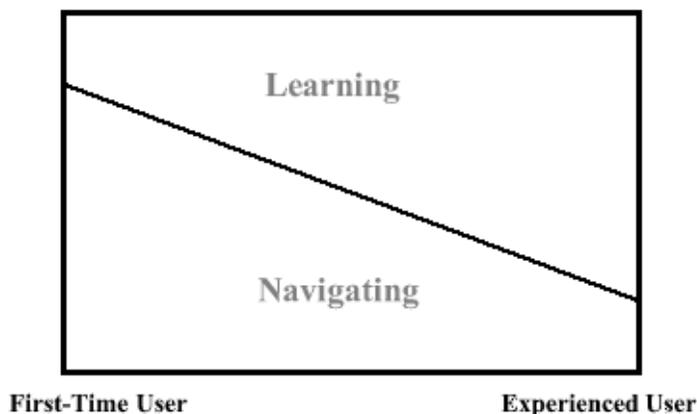
Promoting Learning Using Instructional Design

The presentation of Web sites will rapidly evolve as the underlying technology becomes more sophisticated and more widely available to a broader consumer audience. In order to avoid becoming as out of date as last year's computer, it is important not to focus on the hard technologies but on the soft technologies that underlie the creation of the successful Web sites. Specifically, Web site designs should be based upon principles of learning rather than chasing the most recent technological feature on the horizon. Instead of just asking "Can it be done?", Web-site designers should also ask themselves "Should it be done?" The analogy of the cart and horse is relevant here. Permitting Web site design to be driven by the most recent technological innovation is "putting the cart before the horse." We can put the horse before the cart by focusing initially on the needs of the learner being served by the Web site and then attending to technological issues. Technology is not unimportant, just subordinate to the needs of the learner. The first step to creating a learning-based Web site is to understand the relationship between learning and navigation processes.

Learning vs. Navigation

When users first engage a Web site they are more aware of the process of moving through (i.e. navigating) the site than at later times. Thus, the task of navigation initially consumes the majority of the user's attentional space. As can be seen in Figure 1, this impacts the amount of attentional space accessible to the user to learn new content. As they become more familiar with the structure and controls of the site, users gain confidence in their ability to navigate the site successfully. Therefore, more attentional space will be available for the user to learn (i.e., deciding which resources to select and how to use them). It is the goal of the Web site designer to make Web site navigation as simple a possible, thereby reducing the learning curve for site navigation and increasing the time available for learning.

Figure 1. Attentional space needed in relation to user experience.



While using the Web site, the user also develops an increasingly differentiated mental representation (i.e., schema) of site content. As this schema grows, users become more confident in their knowledge of what is available and where it can be found. A consistent congruence between the user's mental model and the actual functioning of the Web site leads to confidence that the user can locate what is available on the site. As a result, user success in navigating the site motivates continued site use to obtain resources and services. The next section asks some key questions about the individuals who will be using the Web site.

Key Questions in Developing a Need-Based Web Site

One method of helping users find information and services is to employ a Web site development process that is focused more on specific user needs and content than on technology and resources. This approach is achieved when site designers ask themselves three key questions, "Who does (or should) the Web site serve? What are the needs of users? What resources are available (or should be available) to meet user needs?"

The first question to be addressed is, "**Who does (or should) the Web site serve?**" Users vary greatly by expectations, capabilities, cultures, and personalities. However, organizations have a tendency, for the sake of efficient service delivery, to lump their users together (e.g., students, parents, professionals, etc.) based upon some similar characteristic (e.g., age, income, occupation, etc.). Therefore, the organization may not focus on the specific learning needs of specific user groups (e.g., parents who want to support their children's academic success). Sometimes an organization is unaware of the process by which it distills the complexity of the population they serve into simple categories. Thus, these user categories and the characteristics they have in common are not always explicitly stated.

The second question to be answered is, "**What are the needs of users?**" Methods of identifying user needs include: 1) browsing theory, research, and practice literature, 2) soliciting client perceptions via a focus group or survey, and 3) obtaining the expert judgments of staff via surveys, interviews, or focus groups. It is critical to include front-line personnel (e.g., counselors or receptionists) in this last method, as they are often the most aware of the content and form of questions submitted to an organization by its constituents. These staff members also usually respond with additional statements to clarify user needs and act to connect users to appropriate resources and services. This process of incorporating staff expertise makes the Web site an "intelligent" mechanism for delivering resources.

The third question which organizations should ask is "**What resources exist (or should be created) that would meet each of the identified needs?**" To answer this question, a quick inventory of print, audio/video, and computer resources used to work with customers should be taken by the organization. This list of resources then becomes the menu from which resources can be selected. To meet the specific needs of an audience, the most typical combination and sequence of resources can be selected from the menu. For example, students beginning a job campaign may require the reviewing of a resume writing pamphlet before reading a guide to interviewing. This strategy of matching resources to needs directly influences the presentation of information on the Web site. After having identified an organization's users, their needs, and the organizational resources that would meet them, the designer's attention must shift to actually delivering this information via the World Wide Web. To help designers make this shift in attention, the following model of effective information use is presented.

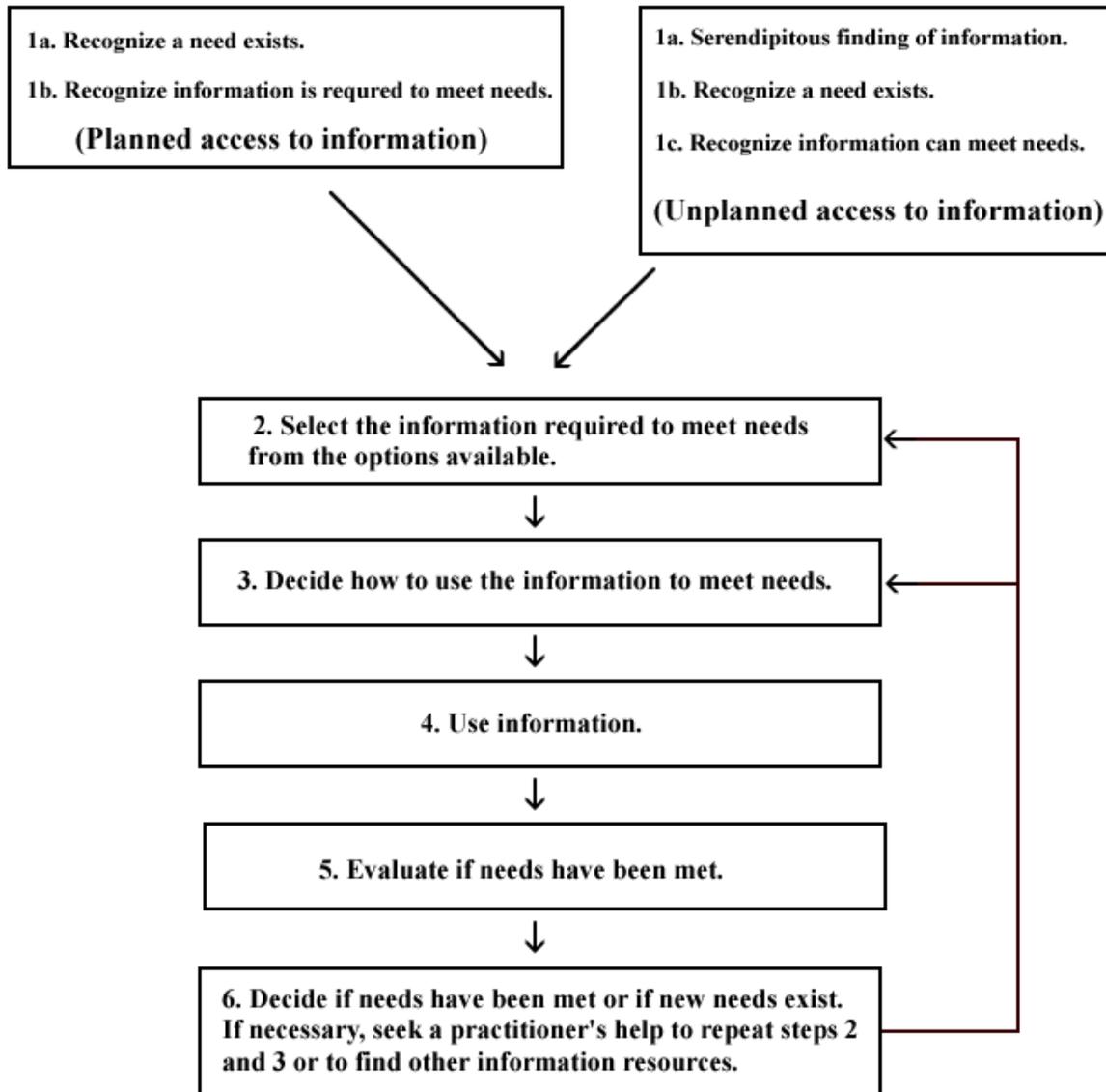
Process for Effective Information Use

Using information to solve problems follows a generic six-step sequence (Sampson, 1999) that has been clarified and adapted in Figure 2 to include serendipitous aspects of learning that are facilitated on the Web. This six-step model can be used to help designers focus on how users acquire and use Web-based information to meet needs.

Recognize Information is Needed to Solve Problems

When creating a Web site, a designer must first consider the users' level of awareness of their needs. Some users explicitly recognize their needs and that these needs will be met by information from a particular Web site. However, some users may visit a Web site looking for one kind of information and serendipitously find other information that leads them to discover new needs. Still other users may stumble across a Web site, sense value, and have their curiosity stimulated by the information provided. Only after they have been exposed to the information do they recognize that they have a need. This access of information in a planned or unplanned way initiates a six-step process by which users make use of information.

Figure 2. Six step process for effective information use.



Web-site designers can use this six-step process for effective information use to support users as they identify their needs and move through a Web site (Sampson, 1999). This process is aligned with the events of instruction described by (Gagné, 1988). These events and how they support the process of information use by the user are described in the succeeding paragraphs.

Select Information Required to Meet Needs from the Options Available

To help users select information which meets their needs, the Web designer must first *gain the users attention* (Gagné, 1988). The learning process can be initiated by providing a simple greeting, such as “What brings you here today?” This focuses users on their needs and engages them in a process of dialogue with the Web site by requiring a verbal response. Once attention is focused, providing the user with a simple list of user types and associated needs to choose from (e.g., “I am a student who needs help with choosing a major”) *informs the user of the possible learning objectives* (Gagné, 1988). Also, including a bright, meaningful and inclusive image on the first page of a Web site serves to *activate motivation* and encourage users to see this Web site as being applicable to their needs (Gagné, 1988). Good visuals also provide a professional look for the Web site, thereby enhancing the credibility of an organization’s message. In short, users should be able to see themselves as potential benefactors of the site and its information.

Decide How to Use Information to Meet Needs

Next, users should be provided with *learning guidance* which supports users as they select and locate resources that meet their needs (Gagné, 1988). Unique learning outcome statements associated with each link elaborate what the user can expect by following that link. These statements help the user create an expectation about the information on the next page and provide a context for future learning. For example, a learning outcome for a “Choose or change my major” link at a university career center might be “Learn what’s involved in choosing a major and what resources are available in The Career Center.”

Once the user reaches a specific resource that they want to use, additional learning guidance can be provided through the use of “how to” information. As discussed later, “how to” information provides user-specific, expert advice about the resource to be accessed. This advice may include information about additional resources that should be used, suggested methods for maximizing resource use, questions that may facilitate deeper learning, and circumstances where assistance may be needed. In short, “how to” information embeds in the Web site a portion of the expertise that an organization’s staff would provide to users in a “face to face” conversation.

Use the Required Information Resources

Once the user accesses a specific information resource, the designer must consider how *presenting the stimulus material* will impact the learner (Gagné, 1988). The designer should pay special attention to the content and visual design of the presented information. The careful and consistent use of cues such as advance organizers, bullets, bold face, underlines, and graphics can lead to enhanced user learning. Content and visual design issues are discussed in depth later in this paper.

Evaluate If Needs Have Been Met

Having viewed a resource, users compare its content to their initial expectations. These expectations have been influenced by a learning outcome statement provided with the previous link. If they received what was described in the learning outcome statement, they may be satisfied and exit the site, or continue browsing to identify additional needs. Users may learn that their needs are different than originally perceived and seek out different resources on the Web site.

Seek Help or Other Resources as Needed

If users do not achieve the desired learning outcome, another possible course of action is to seek the assistance of a practitioner. Web sites should provide sufficient information to users about when and how to seek assistance. Users should seek help when they feel confused or anxious after using a resource, or if they require assistance in applying a specific part of the information to their life (e.g., refining an employment objective). Users should also be provided with information about how to contact an organization’s staff.

User learning is also influenced by the social environment of the organization that is presenting the Web site. In addition to considering learning variables, an organization should also optimize staff contributions to Web site design. The role of social and staff variables are discussed in the section that follows.

Using Staff Collaboration in Organizations to Promote Learning

Our experience in developing Web sites suggest that three additional factors must be considered when developing a Web site. First, most successful Web sites are developed through teamwork, which itself raises complex management issues. Second, the sociopolitical context of the organization can dramatically impact all aspects of Web site development. Third, the type of content and services being delivered through the Web site can also influence site development and outcomes.

Teamwork

According to Holtz (1998), teams composed of members from throughout the organization are more effective than those from individual departments in achieving Web-site management goals. Such teams can benefit from the diverse strengths of each member. In such a situation, the team can effectively establish objectives and generate methods for achieving them, after which information technology professionals can offer technical solutions to problems identified. Thus, the success of an organization’s Web site is largely dependent upon the involvement of individuals with different functions and from different disciplines (Marken, 1995).

This approach is contrary to that taken by some organizations. By virtue of what they deem relevant, organizations prescribe specific skills and expertise (e.g., computer programming) as important, helping to privilege

those within organizations who hold such expertise and skills. Sometimes individual “system champions,” often at a high level in the organization, shepherd a project throughout its development process (Beath & Ives, 1988; Beath, 1991). These forces result in an implicit bias in system development that reflects the champion’s expertise and training as well as what they perceive to be important or not important. This leads to a narrow design with limited integration of organization functions.

Having a Web site team allows for the control of a Web site to be diffused throughout the organization and limits the ability of any single person or department to dominate the site. A design team should include individuals representative of a variety of areas (e.g., information services, administration, and customer service). Staff members from the larger organization should actively take ownership of Web site content for which they are expert, while design team members should remember the old adage, “people support what they help create.”

Sociopolitical Context

The social context of an organization also strongly influences the outcome of the Web site design process. Social context is not determined by individual needs and wants but is determined by what people take for granted, and consider legitimate (Weick, 1996). As Scott (1987b) explained, the most powerful forces that can shape information systems do not result from rational pressures for more effective performance, but from social and cultural pressures to conform to conventional beliefs. Conformity with conventional beliefs is assumed to legitimate or justify organizational practices, in response to internal and external environments (Selznick, 1996). For this reason, Web site designs may be the product of the status quo in an organization (e.g., the delivery of paper-based registration forms) rather than a force for innovation (e.g., online completion of registration forms).

Web site designs are subjected to “big stick” forces (also labeled coercive isomorphism) placed on an organization to conform to rules and practices that are considered important within an industry. Often, there is the threat of sanctions if an organization does not comply with standard practices. For example, the government often mandates specific reporting requirements in regulated industries and in organizations fulfilling government contracts which can constrain Web site designs by prescribing data to be collected, methods of classification, and forms of reporting. One common (and beneficial) example of external pressure on Web site design is the requirement to follow the standards of the American with Disabilities Act.

Web site designs can also be influenced by a tendency to “follow the leader” (mimetic isomorphism). This is due to an organization’s desire to reduce uncertainty, minimize risk, ensure survival and gain legitimacy by selecting and implementing solutions used by the most prestigious and visible members of an industry. In system development, late adopters of a technology often mimic earlier implementations in order to both reduce uncertainty and enhance their conformity to an accepted type of system design.

Web sites can also be influenced by “learning” (normative isomorphism) that occurs by organizational staff members. An organization’s members learn standards of practice through both formal learning at educational institutions and interactions in professional associations. This learning becomes a powerful force that can influence organizational needs and determine expectations about information systems (DiMaggio & Powell, 1983, p. 152). Thus, the forces of coercive, mimetic, and normative isomorphism encourage Web sites of similarity and conformity which are based upon a shared interpretation of important values in the organizational and social context. However, these are not the only social forces that impact the development of an organization’s Web site. The type of systems being developed (e.g. a client appointment system) for delivery through the Web can also influence project outcomes.

System Type

Web sites, as with any type of information system, can be categorized by their function (Clemons, 1991). Those Web sites for specific new products and/or services (e.g., a Web site for a new book) often have clearer performance goals and are thus less subject to social controls. Reasons for this phenomenon may include the narrow focus of the project and lack of precedent within the organization. Those Web sites which are part of an organization’s strategic and support systems may also be more influenced by social pressures. Strategic systems, such as an on-line client orientation, are intended to make an organization more flexible, more responsive to customer needs, and more able to adapt to a competitive environment. Whereas support systems, such as email, usually fulfill an organization’s information reporting and decision-making needs which must be met to ensure survival. It is not uncommon for an organization’s Web site to integrate specific, strategic, and support systems which serve both organizational members and customers. To counteract the pressures of social control on Web sites, designers should try to clearly define the priorities in system development and refocus their activities toward the

development of systems that not only support the status quo, but also create new markets, evaluate and redefine existing markets, and redesign current resources and services.

Often organizational pressures to meet the bottom line (whether in terms of profit or service delivery) promote information support systems. This focus, in turn, enhances the stature of those individuals who develop, advise on, and use these systems, such as accountants, production people and information systems specialists. Thus, social control is exerted through the tendency of “system champions” to develop and use “well established” information support systems which are more homogenous across organizations and their success can be more easily evaluated against similar referents.

Following the business environment, web sites are constantly in a state of flux as they grow to fit the needs of the organization and users. The question of what information and design features to include in a Web site depends on the needs of its users. The challenge for the Web site design team is to combine all the necessary pieces and present them in a manner helpful to the user. The next section will provide basic design features which support the development of more responsive Web sites.

Selecting Web Site Design Features

In order to be useful, information on Web sites must promote learning by being readable, browsable, and searchable (Morgan, 1999). The amount of readability, browsability, and searchability that a Web site exhibits depends on the type and quality of collected information, the information needs of users, and the design features selected. In general, features of Web sites can be organized into five main categories: content, design, navigation, evaluation, and technical and other issues. The five main categories and subcategories are presented in Table 3.

Content

The heart of any Web site is its content. Content is the reason users visit a Web site. They are trying to locate information that pertains to their needs. There are several issues to consider in presenting Web site content. These issues include writing for the Web, using supportive graphics, obtaining appropriate help, finding organizational contact information, and accessing time and place information.

Writing for the Web

Writing content for the Web is different than writing for print media. According to Cook (1997), it is more difficult to read computer screens than books, thus authors and designers of Web site content should follow a few simple rules to create text that is easier for readers to understand. Web pages should be written to ensure short pages, stylistic variety, careful use of hyperlinks, and attention to browsability issues.

It is important to keep pages short, no longer than two or three screens in length. In general, people do not like to read from a computer screen. By keeping pages short and to the point, the probability that the information will be communicated within the user’s attention span will increase. Paragraphs should be short – no longer than five sentences. Wide lines of text can cause users to lose their places as their eyes scan across the page. Pages that require a great deal of vertical scrolling are also difficult to read and users may not continue past the visible screen. Smaller pages also make Web site maintenance easier, particularly if the site requires frequent updates.

A variety of stylistic elements (e.g., bullets, bold, and explanatory graphics) should also be included to break up the monotony and make the page more dynamic. However, it is important to use all stylistic elements in moderation. Emphasizing too many elements leads to “noise” in which messages lose their distinction. Also, too many graphics take too long to download, no matter how fast the user’s computer or network connection.

A large number of hyperlinks within the sentences can also be distracting. It may be difficult for the user to locate important links and information which is surrounded by less applicable links. One way to avoid this is to consider placing related links in margins or footnotes.

Table 3

Selecting Web Site Design Features to Promote Learning**Content**

- Writing for the Web (info chunking, scannability, page length)
- Graphics (related to content, short download time, sensitive to diverse audiences)
 - Icons/symbols
 - Photographs
- Help (help information, first time user orientation, how to pop-up window)
- Organizational information (about us, privacy policy, contact information)
- Time-based features (calendar, what's new, page modification date)
- Place-based features (maps and images of physical environment)

Design

- Consistency
 - Templates (clarification of audience, clarification of needs, and information delivery)
 - Page design (header, footer, fonts, colors, style sheets, etc.)
- Cognitive aspects
 - Limited demands on memory (7 ± 2 options on any page)
 - Browsability (grouping and classifying similar information or items)
 - Readability (language level appropriate for audiences served)
 - Legibility (size, type face, and color of fonts)
 - Menu items ordered by developmental sequence or most frequent use
- Self-sufficiency (page should stand alone if person links from elsewhere)
- Accessibility
 - Alternate text tags for persons with visual disabilities
 - Selecting colors for persons with color blindness

Navigation

- Links
 - Audience
 - Descriptive labeling
 - Learning outcomes
- Feedback
 - Breadcrumbs
 - Clarification of path chosen
- Resource-based tools
 - Search
 - Sitemap
 - Index

Evaluation

- Usability testing (observation)
- Site design documentation (authorship, design strategies, technical specifications)
- Surveys (perceptions of audiences, staff, stakeholders)
- Tracking of Web site usage (statistics and patterns)

Technical and Other Considerations

- User compatibility (browsers, screen size, etc.)
 - Selection of Web site development/delivery tools (appropriate for site design, staff capabilities and cost)
 - Budget and Staffing
 - Ethics
-

Browsability means logically classifying information on a Web site (Morgan, 1989). The advantages of browsability are that readers understand the entire structure of the Web site at a glance and that knowledge of specialized vocabulary is not necessary. Similar items are grouped together; the Web site is easy to navigate and serendipity is fostered, which in turn stimulates thinking. A disadvantage of browsability is that users may become “lost” if the organizational structure employed is foreign to them. For example, even though a library’s Dewey Decimal system is an organizing structure, new users may have a difficult time locating resources. Another browsability disadvantage is that it can be difficult to establish a Web-site organization system as the quantity of information increases. This is due to more complex interrelationships between the information. Furthermore, classifications can also change over time. Thus, the effective organization of information is both critical to the success of a Web site, as well as one of the most challenging activities in Web site design.

To ensure browsability, an organization must first know its audience and ensure that the Web site’s organizational structure is understandable by the audience. If target users cannot make sense of a Web site’s organizational scheme, then they will only use it as a last resort information resource. Example questions an organization should ask about their audience include, “What are their backgrounds? What do they want? What specialized terminology do they use (or not use)? How do they think?”

Providing users with text describing the Web site’s organizational system, its intended audience, and how it can be used within the Web site, also helps to ensure browsability. Morgan (1989) has called this information “about text.” He notes that Web site authors cannot include too much explanatory information as long as it stays within the guidelines for good readability.

Creating a hierarchical system of ideas also improves browsability. To organize a Web site by a hierarchical system, begin with broad terms and subdivide them into narrower terms. It is important to consider that a target audience will approach the Web site with preconceived ideas about how information on topics should be organized. Web site designers should endeavor to create a hierarchical system which fits the preconceptions of as much of the intended audience as possible.

A second available organizational schema follows the idea that information resources should be organized based on format (e.g., books, videotape, etc.). This schema should only be used as a last resort. Users usually don’t care what format the data are in just as long as the answer to their questions can be found. Organizing site information by topic rather than format brings related information together and improves browsability. Thus, users will not have to navigate throughout the Web site for the information that meets their needs.

Graphics

Today, graphics are a significant part of any Web site. They can also be one of the most difficult design problems to manage. While a picture is worth a thousand words, users don’t want to wait a thousand seconds for it to download. A balance needs to be achieved between text and graphic information. Since most users still employ analog modems to access the Internet, the rate at which they download Web pages can be extremely slow. Therefore, design teams must optimize their graphics for the Web. Smaller graphics with fewer kilobytes are a key to shorter download times.

Moreover, graphics included in Web sites need to be related to the content. Purposeless images, or “eye candy,” waste user time and reduce the probability of return visits. Relevant and related graphics that are sensitive to an organization’s diverse audiences make for friendlier Web sites to which users will want to return.

Designers should also ensure that audiences understand the meaning of icons or symbols used in a Web site. “People often recognize pictures of things and understand them more quickly than they do verbal representations of the same things” (Apple Computer, 1993). Often these symbols are more efficient in terms of space and communication speed than their word equivalents. However, they should be used with care. There are many examples of how simple black and white figures can be perceived differently by two viewers (e.g., vase or two faces, young lady or an elderly woman). Unclear icons confuse users, leaving them unsure about icon functions. Also, symbols in different cultures can have completely different meanings. If icons are used, it is important to verify that users will understand their meanings.

Help

Another feature that supports Web site-users is a Help area. Even while using a well designed Web site, some users will become lost or confused. Robust help is a key to answering and solving user questions and problems. Since most help does not occur through live interaction, provided information must be extremely thorough. At a

minimum, Help areas should contain resolutions for common technical problems and descriptions of features, icons, and tools. A “first time user” orientation or tour of a Web site is another excellent method of providing user help. While an organization cannot anticipate every possible user question, thorough staff and user evaluation will hopefully identify and resolve most potential problems before they occur.

Pop-up windows may also be an effective method of assisting users. A pop-up window is typically a smaller window that supplements the primary browser window. This window does not contain a full page of information and navigation and address bars are disabled. It is used “primarily to keep the user in the flow of the transaction” (Nielsen, 1999). A “How To” pop-up is one kind of pop-up window that opens to provide what Nielsen labeled “context sensitive help.” An example of this kind of help is available in Table 4. This kind of help provides specific, supplemental help concerning a resource that the user has engaged.

Organizational Information

Organizational information is another key to a fully developed Web site. An “about us” section allows users to find information about the organization sponsoring a Web site. Items included in this area might consist of location, hours, services, staff, and organizational mission. A single section which includes such practical information is convenient for users. Furthermore, contact information should be placed in a highly visible area or areas on the site. Contact data information usually includes facts such as email address, phone and fax numbers, and mailing and street addresses. The greater the variety of information provided, the easier it will be for users to engage an organization. A Web site’s privacy policy should also be highly visible. This describes what information an organization’s Web site collects, and how the information is shared and used.

Time and Place Information

Remaining up-to-date with new and timely information is a must for a successful Web site. Time-based features such as the organization’s calendar and a “what’s new” area help users access the latest information. Such features are particularly convenient for experienced users who frequently visit a Web site and are thus familiar with its previously published content. Furthermore, a modification or “freshness” date (i.e., the last time this page was updated) on each Web page allows for users to judge the currency and relevancy of the resources available. This helps to minimize confusion for users who may be weeding through content, trying to decipher between old and current information (Nielsen, 1998). Furthermore, Nielsen notes that, “with the growth of e-commerce, trust is getting increasingly important, and outdated content is a sure way [for an organization] to lose credibility.”

Similarly, place-based features, such as maps and images of the physical environment, provide assistance to users who wish to visit an organization. Users will get a sense of the surroundings before they physically come-in, which may enable them to feel more comfortable with the organization.

As previously mentioned, content forms the core of a Web site. Once content is available, a means of displaying it is required. The next section addresses issues involved with the display of content.

Design

Presentation is a large part of the Web site development process. The Web medium is accessed visually the majority of the time. Therefore, rules for “what, how, where, and why” users see information must be clearly defined when building a Web site. The Web site is the first of many steps in which users will interact with an organization. If users cannot understand the Web site, they will simply click away. Consistency, readability, and accessibility must be considered when designing a Web site. Some of the more important design principles and features are mentioned here; however, only through evaluation can it be determined which will work sufficiently for each Web site.

Consistency

Too often users visit Web sites that have inconsistent page design, navigation, and information – each new page requires visitors to learn different methods of interacting with the site. As previously discussed (Figure 1), having a consistent design for each page improves user efficiency and improves content readability (Morgan, 1999). Furthermore, a consistent Web site not only conveys information about the organization in an efficient manner, but creates a perception of stable organizational identity. Due to consistent layout, it is easier for users to know they are reading one organization’s text and Web site versus those of a different organization.

Consistent Web site design can be created through the use of templates. By using a set of templates, organizations can create a consistent “look and feel” throughout their Web sites. An example need-based Web site

Table 4

Example “How to” Information**Career Information and Advising Module Sheets**

The Module Sheets are quick reference guides to help you locate resources that relate to your specific career needs. They are intended to be printed out and brought to The Career Center to assist you in finding resources. You can also find printed versions of these modules in The Career Center.

Example Uses

Students can use the module sheets to:

- Learn about available career resources and where to find them
- Explore career options to get experience
- Obtain information for specific interest groups such as, African American students, students with disabilities, women and career changers
- Find resources for your job campaign or search for graduate/professional school

Example Questions to Ask Yourself

Before use:

- Consider that your "career" is made up of three life roles: work, family, & leisure. Think about each of these areas as you plan your career.
- Come to The Career Center library to engage in self-exploration activities.

During use:

- Use The Career Center library resources to find the information that you need.
- As needed, ask Career Advisor for assistance.

After use:

- Share your career resources and plan with family, friends, and close advisors.

How to Get Help

If you have questions about how to best use the Career Information and Advising Module Sheets, or become confused about yourself or your career choices, speak with a Career Advisor.

using templates might employ three levels of information organization. The first level clarifies the audience (e.g., student or faculty member). The second level clarifies their needs (e.g., wanting course information or research grant information). The third level delivers the actual information (e.g., course outline or grant application). Of course, there can be multiple templates to further define an audience, need, or information. These templates should have similar page design to further enhance the consistency of the Web site. Page design refers to the fonts, colors, styles, and layout used. One strategy for implementing templates and ensuring consistency is to use dynamically inserted headers and footers. Through this method, a Web site can include the same header containing navigation information and the same footer containing contact information on all pages. This information can then be easily modified across all pages at once by editing only the master header and footer.

Cognitive Aspects

When a user views a page, continuous, often tacit, processes occur in the user's mind which affect how the user interacts with the site. This influence of cognitive factors such as memory, readability, and menu item order should be considered in Web site design. For example, when users review a list of items on a page, they can only hold 5 to 9 (7 ± 2) items at one time in working memory (Miller, 1956). Overwhelming users with dozens of options may only make it more difficult for the user to maintain a mental model of the site needed for confident navigation. Abiding by the " 7 ± 2 rule," may facilitate user interaction with Web sites. The design team that ignores this guideline may risk losing their audience to confusion and information overload.

Once users find information, the language of the text must be appropriate and readable for the audiences served. Readability concerns how quickly users can read and comprehend the text on the screen. The readability of written material is directly related to three main factors that improve the match between reader and text, and impact the likelihood that the reader will understand the material. The three factors are the reader's motivation, the degree to which the print is legible, and the degree to which the words and sentences either fall short of or exceed the reader's capability (Johnson, 2000). Motivation appears to influence the other factors and helps determine the degree to which written text will be understood. Klare (1963) found that the readability of text has increased importance when the reader's motivation is low.

The issue of reader capability is addressed by matching the reading level of the audience with the difficulty level of the text (Johnson, 1998). The use of complex sentence structures on a Web site for the general public would contribute to poor readability. This illustrates the importance of considering a Web site's audience to effective site design. A reading age is often associated with written material to identify the chronological age of a reader who would be capable of understanding the text. Formulae have been developed for the purpose of determining text reading level. Some of these formulae result in a grade level representative of those users who would be able to read and comprehend the text. In an effort to ensure that readers are adequately motivated to read text, it has been suggested that written material should be written at a level two years below the intended reader's level (Johnson, 2000).

Readability formulae can be used to spot check the reading levels of Web site pages to ensure that they are within the reading ability of target audiences. However, since these formulae are not without their critics, the final test of the readability of a Web site is to ask typical site users to read aloud from various Web pages. When users appear to have difficulty with a sentence or passage, the text can then be edited. In short, while readability formulae are useful rules of thumb, they should not replace feedback from actual users.

Information must also be legible. Johnson (2000) suggested that lower case print is preferred to upper case, and that bold type facilitates faster reading than italics or all capital letters. In terms of font size, it appears that 10, 11, and 12-point font are the most legible for those with the ability to read fluently, and line lengths of 7-12 words appear to be easiest to read. In addition, unjustified lines and the use of abundant white space and sub-headings between paragraphs all increase legibility. Other elements of text that appear to be related to the ease with which material is read and comprehended include the use of color and diagrams, number of words per page, number of ideas in each paragraph, layout of the pages, structure of sentences, and the degree to which text is interactive (Hill, 1997; Heid, 2000; Tullis, 1995; Scharf, 2000).

The use of white space is also an important factor in improved legibility. White space is not wasted space, because it adds contrast and provides a place for the user's eyes to rest. Instead of using all capital letters (e.g., CAREER) it is better to employ a combination of lower and uppercase letters (e.g., Career) which increases white space. Increased vertical space (also called leading) between lines of text adds white space, making text more legible and improving the look of the page. It is also important to visually organize the page by keeping similar concepts

together on the page. When there is more than one type of information on a page, set the limits of the information with white space or thin lines called “rules” (e.g., help | about us).

A final concern in cognitive aspects of Web site design is how the Web site menu items are ordered. There should be a clear rationale to menu ordering. For example, menu items could be ordered either by developmental sequence (e.g., student → seeking a job → job types → available jobs) or by most frequent use (e.g., available jobs, seeking a job, job types).

Self-Sufficiency

An important factor often missed in Web design is page self-sufficiency. An important question to be answered during design is, “Can each page stand alone?” If users access pages in the middle of a Web site’s hierarchical structure through a search engine (e.g., Google or AltaVista), would they be able to understand the page and move to the rest of the site? Many pages rich with information and deep in a site are often indexed by search engines. However, in poorly organized Web sites, these pages may not link to the site’s home page. This may rob the user of the opportunity to judge the credibility of the information presented and to further explore related information on the Web site. Therefore, every page must be self-sufficient by including the appropriate navigation and organization information which can easily be included through header and footer templates.

Accessibility

Last, but not least, accessibility of a Web site to users with disabilities must be assessed. There are a few simple tasks that a design team can complete to make its Web site more accessible. First, include alternate text tags or “alt tags” on all Web site images. These tags provide descriptive text which can be turned into speech by adaptive devices, such as screen readers. Without alt tags, the images cannot be perceived by persons with visual disabilities. Images should be clearly described so users understand the picture or graphic and the content to which the graphic may be linked. Second, long pages are problematic since it is harder for a visually disabled user to scan for interesting parts with a screen reader or other adaptive device than it is for a sighted user to view the page (Nielsen, 1996).

Another accessibility issue is the selection of appropriate colors for persons with color blindness. One in every twelve males in the United States has some degree of color blindness (Heid, 2000). Of this group, 99 percent have red-green color blindness (Newman, 2000). It is important to ensure that text and background have both high contrast, distinct colors (e.g., black text on a white background), and avoids commonly troublesome color combinations (e.g., red and green) (Hill, 1997; Heid, 2000; Newman, 2000). In general, black and white works best, and a design should never solely rely on color to communicate vital information. These simple design enhancements help all users, not only those with disabilities, to access a Web site in a more efficient and effective manner.

Once content and visual design are established by the Web site development team, rules for helping users to move through the information must be created. User movement on a Web site is called “navigation.” Issues of navigation are discussed in the next section.

Navigation

A significant problem with many Web sites is that users have difficulty locating information. This problem is often due to poor navigation. Links should be clearly labeled, search mechanisms must provide relevant results, and users should be able to purposefully move from point A to point B without frustration. Users must be able to locate information with few problems or obstacles, otherwise they may abandon use of the Web site. User navigation can be supported by a Web site design team through appropriate use of links, feedback, and resource based tools.

Links

Users interact with a Web site through hypertext links which interconnect the pages of the World Wide Web. They are the most critical part of a Web site, since without them users could not move beyond the first page. Thus, Web-design teams should carefully answer questions such as, “What becomes linked? Where do links go? Are the links useful and understandable?” Moreover, careful attention should be paid to the role of links in the learning process. For example, creating a link around the word “jobs” is not as expressive as linking the phrase “interview for jobs.” The use of such descriptive labeling is important. If users do not have a clear a priori understanding of how a link will be useful to them, they either may not follow it or may be disappointed with the information they find.

Designers should avoid using resource titles that lack descriptive clarity and should substitute alternate descriptions that are more meaningful.

Another method of ensuring that users understand how a link benefits them is to provide a learning outcome. Learning outcomes present a longer term vision of results that may be obtained by interacting with a resource or service. An example learning outcome for the previously mentioned “interview for jobs” link would be, “Schedule and prepare for on-campus interviews with employers.” By providing high-quality descriptions and learning outcomes with links, designers enable their users to navigate a Web site and to find needed information quickly and effectively. This can lead to enhanced learner motivation and confidence.

Feedback

Providing feedback to users can help them to better understand where they are located in the Web site and the steps they followed to get there. One such feedback method is to use navigation links called breadcrumbs. These links “...identify one's depth into hierarchical information. They are usually located across the top of a page listing sections and subsections in a string of links. Each link in the bread crumb navigation returns the user to the uppermost page in any given section of the site” (Nielsen, 2000). For example, a page in the middle of a site’s hierarchy about interview workshops may have the following breadcrumbs: career center → workshops & events → interview workshops.

Breadcrumbs also help users to understand the context of the information viewed and provide clarification of the path selected. Therefore, users can easily jump to a more general area if they cannot find the information they are seeking. Feedback from breadcrumbs provides users with a tool for both easily navigating and learning the structure of an organization’s Web site.

Another method of providing feedback to users is to clarify the path they have chosen by including a statement on the top of each page. For example, a student who wishes to change their major may see “I am a student who wishes to change my major” after choosing the appropriate links. This helps students to confirm that they are viewing the expected information.

Resource-Based Tools

Incorporating resource-based tools into the need-based structure gives users a variety of ways to navigate a Web site, increasing the opportunities for quickly addressing needs. Users, especially expert or experienced users, may find resource-based tools such as a local search engine, site map, or alphabetical index to be effective navigation aids. A web site’s search engine is most practical when users know the exact words or information for which they are searching. However, if a search is unsuccessful, an index may be helpful. An index is an “all-purpose listing” (Fleming, 1998, p. 57) of the Web site’s keywords and phrases, presented alphabetically “without representing the site hierarchy” (Rosenfeld & Morville, 1998, p. 66). By including this list of topic areas (and related terms), users can quickly scan and find the subject they are seeking. Indexes are “expected to be fairly long and cover a lot of the detail that a sitemap or table of contents can’t” (Rosenfeld, 1997).

If users have a more general area of interest in mind, the sitemap becomes a particularly useful tool. A site map is a “physical representation” (Rosenfeld & Morville, 1998) of the resources that can be found on a Web site. One benefit of having a sitemap is that it provides an alternative method of access for expert users who can independently link their needs with available resources. Sitemaps can also reflect the structural nature of an organization and its services. Consequently, users can learn which resources are related to which part of the organization and gain a better understanding of the context within which resources are developed and deployed. Sitemaps can also help an organization’s staff to identify and access their contributions and resources on a Web site.

Once the initial content, design, and navigation of a Web site are established, the potential exists for a fully functioning system. The design team should next turn its attention to evaluation to ensure that their design will perform as intended when viewed by users, staff, and stakeholders. Issues of evaluation are discussed in the next section.

Evaluation

Understanding whether a Web site is successful is determined by several factors. Most notable is whether the Web site achieves established goals. To determine this, Web site design teams should evaluate a Web site through usability testing, formal and informal evaluations, and user feedback. Once a Web site has been quality tested, site design documentation should be produced to explain the authorship, design strategies, and technical

specifications. Finally, as a Web site grows, tracking usage statistics and patterns will inform future changes and additions.

Usability Testing

Usability testing is an often missed step in the Web site design process. Creating a Web site design is only half the work. The design must also be tested to determine if it is actually usable (Nielsen, 2000). Questions to be answered during testing include, “Can users find the information they’re seeking? Do they spend too long trying to find links? Do they easily get lost or confused when using the Web site?” Through usability testing, the Web site design team can determine whether the site is effective and efficient. It is best to take an “iterative” and evolutionary approach to usability evaluation, whereby pages are periodically tested throughout the design process. This method allows for potential problems to be identified early and resolved before the site enters live production. This approach, known as rapid prototyping, saves both time and money while producing a superior Web site.

The easiest method of usability testing is the simple observation of users interacting with a Web site. This observation can be obtrusive (e.g., looking over the shoulder) or unobtrusive (e.g., analysis of computer log files) depending on the methods of monitoring. By watching users interacting with the Web site on given tasks, the design team can determine how the user moved from point A to point B, observe whether they had difficulties, and determine how the page may need to be modified. Users can also be asked to “think aloud” as they perform a specific task, such as “find information about internships.” This procedure helps the design team to better understand and identify potential user approaches and alter the Web site accordingly. Tasks requested of users can be as general or specific as needed, such as determining whether the purpose of a Web site is understood or seeing if the user can find a specific piece of information. Greater in-depth initial user testing results in fewer revisions once a Web site is released to users.

Surveys

Beyond observation, obtaining direct feedback is another helpful source of information. Evaluation of the Web site by users, staff and stakeholders can give invaluable insight into the Web site design. An easy method of evaluation is through distributing separate surveys to users, staff, and stakeholders about the Web site. User surveys could address issues such as overall design, ease of navigation, utility of help, and preferred/confusing features. Staff and stakeholder surveys might address issues such as content validity, compliance with organization policy, and coverage of common client needs. This will help the design team to better understand user and staff perceptions of both negative and positive impacts of the Web site.

Site Design Documentation

Providing site design documentation gives users and other developers a better understanding of the Web site. Through documentation of the design strategies, and technical specifications, reference documents are created for both users and future staff. Documentation helps members of the organization realize what steps were taken to create the Web site, as well as, providing a valuable stimulus for potential improvements. Explaining the strategies that were used develops a foundation for the future of the Web site.

Tracking of Web Site Usage

Once the Web site is released and users are provided access, tracking site usage becomes a valuable activity. Knowing how many people visit the site, which pages are viewed, and the length of each visit provides useful information to better understand user behavior. By collecting this data, the Web site design team can make redesigns to better accommodate its users, which in turn help users find the information more effectively. However, in addition to evaluation activities a Web site design team must consider technical and other factors in the development of a Web site.

Technical and Other Considerations

There are additional technical and administrative issues to consider when building a Web site. The management of these factors adds to the complexity of the already multifaceted task of building a Web site to communicate successfully to an organization’s customers. A site design team must ensure user compatibility, select design and delivery tools, plan for budget and staffing, provide for staff training, and behave ethically.

User Compatibility

User compatibility concerns how the user will interact with the Web site. Questions that Web site development teams should ask include, “What kind of computer are they using? How fast is their modem? What Web browser do they use? What is their screen size to view the Web site?” Web sites will never be perfect for every single user, but there are methods which can ensure a enjoyable experience for a majority of users.

Web site teams should design for the lowest common denominator. Web sites should be built so that older, slower computers can obtain access. Providing only flashy multimedia (e.g., Shockwave and streaming video) will undoubtedly turn many users away due to their limited computing resources. Users do not want to spend minutes (or even many seconds) accessing a Web site. Pages should be designed to load fast and contain pertinent information. This is not to imply that Web sites should not use advanced technologies. However, when advanced technologies are used, there must be alternative access methods for users of older systems. Through evaluation of server data, the Web site team can determine, to a limited extent, the hardware and software users are employing to access a Web site. These data can be used to determine the technical constraints of the Web site. Ensuring access to a Web site is critical and user compatibility must be a priority throughout the development process.

Selection of Web Site Development/Delivery Tools

To create a Web site, development and delivery tools also need to be selected. Development tools are pieces of software which allow for the authoring and interconnection of Web page content. Delivery tools, such as server software, enable this newly created information to be retrieved by Web browsers around the world. There is never a single “best” software program. Each tool must be selected by designers after determining what will work for their Web site. There are numerous available options, so having a knowledgeable Web site design member will be valuable in choosing which tools may work best. Staff should network through professional associations and with their peers to collect information about the tools and procedures that have contributed to Web site successes and failures in other organizations. Organizations should also consider how their current systems of document authoring and publishing may need to change to accommodate a Web site.

Budget and Staffing

Staff capabilities and project budgets should also be considered. It has been our experience, that Web sites are often under-staffed and cost more than originally expected. For large Web sites, staff members may need to specialize in content, design, evaluation, and information systems in order to achieve success. However, all too often, a single person is designated an organization’s “Web master” and given the sole responsibility of developing a Web site. This can lead to a Web site which operates as an “add on” and not as an integral part of the organization’s mission. Furthermore, continuous development and maintenance costs must be factored in, as the Web site will grow and change over time. These issues must be thoroughly considered before a Web site moves into development. If these decisions are tabled for too long, both a Web site and its users will suffer. Formulating a Web-site design plan before development will be of valuable help in the process.

Web sites, unlike print publications, need constant maintenance and attention. Consequently, organizations should designate at least one staff member who focuses on the maintenance of its Web site. This staff member is often titled a Web Site Coordinator. The main task of this position is to facilitate coordination between organization members to evaluate and refine a well-integrated Web site. This may require guiding a team with varied expertise from throughout the organization, which necessitates highly developed skills in communication, leadership, and the facilitation of group interactions and decision-making. In addition these necessary facilitation skills, the Web Site Coordinator must have the technical or supervisory skills needed to add and revise content, functionality, and links based upon staff input. Finally, this person also should coordinate evaluation efforts and recommend changes to the Web site, while remaining current with rapidly changing technology and design standards in order to ensure Web site compliance (Sampson, 1999).

Staff Training

Before a Web site is launched to the public, an organization’s staff should be trained on its content and functionality. This will enable staff to assist individuals who have questions about the Web site and better integrate the site into their daily activities. Before sending clients to the Web as a resource, staff should be trained to screen the client, orient them to the Web site, and follow up if the site helps answer their question (Sampson, 1997; Sampson, Peterson, Reardon, & Lenz, 2000). Staff should memorize the organization’s Web site address and become familiar with those sites to which their organization’s Web site is linked.

Ethical Issues

Organizations should also be aware of ethical issues involved in Web site design. The issue of confidentiality is of primary importance for counseling Web sites. Each Web site should provide a privacy policy which outlines the kind of information collected, how it is stored, and with whom it is shared. Only valid information and assessments should be included in a Web site and organizations should avoid linking to other sites without evidence of valid content. If actual services are delivered via a Web site, organizations should only deliver services through qualified, credentialed practitioners. Organizations must also ensure that they are ethical in the implementation of their Web sites. Since individuals of lower socioeconomic status may lack internet access, organizations should provide information in alternate formats and staff should be able to refer customers to free or low-cost internet access methods in their community (Offer & Sampson, 1999; Sampson & Bloom, in press; Sampson 1998; Walz, Sampson, Kolodinski, & Greeno, 1997).

An Implementation Model for Web Site Design and Use in Counseling and Career Services

This section of the paper presents a model for implementing Web sites in counseling and career services. It begins with the need for implementation models and continues with potential outcomes, use of the model, the seven steps of the model, and the nature of the model.

The Need for Implementation Models

Experience with computer applications in counseling and career services has shown that poor implementation limits the effectiveness of service delivery. Specific implementation problems have included poor planning, poor integration of computer applications within service delivery organizations, inadequate staff training, and staff anxiety and resistance (Sampson, 1984; 1996; Sampson & Norris, 1997). What is needed is a guide to the implementation process that reduces complexity enough to make the process comprehensible and helps to motivate practitioners to invest the necessary time and energy in implementation. The implementation model, however, should not oversimplify the process so much that staff become overconfident and fail to address important factors in the process (Sampson, 1996).

Potential Outcomes from Using the Model

The seven-step implementation model shown in Figure 3 is intended to simplify a complex process in such a manner that staff can anticipate important issues and be proactive in designing a sequence of activities leading to the successful implementation of a Web site that effectively meets client needs. By better anticipating Web site problems and issues, less time is then needed for solving problems that might have been avoided. This implementation model is also intended to be flexible enough to be partially or completely applied, depending on the staff time available. The model in Figure 1 has evolved from prior computer application implementation models in counseling and career services (Sampson, 1984; 1996; 1999).

Use of the Implementation Model

This implementation model can be used to support both initial and ongoing Web site implementation. If the Web site is being implemented for the first time, this model can be used as a starting point for the design and use of the site. If the Web site already exists, this model can be used to consider opportunities for enhancing the design and use of the site. Since each counseling and career service differs in clients, staff, organization and resources, implementation plans should reflect these differences. Practitioners can use this model as a starting point for creating a brief (or more complete) implementation plan for a specific counseling or career service. It is better to create a brief plan that improves over time, rather than overwhelming practitioners with an unrealistic implementation plan that leads to frustration when goals are not achieved. The inherent assumptions of this implementation model are that: 1) Good planning improves the design and use of Web sites; 2) Some planning is better than no planning at all; and 3) Implementation is an ongoing process that can improve over time.

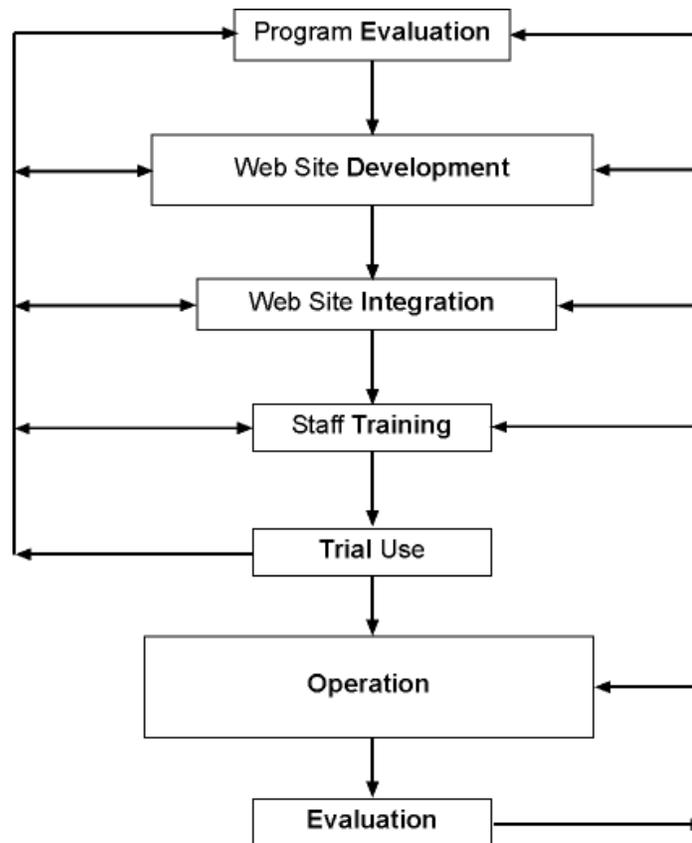
The Seven Steps of the Model

The seven sequential steps of the implementation model are noted in Figure 3 and are described below.

Program Evaluation

This step provides the foundation for the implementation process, helping to ensure that the Web site is used for the right reasons with the right clients. The process begins with an evaluation of how well the resources and services of the organization are currently meeting client needs. If the evaluation indicates that a change in resources

Figure 3. The Seven Step Implementation Model.



or service delivery is necessary, then the features of typical Web sites are reviewed. If a new or revised Web site seems appropriate, the organization then prepares for the implementation process by establishing an implementation committee and a Web site coordinator to guide the process. An implementation plan is prepared and support is sought from stakeholders and administrators for the use of the Web site. The program evaluation process ideally occurs within the context of strategic planning. This helps to ensure that the scope of program evaluation is congruent with the strategic issues that affect the organization. Web sites reflect the strategic plans, either explicit or implicit, of organizations

Web Site Development

Using the above program evaluation data, this step helps to ensure that the Web site developed has the potential to effectively meet client and organizational needs. The process begins with preparation for Web site development (reviewing other designs and agreeing on staffing and budgeting). Next, the staff of the organization collaboratively develops the content of the site. Three key questions in developing content include: “Who does (or should) the Web site serve?” “What are the needs of users?” and “What resources exist (or should be created) that would meet each of the identified needs?” Staff specify audiences, related needs, and related information resources by using: 1) theory and research literature; 2) staff expert judgment, individually or in focus groups; and 3) client perceptions, individually or in focus groups. The next step in the process is the development of Web site features. Here decisions are made about design features, which are prototyped, evaluated, revised, and then implemented. Elements of the "Develop Web Site Features" phase can be initiated while the "Develop Web Site Content" phase is being completed. When the site becomes operational, users, staff, and stakeholders evaluate Web site content and features. Finally, the documentation for the site is completed as the site becomes finalized for initial release. Several of the processes above have been identified in the literature, e.g., the nature of the site (planning process), assessing the information and technical features for the site (analysis process), designing and relating specific pages on the site (design process), and creating actual files and software (implementation process) (December, 1996).

Web Site Integration

Given the Web site developed in the previous step, staff now plans how to integrate Web site use in a way that is congruent with the way in which services are delivered within the organization. The process begins with the staff reviewing current needs and current resources and services. All staff become familiar with the Web site and then evaluate how the system "fits" with existing or new services. A plan is then developed for connecting the Web site with other organizational resources and services. The roles for all staff members are examined, including specific professional, paraprofessional, and clerical support staff interventions with clients. Operational procedures are determined and a plan for evaluating the Web site use is prepared. Public relations efforts also continue, referred to as the promotion process by December (1996).

Staff Training

Staff is now given the training necessary to integrate the Web site with existing service delivery. The process begins with developing a plan for training. Professionals, paraprofessionals, and clerical support staff then receive specific training that is appropriate for their role in delivering services. Administrators and stakeholders are then familiarized with Web site features and use. The effectiveness of training is then evaluated with plans made for future training activities.

Trial Use

The effectiveness of the Web site in actual practice, based on the software integration and staff training efforts completed above, is evaluated with a group of trial users. The process begins with an identification of trial users followed by their trial use of the system. Based on observations and interviews of trial users, staff roles, operational procedures, and training efforts are modified as needed.

Operation

Building upon the experience gained in the trial period, the Web site is used as one component of the total service delivery effort of the organization. Evaluation data are collected and public relations efforts continue.

Evaluation

Building upon the experience gained during operation, results of the evaluation are used to indicate needed improvements in Web site design and use. Information gained in this step is then used in the refinement of service delivery. Depending on the nature of the evaluation results obtained and the resulting changes that are needed, the implementation process cycles back via feedback loops to program evaluation, Web site development, Web site integration, or staff training, followed by trial use and continuing operation of the Web site. December (1996) noted that the innovation process entails the continuous cycle of making changes to the site to achieve the evolving needs of users.

Specific components of each of the seven steps of the model are presented in Table 5 below. The implementation committee and Web site coordinator can review this list and select the components for the Web site implementation plan that are appropriate for the organization.

Table 5

Components of the Seven Steps of the Implementation Model

Program Evaluation

Evaluate Currently Available Resources and Services

- Review the needs of clients
- Review currently available assessment, information, and learning resources
- Review the services provided to help clients effectively use available resources
- Identify client needs that are met effectively with currently available resources and services
- Identify limitations in current resources and services in effectively meeting client needs
- Review the potential content and features of Web sites

Identify how a Web site might enhance current success and help to resolve current limitations in resources and services

Prepare for Implementing a Web Site

Create an implementation committee and choose a Web site coordinator

Prepare a plan for implementing the Web site

Identify stakeholders and administrators who can provide support for improved services

Web Site Development

Prepare for Web Site Development

Review examples of Web sites having various need-based and resource-based features

Agree on staff responsibilities and budget

Develop Web Site Content

Agree on the format for presentation of text (information chunking, page length, limited memory demands, readability, accessibility and menu item ordering)

Agree on format for presentation of graphics (effective use of icons/symbols and photographs)

For each audience identified, describe needs and related information resources based on the Program Evaluation step above

For each link clarifying user needs, create a descriptive title and learning outcome

For each information resource, develop content for "How to use" help feature as needed

Develop general help information and organizational information for "About Us"

Edit all content for clarity and consistency

Review all content for congruence with professional standards of practice

Design Web Site Features

Agree on Web site features

Select Web site development and delivery software

Create page design (header, footer, fonts, colors, clarification of path chosen, style sheets, etc.)

Create templates for clarification of audience, clarification of needs, and delivery of information

Create pages and establish links among pages

Create resource-based tools (Search, Site Map, Index)

Evaluate Web Site Content and Features

Conduct usability testing (observation of users)

Survey perceptions of audiences, staff, and stakeholders

Select software for tracking of Web site usage

Complete Site Documentation (authorship, design strategies, and technical specifications)

Web Site Integration

Prepare for Integrating the Web Site with Existing or New Resources and Services

Review the needs of clients, staff, and your organization

Review current resources and services provided to your clients

Discuss theory and practice issues among staff to generate ideas about existing or new services to help clients use the Web site

Review relevant professional standards to generate ideas about the quality of services provided to clients

Familiarize all staff with Web site features and operation

Decide How the Web Site will be Used in Delivering Services

Decide how the Web site can be used with other assessment, information, and learning resources

Decide how counselors, paraprofessionals, and clerical support staff can help clients make effective use of the Web site

Decide how the Web site might be used collaboratively with other service providers in the organization

Decide How the Web Site Will Operate

If Web site will be available on computers in the counseling or career center, decide how the Web site will be used by clients

Develop procedures for scheduling client use of the Web site if appropriate

Develop a plan for evaluating Web site effectiveness

Revise public relations efforts to include the Web site

Communicate progress with stakeholders and administrators who can provide support

Staff Training

Develop a Plan for Staff Training

Train Professionals, Paraprofessionals, and Clerical Support Staff

Familiarize Administrators and Stakeholders with Web Site Design and Use

Evaluate Training Effectiveness and Plan Future Training

Continue Staff Training as Needed

Trial Use

Identify Trial Users

Begin Trial Use of the System

Observe and Interview Trial Users to Identify the Strengths and Limitations of Web Site Integration

Revise Staff Roles and Operational Procedures as Needed

Continue Staff Training as Needed

Continue Public Relations Efforts

Operation

Operate the Web Site

Collect Evaluation Data

Continue Public Relations Efforts

Evaluation

Evaluate the Design and Use of the Web Site in Service Delivery

Refine Web Site Design and Use Based on Evaluation Results

The Nature of the Model

In order to make best use of the above implementation model, it is important to understand how the dynamics of the implementation process are reflected in the nature of the model. This section begins with a discussion of the time and effort needed for each step in the model, and continues with exploration of feedback loops and the continuing nature of implementation.

Time and Effort Needed for Each Step

The size of the box for each of the seven steps in Figure 1 indicates the relative time and effort that is needed for each step. Obviously the ongoing operation of a Web site will consume the greatest amount of staff time and effort. Web site development is labor intensive because of the many decisions that need to be made to effectively design the Web site. Program evaluation and Web site Integration are the next most labor intensive due to the amount and complexity of the data involved and the critical thinking necessary to make good decisions.

Finally, staff training, trial use, and evaluation are well-focused activities that are less labor intensive in comparison with the other steps in the implementation process.

Feedback Loops

Implementation is a dynamic process. Staff need to respond to feedback as the implementation process continues. Data obtained in a particular step may indicate that a previous step needs to be at least partially repeated to ensure effective Web site implementation. The feedback loops in the present implementation model are indicated in Figure 1, with arrows indicating the direction of the feedback.

The Continuing Nature of Implementation

Implementation is an on-going process. Counseling and career services offered to individuals are in a continual state of flux in response to changes in public policy, individual needs, funding, organizational development, and available assessment and information resources. Web sites are also constantly evolving in response to changes in organizations and technology. As a result of the above factors, the implementation process never actually ends. The amount of time and effort required for implementation does vary over time, ranging from a considerable investment for a new or substantially revised Web site to occasional minimal investment for an established Web site that is functioning well in the organization. Implementation thus becomes an integral part of regular staff planning, training, and evaluation activities.

Conclusion

From the beginning, the primary goal of this paper was to create a resource that could assist in the design of Internet Web sites specifically for counseling and career centers. The method for accomplishing this goal was to stimulate critical thinking, supplemented by some useful ideas and features for initiating and continuing Web site design. Four key points contributed to the paper's method. First, a Web site design team must consider the advantages and disadvantages of the design options that they choose. Would a resource-based, need-based, or combination be most appropriate for the intended user audience? Second, we examined several ways to promote learning with the assistance of instructional design theories. This brought up discussion and suggestions regarding navigation, effective information use, and the three key user questions: Who does (or should) the Web site serve? What are the needs of the users? What resources are available (or should be available) to meet user needs? The third factor that we considered was staff and stakeholder collaboration. A Web site is a fundamental outreach and information resource for an organization. For this reason, many sociopolitical and organizational forces effect the Web site development and upkeep. Being aware of and embracing these factors from the beginning can not only make the process much smoother, but it can result in personal buy-in from individual members of the organization. Finally, we discussed the selection of Web site design features, and how each feature can add to the impact and success of a Web site. While content is always the core of a good Web site, it can only be useful with careful planning of design, navigation, technology, and adherence to ethical concerns. In addition, evaluation is an important and necessary component throughout the entire development project and the life of the site.

With the vast amount of information available on Web design, it is surprising how little information is available for developing counseling-related sites. This is certainly does not suggest that Web sites are not important in the counseling field. In fact, computer and Web related materials are finding their way into counseling centers at an astounding rate. While Web sites may be a evolutionary force for change in the nature of a counselor's work, counselors are in little danger of being replaced by Web sites in the foreseeable future. However, counselors may find themselves becoming increasingly isolated from mainstream communications, if they do not learn to use a technology for delivering information that their clients are adopting in large numbers. By implementing a need-based model of Web site design, counselors can leverage their expertise in the content and process of counseling practice to promote positive user outcomes, while minimizing the potential negative impact of Web sites on users.

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