

Web Sites that Work: Designing with Your Eyes Open

Jared M. Spool, Will Schroeder, Tara Scanlon, Carolyn Snyder

User Interface Engineering
800 Turnpike Street, Suite 101
North Andover, MA 01845
+1 978 975 4343

jspool@uie.com, wills@uie.com, tara@uie.com, csnyder@uie.com

ABSTRACT

Many web sites fail to fulfill their promise because designers are unaware of some of the most important factors that affect a site's success. This tutorial is based on our observations of users struggling with web sites and our consulting work with clients who face the many challenges of web site development. It includes as-yet-unpublished results from our ongoing research. We will show numerous examples of web sites to illustrate real-world successes and failures. Hands-on exercises with live web sites help participants understand and apply the course material. Instead of blindly repeating the mistakes made by others, participants will learn to approach web site design from a fresh perspective that leads to more usable designs.

KEYWORDS

Design principles, usability testing, usability evaluation, graphic design, Internet, task analysis, user studies, product development, practical techniques, world wide web, web site design, web site usability.

TUTORIAL OUTLINE

Introduction

Many books on web site design contain only the authors' opinions of what makes a successful site, but there is often little underlying data. To find out what actually works, User Interface Engineering conducted two landmark usability studies on information retrieval within web sites. These studies were set up as "scavenger hunts" for information—we took users to a site and asked them to find the answers to various questions, which we knew were on the site. From our studies, we collected both qualitative and quantitative data, and our analysis showed which web site design factors were correlated with success at finding information.

Used with permission of User Interface Engineering

1. On-Site Searching

Users gravitate to site search engines, but they usually don't help. We found that users were actually less likely to succeed in finding information when they use an on-site search engine (30% success rate) as compared to following links (53% success).

We observed many problems with search engines. Some sites have multiple search engines covering different parts of the site, but users may not realize this, or can't explain the differences between them. There also are problems with entering keywords. For example, one week's worth of data from Netscape yielded 16 different misspellings of "javascript." Many users don't correctly use multiple keywords, and the presence of prefixes or suffixes (tire vs. tires) can affect search results.

Many sites use full-text searches rather than indexed searches. On the Smithsonian magazine site, the first result from a search for "dinosaur" was a link to an article about the steel industry! Search results are sometimes only a list of page titles, and the designer may not have anticipated that the page titles would be used as links in this manner.

2. Scent of Information

We will demonstrate how users attempt to follow the "scent of information" [2] and how the links in a site can either support or interfere with this user behavior.

Several things can cause users to "lose the scent." Users often employ a narrowing-down strategy in seeking information, so a link that takes them to a more general page will often cause them to abandon that particular path. Some links are misleading. For example, one link promised a complete list of home videos but instead led to a page containing only the best sellers, and this threw users off the scent. Also, we saw that users tend to interpret where a link will lead based on the context of the page they're on and the information they're looking for.

3. Text Links

Links are an essential but often overlooked part of site design. We found that *content links* (links that lead to pages containing content) worked better than *category links* (links that lead to pages containing other links). Also, links arranged into structured lists were more effective than unstructured lists. Links down the left side of the page tended to fare worse than similar lists of links located elsewhere. We also discuss other factors that can damage a link's effectiveness, such as wrapping it across multiple lines or embedding it in surrounding text.

4. Image Links

Our findings suggest that image links may be even harder to design well than text links. Image links don't change color to indicate they have been visited and their unclear boundaries misled users in our studies. Also, users didn't always wait for images to finish downloading before choosing their next link and sometimes missed important information.

5. Navigation and Site Organization

We posit that it is not possible to "design the navigation" for a web site in a vacuum. When we tried to measure navigation, we realized that the concept of navigation actually includes all aspects of web site design (links, graphics, content, page layout, users' knowledge) so we recommend that designers focus on these factors instead.

Many large web sites are developed using a "shell" strategy in which developers first create a navigational structure and hierarchy and then plug the content into it. But sites designed with this strategy tend to be more difficult to use than sites that aren't. The problem with shells is that they often use category links, making it harder for users to understand where specific content is located.

6. Page Layout

Our definition of page layout pertains to the style, positioning, and levels of information on web pages. We found that on sites with more levels of information, it was easier for users to find the answers to our test questions. The use of italics, more font sizes, and photographs also showed positive correlations with user success. We also found that links leading to success were often located below the first screen of the page, implying that scrolling isn't necessarily bad.

7. Whitespace and Readability

Regardless of how we measured whitespace, we found that sites with more whitespace actually fared *worse* in terms of users' success in finding information. When we analyzed web page text with conventional readability measures such as Gunning-Fog, we found that higher reading levels (harder-to-read text) had a strong correlation with success.

We acknowledge that these measures were not intended to measure web sites, but clearly they are acting as a proxy for other factors. We believe that our whitespace and readability results show that users skim web pages rather than reading them. Lots of whitespace and readable text are important factors for reading, but optimal designs for skimming may require emphasizing key words and packing more information into the relatively small window of the web browser.

8. Graphics

Both our studies found that graphics played a smaller role in information retrieval than we originally thought. Many designers place too much faith in the power of graphics to make a site interesting and useful. The role of graphics is often over-emphasized in relation to what they can actually do for a site. Most of the time, graphics didn't help the users in our studies find information (in the sites we studied, most of the graphics and all the animation were purely decorative and conveyed no content). Animation was especially annoying and distracting. Some users even covered it with their hands!

9. Users' Knowledge

Learning and Site Experience. We did find some evidence that users learned to use the web sites we studied. By the second and third task on the same site, users experienced less fatigue, moved through the site faster, and used fewer high-level links in favor of specific links. But the effects of learning may be temporary—users who were familiar with a site prior to our study were no more successful than users who were seeing the site for the first time.

Domain Knowledge and Internet Savviness. Users who were familiar with the subject area of the web site fared no better or worse than those who weren't. Users who were more familiar with web terminology exhibited different behaviors than their less-experienced counterparts (such as using the browser's Go menu) but ultimately were no better or worse at finding information.

HANDS-ON EXERCISES

Throughout the tutorial, hands-on exercises with live web sites give participants the chance to examine and usability test some of the web sites we studied as well as their own.

REFERENCES

1. Spool, J., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T. *Web Site Usability: A Designer's Guide*, User Interface Engineering, North Andover MA, 1997.
2. Pirolli, P., Pitkow, J., and Rao, R. Silk from a Sow's Ear: Extracting Usable Structures from the Web. in *CHI 96 Conference Proceedings* (Vancouver, April 1996), ACM Press 118-125.