

Current Evidence-Based Guidelines on Web Design and Usability Issues

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How to Use This Site

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What Is This Site?

This site provides over 50 of the top Web design and usability guidelines based on research studies and supporting information from the field. Each guideline provides:

- A brief statement of the overarching principle that is the foundation of the guideline
- Comments that further explain the research/supporting information
- Source(s) of the research/supporting information
- A score indicating the "Strength of the Evidence" that supports the guideline
- One or more graphic examples of the guideline in practice.

The National Cancer Institute (NCI) will be converting many more research findings into guidelines. These will be available in the summer of 2001.



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How Should I Use This Site?

Use this site in planning and designing your Web site, and especially in determining whether your site follows the suggested principles. Each guideline represents research studies, usability test results, and/or general Web design ideas that exist. To help you determine how much validity to give to each guideline, a score ranking the "strength of the evidence" for each guideline is provided.

This site does not represent NCI's official Web design guidelines or standards. Rather, it is a resource to help you identify what Web design and usability research/findings are available and how they apply to your Web site.



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How Should I Interpret the "Strength of the Evidence" Scale for Each Guideline?

The "Strength of the Evidence" scale provides designers and developers with an indication of how seriously they should consider each guideline. A five-point scale is used to denote the "strength of the evidence" related to each guideline. The more valid the studies directly supporting a guideline, the higher the "Strength of the Evidence" metric. For example, scores of four or five are most meaningful, and can be implemented with confidence that they will help improve the Web site.

How the Scale Is Defined

Score	Meaning of the number of bullets
	5 bullets — Two or more Category A Experiments (Hypothesis Testing) support the guideline.
	4 bullets — One Category A Experiment (Hypothesis Testing) supports the guideline.
	3 bullets* — Two or more Category B Studies (Observational Evaluation/ Performance-Based Usability Tests) support the guideline.
	2 bullets* — One Category B Study (Observational Evaluation/ Performance-Based Usability Tests) supports the guideline.
	1 bullets* — One or more Category C Observations (Expert/Opinions) , and no other supporting evidence, supports the guideline.



0 bullets** —

No evidence supports the guideline. The guideline may be routinely implemented in many Web sites as standard practice without any supporting evidence.

How To Interpret Scores of Three or Less

*Scores of one, two, or three suggest:

- More evidence is needed to strengthen the designer's overall confidence in the validity of a guideline. This doesn't mean that the guideline is not true, but only that the guideline's truthfulness has not been established through research, and
- Before implementing the guideline, designers should conduct usability tests
 - To ensure the guideline works for their intended audience.
 - To determine if there are any deficiencies in the guideline.

**A score of zero suggests that the guideline should be carefully implemented (if used at all), and thoroughly validated during usability testing.



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What Criteria Were Used to Determine the "Strength of the Evidence" Scale?

Each guideline in this site has been rated to help you determine the "Strength of the Evidence" that supports it. What follows are the criteria used to rank each guideline.

What the Criteria Were Based On

The criteria were based on where the source of the evidence originated and the quality of the research conducted. Quality of the source depends on two considerations:

- How the criteria provides indications of 'certainty,' or what may be true.
- How effectively the criteria allows designers to make strong inferences as to their applicability in the general population of users.

How Sources of Evidence Were Classified

Sources of the evidence were classified into three categories. These categories then contributed to the "Strength of the Evidence" metric associated with each guideline. The sources of the evidence are classified as one or more of the following three categories:

- [Category A Experiments \(Hypothesis Testing\)](#)
- [Category B Studies \(Observational Evaluations/Performance-Based Usability Tests\)](#)
- [Category C Observations \(Expert Opinions\)](#)



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Category A Experiments (Hypothesis Testing)

These sources consist of published usability-related experiments that provide insight into many human-computer interaction issues. They have been the core of the usability research for the past several years, and potentially allow the strongest inferences to be made.

These studies are characterized by:

- Evaluating one or more important and relevant hypotheses
- Using an appropriate number of representative and randomized subjects
- Using tasks that people typically perform
- Applying appropriate statistical methods
- Reporting with sufficient detail to allow replication, and (ideally)
- Evaluating usability by focusing on the three major criteria of:
 - Effectiveness
 - Efficiency, and
 - User satisfaction (preferences)

In general, well-done Category A studies are the best.



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Category B Studies (Observational Evaluations/Performance-Based Usability Tests)

Most of the observations obtained in this category, including those from performance-based usability tests that occur in usability laboratories, are not generally reported in the open literature.

These studies tend to be semi-controlled observations of human-computer interactions with the goal of:

- Identifying design decisions that detract from effective and/or efficient performance, or that reduce user acceptance of products
- Identifying general user tendencies and expectations

When compared with hypothesis testing, they have the following characteristics:

- They do not have any stated hypotheses (a priori).
- They may not have a detailed test plan.
- A relatively small number of representative users are expected to perform relevant tasks.
- They are not analyzed using sophisticated statistical methods.
- Precise scenarios (test items) and other details are usually not reported (reported scenarios allow replication).
- They may, but usually do not, report on all three major usability criteria:
 - Effectiveness
 - Efficiency, and
 - User satisfaction

Although many of the observations may be valid, it is usually difficult to check the validity of each individual observation. Category B studies suggest 'certainty' but are not as definitive as Category A experiments, and still allow for substantial uncertainty.



Category C Observations (Expert Opinions)

Category C Observations are the opinions of respected authorities based upon their own experiences, or the subjective reports of others. When these observations are finally published, they usually occur in a format that makes them hard to critique. These publications include style guides, internal usability standards, or long lists of (do this, but not this) guidelines. Category C observations may be true, but we usually do not have the evidence to confirm these recommendations.



What Process Was Used to Create This Site and the Guidelines?

The process included the following steps:

- 1. Reviewed major sets of guidelines** —including those available on the Web, published in books, guidelines, summary articles, etc. These guidelines were combined and duplications were eliminated to form our beginning original set of guidelines.
- 2. Identified research to validate guidelines** —we tried to identify one or more studies that suggested the guidelines in our original set were true and found that most had little evidence to support them. Therefore, we relaxed our standard and began using secondary references from textbooks, published style guides, list of guidelines, etc. Older studies cited in our guidelines were used because they represent the best available research.
- 3. Identified new guidelines** —we reviewed usability research literature for the past 25 years to find studies that suggested new guidelines. Guidelines were developed based on the results of many of these studies.
- 4. Filled in the gaps** —we conducted some small usability studies to begin "filling in the gaps." The results of these studies were used to develop new guidelines.
- 5. Tested the guidelines** —a "card-sorting" study of typical users, including Web site designers (primarily from NCI, NIH, and HHS), computer programmers, and Web masters, was conducted to help create meaningful categories for the guidelines. We also conducted usability tests on the site to ensure ease-of-use and usefulness.
- 6. Established levels of evidence** —each guideline is assigned a "level of evidence" number, which ranges from 0 (no evidence) to 5 (considerable evidence) to support a guideline. The number is based on the amount of information we identified to support the truth of each guideline (see number 2).
- 7. Assessed relative importance** —an additional rating was given to each guideline, which reflected the relative importance of a guideline to the overall success of a Web site. This rating will allow designers, especially those with time/resource restraints, to focus on specific guidelines to help make their Web sites successful.



How Can I Contribute Additional Research to This Site?

We have tried our best to find as many guidelines and references as possible, but we may have missed some. If you are aware of an original reference for an existing guideline, or a guideline and reference that we missed:

Submit email to: ncictbstaff-r@mail.nih.gov.

Please include:

- Authors
- Article Information: title, publication date, source (journal, technical report, number, etc.) Remember, books are usually not original references.
- Indicate guideline the reference applies to
- What the guideline should say, if submitting a new guideline
- Electronic copy of the article if available



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Design Process

This section considers the following:

- [Set and State Goals](#)
- [Set Performance and/or Preference Goals](#)
- [Share Independent Design Ideas](#)
- [Create and Evaluate Prototypes](#)

■ Set and State Goals

Guideline: Clearly articulate the primary goals of the Web site before beginning the design process.

Comments: Before starting design work, identify the goals of the site (educate, inform, entertain, sales, creativity, etc.). Goals determine the audience, content, function, and the site's unique look and feel.

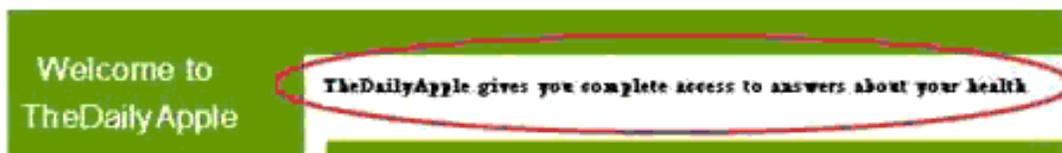
Strength of the evidence: ●○○○○○

• [How to interpret "strength of evidence" scale](#)

Source: Detweiler, M.C. and Omanson, R.C. (1996), *Ameritech Web Page User Interface Standards and Design Guidelines* (www.ameritech.com).

Example:

Not only were goals articulated beforehand, but they also were added to main pages on these sites



■ Set Performance and/or Preference Goals

Guideline: Set performance goals that include the overall information retrieval success rate and the time to find specific information, or preference goals that address satisfaction and acceptance by users.

Comments: Setting user performance and/or preference goals helps developers build better Web sites. It can also help make usability testing more effective. For example, different Intranet sites have set the goal that information will be found 80% of the time and in less than one minute.

Strength of the evidence: ●●●○○

• [How to interpret "strength of evidence" scale](#)

- Sources:**
- Baca, B. and Cassidy, A. (1999), Intranet development and design that works, *Proceedings of the Human Factors and Ergonomics Society* - 1999, 777-790.
 - Bradley, R.F. And Johnk, L.D. (1995), Replacing a networking interface "from hell," *Proceedings of CHI'95*, 538-545.
 - Grose, E., Pierre, S.J., Miller, D. and Goff, R. (1999), Applying usability methods to a large Intranet site, *Proceedings of the Human Factors and Ergonomics Society* - 1999, 762-766.



Share Independent Design Ideas

Guideline: Do not rely exclusively on the initial design ideas of one person or group for a Web site. The more varied and independent ideas considered before making the initial decisions, the better.

Comments: Most developers tend to adopt a "satisficing" strategy that focuses on initial, satisfactory, but less than optimal, solutions. Never be satisfied with a single opinion or the first idea. It is best to "saturate the design space" with ideas before making decisions and to consider alternatives (i.e., better design solutions, throughout the design process).

Strength of the evidence: ●●●●○

• [How to interpret "strength of evidence" scale](#)

- Sources:**
- Ball, L.J., Evans, J.B.T. And Dennis, I. (1994), Cognitive processes in engineering design: A longitudinal study, *Ergonomics*, 37(11), 1753-1786.
 - Ovaska, S. and Raiha, K.J. (1995), Parallel design in the classroom, *Proceedings of CHI'95*, 264-265.



Create and Evaluate Prototypes

Guideline: Use an iterative, or repeated, design approach to create the most useful and usable Web site by developing and testing prototypes.

Comments: Iterative design consists of creating paper and software prototypes, testing the prototypes, and then making changes based on test results. The "test and make changes" process is repeated until the Web site meets performance benchmarks ("usability goals"). When these goals are met, the iterative process ends.

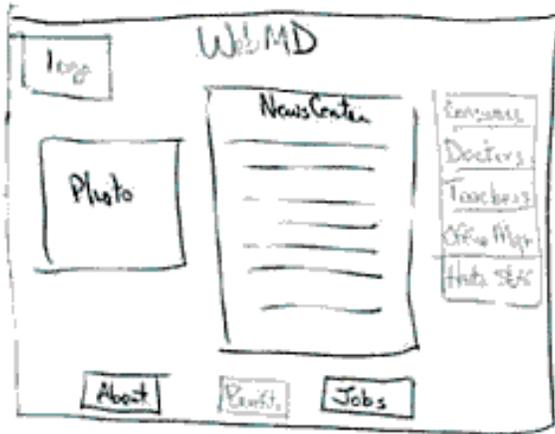
Strength of the evidence: ●●●●○

• [How to interpret "strength of evidence" scale](#)

- Sources:**
- Bailey, G.D. (1993), Iterative methodology and designer training in human-computer interface design, *Proceedings of InterCHI'93*, 198.
 - Bradley, R.F. And Johnk, L.D. (1995), Replacing a networking interface "from hell," *Proceedings of CHI'95*, 538-545.

Example:

Possible paper prototype



Finished product following iterative design, test, and change process



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Design Considerations

This section considers the following:

- [Establish Level of Importance](#)
- [Reduce Users' Workload](#)
- [Be Consistent](#)
- [Provide Feedback to Users](#)
- [Include Logos](#)
- [Limit Maximum Page Size](#)
- [Limit Use of Frames](#)

■ Establish Level of Importance

Guideline: Establish a high-to-low level of importance for each category and carry this approach throughout the design.

Comments: Important categories should appear higher on the page so users can locate them quickly.

Strength of the evidence: ●○○○○○
• [How to interpret "strength of evidence" scale](#)

Source: Detweiler, M.C. and Omanson, R.C. (1996), *Ameritech Web Page User Interface Standards and Design Guidelines* (www.ameritech.com).

Example:

The most important/
accessed
categories
appear near the
top of the
page

Less important
information
requires scrolling
down

Featuring
**HARVARD
MEDICAL
SCHOOL'S**
consumer
health information

April 05, 2001

Search IntelithHealth

Home
[Shopping](#)
[Drug Search](#)
[Condition Center](#)
[Healthy Living](#)
[Your Privacy](#)
[Cool Tonic](#)
[IntelithHealth Dental](#)
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[Health A to Z Resources](#)

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Drug Search
Medical Dictionary
Diseases & Conditions

Men's Health • Women's Health • Children's Health • Seniors' Health

Manage My Health • Chats • Boards • Ask The Doc

Which Water Is Best For You?
Which is better, bottled water or water from the tap? Which is your choice and what are the differences? [Read and see.](#)

Rickets Cases On The Rise
The number of childhood rickets cases is on the rise in the United States. [Read the details.](#)

This Just In...
People traveling in Europe have a small chance of [contracting mad cow disease.](#)

The Heart: It's Electric
See how our hearts keep the beat with our [interactive heart.](#)

Gestational Diabetes
Approximately 3 to 5 percent of all pregnant women in the U.S. are diagnosed with [gestational diabetes.](#)

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▶ [Fitness](#) ▶ [Pain and Stress](#) ▶ [Family Health](#)

Harvard Commentaries
Harvard Commentary: Medical Myths, Seeing Through Them
[Full Commentary](#) [More Commentaries](#)

Polls
Would you have breast implants, despite possible health risks?
 Yes

Be Consistent

Guideline: Present information and similar functions consistently throughout the site, including logos, page titles, headers, navigation elements, etc. Also use a consistent position on all pages for logos, recurring text, buttons, and graphics.

Comments: The more consistent a Web site is in its design, the easier it will be for users to quickly evaluate categories and match expectations on all pages. Users, particularly older users, tend to learn and remember locations of information, functions, and controls. Keep in mind that users spend most of their time on other sites, which is where they form their expectations for how the Web works on your site.

Strength of the evidence: ●●●●○
 • [How to interpret "strength of evidence" scale](#)

Source: • Detweiler, M.C. And Omanson, R.C. (1996), *Ameritech Web Page User Interface Standards and Design Guidelines* (www.ameritech.com).
 • Nielsen, J. (1999), Ten Good Deeds in Web Design, www.useit.com/alertbox/991003.html, October 3.

Example:

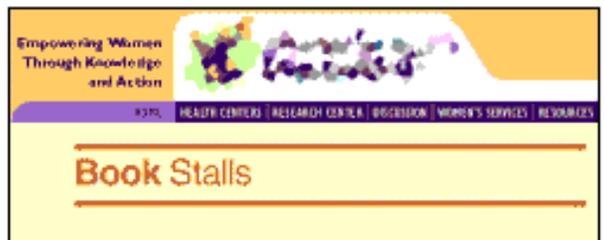
Do this—

The consistent placement of the logo, top navigation, and left-hand navigation helps orient users as they click through the site



Don't do this—

The navigation is missing on the right screenshot



Provide Feedback to Users

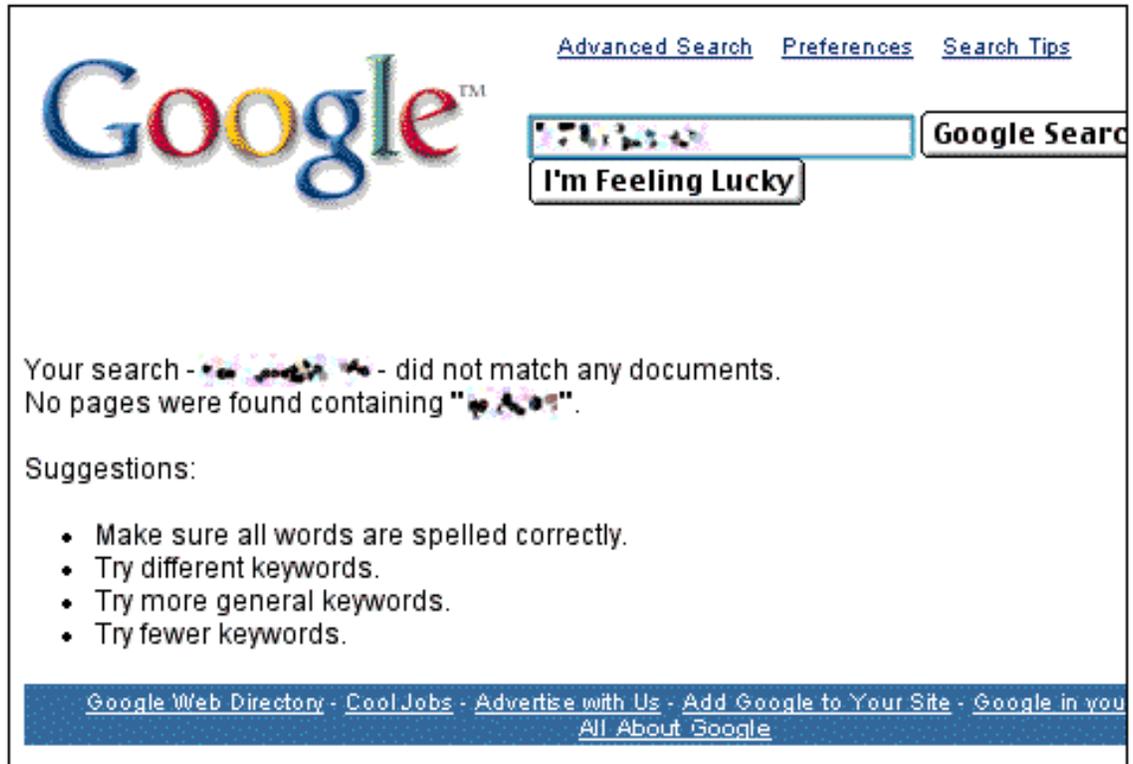
Guideline: Provide feedback to inform users where they are in your site.

Comments: Feedback provides users with information they need to proceed to the next activity. Feedback can be as simple as changing the color on a link after it has been clicked by a user.

Strength of the evidence: ●○○○○
 • [How to interpret "strength of evidence" scale](#)

Source: IBM (1999), *Web Design Guidelines: Design in Action* (www-3.ibm.com/ibm/easy/eou_ext.nsf/Publish/572)

Example:



Include Logos

Guideline: Place a logo(s) in a consistent place on every page to ensure users are fully aware they are on your Web site.

Comments: Frequently users are unaware when they have clicked to a different Web site. Logos are the most effective way to ensure that users know where they are. The logo should be in a consistent location on each page; many designers place the logo in the top left corner.

Strength of the evidence: ●●●●○
• [How to interpret "strength of evidence" scale](#)

Source:

- Nielsen, J. (1996), Top Ten Mistakes in Web Design, www.useit.com/alertbox/9605.html, May.
- Nielsen, J. (1999), "Top Ten Mistakes" Revisited Three Years Later, www.useit.com/alertbox/990502.html, May 2.
- Omanson, R.C., Cline, J.A., Kilpatrick, C.E. and Dunkerton, M.C. (1998), Dimensions affecting website identity, *Proceedings of the Human Factors and Ergonomics Society*, 429-433.
- Omanson, R.C., Cline, J.A. and Nordhielm, C.L. (2001), Effects of Visual Consistency on the Online Brand Experience, *2001 Advertising and Consumer Psychology Conference*, May 17-19.

Example:

Logos consistently placed on every page ensure that users are fully aware of their location while navigating a site



Limit Maximum Page Size

Guideline: Keep Web page size at or below 30,000 bytes for an acceptable downloading time.

Comments: The maximum allowable page size is 30,000 bytes in order to achieve desired response time of 10 seconds using a modem. Page sizes above 30,000 bytes may increase users' wait time; depending on their connection, users may not wait for the page to load.

Strength of the evidence: ●●○○○○
• [How to interpret "strength of evidence" scale](#)

Source:

- Detweiler, M.C. And Omanson, R.C. (1996), *Ameritech Web Page User Interface Standards and Design Guidelines* (www.ameritech.com).
- Nielsen, J. (1996), *Top Ten Mistakes in Web Design*, www.useit.com/alertbox/9605.html, May.

Example:

Do this—

Files averaging 28,000 bytes allows page to load relatively quickly using a 56K modem



Don't do this—

Files averaging 42,000 bytes increases load time significantly when accessed with a 56K modem



Limit Use of Frames

Guideline: Do not include frames in Web sites, unless there is a strong (clearly defensible) reason to do so.

Comments: Use frames only when other design solutions are not adequate. Frames may take longer to design, develop, and maintain. Splitting a page into frames can be confusing for users since frames can break the fundamental user model. Frames can yield unexpected results, particularly when using the "Back" button. Frames make a Web site difficult to use, and can prevent users from emailing a URL to others.

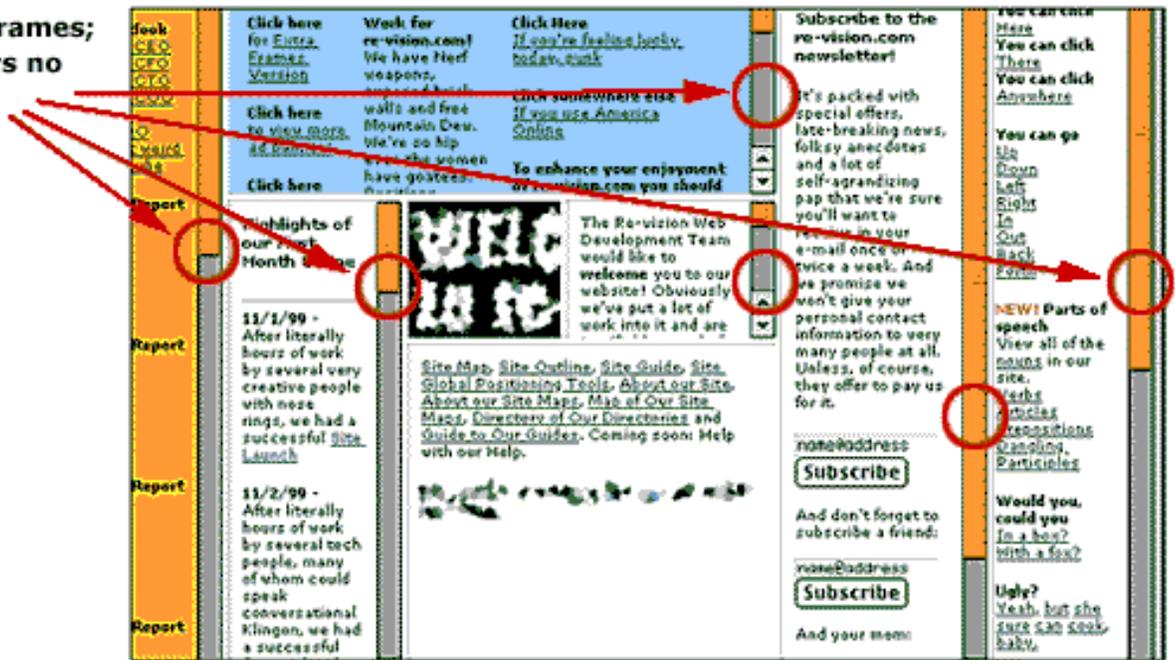
Strength of the evidence: ●●●○○○
 • [How to interpret "strength of evidence" scale](#)

Source:

- Nielsen, J. (1996), Top Ten Mistakes in Web Design, www.useit.com/alertbox/9605.html, May.
- Nielsen, J. (1999), "Top Ten Mistakes" Revisited Three Years Later, www.useit.com/alertbox/990502.html, May 2.
- Spool, J.M., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T. (1997), *Web Site Usability: A Designer's Guide*, North Andover, MA User Interface Engineering.

Example:

Overuse of frames; feature offers no value



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Content/Content Organization

This section considers the following:

- [Establish Level of Importance](#)
- [Use Short Sentence/Paragraph Lengths](#)
- [Provide Useful Content](#)
- [Provide Printing Options](#)
- [Put Important Information At Top of Hierarchy](#)

■ Establish Level of Importance

Guideline: Establish a high-to-low level of importance for each category and carry this approach throughout the design.

Comments: Important categories should appear higher on the page so users can locate them quickly.

Strength of the evidence: ●○○○○○
 • [How to interpret "strength of evidence" scale](#)

Source: Detweiler, M.C. and Omanson, R.C. (1996), *Ameritech Web Page User Interface Standards and Design Guidelines* (www.ameritech.com).

Example:

The most important/ accessed categories appear near the top of the page

Less important information requires scrolling down

Yes
 No

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Provide Useful Content

Guideline: Provide useful and usable content that supports the Web site goal on each page.

Comments: Content is the most critical element of a Web site. Providing easy access and good usability to the wrong content introduces a new problem.

Strength of the evidence: ●○○○○
 •[How to interpret "strength of evidence" scale](#)

Source: Levine, R. (1999), *Guide to Web Style*, [Sun Microsystems](#)

Example:

Useful content relevant to the user is provided

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Put Important Information at Top of Hierarchy

Guideline: Put as much important content as close to the top of the hierarchy as possible.

Comments: When creating a Web site that lends itself to a hierarchical style of organization (i.e., pyramid structure with most important information on the top), it is beneficial to "flatten" the hierarchy and to provide more information sooner. The more steps (or clicks) users must take to find the desired information, the greater the likelihood they will make a wrong choice.

Strength of the evidence: ●●●○○○

• [How to interpret "strength of evidence" scale](#)

- Sources:
- Bailey, R.W., Koyani, S. and Nall, J. (2000), Usability testing of several health information Web sites, *National Cancer Institute Technical Report*, September 7-8.
 - Spool, J.M., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T. (1997), *Web Site Usability: A Designer's Guide*, North Andover, MA User Interface Engineering.

Example:

Do this—

Text is easy to scan

Health literate people are people who:

- Can think things through and make health choices in solving their own problems
- Are responsible and make choices that benefit themselves and others
- Are in charge of their own learning
- Can use communication skills in clear and respectful ways

Don't do this—

Long sentences and long paragraphs are hard to scan for central ideas

Health literacy is the capacity of individuals to obtain, interpret, and understand health information and services and the competence to use such information and services in ways which enhance health. Both concepts (knowledge) and skills are essential components of health literacy. The National Health Education Standards describe both the knowledge and the skills that are essential to health literacy. The "knowledge includes the most important and enduring ideas, issues, and concepts related to achieving good health." The skills include the ways of communicating, reasoning, and investigating which characterize a health-literate person.



Provide Printing Options

Guideline: Provide an alternate form of all documents, resources, or files that can be printed in their entirety.

Comments: Many users prefer to read text from a paper copy of a document. They find this to be more convenient, and it allows them to make notes on the paper. Users sometimes print pages because they do not trust the Web site to have pages for them at a later date.

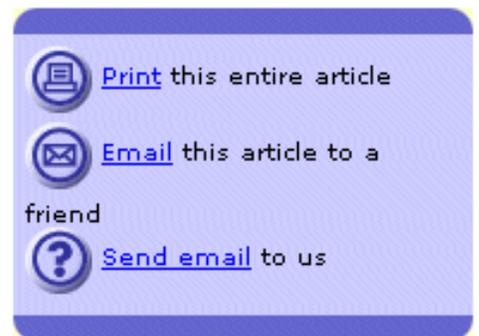
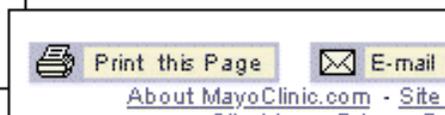
Strength of the evidence: ●●●○○○

• [How to interpret "strength of evidence" scale](#)

- Source:
- Detweiler, M.C. and Omanson, R.C. (1996), *Ameritech Web Page User Interface Standards and Design Guidelines* (www.ameritech.com).
 - Nielsen, J. (1997), Changes in Web Usability Since 1994, www.useit.com/alertbox/9712a.html, December 1.

Example:

Providing an alternate form of a Web document that can be printed aids in the user gathering content and information



[Home](#) • [Dictionary](#) • [Usability.gov](#) • [Privacy Policy](#) • [About this Site](#) • [Contact Us](#)

Printing Complete Guidelines

[Print/View Guidelines in Adobe Acrobat Portable Document Format \(PDF\)](#) (1.9 MB)

Updated 05/22/01

Requirement

- [Adobe Acrobat Reader](#) is required to view the PDF file. If you don't have Acrobat reader, you can download it free of charge from the Adobe Web site.



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Titles/Headings

This section considers the following:

- [Provide Page Titles](#)
- [Use Well-Designed Headings](#)

■ Provide Page Titles

Guideline: Put a descriptive and different title on each page.

Comments: "Titles" are used by search engines to identify pages when users search. Without titles, a page cannot be found. Additionally, if two or more pages have the same title, they cannot be differentiated by users or the "Favorites" capability of a browser.

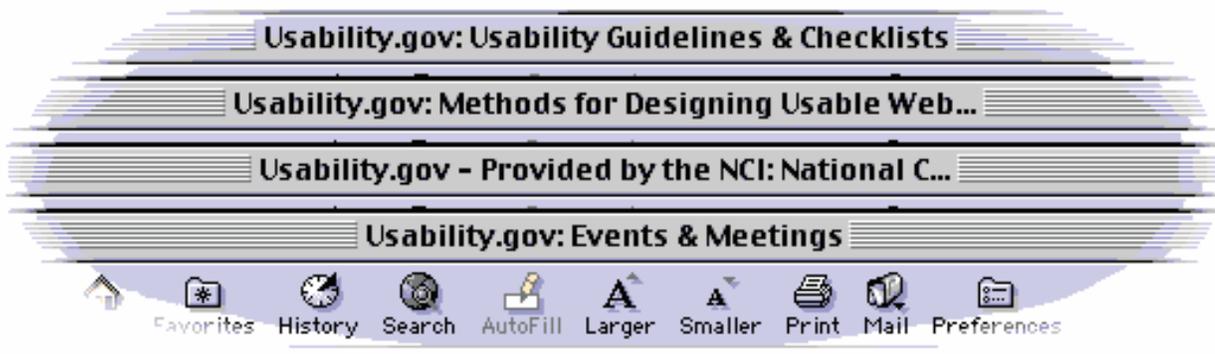
Strength of the evidence: ●○○○○○

• [How to interpret "strength of evidence" scale](#)

Source: Levine, R. (1996), *Guide to Web Style*, [Sun Microsystems](#).

Example:

Distinguish pages by varying titles within hierarchy of the site



■ Use Well-Designed Headings

Guideline: Use many, carefully selected headings, with names that conceptually relate to the information or functions they describe.

Comments: Headings provide strong cues that orient viewers and inform them about a page's organization and structure. Headings also help classify information on a page. Well-designed headings are an important tool for helping users scan text. Write headings and page titles that clearly explain what the page is about and that will make sense when read out-of-context. Headings are often removed from the context of the full page and used in tables of content and search engine results. This means that the headings should clearly tell users what is at the other end of the link.

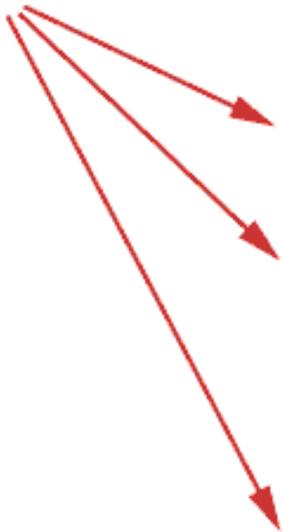
Strength of the evidence: ●●●●○

• [How to interpret "strength of evidence" scale](#)

- Sources:**
- Gerhardt-Powals, J. (1996), Cognitive engineering principles for enhancing human-computer performance, *International Journal of Human-Computer Interaction*, 8 (2), 189-211.
 - Murphy, E.D. and Mitchell, C.M. (1986), Cognitive attributes: Implications for display design in supervisory control systems, *International Journal of Man-Machine Studies*, 25 411-438.
 - Nielsen, J. (1999), The Top Ten New Mistakes of Web Design, www.useit.com/alertbox/990530.html, May 30.
 - Nielsen, J. (1999), Ten Good Deeds in Web Design, www.useit.com/alertbox/991003.html, October 3.

Example:

Users can scan this list of headings to find what interests them



Features

[Should You Participate in a Drug Study?](#)

There are both benefits and risks associated with participating in a clinical trial of a potential new treatment. Our rheumatologist discusses the things you should find out before deciding to take part.

[What's Causing Your Sleepless Nights?](#)

Insomnia is not a disease. It is a symptom. Find out about possible underlying causes of insomnia, who gets it and how tuning in to your body can help you get a good night's sleep.

[Election 2000: The Healthcare Election](#)

If healthcare matters to you, you'll want to read our analyses of the candidates' stances on the four big issues this election. Your vote will determine your healthcare future.

[Win the Product Claim Game](#)

A new product appears almost every day -- one that's seemingly better than the one before. But is it really? Find out who regulates the claims new products make, and how you can get your money's worth at the drugstore.

[Oral Cancer](#)

Some tumors that form in the mouth are not cancerous and pose no serious threat to your health. Cancerous oral tumors are another story. When you notice



TOP OF PAGE

Page Length

This section considers the following:

- [Determine Page Length](#)
- [Determine Scrolling vs. Paging Needs](#)

Determine Page Length

Guideline: Use short pages for (a) home pages and all navigation pages, (b) pages that need to be quickly browsed and/or read online, and (c) pages with very long graphics.

Use long pages to (a) simplify page maintenance (fewer Web page files to maintain), (b) match the structure of a paper counterpart, and (c) make pages more convenient to download and print.

Comments: Determine your goals and your users' goals when making page length decisions. Short pages, those containing one or two screens of text, work well for the home page and menu pages when users are scanning for link choices. Longer pages, although they require more scrolling, may work well for destination pages where related content can be printed and read/scanned together.

Strength of the evidence: ●●○○○

- [How to interpret "strength of evidence" scale](#)

Sources:

- Lynch, P. and Horton, S. (1997), *Yale Web Style Manual*, www.info.med.yale.edu/caim/manual/contents.html
- Lynch, P.J. and Horton, S. (1999), *Web Style Guide: Basic Design Principles for creating Web Sites*, Yale University Press.

Example:

Shorter page is used for this home page (so most content requires no scrolling)

The screenshot shows the NIH homepage with a clean, organized layout. At the top, there is a header with the NIH logo and navigation links: Health, Grants, News, Science, Institutes, and About NIH. Below the header, the main content is divided into two columns. The left column contains several sections, each with a blue icon and a title: Health Information, Grants & Funding Opportunities, News & Events, Scientific Resources, Institutes, Centers & Offices, and About NIH. The right column contains a Q&A section, Employment Opportunities, and Visitor Information. The overall design is professional and easy to navigate.

Determine Scrolling vs. Paging Needs

Guideline: If reading speed is important and response time is reasonably fast, use paging (linking) rather than scrolling.

Comments: Users should be able to move from page to page by selecting links (paging) without always scrolling to important information. This is particularly true for home pages and menu pages. One study showed that users spent about 13% of their total time scrolling within pages. Although each scrolling event takes little time, overall users can spend a considerable amount of time scrolling.

Strength of the evidence: ●●●○○○
 • [How to interpret "strength of evidence" scale](#)

- Sources:**
- Dyson, M. and Kipping, G. (1999), The effect of line length and number of columns on reading performance, <http://www.rdg.ac.uk/AcaDepts/lt/main/resea/publ/titles/98.html>.
 - Byrne, M.D., John, B.E., Wehrle, N.S. and Crow, D.C. (1999), The tangled web we wove: A taskonomy of WWW use, *CHI 99 Conference Proceedings*, 544-551.
 - Nielsen, J. (1997), Changes in Web Usability Since 1994, www.useit.com/alertbox/9712a.html, December 1.

Example:

Both home page and second tier menu page provide quick options to users without requiring them to scroll



Page Layout

This section considers the following:

- [Align Page Elements](#)
- [Establish Level of Importance](#)
- [Be Consistent](#)
- [Reduce Unused Space](#)
- [Put Important Information At Top of Page](#)
- [Format for Efficient Viewing](#)

Align Page Elements

Guideline: Align (vertically and horizontally) information, items, and widgets on a page, window, or screen.

Comments: Users prefer rows and columns on page to be aligned and, as a result, are better able to read the text.

Strength of the evidence: ●●●●○

• [How to interpret "strength of evidence" scale](#)

- Sources:**
- Parush, A., Nadir, R., and Shtub, A (1998), Evaluating the layout of graphical user interface screens: Validation of a numerical computerized model, *International Journal of Human-Computer Interaction*, 10(4), 343-360.
 - Tullis, T.S. (1983), The formatting of alphanumeric displays: A review and analysis, *Human Factors*, 25(6), 657-682.

Example:

Users can read the material easier when columns and links are arranged logically

Do this—



Don't do this—





Establish Level of Importance

Guideline: Establish a high-to-low level of importance for each category and carry out this approach throughout the entire Web site.

Comments: Important categories should appear higher on the page so users can locate them quickly.

Strength of the evidence: ●○○○○○
• [How to interpret "strength of evidence" scale](#)

Source: Detweiler, M.C. and Omanson, R.C. (1996), *Ameritech Web Page User Interface Standards and Design Guidelines* (www.ameritech.com).

Example:

The most important/ accessed categories appear near the top of the page

Less important information requires scrolling down

The screenshot shows the IntelithHealth website layout. At the top, there is a navigation bar with categories like 'Men's Health', 'Women's Health', 'Children's Health', and 'Seniors' Health'. Below this is a search bar and a 'Go' button. The main content area features several articles, including 'Which Water Is Best For You?' and 'Rickets Cases On The Rise'. A sidebar on the left contains a search bar, a 'Go' button, and a list of links such as 'Home', 'Shopping', 'Drug Search', and 'Condition Center'. At the bottom, there is a 'FREE shipping' banner and a 'Polls' section with a question about breast implants.

Annotations with red arrows point from the text on the left to various parts of the page:

- From 'The most important/ accessed categories appear near the top of the page' to the top navigation bar and the 'Drug Search' button.
- From 'Less important information requires scrolling down' to the 'Advertisement' section and the 'FREE shipping' banner.

Be Consistent

Guideline: Place logos, recurring text, buttons, and graphics in a consistent position on all pages.

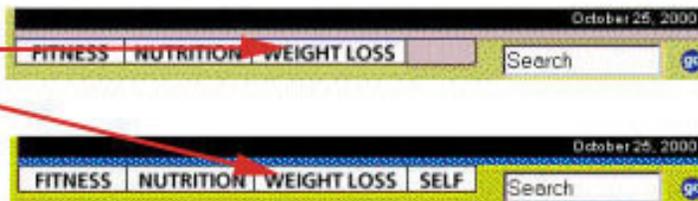
Comments: Users, particularly those older than 65, tend to learn and remember locations of information, functions, and controls.

Strength of the evidence: ●○○○○○
 • [How to interpret "strength of evidence" scale](#)

Source: Detweiler, M.C. And Omanson, R.C. (1996), *Ameritech Web Page User Interface Standards and Design Guidelines* (www.ameritech.com).

Example:

Do this—
 Maintain consistent placement of navigation buttons and search functions from page to page



Don't do this—
 Avoid changing placement and arrangement of graphics and navigational buttons



Reduce Unused Space

Guideline: Reduce the amount of unused space on pages used for scanning and searching.

Comments: On pages that are primarily links or categories, like a home page, the greater the density, the faster the scanning. "Density" is defined as the percent of the screen filled with categories and text. Density has no impact on user accuracy or preference. On content/text pages, using some white space to separate paragraphs and ideas is important. As a rule, use less white space than you would on paper.

Strength of the evidence: ●●●●○

• [How to interpret "strength of evidence" scale](#)

Sources:

- Stagers, N. (1993), Impact of screen density on clinical nurses' computer task performance and subjective screen satisfaction, *International Journal of Man-Machine Studies*, 39, 775-792.
- Spool, J.M., Scanlon, T., Schroeder, W., Synder, C. and DeAngelo, T. (1997), *Web Site Usability: A Designer's Guide*, North Andover, MA, User Interface Engineering

Example:

Do this—
Compared to the screen capture below, the top Web page has a much higher percentage of screen "density"



Don't do this—



Put Important Information at Top of Page

Guideline: Put important items at the top, "above the fold" (in the first screenful of information), to ease scanning.

Comments: Experienced users usually scan a Web page menu or a list from top to bottom. Users generally look at the top center of a page first, then look left, then right, and finally begin systematically moving down the total page. All critical content and navigation options should be at the top of the page. Particularly on navigation pages, all major choices should be visible without scrolling. Users may conclude that what they see on the visible portion of the page is not of interest, and not bother scrolling down to see the rest of the page.

Strength of the evidence: ●●●○○○

• [How to interpret "strength of evidence" scale](#)

- Sources:**
- Byren, M.D., Anderson, J.R., Douglass, S. and Matessa, M. (1999), Eye tracking the visual search of click-down menus, *CHI 99 Conference Proceedings*, 402-409.
 - Bailey, R.W., Koyani, S. and Nall, J. (2000), Usability testing of several health information Web sites, *National Cancer Institute Technical Report*, September 7-8.
 - Nielsen, J. (1996), Top Ten Mistakes in Web Design, www.useit.com/alertbox/9605.html, May.
 - Nielsen, J. (1997), Changes in Web Usability Since 1994, www.useit.com/alertbox/9712a.html, December 1.
 - Nielsen, J. (1999), Top Ten Mistakes Revisited Three Years Later, www.useit.com/alertbox/990502.html, May 2.
 - Nielsen, J. (1999), The Top Ten New Mistakes of Web Design, www.useit.com/alertbox/990530.html, May 30.

Example:

Do this—
 Yahoo has more than 70 links in the first screenful of information



Don't do this—
 This site offers almost no menu options to users in the first screenful



Format for Efficient Viewing

Guideline: Determine, then design, the most efficient viewing and use of information on each page.

Comments: Users spend about 58% of their time using information on the site (viewing, scanning, reading, printing, downloading, etc.). To allow efficient use, tradeoffs are usually required. For example, on some pages it is worthwhile to sacrifice ease of reading for ease of scanning. Developers should evaluate the most common use of each page and make design decisions that ensure the best possible performance. Structure each page to facilitate scanning and help users ignore large chunks of the page in a single glance. Studies report that between 75% and 79% of users scan any new page. Only 16% read word-by-word. Also, most users (78%) tend to focus first on text, not graphics.

Strength of the evidence: ●●●○○○

• [How to interpret "strength of evidence" scale](#)

- Source:**
- Byrne, MD, John, B.E., Wehrle, N.S. and Crow, D.C. (1999), The tangled web we wove: A taskonomy of WWW use, *CHI 99 Conference Proceedings*, 544-551.
 - Nielsen, J. (1997), How Users Read on the Web, www.useit.com/alertbox/9710a.html, October 1.
 - Nielsen, J. (1999), Ten Good Deeds in Web design, www.useit.com/alertbox/991003.html, October 3.
 - Nielsen, J. (2000), Eyetracking Study of Web Readers, www.useit.com/alertbox/20000514.html, May 14.

Example:

Lengthy text is limited on this page to allow users to scan and make selections (detailed text is offered after selection is made)



Font/Text Size

This section considers the following:

- [Use Readable Font Sizes](#)
- [Use Familiar Fonts](#)

■ Use Readable Font Sizes

Guideline: Use at least a 10-point font to achieve the best possible reading performance.

Comments: Research has shown that fonts smaller than 10-point elicited slower performance from users. For people over 65, it may be better to use at least 12 or 14 point. A rule-of-thumb is for a size 3 character on the users screen to equal a printed 12 point character of the same font.

Strength of the evidence:  [How to interpret "strength of evidence" scale](#)

Source: Tullis, T.S., Boynton, J.L. and Hersh, H. (1995), Readability of fonts in the windows environment, *Proceedings of CHI'95*, 127-128.

Example:

12 point font	Federal health officials are urging healthy people to wait until late November for vaccination. That will allow elderly, pregnant women and people with chronic illnesses such as asthma, heart disease or weak immune systems to receive the first shots now being shipped.
10 point font	Federal health officials are urging healthy people to wait until late November for vaccination. That will allow elderly, pregnant women and people with chronic illnesses such as asthma, heart disease or weak immune systems to receive the first shots now being shipped.
8 point font	Federal health officials are urging healthy people to wait until late November for vaccination. That will allow elderly, pregnant women and people with chronic illnesses such as asthma, heart disease or weak immune systems to receive the first shots now being shipped.



■ Use Familiar Fonts

Guideline: Use either a familiar serif or sans serif font to achieve the best possible reading speed. Do not mix serif and sans serif fonts within the text, because it may decrease reading speed.

Comments: Research shows no reliable differences in reading speed or user preferences between 10-point Times Roman, Georgia serif fonts, Helvetica, or Verdana sans serif fonts.

Strength of the evidence:  [How to interpret "strength of evidence" scale](#)

Source: Boyarski, D., Neuwirth, C., Forlizzi, J., and Regli, S.H. (1998). A study of fonts designed for screen display, *CHI 98 Conference Proceedings*, 87-94.

Example:

The mixing of serif and sans serif fonts decreases reading speed

Do you have what it takes? Applicants for the Officer Candidate School program must:

- Be at least 19 years of age and not have passed their 29th birthday at the time of Regular (full-time) enlistment. (Applicants who are 30-34 years of age may request a waiver)
- Be a citizen of the United States.
- Have earned a 4-year college degree or higher prior to entering the Army and beginning OCS. (College students who expect to graduate may apply, however).
- Earn a minimum of 110 GT score on the Armed Forces Vocational Aptitude Battery (ASVAB). (Note: The GT score is one component of the ASVAB results).
- Meet the Army's screening height and weight standards for males or females.
- Take a complete physical exam at a Military Entrance Processing Station no more than 12 months prior to the date of application and meet entry medical fitness standards as determined by military medical authorities.
- Be able to obtain a security clearance.
- Not have more than 10 years of active Federal service when appointed as a commissioned officer.

Individuals who served prior in any branch of the U.S. Military are also eligible for this program, including those in the United States Army Reserve and Army National Guard.



Reading and Scanning

This section considers the following:

- [Use Reading Performance or User Preference](#)
- [Enhance Scanning](#)
- [Determine Scrolling vs. Paging Needs](#)

■ Use Reading Performance or User Preference

Guideline: If reading speed is important, use longer line lengths (100 characters per line) rather than shorter line lengths (55 characters per line).

Comments: Users read faster when line lengths are long, although they tend to prefer shorter line lengths. When designing, first determine if performance or preference is important. If user performance is critical, use longer line lengths to increase reading speed. However, if user preference is critical, use shorter line lengths.

Strength of the evidence:  [How to interpret "strength of evidence" scale](#)

Sources:

- Dyson, M. and Kipping, G. (1999), The effect of line length and number of columns on reading performance, <http://www.rdg.ac.uk/AcaDepts/it/main/resea/publ/titles/98.html>.
- Youngman, M. and Scharff, L. (1999), Text width and margin width influences, <http://hubel.sfasu.edu/research/textmargin.html>

Example:

If reading speed is critical — faster reading speed — around 100 characters per line

Here is an introduction to what low vision is, common causes, and low vision aids. The discussion on causes of low vision is better than those on similar pages because it gives some detail about each condition rather than simply listing them.

If users' preference is critical — users' preferred line length — 55 characters or fewer per line

Send us articles for the Online library. Nothing supports the needs of men better than these stories. You need not be a great writer. Just speak from the heart and say what is important to you.



■ Enhance Scanning

Guideline: Enhance scanning by providing clear links, headings, short phrases and sentences, and short paragraphs.

Comments: Users tend to scan, stopping only when they find something interesting. Research shows that users have difficulty finding a specific piece of information when the page contains wall-to-wall text. Users struggle to find alternatives to reading. They resort to a modified scan strategy and usually read the first sentence and/or scan for links on the page.

Determine Scrolling vs. Paging Needs

Guideline: If response time is reasonably fast, and the page is used primarily for navigation, use paging rather than scrolling.

Comments: Users should be able to move from page to page by selecting links (paging) without always scrolling to important information. This is particularly true for home pages and menu pages. One study showed that users spent about 13% of their total time scrolling within pages. Although each scrolling event takes little time, overall users can spend a considerable amount of time scrolling. Pages that can improve performance by scrolling should be made as long as necessary; as a rule though, it should be a rare exception to go beyond three screensful.

Strength of the evidence: ●●○○○○
 • [How to interpret "strength of evidence" scale](#)

Source: Dyson, M. and Kipping, G. (1999), The effect of line length and number of columns on reading performance, <http://www.rdg.ac.uk/AcaDepts/lt/main/resea/publ/titles/98.html>.

Example:

Both home page and second tier page provide a menu of link options and are therefore designed for paging. Longer, scrollable pages are reserved for the destination pages — the content

The screenshot shows the FirstGov website home page. The page layout includes a header with the logo and navigation links (Home, Privacy & Security, Help, FAQ). Below the header is a 'WELCOME to FirstGov' section. The main content area is divided into several columns of links and information:

- Featured Subjects:** - New Administration Tax Forms, - E-file Your Taxes, - Census 2000 Results, - Valentine's Day, - Past Features
- Keyword Search:** Search for: [input field], Search Tips, Advan
- Interesting Topics:** - Agriculture and Food (Farms, Food, Nutrition), - Arts and Culture (Museums, History, Grants), - Business and Economy (Business Advisor, Statistics, Trade), - Common Interests (Kids, Disabilities, Seniors, Veterans), - Consumer Services and Safety (Recalls, Complaints, Safe)
- U.S. Government:** - Executive Branch, - Legislative Branch, - Judicial Branch
- Doing Business with Government:** - Museums, - History, - Grants
- Related Links:** - Art in the White House, - Encyclopedia of Smithsonian Museums, - Foreign Exchange Programs of the State Department, - Historic Places - National Register, - Historic Preservation

Annotations include a 'TOP OF PAGE' button at the bottom left and a footer with navigation links: Home • Dictionary • Usability.gov • Privacy Policy • About this Site • Contact Us.

Links

This section considers the following:

- [Position Important Links Higher](#)
- [Show Links Clearly](#)
- [Indicate Internal vs. External Links](#)
- [Use Descriptive Link Labels](#)
- [Use Text Links](#)
- [Avoid Mouse Overs](#)
- [Repeat Text Links](#)
- [Present Tabs Effectively](#)
- [Show Used Links](#)

Position Important Links Higher

Guideline: Place important links and information high on the page (at a minimum, above the fold or scroll line).

Comments: When pages have more than a screenful of information, users spend much more time on the top of the page and less time on the remaining screen of information. Research emphasizes that there is an 80-20 split, with 80% of time spent on the first screenful and the remaining 20% on the rest of the page.

Strength of the evidence: ●●○○○○

• [How to interpret "strength of evidence" scale](#)

Source: Bailey, R.W., Koyani, S. and Nall, J. (2000), Usability testing of several health information Web sites, *National Cancer Institute Technical Report*, September 7-8.

Example:

Good use of design space (high density) reduces the need for extensive scrolling to get to needed information

The screenshot shows the Yahoo! homepage with a high density of links. At the top, there are icons for Auctions, Messenger, Check Email, What's New, and Personalize. Below these are navigation links for Shop, Auctions, Classifieds, Shopping, Travel, Yellow Pgs, Maps, Media, News, Sports, Stock Quotes, TV, Connect, Chat, Clubs, Games, GeoCities, Greetings, Mail, Members, Messenger, Personals, People Search, Personal, My Yahoo!, AddBook, Calendar, Briefcase, Photos, Alerts, Bookmarks, Companion, and Bill Pay. The main content area is divided into several sections: Yahoo! Auctions (with categories like Antiques, Autos, Coins, Computers, Electronics, Tickets, Sports Cards, Stamps, and items like Derek Jeter, F1 Race Car, Hello Kitty, Kate Spade, Palm Pilots, Longaberger, MP3 Players, Morgan Dollars), Arts & Humanities (Literature, Photography...), News & Media (Full Coverage, Newspapers, TV...), Business & Economy (E2B, Finance, Shopping, Jobs...), Recreation & Sports (Sports, Travel, Autos, Outdoors...), In the News (Russian divers find letter from Kursk crew, Peru's Fujimori launches message for spy chief, Sony PlayStation2 debuts in America), and Marketplace (Free 56K Internet Access, new! Yahoo! PayDirect - see receive money online, Yi Travel - plan your holiday).

Show Links Clearly

Guideline: Use blue underlined text for all unused links when possible. Do not require users to move the mouse to see when the pointer changes to a hand (mine sweeping).

Comments: Some links are missed by users because the links are not evident. Links must be clearly designated so that there is little (or no) uncertainty on the part of the users as they click on a link. Research has shown that when users were given visual cues to locate links, as opposed to using the pointer to search for links, they were able to find the information seven times faster.

For text, users expect links to be blue and underlined.

For a graphic link, the term "click here" has been shown to increase recognition that the graphic is a link. However, some automatic screen readers may have problems deciphering what "click here" refers to.

Strength of the evidence: ●●○○○○

• [How to interpret "strength of evidence" scale](#)

Sources: • Lynch, P.J. and Horton, S. (1997), *Yale Web Style Manual* (www.info.med.yale.edu/caim/manual/contents.html).

• Lynch, P.J. And Horton, S. (1999), *Web Style Guide: Basic Design Principles for Creating Web Sites*, Yale University Press.

• Bailey, R.W., Koyani, S. and Nall, J. (2000), Usability testing of several health information Web sites, *National Cancer Institute Technical Report*, September 7-8.

Example:

Don't do this—

Graphics don't always clearly indicate a link to users



Do this—

Links that are underlined and blue are easy to recognize as links



Indicate Internal vs. External Links

Guideline: Clearly indicate when a link will move users to (a) the same page, (b) a different page in the same Web site or, (c) a page on a different Web site.

Comments: Users tend to assume that links will take them to another page within the same Web site.

Strength of the evidence: ●●○○○○

• [How to interpret "strength of evidence" scale](#)

Source: Spool, J.M., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T. (1997), *Web Site Usability: A Designer's Guide*, North Andover, MA User Interface Engineering.

Example:

Add URL addresses below links to help users determine where they are going

By seeing the .gov and .com the user is also alerted to the type of site they are clicking on

Web Site Guidelines

[Web Site Design and Usability Guidelines](http://usability.gov/guidelines)
http://usability.gov/guidelines

- Provides guidelines for improving Web design, navigation, function
- Includes findings from Web design and usability literature identified by the National Cancer Institute and provides references

[GUI and Web Standards and Guidelines](http://www.weinschenk.com/guidelinesdemo/)
http://www.weinschenk.com/guidelinesdemo/

- Provides benefits of using standards and guidelines
- Shows how to design user interfaces that are easy to use

[Web Design Guidelines: Design in Action](http://www-3.ibm.com/cmv/easy/eou_ext.nsf/Publish/572)
http://www-3.ibm.com/cmv/easy/eou_ext.nsf/Publish/572



Use Descriptive Link Labels

Guideline: Label links descriptively so that users can discriminate between similar links.

Comments: Users can be slowed when they must ponder the differences between similar link labels.

Strength of the evidence: ●●○○○○
 • [How to interpret "strength of evidence" scale](#)

Source: Spool, J.M., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T. (1997), *Web Site Usability: A Designer's Guide*, North Andover, MA User Interface Engineering.

Example:

Link labels are clear and distinct, allowing users to distinguish paths quickly

CancerNet

A service of the National Cancer Institute

Credible. Current. Comprehensive.

Your gateway to the most recent and accurate cancer information from the [National Cancer Institute](#), a component of the [National Institutes of Health](#).

home
help
dictionary
search

What information do you need?

- [Types of Cancer](#)
 - Breast, Colon, Leukemia,...
 - Statistical Data
- [Treatment Options](#)
 - Treatment Information
 - Chemotherapy, Radiation Therapy,...
 - Alternative/Complementary Medicine
- [Clinical Trials](#)
 - cancerTrials
 - Finding Clinical Trials
 - Understanding Clinical Trials
 - Clinical Trial Resources
- [Genetic Causes](#)

- [Coping with Cancer](#)
 - Side Effects of Treatment
 - Complications Caused by Cancer
 - Emotional and Other Concerns
- [Support and Resources](#)
 - Support Groups
 - Hospice, Home Care
 - Resources for Patients/Survivors, Caregivers, Health Professionals
- [Cancer Literature](#)
 - CANCERLIT
 - Journal of the National Cancer Institute

NEWS

Nationwide Danish Study Finds No Link Between Cell Phone Use and Cancer
[full story](#) [other news](#)
[CancerNet news archive](#)

first-time visitor?

what's new on CancerNet

about this site

other ways to get more information



■ Use Text Links

Guideline: Use text links. Do not use image links.

Comments: Text links generally download faster, are preferred by users, and change colors after being selected.

Strength of the evidence: ●●○○○○
•[How to interpret "strength of evidence" scale](#)

Source: Spool, J.M., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T. (1997), *Web Site Usability: A Designer's Guide*, North Andover, MA User Interface Engineering.

Example:



■ Avoid Mouseovers

Guideline: Do not rely on "mouseovers" for users to identify links. Always use underlines or some other visual indicator (e.g. a stacked list of items) to indicate that words are links.

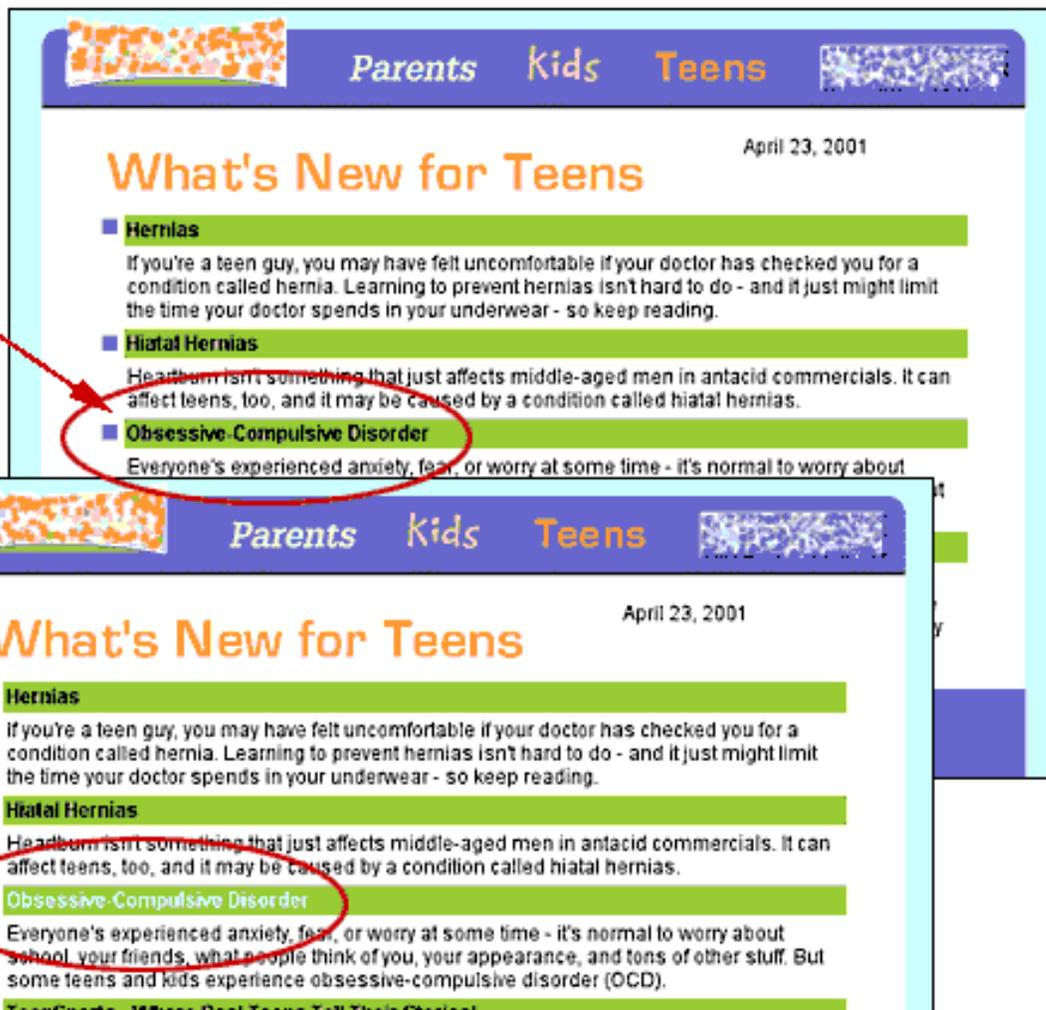
Comments: Relying on mouseovers to designate links can confuse newer users and tend to slow them down because users are uncertain which links perform which functions.

Strength of the evidence: ●●○○○○
•[How to interpret "strength of evidence" scale](#)

Source: Bailey, R.W., Koyani, S. and Nall, J. (2000), Usability testing of several health information Web sites, *National Cancer Institute Technical Report*, September 7-8.

Example:

This text requires the user to "roll over" it with a cursor to indicate that it's a link



Repeat Text Links

Guideline: Ensure that the most important content can be accessed from more than one related text link.

Comments: Some users find important links easily when they have a certain label, while others may recognize the link best with an alternative name. When the information is critical to the success of the Web site, provide more than one link name (that satisfies all users) to the same content.

Strength of the evidence: ●○○○○○
 •How to interpret "strength of evidence" scale

Source: Detweiler, M.C. And Omanson, R.C. (1996), *Ameritech Web Page User Interface Standards and Design Guidelines* (www.ameritech.com).

Example:

Multiple links provide the user with alternative routes for finding the same information

Types of Cancer
 Select a specific type of cancer (from the list of Common Cancers, Alphabetical List, Body Location/System List) or general information.

Common Cancers

- [Bladder Cancer](#)
- [Breast Cancer](#)
- [Colon Cancer](#)
- [Endometrial Cancer](#)
- [Head and Neck Cancer](#)
- [Lung Cancer](#)
- [Melanoma](#)
- [Non-Hodgkin's Lymphoma](#)
- [Prostate Cancer](#)
- [Rectal Cancer](#)

Alphabetical List of Many Cancers

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#)
[N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

Body Location/System List

- [AIDS-Related](#)
- [Bone](#)
- [Brain](#)
- [Breast](#)
- [Childhood Cancers](#)
- [Digestive/Gastrointestinal](#)
- [Endocrine](#)
- [Hematologic/Blood](#)
- [Leukemia](#)
- [Lung](#)
- [Lymphoma](#)
- [Musculoskeletal](#)
- [Neurologic](#)
- [Pregnancy and Cancer](#)



Present Tabs Effectively

Guideline: Place tabs that are used for links at the top of the page and ensure that they look like clickable, real-world tabs.

Comments: Research has shown that users are more likely to find and click appropriately on tabs that look like real-world tabs. Real-world tabs are those that look like the ones found in a file drawer (see the example below). Users can be confused when the tabs do not look like real-world tabs and/or the words are not underlined.

Strength of the evidence: ●●○○○○
 • [How to interpret "strength of evidence" scale](#)

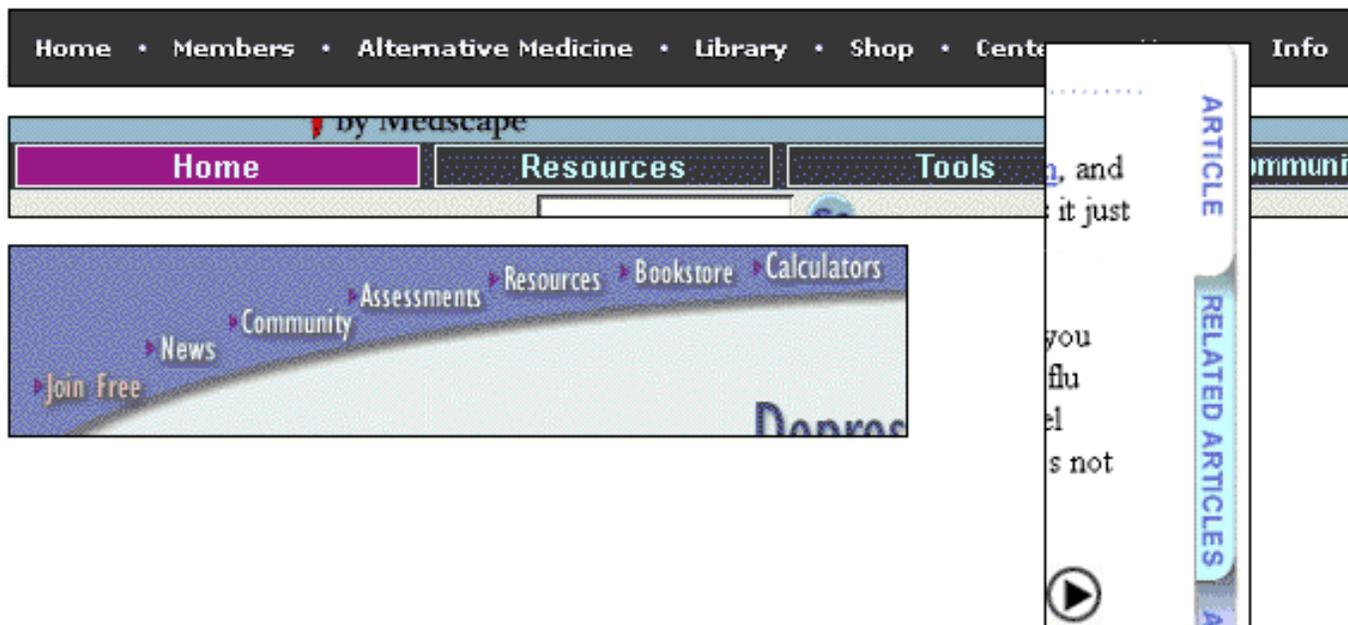
Source: Bailey, R.W., Koyani, S. and Nall, J. (2000), Usability testing of several health information Web sites, *National Cancer Institute Technical Report*, September 7-8.

Example:

Do this—



Don't do this—



Show Used Links

Guideline: Indicate to users when a link has been clicked. If a user selects one link, and there are other links to the same target, make sure all links change colors.

Comments: In a study of the speed with which users could find certain information, providing this type of feedback was the only aspect found to improve the speed of finding information. Make links that have not been clicked blue, and clicked links purple or red. Users continue to use link colors to understand which parts of a site they have visited. Where no evidence of link use, or non-standard colors are used, users repeatedly bounce among a set of pages not knowing that they are going back to the same page again and again.

Strength of the evidence: ●●●○○○
 • [How to interpret "strength of evidence" scale](#)

- Source:**
- Nielsen, J. (1996), Top Ten Mistakes in Web Design, www.useit.com/alertbox/9605.html, May.
 - Nielsen, J. (1999), Top Ten Mistakes Revisited Three Years Later, www.useit.com/alertbox/990502.html, May 2.
 - Nielsen, J. (1999), The Top Ten New Mistakes of Web Design, www.useit.com/alertbox/990530.html, May 30.
 - Spool, J.M., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T. (1997), *Web Site Usability: A Designer's Guide*, North Andover, MA User Interface Engineering.

Example:

A change in link color assists the user in finding information

The screenshot shows a website layout with a light blue background. On the left, there are two sections: 'Resources for Scientists' and 'Partnerships'. On the right, there is a 'News' section with a list of articles and a 'More Press Releases' section. A '1-800-4-CANCER Cancer Information Service' section is also present. Two red arrows originate from the text box on the left. One arrow points to the link 'Questions and Answers for the National Cancer Institute Study of Brain Tumors and Use of Cellular Telephones' in the News section. The other arrow points to the 'Cancer Information Service' link in the 1-800-4-CANCER section.

Resources for Scientists
Funding Opportunities
Training Programs
Extraordinary Scientific Opportunities
Reagents and Tools
Technology Programs

Partnerships
Technology Transfer
Industry Collaborations
Advocacy Groups

News

- [NIH Course on Human Research Protections Goes Online](#)
- [No Association Found Between Cellular Phone Use and Risk of Brain Tumors](#)
- [Questions and Answers for the National Cancer Institute Study of Brain Tumors and Use of Cellular Telephones](#)
- [Researchers Complete Extensive Youth Smoking Prevention Study](#)

More Press Releases

1-800-4-CANCER
Cancer Information Service
The CIS is your source for the latest, most accurate cancer information.



Graphics

This section considers the following:

- [Use Graphics Wisely](#)
- [Avoid Using Graphics As Links](#)
- [Avoid Graphics On Search Pages](#)

Use Graphics Wisely

Guideline: Use only graphics that enhance content or that lead to a better understanding of the information being presented.

Comments: Users may be willing to wait for graphics to download when they add value to the site's content. Regardless, use small and few graphics when possible to reduce download time.

Strength of the evidence: ●●●○○○

- [How to interpret "strength of evidence" scale](#)

Source: Spool, J.M., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T. (1997), *Web Site Usability: A Designer's Guide*, North Andover, MA User Interface Engineering.

- Nielsen, J. (1999), Top Ten Mistakes Revisited Three Years Later, www.useit.com/alertbox/990502.html, May 2.
- Nielsen, J. (1997), Changes in Web Usability Since 1994, www.useit.com/alertbox/9712a.html, December 1.

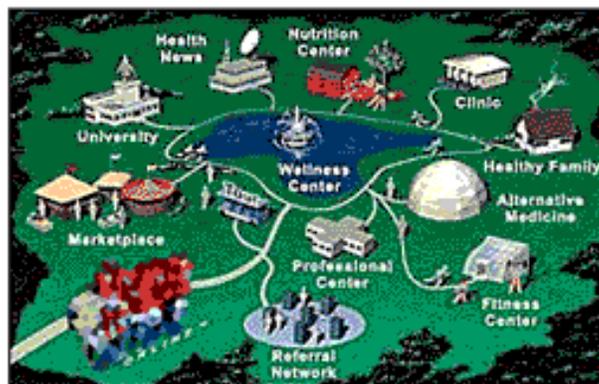
Example:

Do this—

If the user chose an option to get a campus map, the user is likely to be willing to wait for this graphic to download



Don't do this—



Graphics - used for show - add no value and increase download time excessively

Avoid Using Graphics As Links

Guideline: Avoid using graphics that do not have descriptive labels as clickable items wherever possible.

Comments: Clickable images generally confuse users, especially images that contain only graphics. Some that contain both graphics and words are also confusing because users do not know if the images are clickable without using the mouse's pointer ("mine sweeping.") Even with the "sweeping," users are not always sure which areas of an image are clickable, and whether there are several clickable sections on the same graphic.

Strength of the evidence: ●●○○○

• [How to interpret "strength of evidence" scale](#)

Source: Bailey, R.W., Koyani, S. and Nall, J. (2000), Usability testing of several health information Web sites, *National Cancer Institute Technical Report*, September 7-8.

Example:



Avoid Graphics On Search Pages

Guideline: Avoid use of graphics on pages that are primarily used for searching.

Comments: In general, graphics do not have either a positive or negative impact on the success of users when searching, but they take time to design, implement, and maintain and may slow downloading.

Strength of the evidence: ●●○○○

• [How to interpret "strength of evidence" scale](#)

Source: Spool, J.M., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T. (1997), *Web Site Usability: A Designer's Guide*, North Andover, MA User Interface Engineering.

Example:

Do this—

Quick Search Advanced Search

Keywords:

Job Type: ***** ALL Job Types ***** ▾

City: State: **All US** ▾ **search!**

Don't do this—

Quick Search Advanced Search

Keywords:

Job Type: ***** ALL Job Types ***** ▾

City: State: **All US** ▾ **search!**



This graphic offers no value to users who are searching for information

 **TOP OF PAGE**

[Home](#) • [Dictionary](#) • [Usability.gov](#) • [Privacy Policy](#) • [About this Site](#) • [Contact Us](#)

Search

This section considers the following:

- [Consider Importance of Search Engine](#)
- [Indicate Search Scope](#)
- [Enhance Scanning](#)

■ Consider Importance of Search Engine

Guideline: Carefully consider whether there is any advantage to including a search engine.

Comments: Search engines are helpful on some sites, but do not add value on others. Web sites that can benefit most from search engines are those that are large and complex. Search engines have become mandatory for any large site since the amount of content keeps growing. Provide search engines if the site has more than 100 pages. When searching for specific information, search engines may not improve search performance, and may take longer to design, develop, and maintain.

Strength of the evidence: 

- [How to interpret "strength of evidence" scale](#)

Source:

- Nielsen, J. (1996), Top Ten Mistakes in Web Design, www.useit.com/alertbox/9605.html, May.
- Nielsen, J. (1997), Changes in Web Usability Since 1994, www.useit.com/alertbox/9712a.html, December 1.
- Nielsen, J. (1999), Ten Good Deeds in Web Design, www.useit.com/alertbox/991003.html, October 3.
- Spool, J.M., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T. (1997), *Web Site Usability: A Designer's Guide*, North Andover, MA User Interface Engineering.

Example:

Allow users to more precisely identify what they are searching for

For assistance in building your search, see the [PDQ Clinical Trials User's Guide](#).

For an explanation of fields, click on label.

Type of Cancer:

Type of Trial:
(choose 1 or more)*

all
 treatment
 prevention

Status of Trial:
(open/closed to new participants)

open/active trials closed trials

Protocol ID Number:
(if known)

Location of Trials
(for open/active trials only; if known):

City:

State:
(choose 1 or more)*

all states
 AL - Alabama
 AK - Alaska

Country:

NIH Clinical Center Trials only:
(Bethesda, MD)

Version of Results: health professional patient

* NOTE: To choose multiple items:
 On a PC - Hold Ctrl key and click on items
 On a MAC - Hold Command key and click on items



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Indicate Search Scope

Guideline: Indicate to users the scope of what a search engine will search on a Web site. Users tend to believe that the search engine will search the entire site, not a subsite.

Comments: Users should have information about and control over the range of their searches. Clearly state the scope of site pages or database being searched. Give users the ability to specify the scope of their search: for example, give users an option to search locally within a section or subsection, or globally across the site.

Strength of the evidence: ●○○○○○
 • [How to interpret "strength of evidence" scale](#)

Source: Levine, R. (1996), *Guide to Web Style*, [Sun Microsystems](#).

Example:

Do this— Search scope is well defined; provides users with control

Search: all documents
 the Internet

for documents that

and

and

and were last updated

Anytime

 on or after ,
 and on or before ,

and show

Show individual word scores

[Help](#) [Simple](#)

powered by ultraseek server

Don't do this—

Looking for something?
 Enter a question or keyword here.

Search scope is not defined

TOP OF PAGE

Enhance Scanning

Guideline: Enhance scanning by providing clear headings, short phrases and sentences, and short paragraphs.

Comments: Users tend to scan, stopping only when they find something interesting. Research shows that users have difficulty finding a specific piece of information when the page contains wall-to-wall text. Users struggle to find alternatives to reading. They resort to a modified scan strategy and usually read the first sentence and/or scan for links on the page.

Strength of the evidence: [How to interpret "strength of evidence" scale](#)

Sources:

- Bailey, R.W., Koyani, S. and Nall, J. (2000), Usability testing of several health information Web sites, *National Cancer Institute Technical Report*, September 7-8.
- Spool, J.M., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T. (1997), *Web Site Usability: A Designer's Guide*, North Andover, MA User Interface Engineering.

Example:

Navigation

This section considers the following:

- [Keep Navigation Aids Consistent](#)
- [Group Navigation Elements](#)
- [Use Text-Based Navigation Aids](#)
- [Place Navigation On Right](#)

Keep Navigation Aids Consistent

Guideline: Use the same navigation aids (navigation scheme) on all pages.

Comments: Create a common navigational look to ensure that users can use the Web site navigation effectively.

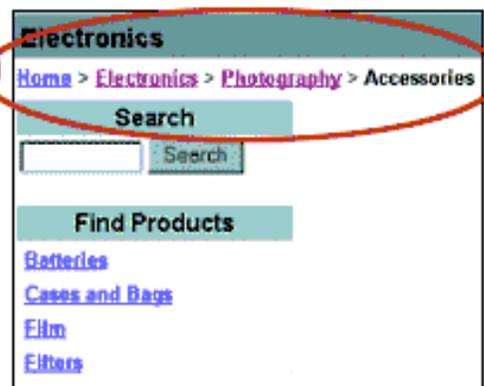
Strength of the evidence: ●○○○○○

- [How to interpret "strength of evidence" scale](#)

Source: Detweiler, M.C. and Omanson, R.C. (1996), *Ameritech Web Page User Interface Standards and Design Guidelines* (www.ameritech.com)

Example:

Headers and other navigation aids, such as this "path" statement, give users a sense of location within Web sites



Use Text-Based Navigation Aids

Guideline: Wherever possible, use text-based navigation aids.

Comments: Consider tradeoffs when choosing navigation aids, especially when deciding between text and graphics. Text-based navigation works better than imaged-based navigation because it enables users to understand the link destinations. Another benefit is that users with text-only and deactivated graphical browsers can see the navigation options.

Strength of the evidence: ●●○○○○

- [How to interpret "strength of evidence" scale](#)

Sources: • Detweiler, M.C. And Omanson, R.C. (1996), *Ameritech Web Page User Interface Standards and Design Guidelines* (www.ameritech.com).

• Koyani, S. and Nall, J. (1999), *Web Site Design and Usability Guidelines*, National Cancer Institute, Bethesda, MD, November.

Example:

Do this—

Mike Ditka's Fridge Makeover

- ♥ [Mike Ditka Teamed Up With "Open The Door To A Healthy Heart"](#)
To Fight Heart Disease
- ♥ [Coach Ditka "Straight from the Heart"](#)
Open the Door to a Healthy Heart? Interview with Mike Ditka
- ♥ [Mike Ditka's Heart-Healthy Fridge Photo Album](#)
- ♥ [View Mike Ditka's Fridge Makeover on Video](#)
Download video with FlashMedia (Requires a Free RealMedia Player)
Aut. File (Better quality than above but at 2.3 MB it will take a few seconds to download on a standard modem.)
- ♥ [Meet Mike Ditka](#)

Text-based graphics give users clear understanding of link destinations

Don't do this—

Open the Door to a Healthy Heart!



Image-based navigation aids like these provide no guidance



Group Navigation Elements

Guideline: Group navigation elements in close proximity.

Comments: Navigation elements help users find and move to areas of the site that have the desired information. They also help users to develop a mental model of the Web site.

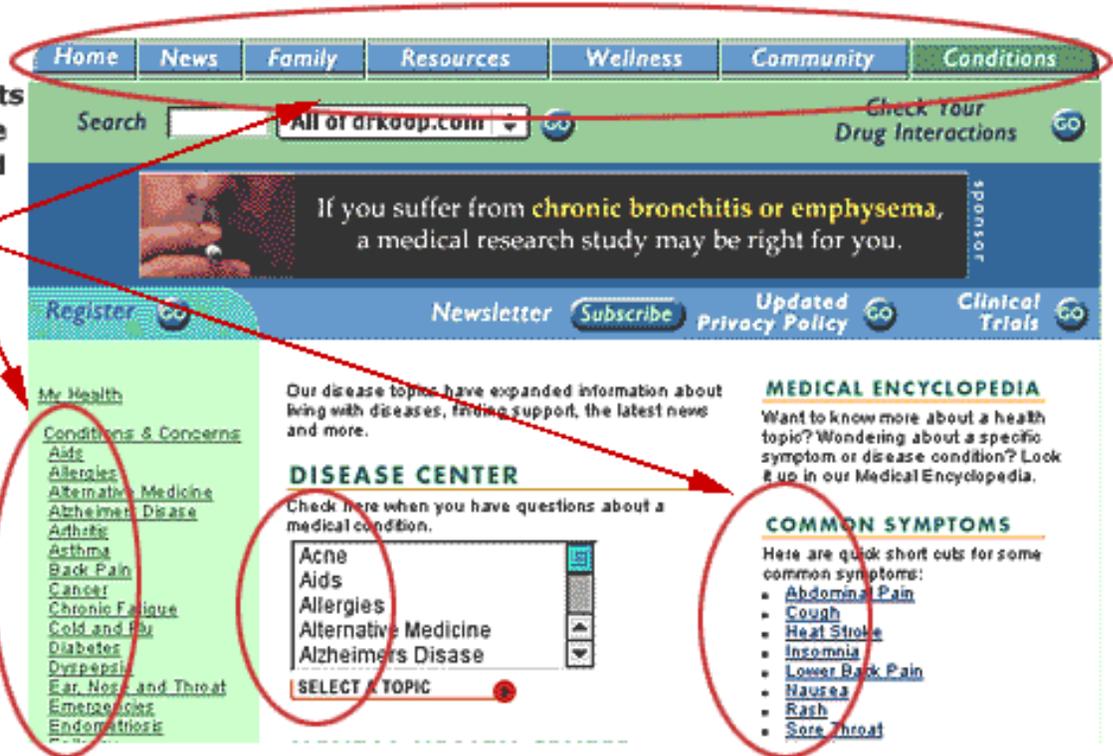
Strength of the evidence: ●○○○○○
• [How to interpret "strength of evidence" scale](#)

Source: Koyani, S. and Nall, J. (1999), *Web Site Design and Usability Guidelines*, National Cancer Institute, Bethesda, MD, November.

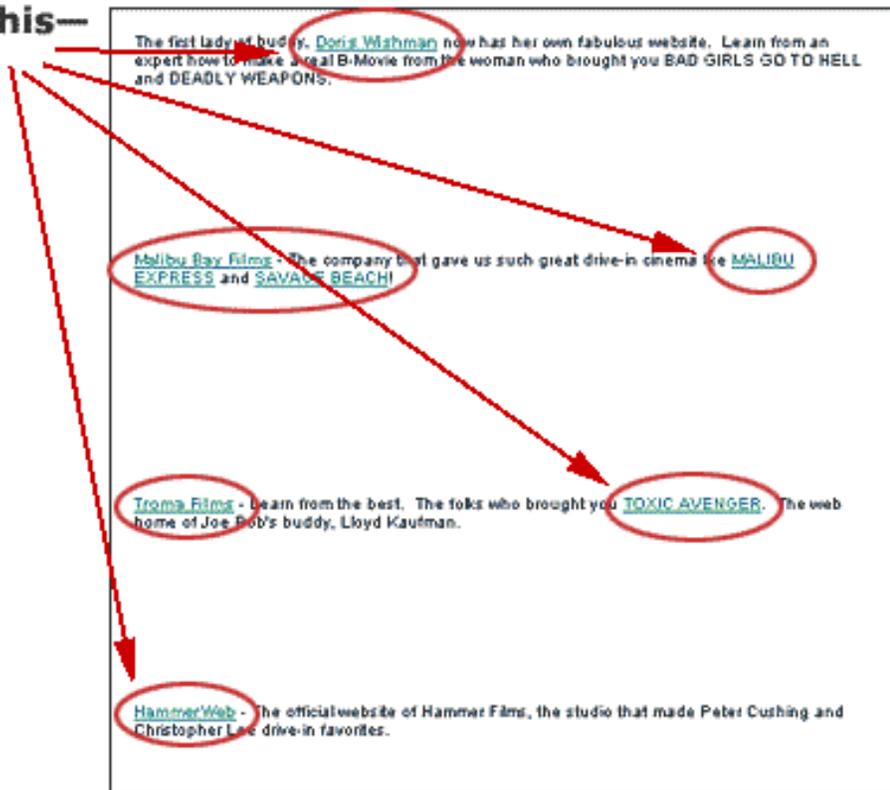
Example:

Do this—

Navigation elements or "tabs" should be grouped or stacked together to assist users



Don't do this—



Place Navigation On Right

Guideline: Use the right margin for the Web site's main index.

Comments: Research shows that users click on topics in the right margin with much more efficiency than topics placed on the left because they are located much closer to the scroll bar. This allows users to quickly move the pointer between the scroll bar and the index items. Benefits are particularly strong for laptops.

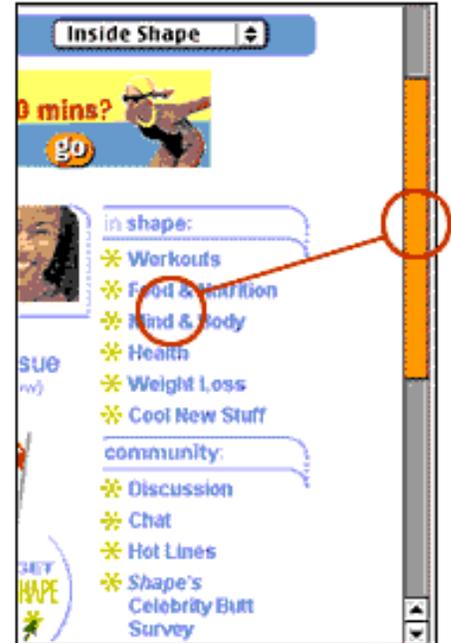
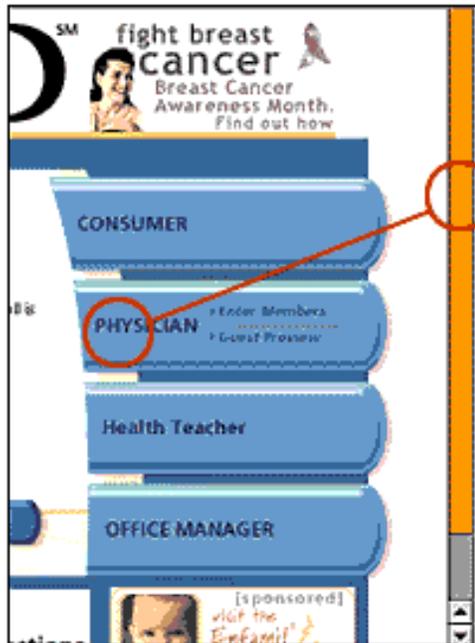
Strength of the evidence: ●●○○○○
 • [How to interpret "strength of evidence" scale](#)

Source: Bailey, R.W., Koyani, S. and Nall, J. (2000), Usability testing of several health information Web sites, *National Cancer Institute Technical Report*, September 7-8.

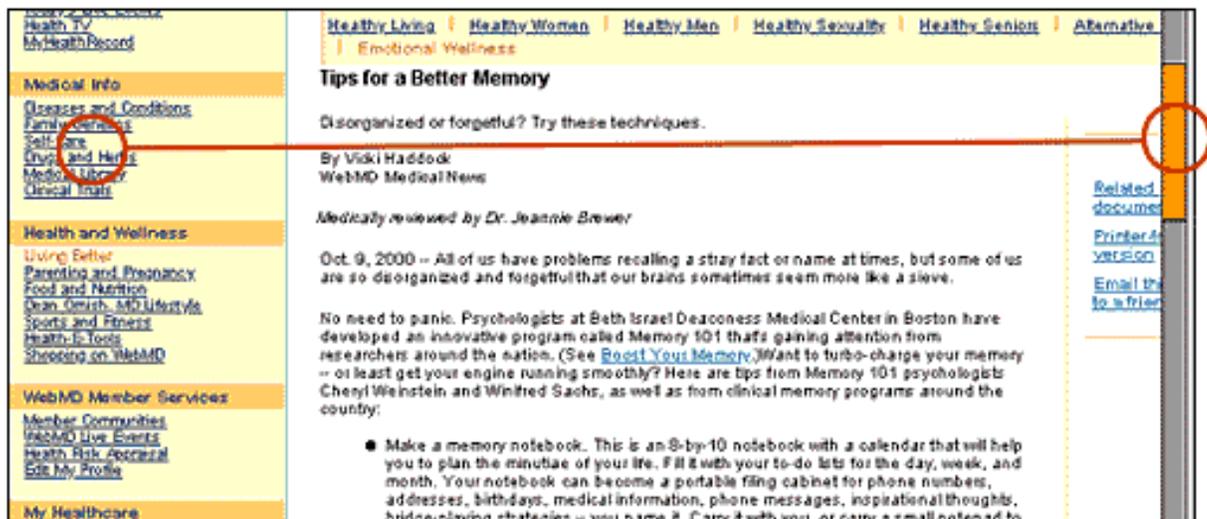
Example:

Do this—

Topics close to the scroll bar allow users to efficiently move between the two



Don't do this— Placement of topics on the left side requires more movement between them and the scroll bar



Software/Hardware

This section considers the following:

- [Determine Connection Speed](#)
- [Reduce Downloading Time](#)
- [Consider Monitor Size](#)
- [Identify Users' Screen Resolution](#)
- [Design for Full or Partial Screen Viewing](#)

Determine Connection Speed

Guideline: Design for connection speeds of 56 kilobytes per second (kbps).

Comments: Sixty percent of users use a 56 kbps connection speed or slower. The remaining users have faster connection speeds (ISDN, DSL, Cable, T1, etc.). Actual connection speeds are about 38% lower than modem speed capability. This means that users with a 56 kbps connection actually have a connection averaging about 35 kbps. If you have data indicating that most, if not all, of your users have slower or faster connection speeds than 56K, determine what is appropriate.

Strength of the evidence: 

• [How to interpret "strength of evidence" scale](#)

Source: www.dreamink.com

Example:

30,000 bytes

Connect Rate	Connect Time
14.4K	20.87 seconds
28.8K	11.62 seconds
33.6K	10.00 seconds
56K	7.90 seconds
ISDN 128K	2.93 seconds
T1 1.44Mbps	1.00 seconds

40,000 bytes

Connect Rate	Connect Time
14.4K	30.29 seconds
28.8K	17.90 seconds
33.6K	15.73 seconds
56K	12.91 seconds
ISDN 128K	6.11 seconds
T1 1.44Mbps	3.19 seconds

50,000 bytes

Connect Rate	Connect Time
14.4K	38.73 seconds
28.8K	22.47 seconds
33.6K	19.62 seconds
56K	15.92 seconds
ISDN 128K	7.00 seconds
T1 1.44Mbps	3.18 seconds



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Reduce Download Time

Guideline: Create Web pages that load quickly.

Comments: Miller and (later) Schneiderman recommended that the computer should respond to simple user entries within two seconds. Recent studies have reported that with data entry tasks there is no advantage of having response times faster than one second. Ideally, pages should download in two seconds or less.

A study reported that Web users rated download times as follows:

Good - Up to 5 seconds
Average - From 6 to 10 seconds
Poor - Over 10 seconds

The overall average time users were willing to wait before pressing an "Increase Quality" button was 8.6 seconds. Users' tolerance for delays decreased as the length of time they spent interacting with the system increased. There was no relationship between computer response time and errors.

If the delay is too long, users may not wait for pages to download. Users will wait about 10 seconds for a page to download, sometimes 15 seconds, before they lose interest. Progress indicators should be provided when users must wait over 10 seconds. Slow download times may result from too many graphics, inappropriate use of applets (when dynamic HTML would work as well), and slow server performance.

Strength of the evidence: 

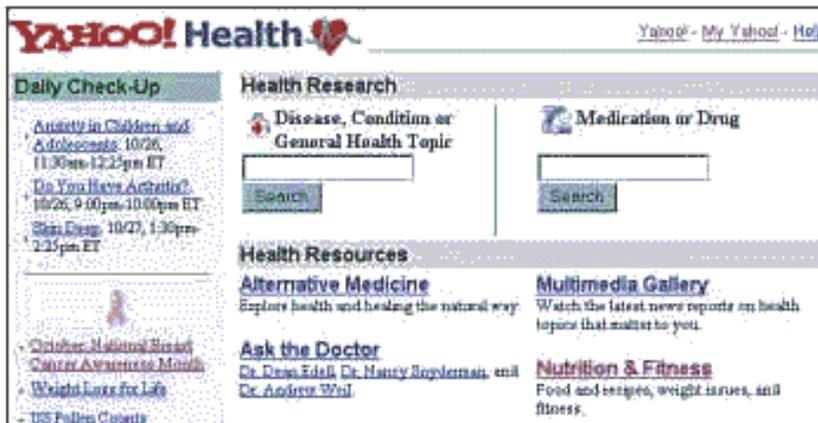
• [How to interpret "strength of evidence" scale](#)

- Source:**
- Bouch, A., Kuchinsky, A. and Bhatti, N. (2000), Quality is in the eye of the beholder: Meeting users' requirements for Internet quality of service, *CHI 2000*, 297-304.
 - Martin, G.L. and Corl, K.G. (1986), System response time effects on user productivity, *Behaviour and Information Technology*, 5(1), 3-13.
 - Miller, R.B. (1968), Response time in user-system conversational transactions. In *Proceedings of the AFIPS Fall joint Computer Conference*, 33, 267-277.
 - Myer, B.A. (1985), The importance of percent-done progress indicators for computer-human interfaces, *Proceedings of CHI'85*, April, 11-17.
 - Nielsen, J. (1996), Top Ten Mistakes in Web Design, www.useit.com/alertbox/9605.html, May.
 - Nielsen, J. (1997), The Need for Speed, www.useit.com/alertbox/9703a.html, March 1.
 - Nielsen, J. (1997), Changes in Web Usability Since 1994, www.useit.com/alertbox/9712a.html, December 1.
 - Nielsen, J. (1999), The Top Ten New Mistakes of Web Design, www.useit.com/alertbox/990530.html, May 30.
 - Shneiderman, B. (1984), response time and display rate in human performance with computers, *Computing Surveys*, 16, 265-285.

Example:

Do this—

Files averaging 28,000 bytes allows page to load relatively quickly using a 56K modem



Don't do this—

Files averaging 42,000 bytes increases load time significantly when accessed with a 56K modem



Consider Monitor Size

Guideline: Design for computers with 17-inch monitors with screen resolutions of 800 x 600 pixels.

Comments: About 40% of users use 17-inch monitors; 26% use smaller monitors (including laptops); and 34% use larger monitors.

Strength of the evidence: ●●●○○○
 • [How to interpret "strength of evidence" scale](#)

Source: • [themes.org](#)
 • [seir.sei.cmu.edu](#)
 • [arstechnica.com](#)



Consider Users' Screen Resolution

Guideline: Design for monitors with a screen resolution of 800 x 600 pixels.

Comments: There is a definite trend in monitor design to go from screen resolutions of 800 x 600 pixels to screen resolutions of 1024 x 768 pixels. Five studies of screen resolutions were reviewed. Two of the studies reported that the largest number of users (53%) were using screen resolutions of 800 x 600 pixels (27% were using 1024 x 768). However, three of the studies reported that the largest number of their users (43%) were using screen resolutions of 1024 x 768 pixels (only 24% were using 800 x 600 pixels). Only about 7% of users are using 640 x 480 pixels, and about 13% are using higher resolutions (1280 x 1024, 1600 x 1200, etc.)

Strength of the evidence: ●●●●○

• [How to interpret "strength of evidence" scale](#)

Source: • [arstechnica.com](#)

- [dreamink.com](#)
- [thecounter.com](#)
- [themes.org](#)
- [seir.sei.cmu.edu](#)
- [statmarket.com](#)

Example:

640 x 480 pixels



800 x 600 pixels



1024 x 768 pixels



1280 x 1024 pixels



Design for Full or Partial Screen Viewing

Guideline: Consider whether a Web site will be used "full screen" or as a "partial screen" (where two or more browsers are open at once) by the majority of your users. If most users use "full screen," fill all the available design space and do not leave white space on the left or right.

Comments: If the majority of users view their pages in full-screen mode, then designers should determine the size of the available space and make full use of it. Currently, most people view Web pages at a resolution of 800 x 600 pixels, which translates to a design space of about 780 pixels. In some cases, designers may want to provide pages that stretch to cover the entire page size (i.e., flexible pages).

Strength of the evidence: ●●●○○○

• [How to interpret "strength of evidence" scale](#)

- Source:**
- Bailey, R.W. (2001), Screen resolution, humanfactors.com/library/mar01.asp
 - Mulder, S. and Brandt, M. (1999), Sizing up the browsers, hotwired.lycos.com/webmonkey/99/41/index3a.html
 - Rowe, L. (1999), Getting a perfect fit, webdesignclinic.com/ezine/v1i9/perfectfit/index.html
 - Roselli, A. (2000), Real-world browser size stats: Part II, evolt.org/article/Real_World_Browser_Size_Stats_Pat_II/20/2297/index.html



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Accessibility

This section considers the following:

- [Use Color Wisely](#)
- [Design for Device Independence](#)
- [Provide Alternative Formats](#)
- [Provide Redundant Text Links](#)
- [Provide User-Controlled Content](#)

■ Use Color Wisely

Guideline: Do not rely on color alone to communicate a message.

Comments: Ensure that text and graphics are understandable when viewed without color. If designers depend on color to convey information, colorblind users and users with devices that have noncolor or nonvisual displays cannot receive the information. When foreground and background colors are close to the same hue, they may provide insufficient contrast on monochrome displays and for people with certain types of color deficits.

Federal Government Web sites are required to follow the Section 508 Federal (Web) Accessibility Standards. This guideline is consistent with paragraph c in Subpart B – Technical Standards: Sec. 1194.22.
<http://usability.gov/accessibility/508.html>.

Strength of the evidence: 
 • [How to interpret "strength of evidence" scale](#)

Source: Chisholm, W., Vanderheiden, G. and Jacobs, I. (eds.) (1999), *Web Content Accessibility Guidelines 1.0*, <http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/>.

Example:

Seen by people who have normal color vision



Seen by people who cannot see red in colors (protanopia)



Tend to confuse "alternative," "diet & fitness" and "women"

Seen by people who cannot see green in colors (deutanopia)



Tend to confuse "alternative" and "women"

Design for Device Independence

Guideline: Design for device independence by using features that enable activation of page elements by a variety of input devices.

Comments: Users should be able to interact with the Web site using a preferred input (or output) device. The input device may be a mouse, keyboard, voice, head wand, etc.

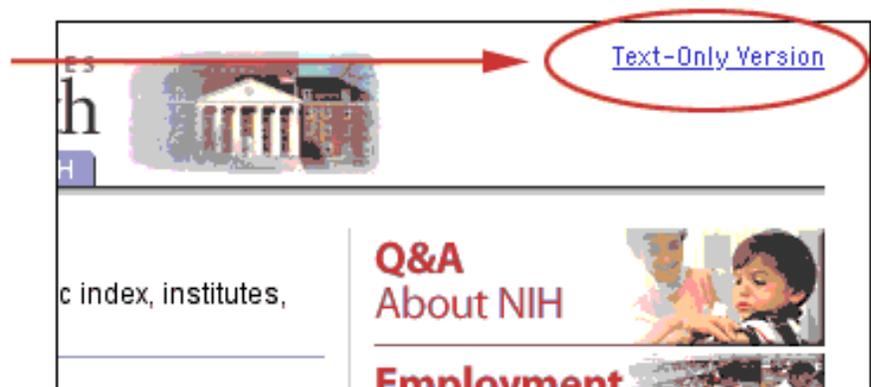
Federal Government Web sites are required to follow the Section 508 Federal (Web) Accessibility Standards. This guideline is consistent with paragraph k in Subpart B – Technical Standards: Sec. 1194.22.
<http://usability.gov/accessibility/508.html>.

Strength of the evidence: ●●○○○
• [How to interpret "strength of evidence" scale](#)

Source: Chisholm, W., Vanderheiden, G. and Jacobs, I. (eds.) (1999), *Web Content Accessibility Guidelines 1.0*, <http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/>.

Example:

Text-only version option allows visually impaired users to view sites with a text reader device



Provide Alternative Formats

Guideline: Provide equivalent alternatives to visual and auditory content for users who don't have the appropriate software or text readers.

Comments: Some users cannot use images, movies, sounds, applets, etc. directly, but they may still use pages that include information equivalent to this visual or to the sound of auditory content.

- Use the HTML "alt" tag for giving users a simple text description of a visual element
- Provide detailed text descriptions for visual content (for example, a chart or diagram) or auditory content
- Consider providing nontext equivalents of text for nonreaders or users who have difficulty reading.

Federal Government Web sites are required to follow the Section 508 Federal (Web) Accessibility Standards. This guideline is consistent with paragraph a and b in Subpart B – Technical Standards: Sec. 1194.22.
<http://usability.gov/accessibility/508.html>.

Strength of the evidence: ●●○○○
• [How to interpret "strength of evidence" scale](#)

Source: Chisholm, W., Vanderheiden, G. and Jacobs, I. (eds.) (1999), *Web Content Accessibility Guidelines 1.0*, <http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/>.

Example:

Both audio and transcripts of the audio allow alternative ways to access information

...ing to come down, and you could feel the ...
 ...ing down, there was a very loud noise and ...
 ...ne shuddered," Hall said. He said Waddle ...
 ...what the hell was that?"

...rred about 10 miles (16 kilometers) off ...
 ...ar Honolulu. The 180-foot (55-meter) ...
 ...ank within minutes.

...of the 35 aboard the Japanese ship but ...
 ...ng and are presumed dead.

...s evident that the accident was serious.

...ship taking on water and the crew bringing ...
 ...w it was going to be a devastating effect,"

...ments came as The Washington Post ...
 ...U.S. Navy's Pacific Fleet chief told ...
 ...dle should have seen the 180-foot ...
 ...Maru before the Greenville hit it last

RESOURCE
[Recent Incidents have strained US-Japanese relations](#)

AUDIO
 Hear the distress call issued by the Navy after the collision
 1.7 Mb/20 sec.
[AIFF](#) or [WAV](#) sound ([Transcript](#))

LINK
[Demonstration of a Navy submarine's emergency surface](#) 

ALSO
 ● [Report: Admiral says sub skipper should have seen ship](#)



Provide Redundant Text Links

Guideline: Provide redundant text links for each active region of an image map.

Comments: If users' software cannot see an image, they cannot select the image itself or parts of the image.

Federal Government Web sites are required to follow the Section 508 Federal (Web) Accessibility Standards. This guideline is consistent with paragraph e in Subpart B – Technical Standards: Sec. 1194.22.

<http://usability.gov/accessibility/508.html>.

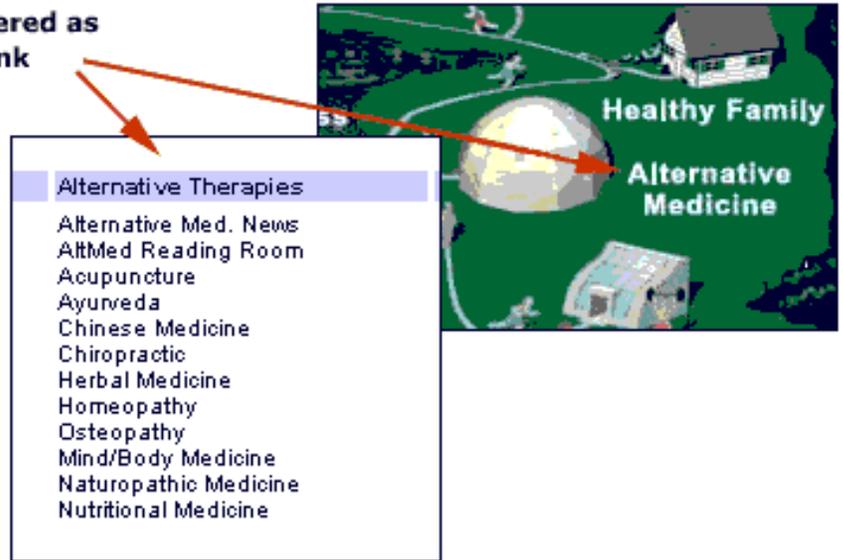
Strength of the evidence: ●●○○○○

• [How to interpret "strength of evidence" scale](#)

Source: Chisholm, W., Vanderheiden, G. and Jacobs, I. (eds.) (1999), *Web Content Accessibility Guidelines 1.0*, <http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/>.

Example:

Alternative health information is offered as both an image map link and a text link



Provide User-Controlled Content

Guideline: Allow users to control time-sensitive content changes, so they can pause or stop moving, blinking, scrolling, or auto-updating of objects or pages.

Comments: Users with physical disabilities may not be able to read quickly or accurately enough to interact with moving text or objects. Some users with cognitive or visual disabilities are unable to read moving text quickly. For some users with cognitive disabilities, any movement can cause such distraction that the rest of the page becomes unreadable. In addition, screen readers are unable to read moving text.

Federal Government Web sites are required to follow the Section 508 Federal (Web) Accessibility Standards. This guideline is consistent with paragraph p in Subpart B – Technical Standards: Sec. 1194.22.
<http://usability.gov/accessibility/508.html>.

Strength of the evidence: ●●○○○○
• [How to interpret "strength of evidence" scale](#)

Source: Chisholm, W., Vanderheiden, G. and Jacobs, I. (eds.) (1999), *Web Content Accessibility Guidelines 1.0*, <http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/>.



Privacy Policy

The National Cancer Institute (NCI) respects the privacy of visitors to the Research-Based Web Design and Usability Guidelines Web site.

Why is information collected?

In order to measure the number of visitors to the various sections of our site and to help us make our site more useful to visitors, we may collect a limited amount of information on usage of the Web site for statistical purposes.

What information is collected?

The information collected includes standard server log information, such as the domain name or IP address from which you accessed the Internet, the date and time you accessed our site, the pages you viewed, the type of browser and operating system you used to access our site, and, if you navigated to our site from another Web site, that Web site's address. We collect this information on an aggregate basis only. Our Web site logs do not collect personally identifiable data, and we make no attempt to link them with the individuals who actually browse the site. For example, we track which pages are most popular among visitors as a whole, but pages viewed are not identified with individual users. With email inquiries, we store the inquiry and the email address information so we can respond electronically.

What information is not collected?

Unless otherwise required by statute, we do not identify publicly who sends questions or comments to our Web site. We will not obtain information that will allow us to personally identify you when you visit our site, unless you choose to provide such information to us.

If you have additional questions about NCI's Privacy Policy, please send them to the NCI Privacy Act Coordinator at novellah@mail.nih.gov.



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- [Who manages this site?](#)
- [Who is this site designed for?](#)
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What's the purpose of this site?

This site is designed to provide over 50 of the top Web design and usability guidelines based on emerging research and supporting information in the field. For more specifics, please see [How to Use This Site](#).

Who manages this site?

This site is managed by the Communication Technologies Branch (CTB) of the [National Cancer Institute's](#) (NCI) Office of Communications. The NCI is a component of the [National Institutes of Health](#), the focal point for the nation's biomedical research, which falls under the [U.S. Department of Health and Human Services](#) (HHS). HHS is the United States government's principal agency for protecting the health of all Americans and providing essential human services.

Who is this site designed for?

This site is designed for anyone involved in Web design, management, authoring, or oversight. The guidelines apply to primarily information and search-oriented Web sites, but could apply across the spectrum of design goals.



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- For technical or navigational difficulties:
 - Contact your Internet service provider and/or technical support staff
 - If you are still experiencing difficulty with our Web site, send a message to ncictbstaff-r@mail.nih.gov
- For information about this site, please visit [How to Use This Site](#).
- If you still have questions/comments please send a message to the NCI Usability Staff at ncictbstaff-r@mail.nih.gov



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