

THE DEVELOPMENT OF AN INSTRUCTIONAL MODULE ON THE BASICS OF WEB
DESIGN FOR SCIENTISTS INTERESTED IN CREATING A WEB PAGE

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DEDICATION

For shelter and stimulation

For sacrifice and generosity

For faith and education

For wisdom and wit

For insight and archaism

For tempers and tough love

Mom, Dad—this is for you.

ACKNOWLEDGEMENTS

Many thanks to my committee members: Lew Calver, Kimberly Hoggatt Krumwiede, and Dr. Chandra Mohan for their patience, expertise, and inspiration.

I would not have been able to complete this work without the critical help of my editor, Melina Wilkins, and my inside contact, Miranda King. Love you, guys.

Thank you to the members of the UT Southwestern Department of Internal Medicine Rheumatology Division for their participation in the creation and evaluation processes of this thesis.

For your irreplaceable knowledge of procedure, your much-appreciated hours of assistance, and your kind words, thank you, Jean Ann Haag.

THE DEVELOPMENT OF AN INSTRUCTIONAL MODULE ON THE BASICS OF WEB
DESIGN FOR SCIENTISTS INTERESTED IN CREATING A WEB PAGE

by

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THESIS

Presented to the Faculty of the Graduate School of Biomedical Sciences

The University of Texas Southwestern Medical Center at Dallas

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF ARTS

BIOMEDICAL COMMUNICATIONS

The University of Texas Southwestern Medical Center at Dallas

Dallas, Texas

May, 2003

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ABSTRACT FOR THE DEVELOPMENT OF AN INSTRUCTIONAL MODULE ON THE
BASICS OF WEB DESIGN FOR SCIENTISTS INTERESTED IN CREATING A WEB
PAGE

Publication No.

Marla Rochelle Wilkins

The University of Texas Southwestern Medical Center at Dallas, 2003

Supervising Professor: Lewis E. Calver, M.S.

The purpose of this thesis is to document and explain the development of an instructional module on the basics of web design for scientists interested in developing a web page. This instructional module was created as an aid for scientific researchers who are interested in either creating a web page or having a web page created on their behalf, but who have limited Internet experience and are unfamiliar with the basic terminology and design processes involved in developing a web page. The module was posted online by the author for evaluation by selected scientists and researchers at UT Southwestern Medical Center at Dallas. It contains information on initial web page design (purpose, audience, organization and navigation), graphic design issues (color, typography, consistency and redundancy), the technical aspects of web design (computer specifications, “internetiquette”, print production versus web production, editing and submission), and a glossary of important terms. The

thesis focuses on the development of a web site for Dr. Chandra Mohan's Lupus Research Laboratory at UT Southwestern, the creation of an interactive web design guide using Mohan Lab's web site as an example, and the creation of a printable pdf "Shortcuts Guide" to accompany the module.

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LIST OF DEFINITIONS

Design – In this work, the combined appearance and organization of a web page, or the act of creating such (Okvirk, Stinson, 328).

Font – A standardized typeface for text, e.g. Times, Arial, Courier (Spiekermann and Ginger).

Formatting – The act of creating an electronic page layout, sometimes used interchangeably with the term *page layout* in web page design.

Gif – Graphic Interchange Format – A digital format for displaying electronic images. Gif images usually use less memory than other formats (Smith & Bebak, 288).

Graphic Design – Usually refers to two-dimensional creation techniques (Okvirk, Stinson, 329).

HTML – HyperText Markup Language – A basic programming code for web pages (Musciano & Kennedy, 8).

HTTP – HyperText Transfer Protocol – The part of a web address that tells your computer to search for a file on the world wide web, as opposed to a newsgroup or other file storage media (Williams and Tollett, 25).

Hue – A color. Blue and yellow are different hues (Okvirk, Stinson, 152).

Informational Design – The hierarchical organization of content (Rosenfeld and Morville, 4).

ISP – Internet Service Provider – An individual or company with a computer that is connected to the Internet 24 hours a day. ISPs provide space in their computer's memory for clients to post their websites, usually for a small fee (Williams and Tollett, 19).

Jpeg – Joint Photographic Experts Group – A digital format for displaying electronic images. Jpegs can have a better picture quality than Gifs (Smith & Bebak, 288).

Navigation – The act of clicking links or buttons on a web site to see to another page. Can also refer to the logical arrangement of content on a single page.

Page Layout – The physical arrangement of objects on a page (images, text, etc.).

Pixel – picture elements – A computer screen is divided into thousands of tiny dots, or pixels.

Everything you see on a computer screen is made up of pixels. A computer monitor usually has 72-96 pixels per inch (Williams and Tollett, 162).

Pixellated – Images that are blurry because they look like they are made up of little squares of color are said to be pixellated.

Point size – A measure of the height of a letter (Spiekermann, 155). One point is .01384 inch (Spiekermann, 55). Larger point sizes mean larger fonts. 12-point is average height for the printed word.

Posting – The act of submitting a web site to a server.

ppi – pixels per inch – Refers literally to the number of pixels in an inch of screen space.

Images with higher ppi numbers print better, but may not look any better on screen since monitors can usually only display 72-96 ppi. Lower ppi images take up less memory (Williams and Tollett, 164).

Resolution – 1. The clarity of an image. 2. The monitor ppi specification used to refer to clarity, such as 800x600ppi.

Sans serif – Letters without formal stroke endings. Arial is a sans-serif font; Times is a serifed font (Spiekermann and Ginger, 49).

Serif – Formal stroke endings of individual letters. Times is a serifed font; Arial is not (Spiekermann and Ginger, 49).

Scrolling – The act of dragging a computer ‘window’s’ vertical and horizontal navigation bars in order to see content that is not currently displayed.

Site map – An outline or diagram that provides an overview of a web site’s organizational layout (Williams and Tollett, 140).

Splash page – The introductory page for a web site.

Subpage – A subordinate page of a web site, not to be confused with the splash page. Some pages do not have subpages.

Typography – The appearance and organization of the written word, or the act of creating such (Spiekermann and Ginger).

URL – Uniform Resource Locator – The actual web address (Williams and Tollett, 25).

Value – A measure of lightness and darkness. Colors may have different *hues*, but the same *value* (Okvirk, Stinson, 153).

Web Browser – Computer software that decodes display instructions for web pages (Williams and Tollett, 23).

Web Page – An electronic document containing instructions for a web browser (Williams and Tollett, 48).

Website – A collection of web pages devoted to one agenda.

XHTML – Like HTML, a basic programming language for web pages (Musciano & Kennedy, 8).

CHAPTER ONE

Introduction

The Importance of Web Pages

A web site, constructed of web pages, is the means by which a presence is established on the Internet. Web sites are used for communication, information storage, recreation, and advertising. Researchers use websites to share their data with other scientists and the general public. The design of a website is critical for successful communication. There are many instructional materials available for designing and creating web pages; however, the time required to read these sources is prohibitive to a full-time researcher¹. The goal of this thesis was to produce an introductory guide module for web page design specifically for researchers who had no design experience but were interested in posting a web page.

The Design Guide's Developmental Strategy

Before I could develop a design guide that would be helpful to my target audience, I needed to assess the skill level and requirements of researchers. To do this, I worked with Chandra Mohan, PhD and the members of his research lab at the University of Texas Southwestern Medical Center at Dallas to develop a web site for Mohan Lab. By working with Mohan Lab

¹ Information gathered from conversations with Dr. Chandra Mohan, Miranda King, and Dr. David Karp, of the Rheumatology Division of the Department of Internal Medicine at UT Southwestern Medical Center at Dallas.

to create a web site, I learned the needs of the researchers and was able to devise an outline of pertinent topics for the design guide.

The Importance of Web Page Design

Web page design is differentiated from graphic design because web design only targets one output medium, that of the computer screen. The appearance and usability of a web page contribute to its goal-oriented success.

Accomplishing the Goal of the Web Page

Web pages, or web sites, can have different goals. Education, instruction, entertainment, commerce, communication, advertisement, and publication are some common web page goals (Smith 14-21). A web page should be designed appropriately to accomplish its goals. *Design* in this instance refers to visual appearance as well as navigation and organization, both of which are aspects of usability.

Attraction

Web pages are created specifically for a public forum, the Internet. The Internet is so loaded with information that a web page must be visually attractive in order to attract an audience (Smith 195). Hard-to-read text and badly colored graphics decrease the probability of visitors to a web page, and therefore decrease the probability that the information on the web page will be disseminated (Smith 201-203). For a web page whose main goal is

advertisement, the concept of gathering and keeping an audience is crucial (Sather 36-42).

For web pages with other goals, an attractive and well-organized visual design increases the potential audience (Sather 65).

Ease of Use

A very important aspect of web page design is usability. Navigation, or the viewing of successively linked pages by clicking an html link or a button, and site organization are just as important to the success of a web site as visual appearance (Williams 125-142). Audience members are less likely to return to pages that are difficult to use (Williams 132). Successful web sites have a well-planned organizational scheme and redundant navigational tools like menus, links, and “next” or “back” buttons (Niederst 157-159).

The Importance of Web Page Design for Researchers

Researchers can use the Internet to communicate with colleagues, students, patients, and collaborators. Web site creation is becoming increasingly simple and is very accessible to the amateur designer. Researchers who lack visual design experience may find it difficult to create a web page that accomplishes their goals.

A Useful Tool for Research and Communication

Many research resources are available on the Internet. Supply vendors, academic magazines, publication sources and abstracts are all available online for researchers. Mohan Laboratory

at the University of Texas Southwestern Medical Center at Dallas uses its web site to post patient education information, list lab personnel and collaborators, describe ongoing research projects, promote laboratory events, and compile valuable lab-related Internet links for use by lab personnel. Web communication provides a fast and inexpensive way for researchers to post and exchange ideas.

Web Page Creation is Increasingly Simple

Web page creation used to be intimidating to the average Internet user, a job for professionals who knew programming languages. But with the advent of What You See Is What You Get (WYSIWYG) software interfaces, anyone with minimal computer experience and a lot of patience can design and post a website (Smith 94-109). Researchers who wish to have a web page but cannot afford to pay a web page designer can now create their own web page if they own the right software and arrange for space on a server. Academic institutions like UT Southwestern Medical Center at Dallas provide space on their servers for research departments who wish to set up a web site.

Researchers Often Lack Experience with Visual Design Techniques

Researchers may have experience with designing supporting charts and graphics for publication, but unless they specifically sought training in art and design, researchers are often unfamiliar with basic design techniques². Graphics designed by researchers for publication are often similar in appearance to previously published graphics because the goal

² Information gathered by the author during conversation with members of Mohan Lab and Karp Lab at UT Southwestern Medical Center at Dallas

of the graphic is to reveal informational content, not to try new design techniques by deviating from standard display methods (Illustrating Science 4). Unfortunately, designing web pages is a relatively new skill for researchers and there are often no standards of web page information display with which to comply. Researchers designing a web page need to be familiarized with basic web design techniques in order to produce a web page that will accomplish its goals.

Lack of Literature

Web page design literature and graphic design literature are abundantly available. There are also resources available to show researchers how to design a traditional graphic for publication. Unfortunately, there is very little audience-specific literature for researchers interested in web design.

Abundance of Common Web Design Literature

Books like The Non-Designers Web Book by Robin Williams and John Tollett and Creating Web Pages for Dummies by Bud Smith and Arthur Bebak are wonderful resources for people with a little computer experience and the time to read them. Every year, new editions of these books and a hundred more just like them are published in America. These web design books are easily obtainable, easy to read, and efficiently organized.

Abundance of Design Literature

Graphic design is a topic about which many books have been written. Instructional design, print design, design techniques, color theory, organizational theory, and typography are all graphic design topics that are well documented and researched by experts. Books like Site-Seeing: A Visual Approach to Web Usability by Luke Wroblewski are useful resources if a person has the time and sufficient interest to read them.

Lack of Research Time for Extracurricular Projects

Unfortunately, researchers making their own web sites have little time to devote to researching design techniques³. Time must instead be spent on projects and research studies, grant writing, staff meetings, and conferences. A researcher interested in creating his or her own site requires a quick and efficient introduction to web design and creation techniques, so that the web page can be created and posted without becoming too much added work.

Lack of Audience-Specific Literature

Very few web design resources are published specifically for researchers. The only researcher-specific sources I found were published by universities as part of their guidelines for university-related websites. Such guidelines for UT Southwestern Medical Center at Dallas include using a white background, including a UT Southwestern logo bar graphic on every page, and instructions for placing maintenance and contact information on every page. The University does provide a web page template for departments wishing to post a web

³ Information gathered by the author from conversations with members of Mohan Lab and Karp Lab at UT Southwestern Medical Center at Dallas

page, but no specific design information is available either within the university or commercially to individual researchers posting a site.

Objectives of This Thesis

My objectives when creating this thesis were 1) to learn the design skill levels and needs of researchers wishing to post a web site by working with a researcher to create a web site for his or her lab, 2) to apply the aforementioned knowledge to the design of an html design guide module intended to present basic design techniques to researchers (see appendix), and 3) to provide a printable quick reference document as a supplement to the html design guide. The completion of these objectives resulted in the achievement of this thesis's goal, which was to produce an introductory module to teach web design to researchers. This thesis documents the creation of a web site for Mohan Laboratory, which was used to establish design parameters of the html design guide; the creation of the design guide itself, and the creation of a printable pdf quick reference page which accompanies the design guide.

CHAPTER TWO

Review of the Literature

Lack of Appropriate Web Design Source Material for Researchers

This thesis was created because of a lack of audience-specific literature on the topic. A great deal of literature pertaining to web design is available, online, on-screen, and in bookstores; however, no single source was found that presented initial design topics for researchers.

Currently Available Sources

In order to find out more about web page creation, a researcher needs to consult several sources: a web page designer or book about web design, instructional guides for the software used to create and display web pages, instructions from the agency hosting the site, and a source for general design information. Combining the knowledge from these sources will gain the scientists enough information to create a cohesive web site. However, the time required to read all of these sources is prohibitive for a full-time researcher⁴.

Web Creation Sources

Unfortunately, there are so many sources for web design available, a scientist who has little web experience has no criteria for distinguishing good resources from unhelpful resources. Knowledge of Internet terminology, technical functions, and design strategies is essential to

⁴ Information gathered from conversations with Dr. Chandra Mohan, Miranda King, and Dr. David Karp, of the rheumatology department at UT Southwestern Medical Center at Dallas.

choosing a helpful web page design resource. For example, terms as simple as *web page* and *web site* can be confusing to novices who do not know the difference, and terms like *aspect ratio* and *XHTML tag* are intimidating. Books such as HTML & XHTML: The Definitive Guide by Chuck Musciano and Bill Kennedy are invaluable resources for professional web site designers but contain little or no helpful information for a beginner. Books like Creating Killer Interactive Websites by Andrew Sather et al are apropos to web design but introduce topics that are too advanced or irrelevant, like “Creating Effective Web Ad Banners” (Sather 165). The design guide module presented by this thesis concisely explains basic web terminology and design topics so scientists will know where to begin their search for web page design resources.

Scientific Graphics Sources

Literature was found which addressed the topics of scientific graphic displays, scientific illustrations, and print publication procedures. This literature, like Mary Helen Briscoe’s A Researcher’s Guide to Scientific and Medical Illustrations, was specifically intended for researchers and scientists, and all of the scientists I encountered were familiar with the publishing and graphics preparation process. But because Internet technology is fairly new, there were no resources available to instruct researchers on how to prepare data for Internet publication apart from general creation guidelines posted by institutions employing scientists⁵. This module presents Internet publication information to scientists so that they

⁵ UT Southwestern Medical Center at Dallas provides guidelines for researchers wishing to create an academic website. These guidelines can be found at:
<http://www3.utsouthwestern.edu/topdirect/epub.htm>

can make the jump from print publishing to posting their data online in an attractive and coherent manner.

General Web Design Sources

Although information on creating scientific graphic displays and figures is available specifically for researchers, books on the topic contained little or no information on basic visual and information display. Data prepared by scientists is usually intended for an audience of fellow researchers and colleagues, who are familiar with accepted methods for information display and are more attracted by the content than by the presentation (Browner, 89-106). Web pages are available to a worldwide audience of all ages, IQ levels and ethnic backgrounds. Because of this more general audience, a scientist might wish to “jazz up” his or her web page to attract viewers by adding colors, sounds, or photos. With no training in art or design, the act of creating a visually appealing and well-organized web page may prove extremely frustrating to some scientists. The interactive module described in this thesis gives researchers basic tips on graphic design and information architecture so that they may create more visually successful web pages and communicate effectively with the viewers.

CHAPTER THREE

Methodology

Purpose and Audience of the Design Guide

In order to establish some basic parameters for creating the design guide, I defined the exact purpose and audience of the project.

Purpose of the Design Guide

The purpose of the design guide was to present web design terminology and principles to scientists who were unfamiliar with web page design. By teaching scientists the important terminology and processes of creating web sites, this guide attempted to de-mystify the Internet publication process and make it possible for scientists to embrace a new wave of technology.

Target Audience of the Design Guide

The audience of the interactive design guide was scientists and researchers who have an interest in creating a web site but do not know how to begin the process. No web design experience was necessary, although scientists who have some knowledge of creating web pages could use this guide to re-familiarize themselves with the design process. This guide was created for scientists who are mildly familiar with the process of creating graphic data

illustrations and written articles for print publications, and who also know how to create on-screen slide publications with Microsoft® Powerpoint.

Creation of Mohan Website to Establish Topics for the Guide

In order to assess the skill level and experience of the guide's target audience, I worked with Dr. Chandra Mohan to create a web site for his laboratory at the University of Texas Southwestern Medical Center at Dallas. By creating the web site before the design guide, I was able to discover which concepts and specific design topics needed to be addressed in a design guide for researchers.

Reasons for Choosing Mohan Lab

To begin the process, I sought a researcher whose need for a laboratory website coincided with my desire to create one. My audience criteria were as follows:

- 1) The person desiring the web page must be a scientist or researcher.
- 2) The scientist or laboratory must be interested in the creation of a web page, not just in having one completed and delivered.
- 3) The scientist creating the site or working with a designer must have some Internet experience, but no web page design experience.
- 4) The scientist must be willing to allow the web page to conform to the standards set forth in my thesis, and be used as an example site for the design guide.

- 5) The scientist must be willing to serve as an advisor for the thesis project.
- 6) The scientist must be willing to provide maintenance for the posted Internet site after the thesis is completed.

Chandra Mohan, PhD, had a lupus research lab at UT Southwestern that was ideal for this project. Dr. Mohan fit the criteria as a researcher interested in working with a designer to create a web site for his laboratory. Dr. Rahul Patel, a researcher at Mohan Lab, agreed to continue maintenance of the Mohan Lab site after completion of the thesis project. In addition, Dr. Mohan was willing to serve as an advisor on my thesis committee and allow his site to be used as an example for the design guide.

Purpose of the Web Site and Intended Audience

Dr. Mohan needed a web site that would present information to multiple audiences: general information for Internet browsers, specific research information for colleagues and other scientists, and resource links for use by members of his own lab. The site's multifaceted purpose reflected its audience: Mohan Lab site was to be a source of information about Mohan Lab and lupus for a general audience, and a working resource reference for daily use by lab personnel.

Content of the Web Site

Dr. Mohan's intended content was as follows:

- 1) Contact information for Mohan Lab
- 2) Information about Systemic Lupus Erythematosus for a general audience
- 3) Summaries, for colleagues, of genetic murine lupus experiments performed by Mohan Lab personnel
- 4) Short biographical information about the personnel of Mohan Lab for a general audience
- 5) Updatable information about lab events for all audiences, and
- 6) Links to Internet resources frequently used by members of Mohan Lab.

Personnel of Mohan Lab were asked to compose personal information, collect event photographs, and summarize experiments. Dr. Mohan wrote information for the general public about lupus and provided answers to several frequently asked lupus questions for an FAQ page. He also compiled a long list of URLs to journals, vendors, and other web resources for use on the links page of the site. I used my digital camera to take photos of Mohan Lab for the contact page, and I took photos of lab equipment for an animated gif (a relatively low-memory animation). I also created a small animation explaining the attachment of antibodies to DNA. When all of the content information was digitized, I began to program the web site.

Organization of the Web Site's Content

The content for Mohan Lab web site was organized hierarchically as follows: an introductory page called a splash page (Figure 3-1) contained a menu of nine items that lead to various sub pages.



Figure 3-1. Mohan Lab's title, or Splash, page.

The nine item choices on the menu were: About Us, Research, Personnel, Events, Links, Contact Us, Directions, Email, and Search the Web (Figure 3-2). The sections About Us, Contact Us, Directions and Personnel were for a general audience. The Research and Events sections contained information that would be interesting to scientific colleagues, and the Links, Email and Search the Web sections were for laboratory use. Each menu choice led to a variety of sub pages containing the information they described.

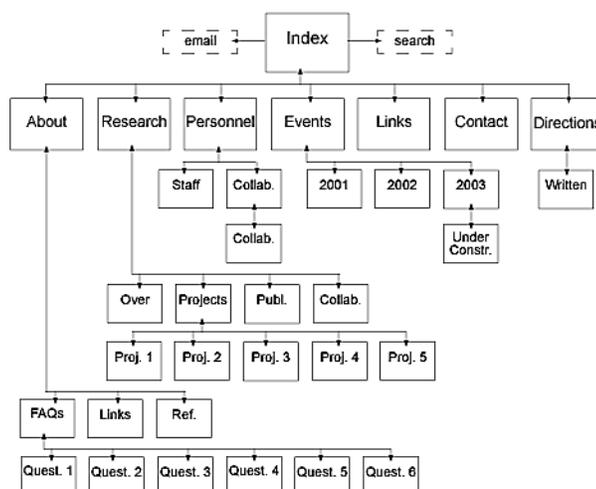


Figure 3-2. Flow Chart depicting the organization of Mohan Web Site.

All of the sections and subsections of the Mohan Lab website were single html web pages, and all of the site's web pages were located in one folder, which contained a single "images" folder in addition to the web pages. All photos and images pertaining to the web site were located in the "images" folder. Except for index.html, all sub page names related to their menu and submenu locations with words separated by underscores.

Use of Software and Technical Setup of the Web Site

I used several software packages to create Mohan Web Site, including Adobe® Photoshop 7.0 and ImageReady 7.0, Macromedia® Dreamweaver MX, Microsoft Word, Microsoft Excel, Netscape Navigator and Internet Explorer. Later I would use the same products to create the design guide.

I physically scanned in or took all the website photos with my digital camera. The photos were edited for size and brightness/contrast in Adobe® Photoshop. The menus and

page backgrounds were laid out in Photoshop and saved as html files from Adobe® ImageReady. The textual content of the website was written and edited in Microsoft Word, then copied and pasted into Dreamweaver html files. Microsoft Excel was used by Dr. Mohan to create the two tables included in the research section of the website.

Macromedia® Dreamweaver is the web-authoring software I used to create the site. I had used Dreamweaver in conjunction with Photoshop and ImageReady to build four previous websites, so I knew the software was compatible. Dreamweaver allows the user to choose either an html code-writing interface or a WYSIWYG (What You See Is What You Get) interface. Scientists unfamiliar with computer programming would be more comfortable creating web pages with a WYSIWYG interface, a fact I later included in the design guide.

The initial design of each page of the website included five frames, one on each side and three stacked in the middle, in order to make centering of the content and scrolling of the text but not the menu possible (Figure 3-3).



Figure 3-3. The original frame-based design of Mohan Web Site.

Unfortunately, some Internet browser software cannot process framed web pages, and using frames increased file size substantially. I abandoned the use of frames in favor of a single left/top justified image that would remain stable and fit on any size screen. While the index page is slightly different in appearance from the sub pages, the web site retains its recognizable redundancy because the menus included in the code of each sub page are drawn from the same image file (Figure 3-4).

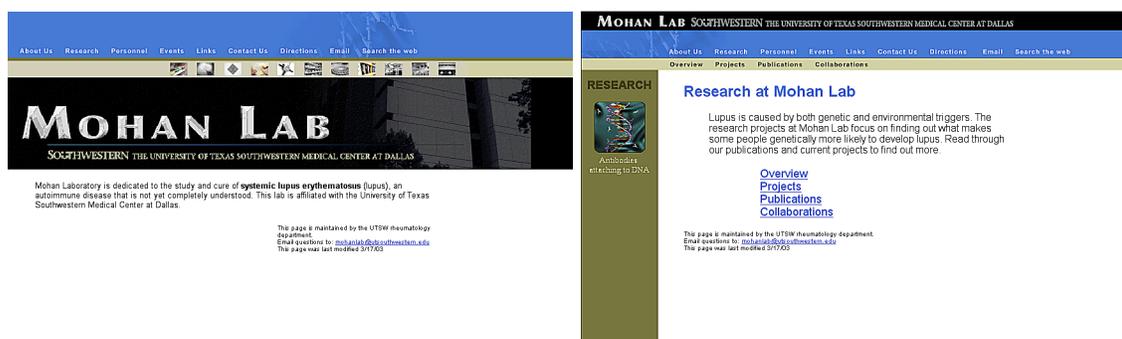


Figure 3-4. Mohan Lab's Splash page and sub page design.

Once the index page and all the sub pages had been set up in Dreamweaver, I used that program's **Preview in Browser** function to test the appearance of each page in both Internet Explorer and Netscape Navigator. I also loaded the web site on both a Macintosh and a PC in order to check its appearance on both. Finally, I was able to connect to the Internet from Dreamweaver using an internal Macintosh modem, and upload the finished web site to UT Southwestern's web server by file transfer protocol (ftp).

Review and Revision of the Web Site

Throughout the design process, I received instructions and corrections on the project from members of my thesis committee. Dr. Mohan's lab team and department personnel also reviewed the site for accuracy and aesthetic purposes. The primary correction I made to the website was discarding the framed interface in favor of a simpler organizational scheme. I also corrected font discrepancies, incorrect links, and some content information. The major complaint of the first, framed version of the website was that it was almost monochromatic, the major colors being black, white, grey, and dark blue. Mohan Lab personnel favored a

more colorful version of the site, so when I revised the site's organization scheme, I increased my palette to include some shades of green and cream. The color palette was kept simple because of UT Southwestern web design guidelines and because the design guide of the thesis stressed design simplicity.

Abiding by UT Southwestern's Guidelines

Before creating the site in Dreamweaver, I contacted UT Southwestern's web publication office to find out if there were any guidelines for pages posted on their server. According to Internet Services at UT Southwestern, any web page affiliated with the university and posted on their server had to meet the following requirements:

- 1) All web pages had to have the current UT Southwestern logo bar at the top, which was linked to UT Southwestern's home page. The logo bar was downloadable from the UT Southwestern web site.
- 2) All pages had to have a white background specified in the html body tag.
- 3) All pages had to list who maintained them, have a link to that person's email, and contain a date for when the page was last updated.
- 4) All web pages containing forms had to adhere to UT Southwestern requirements. Mohan Lab web site did not have any pages with forms.
- 5) First and second level web pages needed to be consistent in style and design with UT Southwestern's current approved page designs. Third level pages needed to have compatible typefaces and designs. Mohan Lab's page was a third level page.

6) All new web pages had to be submitted to UT Southwestern's Office of News and Publications for review. Mohan Lab's site was reviewed and approved.

7) Web pages could not be created solely for personal use by the researcher.

Mohan Lab web site fulfilled all of these requirements and was approved for posting on the UT Southwestern server.

Posting the Web Site

When Dr. Mohan's web site was completed, I submitted a request form to Internet Services at UT Southwestern for a generic laboratory email address and a space on the UT

Southwestern web server. Mohan Lab was given the email address

Mohan.Lab@UTSouthwestern.edu which is set to forward email to whoever is maintaining the web site (at this time Dr. Rahul Patel). Internet Services granted Mohan Lab a place on

their server and provided an approved URL, a password and an ftp address to which the site could be uploaded. Mohan Lab site was uploaded to the UT Southwestern server and is

located on the web at <http://www3.utsouthwestern.edu/mohan>.

Design Guide Topics and Skill Level Assessment

Creating the Mohan Web site from scratch gave me experience with the computer programs used for creating web sites. The experience also allowed me to understand how to approach the creation of the Web Design Guide for researchers, because I discovered the interest and

knowledge limits of scientists who wanted to create a web site. I learned the extent of the scientists' knowledge of general design principles, writing and organizing information for a specific audience, and creating scientific graphics. The design guide was created to be helpful to scientists like those with whom I created Mohan Web site.

Establishing the Skill Level of the Researchers

I found that though the researchers I worked with were extremely familiar with using the Internet for communication, research, and entertainment, all but one of them had no experience with creating web pages. Dr. Rahul Patel was the only member of Mohan Lab that I talked to with web design experience. He was chosen to maintain the site after this thesis project was completed.

The researchers I worked with also had no formal art or design training, but they had plenty of experience designing scientific print graphics and slides. During conversations with Dr. Chandra Mohan, I discovered that he was able to produce efficient and attractive scientific graphics but was unable to describe the design techniques he had used to create them. Because he was unaware of the concepts of graphic web design and the technical process of building a web site, Dr. Mohan was uncomfortable with designing a web site by himself. His minimal web design abilities but high interest level made him a member of my target audience. By using Dr. Mohan's advice I created a design guide specifically suited to my audience's needs. While helping him create his laboratory's website, I established what basic, visual design, and technical design concepts to include in the design guide.

Defining Basic Concepts

Three overwhelmingly important basic concepts asserted themselves during the creation of Mohan Web Site: purpose, audience, and navigation. I knew that establishing the purpose and audience of any project improves its quality and completion time, but usability, or navigation, is a basic concept unique to web design.

I defined the purpose of a project as the reason for which it was created. A project could have a single purpose or multiple purposes. Knowing the goal of the project and adhering to it throughout the creation process streamlines the work into an efficient whole. The purpose of Mohan Web Site was to provide information for staff, colleagues, and a general audience. The purpose of the design guide was to introduce web design topics to researchers. The purpose of the pdf document was to provide researchers with a hard copy reference of the information they'd learned in the design guide.

The second basic concept I defined was audience. As defined for this project, an *audience member* was any potential viewer of a project, and a *target audience member* was a viewer for which the project was specifically intended. I felt it necessary to address this concept because some researchers might be more accustomed to writing for a scientific audience than the varied audiences of web pages. Designs can vary according to the audience, and scientists needed to think about the age, gender, nationality, skill level, and physical limitations of their target audience before beginning the process of web page creation in order to design an effective product.

Web pages revolve around the third basic concept, navigation. Unlike books, which are navigated in one direction (forward) by flipping successive pages, web sites can be highly

interlinked, more like a maze with interconnecting corridors. In order for a web site to be useful to an audience, it must contain easy to find information. Menus, buttons, site maps and links were all aspects of web site navigation that I planned to discuss.

Defining Visual Design Concepts

In addition to the three basic concepts of design, I narrowed the concepts of visual design pertinent to researchers to a few topics: organization, simplification, style and consistency, color, and typography. Organization was used to arrange the content and pages of Mohan Web Site and the design guide in a coherent and efficient manner. Simplification was the method I used and recommended to researchers to prevent clutter and unnecessary flotsam on a web page. I also stressed in the design guide that web pages should have a consistent style and layout so viewers could focus on the content rather than the form. Color and typography were both topics for which I gave general web design tips, such as using colors of different values to enhance contrast, and dividing text into small paragraphs for better readability. All visual design information was assembled from my own bibliographical sources and was rearranged to be most useful to a researcher.

Organization

In the organization section of the design guide, I urged the viewer to organize not only the logical but also the visible layout of their web site's content. I told them to "use clear and concise navigation methods," "give important information a dominant position on the page," "segregate content hierarchically into logical categories," and "remember the purpose" of

their site. At the end of this section was the first use of Mohan Lab's web site as an example of visual design.

Simplification

The simplification section of visual design stressed the importance of an uncluttered layout to the visual success of a web page. I explained to the viewer that "simplification" of a web page did not mean reducing the detailed meanings of the content. I clarified this by stating that in order for ideas to be presented efficiently, they must have detailed explanations but an uncluttered visual appearance. To illustrate this point I included two vastly different representations of the human heart.

Style and Consistency

On the style and consistency page I recommended that the viewer's web page be parallel in structure, organization, color, and layout. Using a consistent structure allows the audience to focus on the important content of the web page instead of its appearance. Mohan web site was used as an example in this section. The design of Mohan Lab's web site sub pages were consistent to the style of its title page.

Color

For the rather large section on color, I organized the text into a series of simple "rules" to follow. Some of the rules reflected the concepts of consistency and simplification addressed earlier in the guide. I explained what a hue is and the importance of value. I mentioned that

certain colors have cognitive associations or the tendency to overpower a page. This section was full of graphic examples that can be clicked on to enlarge and study.

Typography

As in the color section, I organized the content of the typography section into easy-to-follow rules. Using color and type is not foreign to researchers, but they may never have been taught to use it effectively. I stressed using common sense when choosing type, and I again reminded the researcher to think of their web site's purpose. The differences in serif and sans serif fonts were explained, followed by several rules describing the best way to prepare type for onscreen display, including using dark text on a light background, not letting the text hang off the right edge of the screen, and avoiding all capital letters in a word.

Defining Technical Design Concepts

I found during the development of Mohan Web Site that many researchers lacked knowledge of technical design issues as well as visual design issues. I assembled a section of the design guide called Technical Design that addressed design topics not related to visual design. As with Visual Design, I reduced the amount of information available in my sources to the information useful for researchers and appropriate for my project. The technical design topics were: print design versus screen design, computer issues, "internetiquette," and editing and submission.

In the section on print design versus screen design, I provided a side-by-side chart comparing product traits like vertical format (print design) and horizontal format (screen

design). Computer Issues was a large section introducing terminology like *pixels* and *jpeg*, which the researcher would undoubtedly encounter with further web design study.

“Internetiquette” was about the ethics of web design, protecting images and getting permissions. Editing and Submission reminded researchers that review by colleagues and posting the site are as important to web design as creating an interface.

Print versus Screen

Because on screen publication is so different than traditional print publication, I provided a chart listing some of the differences. Horizontal versus vertical format, lower resolution graphics, and viewers with short attention spans are all aspects of on screen publication. By comparing the traits of the two publication methods side by side, I hoped to stimulate the viewer into thinking about how to adapt his or her content to an on screen format.

Computer Issues

This was also a rather large section. In it I briefly mentioned many of the computer issues a researcher might encounter while preparing his or her own web page. Monitor resolution, compatibility, processor speed, complexity, maintenance, and color and screen display limitations were all topics explained in this section. Most of the topics here were simply described without graphic examples.

“Internetiquette”

The ethics of web page publication were discussed on this page. The most important point was reminding the researcher to get permission to display every element on the web site that he or she did not create. I also urged the researcher to protect his or her own content by refraining from posting any object he or she did not want to become public domain. Lastly I recommended that the researcher take written credit for any element on the page that he or she created. I reminded the researcher that signing his or her work is a simple way to establish ownership.

Editing and Submission

“Editing and Submission” was meant to get the researcher thinking about what would happen after the design process. Many academic institutions have specific guidelines for web designers wishing to post a site on their server. A researcher should look up the guidelines before making any major design decisions. I also recommended that the researcher critically edit his or her web site before posting it on the server.

Choosing a Format for the Design Guide

Once I established the topics to include in the design guide, I began to create the guide itself. Originally, the entire guide was to be a printable pdf document with a navigable outline attached, but after some debate with my committee and software trials, I decided to create the design guide as an html page organized like a slide show (Figure 3-5).

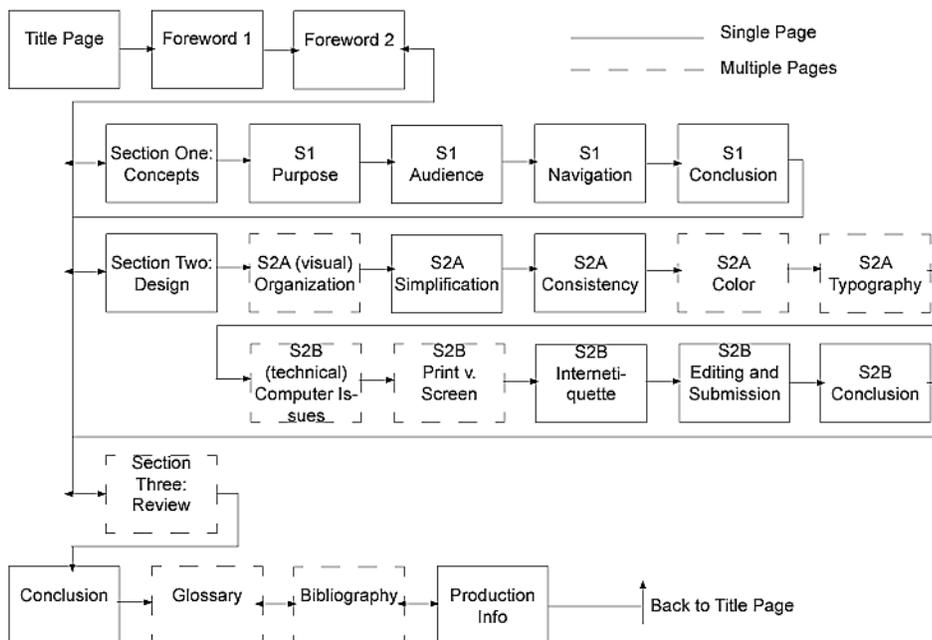


Figure 3-5. Flowchart for the design guide.

This meant that the guide could have redundant methods of navigation and linking (menus, linked text, and photos) while retaining the organization of a tutorial. The pdf component of the module was included as a reference page in the review section and included a summarized version of the topics included in the guide. The design guide itself was entitled, “The Busy Researcher’s Guide to Understanding Web Design.”

Designing the Guide’s Interface

Applying the Design Guide Topics to the Guide

I followed the design principles developed during the creation of Mohan Web Site when designing the interface for the design guide, including horizontal format, sans serif text, consistent style on successive pages, and limited color palette. Blue and orange were the primary colors, along with several values of those colors, plus black and white (Figure 3-6).



Figure 3-6. This figure shows the title page and sub page of the design guide with the horizontal format and blue and orange interface.

For ease of navigation I placed a menu across the top of each page that linked to the major sections, and an outline menu on section pages that allowed the viewer to navigate within each section (Figure 3-7).

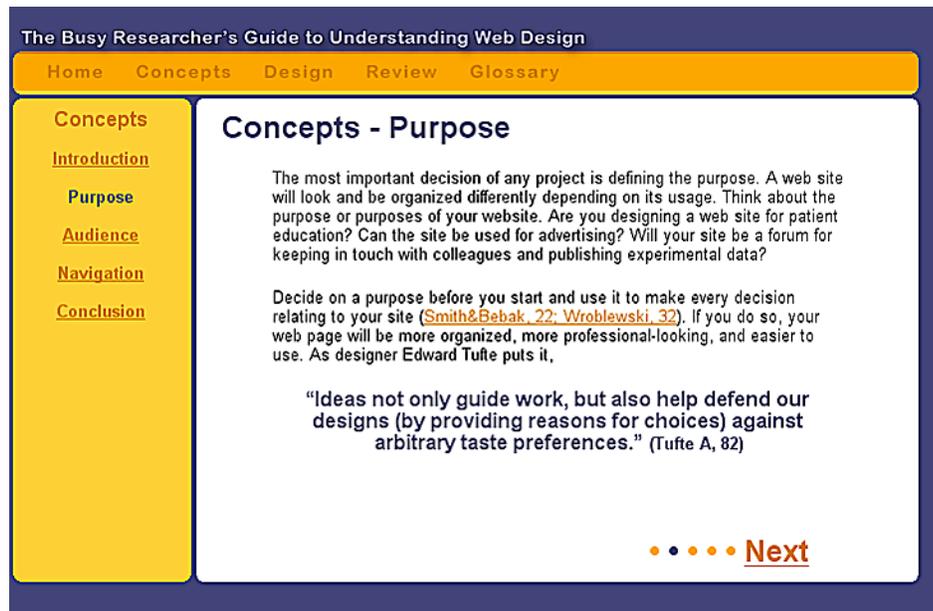


Figure 3-7. Sub page of the design guide. Notice the main sections menu across the top and the subsection menu along the left side.

The guide was created to be viewed in a “tutorial” fashion, each page connected to its successor by a “Next” button. I included a row of dots along the bottom of each section that changed color with each successive page so the viewer could track their progress through the guide (Figure 3-8).



Figure 3-8. Design guide navigation. Rows of dots allow the viewer to track their progress through the sections of the guide.

Software and Setup of the Design Guide

The menus and background of each guide page were designed in Adobe® Photoshop and converted to html in Adobe® ImageReady, then opened in Macromedia® Dreamweaver for the addition of content. This was similar to the method I'd used to create Mohan Lab's web site, but the design guide contained rollovers and Mohan Lab's site did not. Content was added on a new layer in Dreamweaver that was divided into tables according to the layout of each page. Aspect ratio for each page was 720x460 (pixels) at 96 dpi. All colors were web-safe, and Arial and its derivations were the primary fonts. Bibliographical citations are linked to their full citations in the bibliography. Examples from Mohan Web site are linked to that site, and thumbnail picture examples link to a larger version of the same graphic. The viewer can track his or her progress by watching the color changes in the vertical section menus or the dots next to the "next" button.

Adding a Review Section, Glossary, Bibliography, and Production Information

In order to maximize audience information retention, I included a section at the end of the guide for review. The review section summarized major points presented in the previous sections, and provided a link to the printable pdf reference sheet. Other additions to the guide included a glossary of applicable terms, a bibliography of my sources, and production information for the guide itself. I also included forewords at the beginning explaining the purpose of the guide and how best to navigate it. See the appendix of this document to view the full version of the design guide.

Creating the Figures and Writing the Text

Many of the topics in the design guide (especially those described in Visual Design) required a figure to reinforce the textual content. Mohan Lab's web site was included as a model site in several images and links. For topics that required figures not available on Mohan Lab's web site, I created appropriate examples using Adobe® Photoshop (Figure 3-9).



Figure 3-9. "Simplification" figure. An example of the figures in the design guide that were created in Adobe® Photoshop.

Such topics included simplification, and the cognitive associations of color. All graphics were created for screen display at 96 dpi and used with permission. The textual content of the guide was derived from my research during the creation of Mohan Lab and was approved by my advisory committee. All text was written for a target audience of research professionals (educated American adults) and specific design and computer terms were defined either in the text or in the glossary.

Inclusion of the Printable pdf Document

The printable pdf Quick Reference Sheet was included in the review section of the design guide (Figure 3-10). Its purpose was to provide scientists with a hard copy reference they could keep following the use of the design guide tutorial.

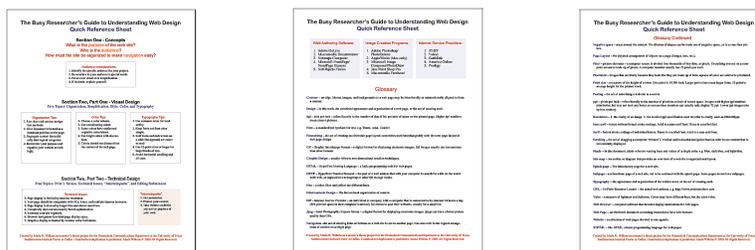


Figure 3-10. Pages 1,2, and 3 of the pdf Quick Reference Sheet.

Refining the Topics for the pdf Document

All topics that were mentioned in the design guide were included in the pdf Quick Reference.

Main points were summarized in numerical format to aid in memory retention (Figure 3-11).



Figure 3-11. Example of design topics summarized in numerical form.

In addition, the pdf sheet included non-comprehensive lists of current web authoring and image creation software, and well as a non-comprehensive list of Internet service providers. The pdf document also included the glossary of applicable terminology from the guide.

Software and Setup of the pdf Document

PDF refers to a document created to be viewed with Adobe® Acrobat Reader. I used this format because the researchers I worked with were familiar with saving and receiving pdf documents. I set up the document's layout using Adobe® InDesign, a page layout program. The document consisted of three letter-sized pages. Though the pdf document was created with the same blue and orange colors as the design guide, it could be printed in black and white with no loss of information.

Editing and Revision

After I completed the creation of the design guide and pdf document, with Mohan web site providing examples, I submitted it to my committee for review. Several minor formatting and typographical errors were corrected in the design guide, and a few topics were added. These topics included a statement regarding the use of color for a color-blind audience and a more comprehensive discussion of value. The design guide was tested on Macintosh and PC computers, using both Internet® Explorer and Netscape® Communicator, two different web browsers. The only problem was a font size difference on some computers, which could be corrected by the user in the "preferences" window of his or her web browser. Following

revision, the design guide was posted on the Internet for evaluation by members of Mohan Lab and Karp Lab at UT Southwestern Medical Center at Dallas.

CHAPTER FOUR

Evaluation

Method of Evaluation

After the completion of the design guide (see appendix), Mohan Web Site, and the pdf quick reference document, all parts of the module were posted online for evaluation by researchers in the Rheumatology Division of the Department of Internal Medicine at UT Southwestern Medical Center at Dallas.

Evaluation Audience

Nineteen researchers from UT Southwestern's Rheumatology Division evaluated the design guide module. They were part of the target audience of the design guide, with computer and Internet navigation experience but little or no experience designing web pages. Researchers were given three days to view the module online and fill out a two-page evaluation form.

Evaluation Form

The two-page evaluation form was e-mailed as a word document attachment to each researcher. The researcher then printed and filled out the form after viewing the design module online. Part one of the form asked questions about the researcher's background and part two asked questions about the design guide. The questions required the evaluator to write an answer, circle yes or no, or rate a question on a one to five scale.

Six questions made up part one of the evaluation form. These questions were meant to establish the evaluator's backgrounds and experience levels. The questions were as follows:

Background information: Name (optional) _____

1. What is your occupation/research position?

2. How often do you use the Internet? (Circle the answer that applies.)

Not often	1	2	3	4	5	Very often
-----------	---	---	---	---	---	------------

4. Circle the number that best describes your level of proficiency when using the internet:

Not proficient	1	2	3	4	5	Very proficient
----------------	---	---	---	---	---	-----------------

5. Have you ever created an Internet web page? Yes No

If "yes," briefly describe the web page and the method of creation:

If "no," are you interested in creating a web page of your own? Yes No

6. How familiar are you with the methods used to create web pages?

Not familiar	1	2	3	4	5	Very familiar
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Figure 4-1. Evaluation questions about the background of the evaluator.

Part two of the evaluation form asked nine questions about the design guide. These questions were meant to assess the value of the design guide as a resource tool for the researcher. The questions were as follows:

Design Guide Evaluation: (Circle the answer that applies)

1. Was the design guide's interface easy to use/understand? Yes No

2. Rate the guide's navigation:

Difficult to navigate	1	2	3	4	5	Easy to navigate
-----------------------	---	---	---	---	---	------------------

3. Were the guide's concepts presented clearly and efficiently? Yes No

4. a. Please state the purpose of the guide in your own words:

b. Did the guide accomplish its purpose? Yes No

5. Do you feel better prepared to design a website now that you have viewed this guide? Yes No

6. Would you use this guide as a reference in the future for creating a website? Yes No

7. Would you recommend this guide to other researchers who are interested in designing a website?
Yes No

8. What changes would you make to this guide?

9. Additional comments:

Figure 4-2. Evaluation questions about the design guide.

I collected the evaluation forms and analyzed the questions and comments in order to determine the usefulness of the design guide.

Results of the Evaluation

The results of the evaluation were encouraging and well within expectations. Responses were positive overall, with some desire to see more technical information included in the guide. Eighteen complete evaluations were received , and one which did not include the last five and a half questions because the second page was missing. The results of the incomplete evaluation are included in this section because they were from one of only two evaluations submitted by a researcher familiar with web page design and they contained some useful comments.

Background of the Evaluators

All evaluators were researchers, scientists, or technicians with UT Southwestern Medical Center at Dallas. The evaluators all used the Internet often and considered themselves of average to high proficiency. Only three of the evaluators had created Internet web pages before: one person used Microsoft® Word, one person used Microsoft® FrontPage, and one person used Macromedia® Dreamweaver combined with an HTML text editor. Two of the three who had created a web page before considered themselves moderately familiar with the methods used to create web pages and the other considered himself unfamiliar with the methods used to create web pages. Of the evaluators who had never created a web page,

seven were interested in creating a web page of their own and nine were not. None of these evaluators were very familiar with the methods used to create web pages; six considered themselves not familiar at all. Most of the evaluators fell within my target audience: researchers unfamiliar with web design who are interested in creating a web page. Evaluators who were already familiar with web design and who were not interested in creating a web page also had good comments, and their results will be included in the next section because although they were not the target audience of this project, they belong to a likely audience of the project.

Evaluation of the Guide

All nineteen evaluators found the guide's interface easy to understand and rated its navigation as "easy" or "very easy." They unanimously said that the guide's concepts were presented clearly and efficiently. When asked to restate the purpose of the guide, most answers were the same as the desired purpose of the guide, with one exception. One evaluator wrote that the purpose of the guide was "to make internet surfing easy and friendly," a purpose that has more to do with web usage than web design. Overall, the restated purposes were more accurate. Quoted here are a few of the restatements:

“[The purpose of the guide was] to familiarize researchers with basic concepts of web design.”

“[The guide was] a detailed site of instruction on the creation and design of a website that is easily understood to a beginner.”

“[The purpose of the guide was] to provide a general understanding of what components of a website make it professional, easy to use, and understandable.”

“The purpose of the guide was [to] explain the basic structure of a website and to point out the importance of good web design.”

“[The purpose of the guide was] to help those who do not have a background in design to plan a page that is appealing to the general public.”

All of the evaluators felt that the guide accomplished its purpose.

The following questions were not answered by the evaluator with the incomplete evaluation form. Of the eighteen remaining evaluators, fifteen considered themselves better prepared to design a website after reviewing the guide. Those that did not feel better prepared requested more technical information about the actual setup of a website. Technical web page setup was not one of the topics presented by the design guide. All of the evaluators wrote that they would recommend this guide to other researchers interested in designing a web site, and all but two of the evaluators would use the guide as a reference in the future for creating a website. One of the evaluators who said he would not use the guide as a reference wrote that he would rather use a book with more technical web setup information, and the other wrote “not applicable” because he was not interested in creating a web page.

Some changes were recommended for the guide: 1) to include more technical web page setup information, 2) to use a darker orange font on the “nav bar” menu because the

menu was difficult to read on that evaluator's monitor, 3) to "fix" the "Next" button's location so it did not move with successive pages, and 4) to change the design to accommodate font discrepancies on individual computers and cross-platform (some display problems were experienced by PC viewers due to individual font settings).

Additional comments were positive overall. Most of the evaluators found the guide helpful and interesting, with easy to understand navigation. Quoted below are some of the comments of the evaluators:

"This [design guide] was incredibly helpful in designing a web page – especially helpful for researchers. This [design guide] also transcends web design and is useful in designing presentation in any format (this is very helpful as researchers often give [Microsoft®] PowerPoint presentations)."

"[This guide was] well directed towards the target audience."

"[There were] issues brought up that I would never have thought about – i.e. cognitive color response."

"Though the guide tells us about what design considerations we should think about, I still feel helpless in front of the screen (in terms of trying to create or modify the web-page) because I don't know the technicalities of the design software."

"Looks great!"

The design guide appeared to accomplish its goal of teaching researchers with no experience the basic concepts of web design. Even though feedback was overwhelmingly positive, the most frequent negative comment was that the guide lacked information about technical web page setup. Creating another guide to address this topic would be a good area for further study.

CHAPTER FIVE

Conclusions and Recommendations

Accomplishment of Goals

The goal of this thesis was to produce an introductory design guide module to teach web design to researchers. The objectives of this thesis were 1) to learn the design skill levels and needs of researchers wishing to post a web site by working with a researcher to create a web site for his or her lab, 2) to apply the aforementioned knowledge to the design of an html design guide module intended to present basic design techniques to researchers, and 3) to provide a printable quick reference document as a supplement to the html design guide. The objectives were accomplished and the goal was achieved. This section addresses the most successful aspects of the process and targets some problem areas that need improvement.

Areas of Success

The most successful parts of this project were the application of chosen software to the format of the three parts of the module; the research into web and graphic design resources; and the hybrid format of the design guide, as a cross between a slide show and a website.

Using Adobe® and Macromedia® software to create the website, design guide, and pdf document was a good choice. These companies produce software that is easy to use and compatible with other software, so there are fewer technical problems. Combining Adobe® Photoshop, Adobe® ImageReady, and Macromedia® Dreamweaver together worked

particularly well for the design guide, since html rollovers and backgrounds could be created easily with the Adobe products and imported into Dreamweaver for linking and further programming. Adobe® InDesign was used to create the pdf document. That program is set up to save documents in pdf format and is compatible with Photoshop, ImageReady, and Acrobat, which made the creation of the quick reference guide fairly fast and painless. In addition, most of the researchers I worked with were at least partially familiar with Adobe products (especially Adobe® Acrobat) so communication during thesis development was easier.

I was faced with an overabundance of resources for technical web design and scientific graphic design, some of which were appropriate and some of which were not appropriate. Using my assessment of researcher's needs I was able to successfully narrow the design topics and technical issues to a few introductory issues that would be most important to a web design novice. Researching web design and discovering the researcher's skill levels was an interesting and rewarding process. It allowed me to produce a product that would be useful for my target audience.

The hybrid slide show/web page format of the design guide worked out particularly well. Presenting topics successively as slides allowed me to build forward from basic concepts to more detailed design issues. This format was also familiar to researchers, who are accustomed to viewing and creating slide show presentations. As an html site, the design guide allowed more interactivity than a slide show could, creating a more useful final product. Researchers who had viewed the guide once could navigate forward or backward to

a specific section for future reference. The horizontal section menu and vertical outline menus made this possible.

Problems

This project also had some room for improvement. The guide is presented to researchers as a whole and does not address the varying skill levels of researchers. Some researchers may have more experience with computers and web pages, and would need a guide that covered more technical topics. Since my design guide was aimed at researchers who were interested in creating web page but had no experience with design, partially experienced people might find the guide not detailed enough.

Also, if someone were to attempt to create a similar guide in the future, more research into browser, file format, and platform compatibility would be useful. During the creation of Mohan Web Site and the design guide, I often found myself backtracking to correct display inconsistencies. Pages looked different if they were viewed on Macs or PCs, or if they were viewed in Internet® Explorer or Netscape® Communicator. Photos and graphic elements had to be changed as well depending on whether they worked better as jpegs, gifs, or some other file format. More initial research into file formats and the various requirements of platforms and browsers would have made the design process smoother.

In addition, this thesis took longer to produce than I had initially intended. I continually had to upgrade my knowledge of software and computer systems in order to stay technologically current. Computer-based theses, especially those dependent on the Internet or a particular version of software to be current and accurate, should be produced relatively

quickly. I had to go back and redo many features because of software upgrades and new technical requirements of the university.

Despite a few problems, this thesis accomplished its goals. Researchers who evaluated the design guide found it helpful and appropriate for the target audience. Evaluators also found the interface, concept presentation, and navigational elements of the design guide to be efficient and easy to understand. Overall, feedback was positive.

Recommendations for Further Study

This thesis illuminates several areas in which future study would be helpful. The idea of helping researchers create web pages could be enhanced by the production of templates for research sites. Researchers might also benefit from a more comprehensive presentation of graphic design topics, especially in relation to scientific illustrations and modern media. Finally, the idea of this design guide might be pushed further into a technical manual of web page creation written expressly for researchers.

Web Page Template for Research Web Sites

Though many of the researchers I talked to were interested in having web sites, very few of them had the extra time to research and learn the software required to create one. Providing web page templates that simply require researchers to add content would be useful. UT Southwestern is developing web page templates for its research departments to use, but individual researchers desiring web sites would benefit from pre-made web page packets as

well. Using templates would save the researchers time and ensure a professional-looking finished product.

Applications of Graphic and Informational Design for Researchers

This thesis addressed graphic and informational design as applied to web page design; however, scientists and researchers create printed presentations and publications that would also benefit from the application of good design strategies. A module presenting design skills as applied to printed media would be useful, especially if it addressed modern media production. Many of the sources I found describing the production of scientific graphics were a decade or more old and did not cover production procedures involving the computer, digital slides (like Microsoft® Powerpoint presentations), or digital recording media like cameras and video equipment. Scientists would benefit from an upgraded tutorial of presentation topics and media.

Technical Guide to Web Page Setup Specifically for Researchers

Because universities are increasingly incorporating the use of computers in their curricula, recent research graduates generally have a more advanced knowledge of computer skills and media production techniques. A logical supplement to this module would be an instructional module describing more advanced technical web design issues for these audiences. Rather than describing words such as *web browser* and *html*, this supplementary module could describe advanced issues like cross-platform software and the traits of various graphic file formats, and give detailed reviews of new software and computer systems. Though my thesis

produced a teaching module that was appropriate for its intended audience, a future audience will need an upgraded version more attuned to their needs.

APPENDIX

Instructional Design Guide Module

The design guide module is attached as a supplement to this thesis document. To view the design guide, navigate to the folder called design_guide. In the folder, double-click on index.html to open the design guide in Internet® Explorer. You may also choose to open index.html from within another Internet browser. Mohan Lab web site and the PDF quick reference document are included in the guide and may be reached by clicking on their labeled links on the appropriate pages. Mohan Lab web site may also be viewed online at:
<http://www3.utsouthwestern.edu/mohan>

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CURRICULUM VITAE

West Texan Marla R. Wilkins was born in Odessa on August 11, 1976, during a meteor shower. She resided at the Academy-of-St.-Wilkins-in-the-Field in Odessa with her parents, Marvin and Judith Wilkins, and her two sisters, Melina and Miranda Wilkins, until 1994, when she graduated with honors from Permian High School.

Marla then attended Texas A&M University in College Station where in 1998 she matriculated with a Bachelor of Biomedical Science degree from the School of Veterinary Medicine. After deciding a career as a research scientist would not satisfy her creative soul, Marla returned to college, attending the University of Texas of the Permian Basin in Odessa and graduating with honors in 2002 with a Bachelor of Art degree. Seeking to combine her scientific and artistic knowledge, and after reading a fortuitous article in the Odessa American newspaper, she applied to and was accepted into the master's degree program in the Graduate School of Biomedical Communications at the University of Texas Southwestern Medical Center at Dallas, where she graduated with a Master of Arts degree in Biomedical Communication in August 2003.

Marla enjoys traveling, science fiction, and playing the violin. She hopes someday to be able to pay off her student loans.

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