ADA / Section 508's effect on a website for higher education; a study comparing students reaction to ADA/Bobby compliant website against a non compliant website.

C. Robert Schmid

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By

C. Robert Schmid

INFS 778/790 Information System Project

Dakota State University
Madison SD
Title

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Madison SD

To Fulfill Requirements for INFS 778 Information System Project

Signed

Project Supervisor: [Signature] Date 6/15/2001

Faculty Committee Members:

Dr. Orinda Christoph [Signature] Date 6/15/01

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Dean of the College of Business and Information Systems

[Signature] Date
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Introduction

Use of the Internet and specifically Web sites in higher education have increased dramatically over the last few years. Universities and colleges use Web sites for recruitment and informing alumni and students of current events of the institution. Many universities are beginning to utilize the Web sites as a true teaching tool. At Dakota State University (DSU), every faculty member has a Web site. These Web sites are used to pass out homework assignments, distribute PowerPoint lecture notes, and with some professors, even grades can be accessed through their Web site.

For a student with a disability gaining access to this information could be a problem. Vision impaired people may have a problem with the images and graphics. Mobility impaired may not be able to operate a mouse so that the Web site navigation may be a problem. These are just two examples of possible problems a disabled person may have. (Cunningham1 35,136)

It is estimated that 19.4 percent of non-institutionalized civilians in the United States (US), (49.9 million people), have a disability. Almost half, (24.1 million people), have a severe disability.
In addition, of that 24.1 million people with severe disabilities, 10.4 million people are of working age (16-64) as listed on the Web site www.infouse.com/disabilitydata. (Krause 4,44)

Guidelines have been developed on how to make a Web site more accessible to people with disabilities. A Web site designed following these guidelines is considered ADA (Americans with Disabilities Act) compliant.

According to Judy Heim a writer for PC World.com, “Webmasters fear that a site accessible (to disabled persons) means replacing attractive graphics with an austere look and a big typeface.” (Heim) Whether this is a real situation or just imagined, has never really been tested. What I hope to accomplish with this research project is to gain some real insights into what students feel when viewing a particular Web site.

Two Web sites were used for this project. One was ADA compliant, while the other was very non-ADA compliant. Both Web sites have identical content. The students used to conduct the research were divided into two groups. One group viewed the ADA compliant site, and the other group viewed the non-ADA compliant site. Both groups answered an identical set of questions about the Web site dealing with specific question to gain insight as to preferences on specific aspects of the Web sites, along with demographic type questions. Neither group was allowed to view the other group’s Web site. I will discuss the specific details of the study in the latter part of the report.

1. **Who is affected?**

   Disabilties and explanations

   There are many disabilities that can deny a person access to a Web site. For the purpose of this report the following disabilities are addressed on the Web site used in the
survey. The selection of the following problem areas were sighted in the book titled “Information Access and Adaptive Technology”, by Carmela Cunningham and Norman Coombs. (135,136) This information was also cross-referenced with W3C Priority 1 Guidelines.

The following is a list of the disabilities and problem areas involved.

Visual Impaired:

- Blind
- Sight impairment
- Color deficits

For people that are blind or have some other type of sight impairment images and graphics are of little or no use if a screen reader does not reach them on a magnifier that may not identify them. Colors can be a problem when foreground and background are too close to provide sufficient contrast for monochrome displays and people with color deficits (color blind). Specific colors can cause problems for people with color deficits, red, green, brown, gray and purple. (Colour Blindness)

Hearing Impaired:

- Hard of hearing
- Deaf

When sound is used to convey content it may make access to hard of hearing and deaf people impossible. (Cunningham 136) Also, as will be witnessed in the survey, if there is no sound at the computer access will be impossible.

Cognitive and Visual disabilities according to the W3C guideline 7:

Some people with cognitive or visual disabilities are unable to read moving text quickly enough or at all. Movement can also cause such a
distraction that the rest of the page becomes unreadable for people with cognitive disabilities. Screen readers are unable to read moving text. People with physical disabilities might not be able to move quickly or accurately enough to interact with moving objects. (World Wide Web Consortium)

Motor Impairment:

- Paralyzed
- Muscular impairments
- Some people have trouble or are completely unable to use a mouse.

For these people, point and click navigation is impossible. Alternate navigation to other pages and links is the answer. (Cunningham 136,137).

2. Definition of ADA with respect to Website development

U.S. Government – Section 508

The government section 508 of the Rehabilitation Act requires access to Federal government’s electronic and information technology. The following was published in the Federal Register on December 21, 2000, and is a summary of the law:

The Architectural and Transportation Barriers Compliance Board (Access Board) is issuing final accessibility standards for electronic and information technology covered by section 508 of the Rehabilitation Act Amendments of 1998. Section 508 requires the Access Board to publish standards setting forth a definition of electronic and information the technical and functional performance criteria necessary for such technology to comply with section 508. Section 508 requires that when Federal agencies develop, procure, maintain, or use electronic and information technology, they shall ensure that the electronic and
information technology allows Federal employees with disabilities to have access to and use of information and data that is comparable to the access to and use of information and data by Federal employees who are not individuals with disabilities, unless an undue burden would be imposed on the agency. Section 508 also requires that individuals with disabilities, who are members of the public seeking information or services from a Federal agency, have access to and use of information and data that is comparable to that provided to the public who are not individuals with disabilities, unless an undue burden would be imposed on the agency. (United States Architectural and Transportation Barriers Compliance Board)

Compliance with Section 508 is required in the Federal government sector only. It does not apply to the private sector, and it does not impose any requirements on recipients of federal funds. (United States Architectural and Transportation Barriers Compliance Board) Therefore state institutions are not required to comply with section 508.

A history of section 508 follows:

Section 508 dates back to 1986, when Congress added this section to the Rehabilitation Act of 1973. The Rehabilitation Act contains comprehensive prohibitions against employment discrimination by the Federal government, (19 U.S.C. ss791), by contractors for the Federal government (29 U.S.C. ss793), and by programs and activities receiving Federal financial assistance (29 U.S.C. ss794). In the 1980’s Federal agencies significantly increased their dependency on electronic office technologies. Section 508 was added to ensure that such E&IT would be accessible to individuals with disabilities. Pub. L. 99-506, Title VI, ss603(a); Title I ss103(d)(2)(A), (C), as amended, Pub. L 100-630, Title II, ss206(f); Pub. L. 102-569, Title V ss509(a), codified at 29 U.S.C. ss794d.
(United States Architectural and Transportation Barriers Compliance Board)

To see a complete copy of Section 508 law, see Appendix A.

Another law that is of concern for education is The Americans with Disabilities Act of 1990. The purpose of this law is to integrate disabled students into schools to the fullest extent possible and provide them with the same educational opportunities that other students have. (Morrissey 15) Also the ADA of 1990 does apply to Web sites as per a ruling by the Justice Department. Just as in a brick and mortar obstacle instance, a lawsuit can be brought under the act for Web sites that do not meet ADA standards. (Heim)

Private Efforts

World Wide Web Consortium (W3C)

World Wide Web Consortium (W3C) was created in October of 1994, by Tim Berners-Lee, inventor of the Web, at the Massachusetts Institute of Technology, Laboratory for Computer Science, in collaboration with CERN, with support from DARPA and the European Commission. (World Wide Web Consortium)

W3C purpose has leaded the Web to its “full potential by developing protocols that promote its evolution and ensure its interoperability.” (World Wide Web Consortium)

Web 3 Consortium (W3C) has developed guidelines on how to make Web content accessible to people with disabilities. These guidelines are intended for all “Web content developers” and for the developers of “authority tools”.

"These guidelines do not discourage content development from using images, video, etc., but not rather explain how to make multi-media content more accessible to a wide audience". (World Wide Web Consortium)

Accessibility issues pertaining to Web page design as per W3C are as follows:

- They (Web site users) may not be able to see, hear, move, or may not be able to process some types of information easily or at all.

- They (Web site users) may have difficulty reading or comprehending text.

- They (Web site users) may not have or be able to use a keyboard or mouse.

- They (Web site users) may have a text-only screen, a small screen, or a slow Internet connection.

- They (Web site users) may not speak or understand fluently the language in which the document is written.

- They (Web site users) may be in a situation where their eyes, ears, or hands are busy or interfered with (e.g., driving to work, working in a loud environment, etc.).

- They (Web site users) may have an early version of a browser, a different browser entirely, a voice browser, or a different operating system. (World Wide Web Consortium)

A complete copy of the W3C Web Content Accessibility Guidelines can be found in Appendix B.

CAST/Bobby

Center for Applied Special Technology (CAST) was founded in 1984 and is a not for profit organization that uses innovated computer technologies to expand the opportunities for all people, including those with disabilities.
First released in 1996, Bobby is a tool for Web developers that help identify changes necessary for user with disabilities to more easily use their Web pages. For example, a blind user might be aided by sound track of motion pictures, or a deaf person might be aided by text where sound file is on a Web page.

Bobby grew out of this underlying mission to expand opportunities for the disabled through the use of computer technologies. While planning its own Web site, CAST researchers wrestled with how to make those entire Web now “universally designed”, and more accessible and useful to all people, including those with disabilities. While researching and studying the existing Web accessibility guidelines it recognized that it was unlikely that Web developers would sit down and reach a handbook of guidelines. With that in mind, CAST set out to develop an online tool that Web developers could use to easily implement those guidelines. (CAST)

CAST/Bobby has not developed guidelines on its own. Bobby uses the W3C Web content accessibility guidelines as a basis for its development tools.

What follows is from www.cast.org/bobby. To become Bobby approved, a Web site must:

- Provide text equivalents for all images and multimedia such as animation, audio, and video

- Ensure that all information conveyed with color is also available without color

- Identify headers for data tables and make line-by-line reading sensible for layout tables
- Provide summaries of graphs and charts

- Identify document language and any changes of the language

- Organize content logically and clearly, such as with headings, list elements, meaningful links, and navigation bars

- Provide alternative content for features (e.g., applets or plug-ins) that may not be supported. (CAST/Bobby)

DINF

Disabilities Information Resources (DINF) is a New Jersey non-profit corporation whose purpose is collecting information on a disabilities and disabilities related subjects and making it available on the World Wide Web. The information provided on the Web site is designed for researchers, Legislative bodies, people with disabilities, and people working in the disabilities field. (DINF)

3. Other cases – Educational and Commercial

ADA Web site compliance issues are beginning to emerge in the news. Two instances that are of particular interest are as follows:

First, the University Of Wisconsin Madison announced on December 13, 2000, in the Wisconsin Weekly magazine, that effective January 22, 2001 the university will implement a policy to make all campus Web sites more available to people with disabilities.
According to the article, “new Web pages published or hosted by the university after Jan. 22 must comply with W3C guidelines. Existing ‘legacy’ pages have a year to comply.” (Christianson)

Additionally, on November 4, 1999 nine blind citizens of Massachusetts joined with the National Federation for the Blind in a suit against America On Line (AOL) to argue that federal law requires them to design its Internet services so that blind people can access it.

The suit was filed in U.S. District Court in Boston. The case rests on “the federation’s reading of the Americans with Disabilities Act, a law passed in 1990.” “A section of the law requires ‘public accommodation’, such as business, to make reasonable efforts to make services available to disabled people. The federation hopes to convince a court that AOL and other Internet based business are public accommodations under the law, and must be made accessible.” (Bray)

On July 27, 2000 an Associated Press report said the National Federation for the Blind agreed to drop its lawsuit against AOL. In return AOL has reportedly agreed to adopt a policy with guidelines for making AOL accessible to disabled people. This was to be accomplished with AOL’s next release in the fall of 2000. (Stone)

4. Tools to aid handicapped to access the Web

What follows is a brief outline showing various input and output devices to aid disabled people in Web access:

Alternate Input

Alternate Keyboards:
Programable Keyboards – can be programmed so pressing custom keys can enter letters, numbers, words, or phrases.

Miniature Keyboards – for people with limited range of motion, keys are spaced closer together.

Chording Keyboards – usually have a limited number of keys. By pressing a combination of keys text can be entered.

Onscreen Keyboards – software images of either standard or modified keyboard are placed on the computer screen. A mouse, trackball, touch screen, joystick, or electronic pointing device selects keys.

Access Utilities – software programs that modify the standard keyboard to simplify operations of the keyboard or replace mouse, add sound to keystrokes, or substitute visual cues for sound cues.

Keyboard Additions:

Key guards – plastic covers with holes for each key. Provides protection from touching unwanted keys.

Moisture Guards – provides protection from spills and drools using a thin sheet of plastic.

Alternative Labels – add visual clarity to the keys.

Switches and Switch Software – Switches offer an alternate way to provide input when a standard access method is not possible. Interface software is usually required to connect the switch to the computer.

Alternate Output

Talking and Large Print Processors:

Talking word processors – software program that uses speech synthesizer to provide auditory feedback of what has been typed.

Large – print word processors – allows user to view text in large print without added screen enlargement.

Braille Embossers and translators – give output of text in the form of embossed Braille.

Refreshable Braille displays – also gives Braille output. Displays are not
embossed on paper but are mechanical in nature and lift small, rounded plastic or metal pins, to form Braille characters.

Speech synthesizers – “speaks” out loud information going to the screen. Screen readers – works in conjunction with speech synthesizers to provide verbalization of everything on the screen including text, punctuation, control buttons, and menus.

Screen enlargement programs – focuses on a single portion of the screen and enlarges it.

Monitor Additions:

Screen Magnifiers – fit over the screen of the computer and magnifies the images that appear on the screen.

Anti-glare filters – designed to reduce glare and improve contrast, they are clear screen that fits over the computer monitor screen.

Monitor mounts – allow adjustment of the monitor position.

(Alliance for Technology Access)

For more information on tools to aid disabled people to access Web technologies:

Computer and Web Resources for People with Disabilities:

A guide to exploring today’s assistive technology /

Alliance for Technology Access.

3rd edition

Bib – Record – Id – 0042912223

Alt tags are an additional tool to aid disabled people. An alt tag provides drop down boxes, that when pointed to with the mouse pointer or tabbed to with tab keys, displaying text giving a brief description of the graphic or image. An Alt tag is a simple modification to the HTML code. (Cunningham 136)

Examples of all of the Alt tags used on the ADA compliant site are as follows

(Alt tags are bold and larger font to aid in identifying):
Home Page

<img border="0" src="homepa3.gif" alt="Parent company's logo - PSV Home Security Co." width="139" height="72">

<font face="Arial" color="#000080"><img border="0" src="homepa2.jpg" alt="Marketing company's logo - Homesaffe.com" width="428" height="64"></font>

<img src="Homepal.gif" align="left" hspace="12" v:shapes="_x0000_s1026" alt="Graphic representing a Guard Dog" width="165" height="131">

Products Page

Logos are the same as on Home Page

<img border="0" src="produc3.jpg" width="152" height="114" alt="Picture of Premier Wired System">

<img border="0" src="produc4.jpg" width="160" height="87" alt="Picture of Elite Wired System">

<img border="0" src="produc5.gif" width="151" height="121" alt="Picture of Basic Wired System">

<img border="0" src="produc6.gif" width="157" height="114" alt="Cartoon depiction of Uncle Elmers Eye in a Jar">

<img border="0" src="produc7.jpg" width="96" height="128" alt="Cartoon depiction of a Dog in a Can">

Order Page

Logo's are the same as on Home Page

<img border="0" src="Still_calculator.jpg" alt="Person operating a calculator" width="137" height="189">
The text in quotation marks after the alt= is what appears in the drop done box when an image is pointed to with mouse pointer or tabbed to with tab keys.

5. Resources and Tools for ADA compliance for Web sites

W3C

W3C has become the leading force in ADA compliance guidelines for Web site design. For a complete copy of Web Content Accessibility Guidelines 1.0 see Appendix B in back of report, or go to http://www.w3.org/tr/wai-Webcontent/wai-pageauth.html.

W3C Web Content Accessibility Guidelines have three priority levels. Priority one, is a must be satisfied checkpoint. If these checkpoints are not satisfied, one or more groups of disabled people will find impossible to access information from the Web site.

Priority two, are classified as, should be satisfied (optional) checkpoints. If these checkpoints are not satisfied, one or more groups of disabled people will find it difficult to access information from the Web site.

Priority three, are classified as, may be satisfied (optional) checkpoints. If these checkpoints are not satisfied, one or more of groups of disabled people will find it somewhat difficult to access information from the Web site. (World Wide Web Consortium)

The issues addressed in this research project on the Non-ADA Web site are priority one issues.
Bobby

Bobby, as stated earlier, is free software to aid the Web developer in creating ADA compliant pages. There are two methods by which the user can utilize Bobby. One method is online; enter the URL of the Web page to be tested in the appropriate box provided on Bobby’s site. Bobby will display the results. The second method is the download version. This is particularly handy for Web designers working on pages that have not yet been published.

I used the online version to convert the non-ADA site to be ADA compliant. An explanation of its use is a partial copy of “How to read the Bobby Report”:

The online version of the report is divided into two main parts: a copy of the original Web page that you asked Bobby to analyze, and a textual accessibility report. The first part does not appear if you have checked the “Check For Text-Only Output” box in the Advanced Options Page.

In the first part of the report, the copy of the original Web page is marked with “Bobby-hats” (icon). Hats with wheelchairs indicate Priority 1 accessibility errors that are automatically detectable. A question mark identifies a possible Priority 1 error that cannot be fully automatically checked, indicating that the user will need to address that question manually.

The second part of the Bobby report consists of at most five sections (some sections are not displayed if not relevant): Priority 1 Accessibility, Priority 2 Accessibility, Priority 3 Accessibility, Browser Compatibility Errors, and Download Time. (CAST/Bobby)

The priorities for accessibility follow W3C Web Content Guidelines Priorities. There are a number of items that require manual examination; these are presented in the
User Checks section. It is because of the User Checks section that the ADA Compliant page will get a long report of errors and still may be ADA compliant. (CAST/Bobby)

**Vischeck**

Vischeck is a free testing tool that will show what a single image, or an entire Web page would look like to a person that is colorblind.

There are four methods to utilize this tool:

1. Single image online.
2. Vischeck URL to check an entire page.
3. Download a java version.
4. Download Vischeck Photo Shop for windows.

Vischeck is located at [http://www.vischeck.com](http://www.vischeck.com). (Dougherty)

**Jaws**

Jaws is a screen reader program marketed by ADA Worklink, which provides voice output for windows applications. It is advantageous to check the Web site on a screen reader for further validation of the User Check Section of Bobby. (A.D.A. Worklink)

**Screen Enlargement Programs**

Screen Enlargement Programs focus on a single portion of the screen and enlarges it. Magnification on most programs is variable from 2x to 16x or more. Visually impaired people use these programs. Testing using a screen enlargement program as a testing tool would give further validation. (Alliance for Tech access)
6. Survey to attempt to predict impact of voluntary compliance with Section 508

Design and build two Web sites.

To begin the research two separate Websites were designed and built using Microsoft Front Page. Each Web site is three pages in length: Home Page, Products Page (with graphics and pictures, along with text describing the products), and an Order Page (which has text and text boxes to enter order information).

Both Web sites have identical content. One Web site was a Non ADA compliant site. The other site was an ADA compliant site.

The URL’s for each Web site are as follows:

Non-ADA site: http://www.students.dsu.edu/schmide/homepage1.htm

ADA site: http://www.students.dsu.edu/schmide/homepage2.htm

Copies of both Web sites can be found in Appendix C.

The table that follows shows the issues and problems on the Non ADA site and the fixes used on the ADA compliant site:

Table 1

<table>
<thead>
<tr>
<th>Issue</th>
<th>Non ADA site Condition/Problem</th>
<th>ADA site Solution/Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font Style</td>
<td>Magnetic font style- Difficult to read with low contrast, Screen magnifier had a hard time with it.</td>
<td>Arial font style – Much easier to read, cleaner looking.</td>
</tr>
<tr>
<td>Font color</td>
<td>Green – changes color for color blind people,</td>
<td>Blue – does not cause a problem for colorblind people.</td>
</tr>
<tr>
<td>Background color</td>
<td>Light green – Low contrast between font colors, combination of the two may cause problem for colorblind people.</td>
<td>White – Excellent contrast does not cause problem for colorblind people.</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>Graphics pictures images and logos</td>
<td>Do not have Alt tags. – Screen readers do not recognize them.</td>
<td>Include Alt tags – Screen readers can identify them. And read information to blind person.</td>
</tr>
<tr>
<td>Scrolling text</td>
<td>Sales sign on order page was scrolling – May cause problems for people with cognitive disabilities and people with photosensitive epilepsy problems; also screen readers may have a problem.</td>
<td>Sale sign on Order page was frozen – causing no problems.</td>
</tr>
<tr>
<td>Site Navigation</td>
<td>One set of Hover Buttons on the left side – People that cannot operate mouse cannot navigate the site. Motor skills and blind</td>
<td>Alternate Navigation provided at the bottom of each page and can be accessed with tab keys – easier navigation.</td>
</tr>
<tr>
<td>Sound</td>
<td>Music plays when the Home Page open – Deaf people cannot hear, If no sound available it cannot be heard.</td>
<td>Post a text notice – Sound “Peppy” music, Deaf people and if sound not available that the music is there.</td>
</tr>
<tr>
<td>Moving Graphics</td>
<td>Calculator on Order Page the finger are moving - May cause problems for people with cognitive disabilities and people with photosensitive epilepsy problems; also screen readers may have a problem.</td>
<td>Calculator on Order Page the finger is frozen – causing no problem.</td>
</tr>
</tbody>
</table>

*Hover buttons in many cases cannot be tabbed to and as a result cannot be accessed by people that cannot use a mouse.

As can be in Table one all of the fixes used in the ADA compliant site, for the problems found the Non ADA site, were quite easy to perform.

Testing of the ADA compliant site to assure that it was ADA compliant was as follows:
Step 1: The Non-ADA site was created first. Its URL was placed in the Bobby online testing facility to see what problems existed. Copy of the Bobby report for Non-ADA site can be found in Appendix D.

Step 2: The Non-ADA site was checked on Vischeck by placing the URL on Vischeck's online testing facility to see what colorblind people would see.

Step 3: Once step one and two were completed the ADA compliant site was completed using the fixes as noted in table one. The ADA compliant site was then tested on Bobby's online testing facility similar to the method used on the Non-ADA site. Copy of the Bobby report for ADA site can be found in Appendix D. A few problems were found with the User Checks section and subsequently fixed.

Step 4: Test the ADA compliant site on Vischeck similar to the process done with the Non-ADA site. No problems existed.

Step 5: Test the Non-ADA site on Jaws Screen Reader. Several problems existed. No graphics or images were picked up. The hover buttons on the left side, used for site navigation were not picked up. Making it impossible to navigate to the other pages of the site. The Text was read with no problems.

Step 6: Test the ADA site on Jaws Screen Reader. No problems existed. Images and graphics were identified. Both sets of navigation buttons were useable. The text boxes on the Order Page, used for order entry, operated properly.

Step 7: Test the Non-ADA site on a 5x Screen Enlargement Program (magnifier). Some problems were noted with the style of font and the lack of contrast making some of the text unreadable.

Step 8: Test the ADA site on a 5x Screen Enlargement Program (magnifier). One minor problem was found. The pixels were too far apart, making it hard to read. Only two words were affected. By making the font bold the problem was fixed.

The Survey

With the two Web sites completed and tested it was time to design the survey form. Questions were asked regarding all of the issues in Table One, plus general
questions about the site, plus demographic questions. A total of eighteen questions were asked on the survey.

Two copies of the survey were made. One directing the students to go to:
http://www.students.dsu.edu/schmide/homepage1.htm this is the Non-ADA site.
The other survey instructed the students to go to:
http://www.students.dsu.edu/schmide/homepage2.htm this is the ADA compliant site.

The URL at the top of the survey form was the only difference between the two survey forms. Copies of both survey forms are attached in Appendix E.

**Student Sampling**

Students sampled were from four sections of CSC 105 “Basic Computer” classes. A total of 57 students were surveyed. In each class section one half the class viewed the Non-ADA site and the other one half of the class viewed the ADA compliant site and responded to the survey questions. 29 students viewed and completed the ADA compliant survey and 28 students viewed and completed the Non-ADA site survey.

Respondents used a Lickert scale to indicate the extent to which they agreed (5 indicates strong agreement) or disagreement (1 indicates strong disagreement) with statements concerning one of the two Web sites.
Table 2. Demographic information Respondents to ADA survey

<table>
<thead>
<tr>
<th>Computer use</th>
<th>Do not use a computer</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Other Lab</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>DSU Personal</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>My friends personal</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>My own</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Computer user</td>
<td>Do not use a computer</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Novice</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Advanced</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Expert</td>
<td>3</td>
</tr>
<tr>
<td>Year in school</td>
<td>Freshman</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Grad student</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td>Students Major</td>
<td>Bis</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Natural Science</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Liberal Arts</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Began using computers</td>
<td>Do not use computers</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Elementary</td>
<td>5</td>
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<td></td>
<td>Middle</td>
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</tr>
<tr>
<td></td>
<td>High</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>College</td>
<td>9</td>
</tr>
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<td></td>
<td>Other</td>
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<tr>
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<td>15</td>
</tr>
<tr>
<td></td>
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<td>14</td>
</tr>
</tbody>
</table>
### Table 3. Demographic information Respondents to Non ADA survey

<table>
<thead>
<tr>
<th>Computer use</th>
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<tbody>
<tr>
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</tr>
<tr>
<td></td>
<td>DSU Personal</td>
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<td></td>
<td>My friends personal</td>
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<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td>Other</td>
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</tr>
<tr>
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</tr>
<tr>
<td></td>
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</tr>
<tr>
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<tr>
<td></td>
<td>Advanced</td>
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<td></td>
<td>Expert</td>
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</tr>
<tr>
<td>Year in school</td>
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<td>12</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
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</tr>
<tr>
<td></td>
<td>Junior</td>
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</tr>
<tr>
<td></td>
<td>Senior</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Grad student</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Students Major</td>
<td>Bis</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>4</td>
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<td></td>
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<tr>
<td></td>
<td>Liberal Arts</td>
<td>4</td>
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<tr>
<td></td>
<td>Other</td>
<td>10</td>
</tr>
<tr>
<td>Began using computers</td>
<td>Do not use computers</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Elementary</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>College</td>
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<td></td>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>12</td>
</tr>
</tbody>
</table>
Hypothesis Results

Hypothesis 1: There will be no difference between student responses for those viewing the ADA compliant Web site and the Non ADA Web site.

Table 4. T-test Results on Students Responses to ADA & Non ADA Web Sites

<table>
<thead>
<tr>
<th>Question</th>
<th>N</th>
<th>Mean</th>
<th>Prob&gt;T</th>
<th>Accept/Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font style is effective</td>
<td>ADA =29</td>
<td>3.3793</td>
<td>.0881*</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>Non ADA =28</td>
<td>2.8929</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Font color is effective</td>
<td>ADA =29</td>
<td>3.4828</td>
<td>.7746</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Non ADA =27</td>
<td>3.4074</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Background color is effective</td>
<td>ADA =29</td>
<td>3.2414</td>
<td>.6953</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Non ADA =28</td>
<td>3.3571</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pictures and image helpful</td>
<td>ADA =29</td>
<td>3.4828</td>
<td>.9567</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Non ADA =28</td>
<td>3.5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculator effective</td>
<td>ADA =29</td>
<td>2.9193</td>
<td>.7405</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Non ADA =26</td>
<td>2.9873</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sound appealing</td>
<td>ADA =29</td>
<td>5.0345</td>
<td>.7260</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Non ADA =28</td>
<td>5.1786</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Navigation from page to page was easy</td>
<td>ADA =29</td>
<td>4.069</td>
<td>.3082</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Non ADA =27</td>
<td>4.3333</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content was easy to read</td>
<td>ADA =29</td>
<td>4.1034</td>
<td>.0022*</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>Non ADA =28</td>
<td>3.6144</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colors were appealing</td>
<td>ADA =28</td>
<td>3.25</td>
<td>1.000</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Non ADA =28</td>
<td>3.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Sale” Banner was effective</td>
<td>ADA =28</td>
<td>3.000</td>
<td>.0810*</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>Non ADA =28</td>
<td>3.6786</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generally effective in conveying message</td>
<td>ADA =29</td>
<td>3.5862</td>
<td>.6168</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Non ADA =28</td>
<td>3.4643</td>
<td></td>
<td></td>
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<tr>
<td>Likely to buy a product from Web site</td>
<td>ADA =29</td>
<td>2.7586</td>
<td>.6674</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Non ADA =28</td>
<td>2.8571</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P ≤ 10 is rejected

There are a few differences in how the respondents viewed the ADA site versus the Non-ADA site. Hypothesis 1 is rejected in three instances, which finds that there was a significant difference in the two areas that favored the ADA compliant site. First the font style was found to be more effective in conveying the message of the site. Second,
the students that viewed the ADA site rated it easier to read than the students that viewed the Non-ADA site.

Hypothesis 1, which finds that there was a significant difference that favored the Non-ADA compliant site. The “Sale banner” on the order page was found to be more effective on the Non-ADA site. This obstacle could be overcome with an ADA compliant site by utilizing a method to turn off the scrolling banner. The “Sale sign on the ADA compliant site for the study was static.

_Hypothesis 2: There will be no difference between novice / average users and advanced/expert users student responses viewing the ADA compliant Web site._

<table>
<thead>
<tr>
<th>Question</th>
<th>N</th>
<th>Mean</th>
<th>Prob&gt;T</th>
<th>Accept/Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font style is effective</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>3.285</td>
<td>.4741</td>
<td>Accept</td>
</tr>
<tr>
<td>Font color is effective</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>3.381</td>
<td>.3945</td>
<td>Accept</td>
</tr>
<tr>
<td>Background color is effective</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>3.285</td>
<td>.7505</td>
<td>Accept</td>
</tr>
<tr>
<td>Pictures and image helpful</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>3.333</td>
<td>.2382</td>
<td>Accept</td>
</tr>
<tr>
<td>Calculator effective</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>3.1905</td>
<td>.1809</td>
<td>Accept</td>
</tr>
<tr>
<td>Sound appealing</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>5.0476</td>
<td>.9464</td>
<td>Accept</td>
</tr>
<tr>
<td>Navigation from page to page was easy</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>4.0476</td>
<td>.8443</td>
<td>Accept</td>
</tr>
<tr>
<td>Content was easy to read</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>4.0952</td>
<td>.9469</td>
<td>Accept</td>
</tr>
<tr>
<td>Colors were appealing</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>3.25</td>
<td>1.0</td>
<td>Accept</td>
</tr>
<tr>
<td>“Sale” Banner was effective</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>2.85</td>
<td>.4179</td>
<td>Accept</td>
</tr>
<tr>
<td>Generally effective in conveying message</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>3.5238</td>
<td>.05888</td>
<td>Accept</td>
</tr>
<tr>
<td>Likely to buy a</td>
<td>Novice/average =21 Advanced/expert=8</td>
<td>2.8095</td>
<td>.6351</td>
<td>Accept</td>
</tr>
</tbody>
</table>
When it comes to computer experience levels Novice/Average verses Advanced/Expert when viewing the ADA compliant site no significant differences were noted.

*Hypothesis 3: There will be no difference between novice / average users and advanced / expert users student responses viewing the Non ADA compliant Web site.*

<table>
<thead>
<tr>
<th>Table 6. T-test Results on Students Responses to Non ADA Web Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Question</strong></td>
</tr>
<tr>
<td>Font style is effective</td>
</tr>
<tr>
<td>Novice/average =18</td>
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<tr>
<td>Advanced/expert =10</td>
</tr>
<tr>
<td>Font color is effective</td>
</tr>
<tr>
<td>Novice/average =17</td>
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<tr>
<td>Advanced/expert =10</td>
</tr>
<tr>
<td>Background color is effective</td>
</tr>
<tr>
<td>Novice/average =18</td>
</tr>
<tr>
<td>Advanced/expert =10</td>
</tr>
<tr>
<td>Pictures and image helpful</td>
</tr>
<tr>
<td>Novice/average =18</td>
</tr>
<tr>
<td>Advanced/expert =10</td>
</tr>
<tr>
<td>Calculator effective</td>
</tr>
<tr>
<td>Novice/average =17</td>
</tr>
<tr>
<td>Advanced/expert =9</td>
</tr>
<tr>
<td>Sound appealing</td>
</tr>
<tr>
<td>Novice/average =18</td>
</tr>
<tr>
<td>Advanced/expert =10</td>
</tr>
<tr>
<td>Navigation from page to page was easy</td>
</tr>
<tr>
<td>Novice/average =18</td>
</tr>
<tr>
<td>Advanced/expert =9</td>
</tr>
<tr>
<td>Content was easy to read</td>
</tr>
<tr>
<td>Novice/average =18</td>
</tr>
<tr>
<td>Advanced/expert =10</td>
</tr>
<tr>
<td>Colors were appealing</td>
</tr>
<tr>
<td>Novice/average =18</td>
</tr>
<tr>
<td>Advanced/expert =10</td>
</tr>
<tr>
<td>“Sale” Banner was effective</td>
</tr>
<tr>
<td>Novice/average =18</td>
</tr>
<tr>
<td>Advanced/expert =10</td>
</tr>
<tr>
<td>Generally effective in conveying message</td>
</tr>
<tr>
<td>Novice/average =18</td>
</tr>
<tr>
<td>Advanced/expert =10</td>
</tr>
<tr>
<td>Likely to buy a product from Web site</td>
</tr>
<tr>
<td>Novice/average =18</td>
</tr>
<tr>
<td>Advanced/expert =10</td>
</tr>
</tbody>
</table>

*P ≤ .10 is rejected
Hypothesis 3 is rejected in two instances, which finds that there was a significant difference in the two areas that favored the Non-ADA compliant site. First Novice/average found the Non-ADA Web site generally more effective in conveying the message than the Advanced/Expert users students. Second, the Novice/average user students were more likely to buy a product based on the Web site than the Advanced/Expert user students.

Hypothesis 4: There will be no difference between freshmen and sophomores student responses viewing the ADA compliant Web site.

Table 7. T-test Results on Students Responses to ADA Web Sites

<table>
<thead>
<tr>
<th>Question</th>
<th>N</th>
<th>Mean</th>
<th>Prob&gt;T</th>
<th>Accept/Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font style is effective</td>
<td>Fresh = 19</td>
<td>3.6316</td>
<td>.3809</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>3.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Font color is effective</td>
<td>Fresh = 19</td>
<td>3.6842</td>
<td>.5883</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Background color is effective</td>
<td>Fresh = 19</td>
<td>3.3684</td>
<td>.3811</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>3.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pictures and image helpful</td>
<td>Fresh = 19</td>
<td>3.5789</td>
<td>.5213</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>3.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculator effective</td>
<td>Fresh = 19</td>
<td>3.5</td>
<td>.8598</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sound appealing</td>
<td>Fresh = 19</td>
<td>5.1579</td>
<td>.0777*</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>3.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Navigation from page to page was easy</td>
<td>Fresh = 19</td>
<td>4.2632</td>
<td>.0773*</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content was easy to read</td>
<td>Fresh = 19</td>
<td>4.2632</td>
<td>.1346</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colors were appealing</td>
<td>Fresh = 19</td>
<td>3.4737</td>
<td>.6635</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>3.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Sale” Banner was effective</td>
<td>Fresh = 19</td>
<td>3.3889</td>
<td>.8012</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>3.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generally effective in conveying message</td>
<td>Fresh = 19</td>
<td>3.7895</td>
<td>.6989</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>3.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likely to buy a product from Web site</td>
<td>Fresh = 19</td>
<td>3.0</td>
<td>.3778</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>Soph = 5</td>
<td>2.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P ≤ .10 is rejected
Hypothesis 4 is rejected in two instances, which finds that there was a significant difference that favored the ADA compliant site. First freshmen rated the sound higher than sophomores rated the sound, however not many of either group heard the sound because it was not operable on most of the computers in the labs used. Second freshmen found navigation from page to page of the ADA site easier than the sophomores did.

*Hypothesis 5: There will be no difference between freshmen and sophomores student responses viewing the Non-ADA compliant Web site.*

<table>
<thead>
<tr>
<th>Question</th>
<th>N</th>
<th>Mean</th>
<th>Prob&gt;T</th>
<th>Accept/Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font style is effective</td>
<td>Fresh = 12</td>
<td>3.0833</td>
<td>2.5</td>
<td>.1598</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Font color is effective</td>
<td>Fresh = 12</td>
<td>3.7273</td>
<td>3.4</td>
<td>.4581</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Background color is effective</td>
<td>Fresh = 12</td>
<td>3.6667</td>
<td>3.3</td>
<td>.3872</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pictures and image helpful</td>
<td>Fresh = 12</td>
<td>3.5</td>
<td>3.0</td>
<td>.4008</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculator effective</td>
<td>Fresh = 12</td>
<td>3.5833</td>
<td>3.0</td>
<td>.3424</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sound appealing</td>
<td>Fresh = 12</td>
<td>4.9167</td>
<td>5.1</td>
<td>.7889</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Navigation from page to page was easy</td>
<td>Fresh = 12</td>
<td>4.25</td>
<td>4.2</td>
<td>.9159</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content was easy to read</td>
<td>Fresh = 12</td>
<td>3.25</td>
<td>2.6</td>
<td>.1691</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colors were appealing</td>
<td>Fresh = 12</td>
<td>3.75</td>
<td>3.0</td>
<td>.0971*</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Sale” Banner was effective</td>
<td>Fresh = 12</td>
<td>4.0833</td>
<td>3.3</td>
<td>.1820</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generally effective in conveying message</td>
<td>Fresh = 12</td>
<td>3.75</td>
<td>3.0</td>
<td>.0511*</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likely to buy a product from Web site</td>
<td>Fresh = 12</td>
<td>3.0833</td>
<td>2.5</td>
<td>.1364</td>
</tr>
<tr>
<td></td>
<td>Soph = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P ≤ .10 is rejected
Hypothesis 5 is rejected in two instances. When viewing the Non-ADA site freshmen found the colors site generally more appealing than sophomores did. Freshmen also found the Non-ADA site generally more effective in conveying the message than sophomores did.

_Hypothesis 6: There will be no difference between those students that began using computers in Elementary/middle School and students that began using computers in high school/college student responses viewing the ADA compliant Web site._

<table>
<thead>
<tr>
<th>Question</th>
<th>N</th>
<th>Mean</th>
<th>Prob&gt;T</th>
<th>Accept/Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font style is effective</td>
<td>Ele./mid. = 10 High/col. = 17</td>
<td>3.5</td>
<td>3.4118</td>
<td>.8479</td>
</tr>
<tr>
<td>Font color is effective</td>
<td>Ele./mid. = 10 High/col. = 17</td>
<td>3.5</td>
<td>3.4706</td>
<td>.9457</td>
</tr>
<tr>
<td>Background color is effective</td>
<td>Ele./mid. = 10 High/col. = 17</td>
<td>3.33</td>
<td>3.1765</td>
<td>.8050</td>
</tr>
<tr>
<td>Pictures and image helpful</td>
<td>Ele./mid. = 10 High/col. = 17</td>
<td>3.6</td>
<td>3.4118</td>
<td>.6823</td>
</tr>
<tr>
<td>Calculator effective</td>
<td>Ele./mid. = 9 High/col. = 17</td>
<td>3.4444</td>
<td>3.2941</td>
<td>.7611</td>
</tr>
<tr>
<td>Sound appealing</td>
<td>Ele./mid. = 10 High/col. = 17</td>
<td>4.7</td>
<td>5.2941</td>
<td>.3802</td>
</tr>
<tr>
<td>Navigation from page to page was easy</td>
<td>Ele./mid. = 10 High/col. = 17</td>
<td>4.0</td>
<td>4.1765</td>
<td>.6445</td>
</tr>
<tr>
<td>Content was easy to read</td>
<td>Ele./mid. = 10 High/col. = 17</td>
<td>4.2</td>
<td>4.0588</td>
<td>.7513</td>
</tr>
<tr>
<td>Colors were appealing</td>
<td>Ele./mid. = 10 High/col. = 17</td>
<td>2.8</td>
<td>3.4706</td>
<td>.1722</td>
</tr>
<tr>
<td>“Sale” Banner was effective</td>
<td>Ele./mid. = 9 High/col. = 17</td>
<td>2.6667</td>
<td>3.2941</td>
<td>.3354</td>
</tr>
<tr>
<td>Generally effective in conveying message</td>
<td>Ele./mid. = 10 High/col. = 17</td>
<td>3.5</td>
<td>3.7059</td>
<td>.6171</td>
</tr>
<tr>
<td>Likely to buy a product from Web site</td>
<td>Ele./mid. = 10 High/col. = 17</td>
<td>2.5</td>
<td>2.9412</td>
<td>.2432</td>
</tr>
</tbody>
</table>

*P ≤ .10 is rejected
No difference was found when comparing students that began using computers in elementary/middle school verses high school/college when viewing the ADA site.

*Hypothesis 7: There will be no difference between those students that began using computers in elementary/middle school and students that began using computers in high school/college student responses viewing the Non ADA compliant Web site.*

<table>
<thead>
<tr>
<th>Question</th>
<th>N</th>
<th>Mean</th>
<th>Prob&gt;T</th>
<th>Accept/Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font style is effective</td>
<td>Ele./mid. = 12, High/col. = 16</td>
<td>2.75, 3.0</td>
<td>.5204, .6528</td>
<td>Accept, Accept</td>
</tr>
<tr>
<td>Font color is effective</td>
<td>Ele./mid. = 12, High/col. = 15</td>
<td>3.5, 3.333</td>
<td>.5007, .3849</td>
<td>Accept, Accept</td>
</tr>
<tr>
<td>Background color is effective</td>
<td>Ele./mid. = 12, High/col. = 16</td>
<td>3.5, 3.25</td>
<td>.5007, .3849</td>
<td>Accept, Accept</td>
</tr>
<tr>
<td>Pictures and image helpful</td>
<td>Ele./mid. = 12, High/col. = 16</td>
<td>3.25, 3.6875</td>
<td>.3849, .8981</td>
<td>Accept, Accept</td>
</tr>
<tr>
<td>Calculator effective</td>
<td>Ele./mid. = 10, High/col. = 16</td>
<td>3.5, 3.4375</td>
<td>.3849, .8981</td>
<td>Accept, Accept</td>
</tr>
<tr>
<td>Sound appealing</td>
<td>Ele./mid. = 12, High/col. = 16</td>
<td>4.9167, 5.375</td>
<td>.4068, .7065</td>
<td>Accept, Accept</td>
</tr>
<tr>
<td>Navigation from page to page easy</td>
<td>Ele./mid. = 12, High/col. = 15</td>
<td>4.4167, 4.2667</td>
<td>.7065, .2941</td>
<td>Accept, Accept</td>
</tr>
<tr>
<td>Content was easy to read</td>
<td>Ele./mid. = 12, High/col. = 16</td>
<td>2.9167, 3.375</td>
<td>.2941, .7298</td>
<td>Accept, Accept</td>
</tr>
<tr>
<td>Colors were appealing</td>
<td>Ele./mid. = 12, High/col. = 16</td>
<td>3.1667, 3.3125</td>
<td>.2941, .7298</td>
<td>Accept, Accept</td>
</tr>
<tr>
<td>“Sale” Banner was effective</td>
<td>Ele./mid. = 12, High/col. = 16</td>
<td>3.4167, 3.875</td>
<td>.3786, .1046</td>
<td>Accept, Accept</td>
</tr>
<tr>
<td>Generally effective in conveying message</td>
<td>Ele./mid. = 12, High/col. = 16</td>
<td>3.1667, 3.6875</td>
<td>.1046, .2856</td>
<td>Accept, Accept</td>
</tr>
<tr>
<td>Likely to buy a product from Web site</td>
<td>Ele./mid. = 12, High/col. = 16</td>
<td>2.6667, 3.0</td>
<td>.2856, .2856</td>
<td>Accept, Accept</td>
</tr>
</tbody>
</table>

*P ≤ 10 is rejected
Hypothesis 7: No difference was found when comparing students that began using computers in elementary/middle school versus high school/college when viewing the Non-ADA site.

Conclusions

In the Introduction of this paper, it has been cited that the perception by Webmasters, is that an ADA compliant Web site, is a bland and unappealing site to the user. In order to determine if this premise is a real or imagined is the purpose of this study. This paper reports the results of a study administered to 57 students, enrolled in CSC 105 “Basic Computers” at Dakota State University, for the spring semester 2001. Comparing the ADA compliant Web site to the Non-ADA Web site only a few differences exist.

Hypothesis 1 is rejected in three instances, which finds that there was a significant difference in the two areas that favored the ADA compliant site. First the font style was found to be more effective in conveying the message of the site. Second, the students that viewed the ADA site rated it easier to read than the students that viewed the Non-ADA site. Hypothesis 1, which finds that there was a significant difference that favored the Non-ADA compliant site. The “Sale banner” on the order page was found to be more effective on the Non-ADA site. This could be overcome on an ADA compliant Web site by utilizing a method to turn off the scrolling banner. The “Sale” sign used on the ADA compliant Web site for the study was static.

The following conclusions are based upon the results of the demographic issues involved in the study:
Hypothesis 2 - When it comes to computer experience levels Novice/Average versus Advanced/Expert when viewing the ADA compliant site no significant differences were noted.

Hypothesis 3 is rejected in two instances. First the Novice/Average found the Non-ADA Web site generally more effective in conveying the message than the Advanced/Expert users students. Second, the Novice/average user students were more likely to buy a product based on the Web site than the Advanced/Expert user students. It certainly appears as though more experienced users were unaffected by the bells and whistles of the Non-ADA site.

Hypothesis 4 and Hypothesis 5 freshman verses sophomore students, both groups were so similar no significant difference exists between the two groups. As a result no meaningful results could be arrived at. In order to gain further incites to the differences between freshmen and sophomores Web site preferences further study is needed.

Hypothesis 6, no difference was found when comparing students that began using computers in elementary/middle school verses high school/college when viewing the ADA compliant site.

Hypothesis 7, no difference was found when comparing students that began using computers in elementary/middle school verses high school/college when viewing the Non-ADA compliant site.

ADA compliance of Web site's used in higher education yields mostly positive results. The few negatives can normally be overcome with the use of alternate access methods.
Recommendation for Further Study

One potential for additional study would be to survey college bound high school seniors using an ADA compliant Website and a Non-ADA Web site to determine levels of satisfaction. The premise for this study could be similar except using a fictitious University as the basis for the Web sites. The goal would be to determine to what extent a Web site is able to influence college bound seniors in their decision on a college or university.


Cunningham, Carmela, and Norman Coombs. Information access and adaptive technology. Washington DC:

ADA / Section 508’s effect on a website for higher education; a study comparing students reaction to ADA/Bobby compliant website against a non compliant website.


Dougherty Ph.D., Robert, and Alex Wade Ph.D. Vischeck. 12 May 2001


Morrissey, Patricia A. The educator's guide to the Americans with Disabilities Act. Alexandria, VA

Stone, Martin. "AOL To Become accessible for the Blind." Newsbyte/Post-Newsweek Business

United States. Architectural and Transportation Barriers Compliance Board. Electronic and
Information
Technology Accessibility Standards. 27 May 2001 <www.access-board.gov/news/508-final
htm>.

ADA / Section 508’s effect on a website for higher education; a study comparing students reaction to ADA/ Bobby compliant website against a non compliant website.

*http://www.w3.org/consortium

*http://www.w3.org/TR/WAI-WEBCONTENT
Appendix A

Section 508 Law
PL 105-220, 1998 HR 1385
PL 105-220, enacted on August 7, 1998, 112 Stat 936
codified as: Section 504 of the Rehabilitation Act, 29 U.S.C. § 794d

WORKFORCE INVESTMENT ACT OF 1998

SEC. 508. ELECTRONIC AND INFORMATION TECHNOLOGY.

(a) REQUIREMENTS FOR FEDERAL DEPARTMENTS AND AGENCIES.--

(1) ACCESSIBILITY.--

(A) DEVELOPMENT, PROCUREMENT, MAINTENANCE, OR USE OF ELECTRONIC AND INFORMATION TECHNOLOGY.—When developing, procuring, maintaining, or using electronic and information technology, each Federal department or agency, including the United States Postal Service, shall ensure, unless an undue burden would be imposed on the department or agency, that the electronic and information technology allows, regardless of the type of medium of the technology--

(i) individuals with disabilities who are Federal employees to have access to and use of information and data that is comparable to the access to and use of the information and data by Federal employees who are not individuals with disabilities; and

(ii) individuals with disabilities who are members of the public seeking information or services from a Federal department or agency to have access to and use of information and data that is comparable to the access to and use of the information and data by such members of the public who are not individuals with disabilities.

(B) ALTERNATIVE MEANS EFFORTS.—When development, procurement, maintenance, or use of electronic and information technology that meets the standards published by the Access Board under paragraph (2) would impose an undue burden, the Federal department or agency shall provide individuals with disabilities covered by paragraph (1) with the information and data involved by an alternative means of access that allows the individual to use the information and data.

(2) ELECTRONIC AND INFORMATION TECHNOLOGY STANDARDS.—

(A) IN GENERAL.—Not later than 18 months after the date of enactment of the Rehabilitation Act Amendments of 1998, the Architectural and Transportation Barriers Compliance Board (referred to in this section as the 'Access Board'), after consultation with the Secretary of Education, the Administrator of General Services, the Secretary of Commerce, the Chairman of the Federal Communications Commission, the Secretary of Defense, and the head of any other Federal department or agency that the Access Board determines to be appropriate, including consultation on relevant research findings, and after consultation with the electronic and information technology industry and
appropriate public or nonprofit agencies or organizations, including organizations representing individuals with disabilities, shall issue and publish standards setting forth—

(i) for purposes of this section, a definition of electronic and information technology that is consistent with the definition of information technology specified in section 5002(3) of the Clinger-Cohen Act of 1996 (40 U.S.C. 1401(3)); and

(ii) the technical and functional performance criteria necessary to implement the requirements set forth in paragraph (1).

(B) REVIEW AND AMENDMENT.—The Access Board shall periodically review and, as appropriate, amend the standards required under subparagraph (A) to reflect technological advances or changes in electronic and information technology.

(3) INCORPORATION OF STANDARDS.—Not later than 6 months after the Access Board publishes the standards required under paragraph (2), the Federal Acquisition Regulatory Council shall revise the Federal Acquisition Regulation and each Federal department or agency shall revise the Federal procurement policies and directives under the control of the department or agency to incorporate those standards. Not later than 6 months after the Access Board revises any standards required under paragraph (2), the Council shall revise the Federal Acquisition Regulation and each appropriate Federal department or agency shall revise the procurement policies and directives, as necessary, to incorporate the revisions.

(4) ACQUISITION PLANNING.—In the event that a Federal department or agency determines that compliance with the standards issued by the Access Board under paragraph (2) relating to procurement imposes an undue burden, the documentation by the department or agency supporting the procurement shall explain why compliance creates an undue burden.

(5) EXEMPTION FOR NATIONAL SECURITY SYSTEMS.—This section shall not apply to national security systems, as that term is defined in section 5142 of the Clinger-Cohen Act of 1996 (40 U.S.C. 1452).

(6) CONSTRUCTION.—

(A) EQUIPMENT.—In a case in which the Federal Government provides access to the public to information or data through electronic and information technology, nothing in this section shall be construed to require a Federal department or agency—

(i) to make equipment owned by the Federal Government available for access and use by individuals with disabilities covered by paragraph (1) at a location other than that where the electronic and information technology is provided to the public; or
(ii) to purchase equipment for access and use by individuals with disabilities covered by paragraph (1) at a location other than that where the electronic and information technology is provided to the public.

(B) SOFTWARE AND PERIPHERAL DEVICES.—Except as required to comply with standards issued by the Access Board under paragraph (2), nothing in paragraph (1) requires the installation of specific accessibility-related software or the attachment of a specific accessibility-related peripheral device at a workstation of a Federal employee who is not an individual with a disability.

(b) TECHNICAL ASSISTANCE.—The Administrator of General Services and the Access Board shall provide technical assistance to individuals and Federal departments and agencies concerning the requirements of this section.

(c) AGENCY EVALUATIONS.—Not later than 6 months after the date of enactment of the Rehabilitation Act Amendments of 1998, the head of each Federal department or agency shall evaluate the extent to which the electronic and information technology of the department or agency is accessible to and usable by individuals with disabilities described in subsection (a)(1), compared to the access to and use of the technology by individuals described in such subsection who are not individuals with disabilities, and submit a report containing the evaluation to the Attorney General.

(d) REPORTS.—

(1) INTERIM REPORT.—Not later than 18 months after the date of enactment of the Rehabilitation Act Amendments of 1998, the Attorney General shall prepare and submit to the President a report containing information on and recommendations regarding the extent to which the electronic and information technology of the Federal Government is accessible to and usable by individuals with disabilities described in subsection (a)(1).

(2) BIENNIAL REPORTS.—Not later than 3 years after the date of enactment of the Rehabilitation Act Amendments of 1998, and every 2 years thereafter, the Attorney General shall prepare and submit to the President and Congress a report containing information on and recommendations regarding the state of Federal department and agency compliance with the requirements of this section, including actions regarding individual complaints under subsection (f).

(e) COOPERATION.—Each head of a Federal department or agency (including the Access Board, the Equal Employment Opportunity Commission, and the General Services Administration) shall provide to the Attorney General such information as the Attorney General determines is necessary to conduct the evaluations under subsection (c) and prepare the reports under subsection (d).

(f) ENFORCEMENT.—

(1) GENERAL.—
(A) COMPLAINTS.—Effective 2 years after the date of enactment of the Rehabilitation Act Amendments of 1998, any individual with a disability may file a complaint alleging that a Federal department or agency fails to comply with subsection (a)(1) in providing electronic and information technology.

(B) APPLICATION.—This subsection shall apply only to electronic and information technology that is procured by a Federal department or agency not less than 2 years after the date of enactment of the Rehabilitation Act Amendments of 1998.

(2) ADMINISTRATIVE COMPLAINTS.—Complaints filed under paragraph (1) shall be filed with the Federal department or agency alleged to be in noncompliance. The Federal department or agency receiving the complaint shall apply the complaint procedures established to implement section 504 for resolving allegations of discrimination in a federally conducted program or activity.

(3) CIVIL ACTIONS.—The remedies, procedures, and rights set forth in sections 505(a)(2) and 505(b) shall be the remedies, procedures, and rights available to any individual with a disability filing a complaint under paragraph (1).

(g) APPLICATION TO OTHER FEDERAL LAWS.—This section shall not be construed to limit any right, remedy, or procedure otherwise available under any provision of Federal law (including sections 501 through 505) that provides greater or equal protection for the rights of individuals with disabilities than this section.
Appendix B

Web Content Accessibility Guidelines
Web Content Accessibility Guidelines 1.0

W3C Recommendation 5-May-1999

This version:
http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505
(plain text, PostScript, PDF, gzip tar file of HTML, zip archive of HTML)

Latest version:
http://www.w3.org/TR/WAI-WEBCONTENT

Previous version:
http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990324

Editors:
Wendy Chisholm, Trace R & D Center, University of Wisconsin -- Madison
Gregg Vanderheiden, Trace R & D Center, University of Wisconsin -- Madison
Ian Jacobs, W3C

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Abstract

These guidelines explain how to make Web content accessible to people with
disabilities. The guidelines are intended for all Web content developers (page authors
and site designers) and for developers of authoring tools. The primary goal of these
guidelines is to promote accessibility. However, following them will also make Web
content more available to all users, whatever user agent they are using (e.g., desktop
browser, voice browser, mobile phone, automobile-based personal computer, etc.) or
constraints they may be operating under (e.g., noisy surroundings, under- or over-
illuminated rooms, in a hands-free environment, etc.). Following these guidelines will
also help people find information on the Web more quickly. These guidelines do not
discourage content developers from using images, video, etc., but rather explain
how to make multimedia content more accessible to a wide audience.
This is a reference document for accessibility principles and design ideas. Some of the strategies discussed in this document address certain Web internationalization and mobile access concerns. However, this document focuses on accessibility and does not fully address the related concerns of other W3C Activities. Please consult the W3C Mobile Access Activity home page and the W3C Internationalization Activity home page for more information.

This document is meant to be stable and therefore does not provide specific information about browser support for different technologies as that information changes rapidly. Instead, the Web Accessibility Initiative (WAI) Web site provides such information (refer to [WAI-UA-SUPPORT]).

This document includes an appendix that organizes all of the checkpoints by topic and priority. The checkpoints in the appendix link to their definitions in the current document. The topics identified in the appendix include images, multimedia, tables, frames, forms, and scripts. The appendix is available as either a tabular summary of checkpoints or as a simple list of checkpoints.

A separate document, entitled "Techniques for Web Content Accessibility Guidelines 1.0" ([TECHNIQUES]), explains how to implement the checkpoints defined in the current document. The Techniques Document discusses each checkpoint in more detail and provides examples using the Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), Synchronized Multimedia Integration Language (SMIL), and the Mathematical Markup Language (MathML). The Techniques Document also includes techniques for document validation and testing, and an index of HTML elements and attributes (and which techniques use them). The Techniques Document has been designed to track changes in technology and is expected to be updated more frequently than the current document. Note. Not all browsers or multimedia tools may support the features described in the guidelines. In particular, new features of HTML 4.0 or CSS 1 or CSS 2 may not be supported.

"Web Content Accessibility Guidelines 1.0" is part of a series of accessibility guidelines published by the Web Accessibility Initiative. The series also includes User Agent Accessibility Guidelines ([WAI-USERAGENT]) and Authoring Tool Accessibility Guidelines ([WAI-AUTOOLS]).

Status of this document

This document has been reviewed by W3C Members and other interested parties and has been endorsed by the Director as a W3C Recommendation. It is a stable document and may be used as reference material or cited as a normative reference from another documents. W3C's role in making the Recommendation is to draw attention to the specification and to promote its widespread deployment. This enhances the functionality and universality of the Web.

The English version of this specification is the only normative version. However, for
translations in other languages see http://www.w3.org/WAI/GL/WAI-WEBCONTENT-TRANSLATIONS.

The list of known errors in this document is available at http://www.w3.org/WAI/GL/WAI-WEBCONTENT-ERRATA. Please report errors in this document to wai-wcag-editor@w3.org.

A list of current W3C Recommendations and other technical documents can be found at http://www.w3.org/TR.

This document has been produced as part of the W3C Web Accessibility Initiative. The goal of the Web Content Guidelines Working Group is discussed in the Working Group charter.

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4. Priorities
5. Conformance
6. Web Content Accessibility Guidelines
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   3. Use markup and style sheets and do so properly.
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   7. Ensure user control of time-sensitive content changes.
   8. Ensure direct accessibility of embedded user interfaces.
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   13. Provide clear navigation mechanisms.
   14. Ensure that documents are clear and simple.

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Appendix B. -- Glossary
Acknowledgments
References

The appendix list of checkpoints is available as either a tabular summary of file://A:\Web Content Accessibility Guidelines 1_0.htm

5/22/01
checkpoints or as a simple list of checkpoints.

1. Introduction

For those unfamiliar with accessibility issues pertaining to Web page design, consider that many users may be operating in contexts very different from your own:

- They may not be able to see, hear, move, or may not be able to process some types of information easily or at all.
- They may have difficulty reading or comprehending text.
- They may not have or be able to use a keyboard or mouse.
- They may have a text-only screen, a small screen, or a slow Internet connection.
- They may not speak or understand fluently the language in which the document is written.
- They may be in a situation where their eyes, ears, or hands are busy or interfered with (e.g., driving to work, working in a loud environment, etc.).
- They may have an early version of a browser, a different browser entirely, a voice browser, or a different operating system.

Content developers must consider these different situations during page design. While there are several situations to consider, each accessible design choice generally benefits several disability groups at once and the Web community as a whole. For example, by using style sheets to control font styles and eliminating the FONT element, HTML authors will have more control over their pages, make those pages more accessible to people with low vision, and by sharing the style sheets, will often shorten page download times for all users.

The guidelines discuss accessibility issues and provide accessible design solutions. They address typical scenarios (similar to the font style example) that may pose problems for users with certain disabilities. For example, the first guideline explains how content developers can make images accessible. Some users may not be able to see images, others may use text-based browsers that do not support images, while others may have turned off support for images (e.g., due to a slow Internet connection). The guidelines do not suggest avoiding images as a way to improve accessibility. Instead, they explain that providing a text equivalent of the image will make it accessible.

How does a text equivalent make the image accessible? Both words in "text equivalent" are important:

- Text content can be presented to the user as synthesized speech, braille, and visually-displayed text. Each of these three mechanisms uses a different sense - ears for synthesized speech, tactile for braille, and eyes for visually-displayed text -- making the information accessible to groups representing a variety of sensory and other disabilities.
• In order to be useful, the text must convey the same function or purpose as the image. For example, consider a text equivalent for a photographic image of the Earth as seen from outer space. If the purpose of the image is mostly that of decoration, then the text "Photograph of the Earth as seen from outer space" might fulfill the necessary function. If the purpose of the photograph is to illustrate specific information about world geography, then the text equivalent should convey that information. If the photograph has been designed to tell the user to select the image (e.g., by clicking on it) for information about the earth, equivalent text would be "Information about the Earth". Thus, if the text conveys the same function or purpose for the user with a disability as the image does for other users, then it can be considered a text equivalent.

Note that, in addition to benefitting users with disabilities, text equivalents can help all users find pages more quickly, since search robots can use the text when indexing the pages.

While Web content developers must provide text equivalents for images and other multimedia content, it is the responsibility of user agents (e.g., browsers and assistive technologies such as screen readers, braille displays, etc.) to present the information to the user.

Non-text equivalents of text (e.g., icons, pre-recorded speech, or a video of a person translating the text into sign language) can make documents accessible to people who may have difficulty accessing written text, including many individuals with cognitive disabilities, learning disabilities, and deafness. Non-text equivalents of text can also be helpful to non-readers. An auditory description is an example of a non-text equivalent of visual information. An auditory description of a multimedia presentation's visual track benefits people who cannot see the visual information.

2. Themes of Accessible Design

The guidelines address two general themes: ensuring graceful transformation, and making content understandable and navigable.

2.1 Ensuring Graceful Transformation

By following these guidelines, content developers can create pages that transform gracefully. Pages that transform gracefully remain accessible despite any of the constraints described in the introduction, including physical, sensory, and cognitive disabilities, work constraints, and technological barriers. Here are some keys to designing pages that transform gracefully:

• Separate structure from presentation (refer to the difference between content, structure, and presentation).
• Provide text (including text equivalents). Text can be rendered in ways that are available to almost all browsing devices and accessible to almost all users.
• Create documents that work even if the user cannot see and/or hear. Provide information that serves the same purpose or function as audio or video in ways suited to alternate sensory channels as well. This does not mean creating a prerecorded audio version of an entire site to make it accessible to users who are blind. Users who are blind can use screen reader technology to render all text information in a page.
• Create documents that do not rely on one type of hardware. Pages should be usable by people without mice, with small screens, low resolution screens, black and white screens, no screens, with only voice or text output, etc.

The theme of graceful transformation is addressed primarily by guidelines 1 to 11.

2.2 Making Content Understandable and Navigable

Content developers should make content understandable and navigable. This includes not only making the language clear and simple, but also providing understandable mechanisms for navigating within and between pages. Providing navigation tools and orientation information in pages will maximize accessibility and usability. Not all users can make use of visual clues such as image maps, proportional scroll bars, side-by-side frames, or graphics that guide sighted users of graphical desktop browsers. Users also lose contextual information when they can only view a portion of a page, either because they are accessing the page one word at a time (speech synthesis or braille display), or one section at a time (small display, or a magnified display). Without orientation information, users may not be able to understand very large tables, lists, menus, etc.

The theme of making content understandable and navigable is addressed primarily in guidelines 12 to 14.

3. How the Guidelines are Organized

This document includes fourteen guidelines, or general principles of accessible design. Each guideline includes:

• The guideline number.
• The statement of the guideline.
• Guideline navigation links. Three links allow navigation to the next guideline (right arrow icon), the previous guideline (left arrow icon), or the current guideline’s position in the table of contents (up arrow icon).
• The rationale behind the guideline and some groups of users who benefit from it.
• A list of checkpoint definitions.

The checkpoint definitions in each guideline explain how the guideline applies in typical content development scenarios. Each checkpoint definition includes:

• The checkpoint number.
• The statement of the checkpoint.
• The priority of the checkpoint. Priority 1 checkpoints are highlighted through the use of style sheets.
• Optional informative notes, clarifying examples, and cross references to related guidelines or checkpoints.
• A link to a section of the Techniques Document ([TECHNIQUES]) where implementations and examples of the checkpoint are discussed.

Each checkpoint is intended to be specific enough so that someone reviewing a page or site may verify that the checkpoint has been satisfied.

3.1 Document conventions

The following editorial conventions are used throughout this document:

• Element names are in uppercase letters.
• Attribute names are quoted in lowercase letters.
• Links to definitions are highlighted through the use of style sheets.

4. Priorities

Each checkpoint has a priority level assigned by the Working Group based on the checkpoint’s impact on accessibility.

[Priority 1]
A Web content developer must satisfy this checkpoint. Otherwise, one or more groups will find it impossible to access information in the document. Satisfying this checkpoint is a basic requirement for some groups to be able to use Web documents.

[Priority 2]
A Web content developer should satisfy this checkpoint. Otherwise, one or more groups will find it difficult to access information in the document. Satisfying this checkpoint will remove significant barriers to accessing Web documents.

[Priority 3]
A Web content developer may address this checkpoint. Otherwise, one or more groups will find it somewhat difficult to access information in the document. Satisfying this checkpoint will improve access to Web documents.

Some checkpoints specify a priority level that may change under certain (indicated) conditions.

5. Conformance

This section defines three levels of conformance to this document:
• Conformance Level "A": all Priority 1 checkpoints are satisfied;
• Conformance Level "Double-A": all Priority 1 and 2 checkpoints are satisfied;
• Conformance Level "Triple-A": all Priority 1, 2, and 3 checkpoints are satisfied;

Note. Conformance levels are spelled out in text so they may be understood when rendered to speech.

Claims of conformance to this document must use one of the following two forms.

Form 1: Specify:

• The guidelines title: "Web Content Accessibility Guidelines 1.0"
• The guidelines URL: http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505
• The conformance level satisfied: "A", "Double-A", or "Triple-A".
• The scope covered by the claim (e.g., page, site, or defined portion of a site.).

Example of Form 1:

This page conforms to W3C's "Web Content Accessibility Guidelines 1.0", available at http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505, level Double-A.

Form 2: Include, on each page claiming conformance, one of three icons provided by W3C and link the icon to the appropriate W3C explanation of the claim. Information about the icons and how to insert them in pages is available at [WCAG-ICONS].

6. Web Content Accessibility Guidelines

Guideline 1. Provide equivalent alternatives to auditory and visual content.

Provide content that, when presented to the user, conveys essentially the same function or purpose as auditory or visual content.

Although some people cannot use images, movies, sounds, applets, etc. directly, they may still use pages that include equivalent information to the visual or auditory content. The equivalent information must serve the same purpose as the visual or auditory content. Thus, a text equivalent for an image of an upward arrow that links to a table of contents could be "Go to table of contents". In some cases, an equivalent should also describe the appearance of visual content (e.g., for complex charts, billboards, or diagrams) or the sound of auditory content (e.g., for audio samples used in education).
This guideline emphasizes the importance of providing text equivalents of non-text content (images, pre-recorded audio, video). The power of text equivalents lies in their capacity to be rendered in ways that are accessible to people from various disability groups using a variety of technologies. Text can be readily output to speech synthesizers and braille displays, and can be presented visually (in a variety of sizes) on computer displays and paper. Synthesized speech is critical for individuals who are blind and for many people with the reading difficulties that often accompany cognitive disabilities, learning disabilities, and deafness. Braille is essential for individuals who are both deaf and blind, as well as many individuals whose only sensory disability is blindness. Text displayed visually benefits users who are deaf as well as the majority of Web users.

Providing non-text equivalents (e.g., pictures, videos, and pre-recorded audio) of text is also beneficial to some users, especially nonreaders or people who have difficulty reading. In movies or visual presentations, visual action such as body language or other visual cues may not be accompanied by enough audio information to convey the same information. Unless verbal descriptions of this visual information are provided, people who cannot see (or look at) the visual content will not be able to perceive it.

**Checkpoints:**

1.1 Provide a text equivalent for every non-text element (e.g., via "alt", "longdesc", or in element content). *This includes:* images, graphical representations of text (including symbols), image map regions, animations (e.g., animated GIFs), applets and programmatic objects, ascii art, frames, scripts, images used as list bullets, spacers, graphical buttons, sounds (played with or without user interaction), stand-alone audio files, audio tracks of video, and video. [Priority 1]

For example, in HTML:

- Use "alt" for the IMG, INPUT, and APPLET elements, or provide a text equivalent in the content of the OBJECT and APPLET elements.
- For complex content (e.g., a chart) where the "alt" text does not provide a complete text equivalent, provide an additional description using, for example, "longdesc" with IMG or FRAME, a link inside an OBJECT element, or a description link.
- For image maps, either use the "alt" attribute with AREA, or use the MAP element with A elements (and other text) as content.

Refer also to checkpoint 9.1 and checkpoint 13.10.

**Techniques for checkpoint 1.1**

1.2 Provide redundant text links for each active region of a server-side image map. [Priority 1]

Refer also to checkpoint 1.5 and checkpoint 9.1.
Techniques for checkpoint 1.2

1.3 Until user agents can automatically read aloud the text equivalent of a visual track, provide an auditory description of the important information of the visual track of a multimedia presentation. [Priority 1]

Synchronize the auditory description with the audio track as per checkpoint 1.4. Refer to checkpoint 1.1 for information about textual equivalents for visual information.

Techniques for checkpoint 1.3

1.4 For any time-based multimedia presentation (e.g., a movie or animation), synchronize equivalent alternatives (e.g., captions or auditory descriptions of the visual track) with the presentation. [Priority 1]

Techniques for checkpoint 1.4

1.5 Until user agents render text equivalents for client-side image map links, provide redundant text links for each active region of a client-side image map. [Priority 3]

Refer also to checkpoint 1.2 and checkpoint 9.1.

Techniques for checkpoint 1.5

Guideline 2. Don't rely on color alone.

Ensure that text and graphics are understandable when viewed without color.

If color alone is used to convey information, people who cannot differentiate between certain colors and users with devices that have non-color or non-visual displays will not receive the information. When foreground and background colors are too close to the same hue, they may not provide sufficient contrast when viewed using monochrome displays or by people with different types of color deficits.

Checkpoints:

2.1 Ensure that all information conveyed with color is also available without color, for example from context or markup. [Priority 1]

Techniques for checkpoint 2.1

2.2 Ensure that foreground and background color combinations provide sufficient contrast when viewed by someone having color deficits or when viewed on a black and white screen. [Priority 2 for images, Priority 3 for text].

Techniques for checkpoint 2.2

Guideline 3. Use markup and style sheets and do so properly.

Mark up documents with the proper structural elements. Control presentation with style sheets rather than with presentation elements and attributes.
Using markup improperly -- not according to specification -- hinders accessibility. Misusing markup for a presentation effect (e.g., using a table for layout or a header to change the font size) makes it difficult for users with specialized software to understand the organization of the page or to navigate through it. Furthermore, using presentation markup rather than structural markup to convey structure (e.g., constructing what looks like a table of data with an HTML PRE element) makes it difficult to render a page intelligibly to other devices (refer to the description of difference between content, structure, and presentation).

Content developers may be tempted to use (or misuse) constructs that achieve a desired formatting effect on older browsers. They must be aware that these practices cause accessibility problems and must consider whether the formatting effect is so critical as to warrant making the document inaccessible to some users.

At the other extreme, content developers must not sacrifice appropriate markup because a certain browser or assistive technology does not process it correctly. For example, it is appropriate to use the TABLE element in HTML to mark up tabular information even though some older screen readers may not handle side-by-side text correctly (refer to checkpoint 10.3). Using TABLE correctly and creating tables that transform gracefully (refer to guideline 5) makes it possible for software to render tables other than as two-dimensional grids.

Checkpoints:

3.1 When an appropriate markup language exists, use markup rather than images to convey information. [Priority 2]
   For example, use MathML to mark up mathematical equations, and style sheets to format text and control layout. Also, avoid using images to represent text -- use text and style sheets instead. Refer also to guideline 6 and guideline 11.
   Techniques for checkpoint 3.1

3.2 Create documents that validate to published formal grammars. [Priority 2]
   For example, include a document type declaration at the beginning of a document that refers to a published DTD (e.g., the strict HTML 4.0 DTD).
   Techniques for checkpoint 3.2

3.3 Use style sheets to control layout and presentation. [Priority 2]
   For example, use the CSS 'font' property instead of the HTML FONT element to control font styles.
   Techniques for checkpoint 3.3

3.4 Use relative rather than absolute units in markup language attribute values and style sheet property values. [Priority 2]
   For example, in CSS, use 'em' or percentage lengths rather than 'pt' or 'cm', which are absolute units. If absolute units are used, validate that the rendered content is usable (refer to the section on validation).
3.5 Use header elements to convey document structure and use them according to specification. [Priority 2]
   For example, in HTML, use H2 to indicate a subsection of H1. Do not use headers for font effects.
3.6 Mark up lists and list items properly. [Priority 2]
   For example, in HTML, nest OL, UL, and DL lists properly.
3.7 Mark up quotations. Do not use quotation markup for formatting effects such as indentation. [Priority 2]
   For example, in HTML, use the Q and BLOCKQUOTE elements to mark up short and longer quotations, respectively.

Guideline 4. Clarify natural language usage

Use markup that facilitates pronunciation or interpretation of abbreviated or foreign text.

When content developers mark up natural language changes in a document, speech synthesizers and braille devices can automatically switch to the new language, making the document more accessible to multilingual users. Content developers should identify the predominant natural language of a document’s content (through markup or HTTP headers). Content developers should also provide expansions of abbreviations and acronyms.

In addition to helping assistive technologies, natural language markup allows search engines to find key words and identify documents in a desired language. Natural language markup also improves readability of the Web for all people, including those with learning disabilities, cognitive disabilities, or people who are deaf.

When abbreviations and natural language changes are not identified, they may be indecipherable when machine-spoken or brailled.

Checkpoints:

4.1 Clearly identify changes in the natural language of a document's text and any text equivalents (e.g., captions). [Priority 1]
   For example, in HTML use the "lang" attribute. In XML, use "xml:lang".
4.2 Specify the expansion of each abbreviation or acronym in a document where it first occurs. [Priority 3]
   For example, in HTML, use the "title" attribute of the ABBR and ACRONYM elements. Providing the expansion in the main body of the document also helps document usability.
Techniques for checkpoint 4.2

4.3 Identify the primary natural language of a document. [Priority 3]
For example, in HTML set the "lang" attribute on the HTML element. In
XML, use "xml:lang". Server operators should configure servers to take
advantage of HTTP content negotiation mechanisms ([RFC2068],
section 14.13) so that clients can automatically retrieve documents of
the preferred language.
Techniques for checkpoint 4.3

Guideline 5. Create tables that transform gracefully.

Ensure that tables have necessary markup to be transformed by accessible
browsers and other user agents.

Tables should be used to mark up truly tabular information ("data tables"). Content
developers should avoid using them to lay out pages ("layout tables"). Tables for any
use also present special problems to users of screen readers (refer to checkpoint
10.3).

Some user agents allow users to navigate among table cells and access header and
other table cell information. Unless marked-up properly, these tables will not provide
user agents with the appropriate information. (Refer also to guideline 3.)

The following checkpoints will directly benefit people who access a table through
auditory means (e.g., a screen reader or an automobile-based personal computer) or
who view only a portion of the page at a time (e.g., users with blindness or low vision
using speech output or a braille display, or other users of devices with small displays,
etc.).

Checkpoints:

5.1 For data tables, identify row and column headers. [Priority 1]
For example, in HTML, use TD to identify data cells and TH to identify
headers.
Techniques for checkpoint 5.1

5.2 For data tables that have two or more logical levels of row or column
headers, use markup to associate data cells and header cells. [Priority 1]
For example, in HTML, use THEAD, TFOOT, and TBODY to group rows,
COL and COLGROUP to group columns, and the "axis", "scope", and
"headers" attributes, to describe more complex relationships among
data.
Techniques for checkpoint 5.2

5.3 Do not use tables for layout unless the table makes sense when
linearized. Otherwise, if the table does not make sense, provide an
alternative equivalent (which may be a linearized version). [Priority 2]
Note. Once user agents support style sheet positioning, tables should
not be used for layout. Refer also to checkpoint 3.3.
Techniques for checkpoint 5.3

5.4 If a table is used for layout, do not use any structural markup for the
purpose of visual formatting. [Priority 2]
For example, in HTML do not use the TH element to cause the content
of a (non-table header) cell to be displayed centered and in bold.
Techniques for checkpoint 5.4

5.5 Provide summaries for tables. [Priority 3]
For example, in HTML, use the "summary" attribute of the TABLE
element.
Techniques for checkpoint 5.5

5.6 Provide abbreviations for header labels. [Priority 3]
For example, in HTML, use the "abbr" attribute on the TH element.
Techniques for checkpoint 5.6

Refer also to checkpoint 10.3.

Guideline 6. Ensure that pages featuring new
technologies transform gracefully.

Ensure that pages are accessible even when newer technologies are not supported or are turned off.

Although content developers are encouraged to use new technologies that solve problems raised by existing technologies, they should know how to make their pages still work with older browsers and people who choose to turn off features.

Checkpoints:

6.1 Organize documents so they may be read without style sheets. For example, when an HTML document is rendered without associated style sheets, it must still be possible to read the document. [Priority 1]
When content is organized logically, it will be rendered in a meaningful order when style sheets are turned off or not supported.
Techniques for checkpoint 6.1

6.2 Ensure that equivalents for dynamic content are updated when the dynamic content changes. [Priority 1]
Techniques for checkpoint 6.2

6.3 Ensure that pages are usable when scripts, applets, or other
programmatic objects are turned off or not supported. If this is not possible, provide equivalent information on an alternative accessible page. [Priority 1]
For example, ensure that links that trigger scripts work when scripts are turned off or not supported (e.g., do not use "javascript:" as the link target). If it is not possible to make the page usable without scripts, provide a text equivalent with the NOSCRIPT element, or use a server-
side script instead of a client-side script, or provide an alternative accessible page as per checkpoint 11.4. Refer also to guideline 1.  
Techniques for checkpoint 6.3  
6.4 For scripts and applets, ensure that event handlers are input device-independent. [Priority 2]  
Refer to the definition of device independence.  
Techniques for checkpoint 6.4  
6.5 Ensure that dynamic content is accessible or provide an alternative presentation or page. [Priority 2]  
For example, in HTML, use NOFRAMES at the end of each frameset.  
For some applications, server-side scripts may be more accessible than client-side scripts.  
Techniques for checkpoint 6.5  

Refer also to checkpoint 11.4.  

Guideline 7. Ensure user control of time-sensitive content changes.  

Ensure that moving, blinking, scrolling, or auto-updating objects or pages may be paused or stopped.  

Some people with cognitive or visual disabilities are unable to read moving text quickly enough or at all. Movement can also cause such a distraction that the rest of the page becomes unreadable for people with cognitive disabilities. Screen readers are unable to read moving text. People with physical disabilities might not be able to move quickly or accurately enough to interact with moving objects.  

Note. All of the following checkpoints involve some content developer responsibility until user agents provide adequate feature control mechanisms.  

Checkpoints:  

7.1 Until user agents allow users to control flickering, avoid causing the screen to flicker. [Priority 1]  

Note. People with photosensitive epilepsy can have seizures triggered by flickering or flashing in the 4 to 59 flashes per second (Hertz) range with a peak sensitivity at 20 flashes per second as well as quick changes from dark to light (like strobe lights).  

Techniques for checkpoint 7.1  
7.2 Until user agents allow users to control blinking, avoid causing content to blink (i.e., change presentation at a regular rate, such as turning on and off). [Priority 2]  

Techniques for checkpoint 7.2  
7.3 Until user agents allow users to freeze moving content, avoid movement
in pages. [Priority 2]
When a page includes moving content, provide a mechanism within a
script or applet to allow users to freeze motion or updates. Using style
sheets with scripting to create movement allows users to turn off or
override the effect more easily. Refer also to guideline 8.
Techniques for checkpoint 7.3

7.4 Until user agents provide the ability to stop the refresh, do not create
periodically auto-refreshing pages. [Priority 2]
For example, in HTML, don't cause pages to auto-refresh with "HTTP-
EQUIV=refresh" until user agents allow users to turn off the feature.
Techniques for checkpoint 7.4

7.5 Until user agents provide the ability to stop auto-redirect, do not use
markup to redirect pages automatically. Instead, configure the server to
perform redirects. [Priority 2]
Techniques for checkpoint 7.5

Note. The BLINK and MARQUEE elements are not defined in any W3C HTML
specification and should not be used. Refer also to guideline 11.

Guideline 8. Ensure direct accessibility of embedded user interfaces.

Ensure that the user interface follows principles of accessible design: device-
independent access to functionality, keyboard operability, self-voicing, etc.

When an embedded object has its "own interface", the interface -- like the interface to
the browser itself -- must be accessible. If the interface of the embedded object
cannot be made accessible, an alternative accessible solution must be provided.

Note. For information about accessible interfaces, please consult the User Agent
Accessibility Guidelines ([WAI-USERAGENT]) and the Authoring Tool Accessibility
Guidelines ([WAI-AUTOOL]).

Checkpoint:

8.1 Make programmatic elements such as scripts and applets directly
accessible or compatible with assistive technologies [Priority 1 if
functionality is important and not presented elsewhere, otherwise Priority 2.]
Refer also to guideline 6.
Techniques for checkpoint 8.1


Use features that enable activation of page elements via a variety of input devices.
Device-independent access means that the user may interact with the user agent or document with a preferred input (or output) device -- mouse, keyboard, voice, head wand, or other. If, for example, a form control can only be activated with a mouse or other pointing device, someone who is using the page without sight, with voice input, or with a keyboard or who is using some other non-pointing input device will not be able to use the form.

Note. Providing text equivalents for image maps or images used as links makes it possible for users to interact with them without a pointing device. Refer also to guideline 1.

Generally, pages that allow keyboard interaction are also accessible through speech input or a command line interface.

Checkpoints:

9.1 Provide client-side image maps instead of server-side image maps except where the regions cannot be defined with an available geometric shape. [Priority 1]
   Refer also to checkpoint 1.1, checkpoint 1.2, and checkpoint 1.5.
   Techniques for checkpoint 9.1

9.2 Ensure that any element that has its own interface can be operated in a device-independent manner. [Priority 2]
   Refer to the definition of device independence.
   Refer also to guideline 8.
   Techniques for checkpoint 9.2

9.3 For scripts, specify logical event handlers rather than device-dependent event handlers. [Priority 2]
   Techniques for checkpoint 9.3

9.4 Create a logical tab order through links, form controls, and objects. [Priority 3]
   For example, in HTML, specify tab order via the "tabindex" attribute or ensure a logical page design.
   Techniques for checkpoint 9.4

9.5 Provide keyboard shortcuts to important links (including those in client-side image maps), form controls, and groups of form controls. [Priority 3]
   For example, in HTML, specify shortcuts via the "accesskey" attribute.
   Techniques for checkpoint 9.5

Guideline 10. Use interim solutions.

Use interim accessibility solutions so that assistive technologies and older browsers will operate correctly.

For example, older browsers do not allow users to navigate to empty edit boxes.
Older screen readers read lists of consecutive links as one link. These active elements are therefore difficult or impossible to access. Also, changing the current window or popping up new windows can be very disorienting to users who cannot see that this has happened.

Note. The following checkpoints apply until user agents (including assistive technologies) address these issues. These checkpoints are classified as "interim", meaning that the Web Content Guidelines Working Group considers them to be valid and necessary to Web accessibility as of the publication of this document. However, the Working Group does not expect these checkpoints to be necessary in the future, once Web technologies have incorporated anticipated features or capabilities.

Checkpoints:

10.1 Until user agents allow users to turn off spawned windows, do not cause pop-ups or other windows to appear and do not change the current window without informing the user. [Priority 2]
   For example, in HTML, avoid using a frame whose target is a new window.
   Techniques for checkpoint 10.1

10.2 Until user agents support explicit associations between labels and form controls, for all form controls with implicitly associated labels, ensure that the label is properly positioned. [Priority 2]
   The label must immediately precede its control on the same line (allowing more than one control/label per line) or be in the line preceding the control (with only one label and one control per line).
   Refer also to checkpoint 12.4.
   Techniques for checkpoint 10.2

10.3 Until user agents (including assistive technologies) render side-by-side text correctly, provide a linear text alternative (on the current page or some other) for all tables that lay out text in parallel, word-wrapped columns. [Priority 3]
   Note. Please consult the definition of linearized table. This checkpoint benefits people with user agents (such as some screen readers) that are unable to handle blocks of text presented side-by-side; the checkpoint should not discourage content developers from using tables to represent tabular information.
   Techniques for checkpoint 10.3

10.4 Until user agents handle empty controls correctly, include default, place-holding characters in edit boxes and text areas. [Priority 3]
   For example, in HTML, do this for TEXTAREA and INPUT.
   Techniques for checkpoint 10.4

10.5 Until user agents (including assistive technologies) render adjacent links distinctly, include non-link, printable characters (surrounded by spaces) between adjacent links. [Priority 3]
   Techniques for checkpoint 10.5
Guideline 11. Use W3C technologies and guidelines.

Use W3C technologies (according to specification) and follow accessibility guidelines. Where it is not possible to use a W3C technology, or doing so results in material that does not transform gracefully, provide an alternative version of the content that is accessible.

The current guidelines recommend W3C technologies (e.g., HTML, CSS, etc.) for several reasons:

- W3C technologies include "built-in" accessibility features.
- W3C specifications undergo early review to ensure that accessibility issues are considered during the design phase.
- W3C specifications are developed in an open, industry consensus process.

Many non-W3C formats (e.g., PDF, Shockwave, etc.) require viewing with either plug-ins or stand-alone applications. Often, these formats cannot be viewed or navigated with standard user agents (including assistive technologies). Avoiding non-W3C and non-standard features (proprietary elements, attributes, properties, and extensions) will tend to make pages more accessible to more people using a wider variety of hardware and software. When inaccessible technologies (proprietary or not) must be used, equivalent accessible pages must be provided.

Even when W3C technologies are used, they must be used in accordance with accessibility guidelines. When using new technologies, ensure that they transform gracefully (Refer also to guideline 6.).

Note. Converting documents (from PDF, PostScript, RTF, etc.) to W3C markup languages (HTML, XML) does not always create an accessible document. Therefore, validate each page for accessibility and usability after the conversion process (refer to the section on validation). If a page does not readily convert, either revise the page until its original representation converts appropriately or provide an HTML or plain text version.

Checkpoints:

11.1 Use W3C technologies when they are available and appropriate for a task and use the latest versions when supported. [Priority 2]
Refer to the list of references for information about where to find the latest W3C specifications and [WAI-UA-SUPPORT] for information about user agent support for W3C technologies.
Techniques for checkpoint 11.1

11.2 Avoid deprecated features of W3C technologies. [Priority 2]
For example, in HTML, don't use the deprecated FONT element; use style sheets instead (e.g., the 'font' property in CSS).
Techniques for checkpoint 11.2
11.3 Provide information so that users may receive documents according to their preferences (e.g., language, content type, etc.) [Priority 3]

**Note.** Use content negotiation where possible.

**Techniques for checkpoint 11.3**

11.4 If, after best efforts, you cannot create an accessible page, provide a link to an alternative page that uses W3C technologies, is accessible, has equivalent information (or functionality), and is updated as often as the inaccessible (original) page. [Priority 1]

**Techniques for checkpoint 11.4**

**Note.** Content developers should only resort to alternative pages when other solutions fail because alternative pages are generally updated less often than "primary" pages. An out-of-date page may be as frustrating as one that is inaccessible since, in both cases, the information presented on the original page is unavailable. Automatically generating alternative pages may lead to more frequent updates, but content developers must still be careful to ensure that generated pages always make sense, and that users are able to navigate a site by following links on primary pages, alternative pages, or both. Before resorting to an alternative page, reconsider the design of the original page; making it accessible is likely to improve it for all users.

**Guideline 12. Provide context and orientation information.**

Provide context and orientation information to help users understand complex pages or elements.

Grouping elements and providing contextual information about the relationships between elements can be useful for all users. Complex relationships between parts of a page may be difficult for people with cognitive disabilities and people with visual disabilities to interpret.

**Checkpoints:**

12.1 Title each frame to facilitate frame identification and navigation. [Priority 1]

For example, in HTML use the "title" attribute on FRAME elements.

**Techniques for checkpoint 12.1**

12.2 Describe the purpose of frames and how frames relate to each other if it is not obvious by frame titles alone. [Priority 2]

For example, in HTML, use "longdesc," or a description link.

**Techniques for checkpoint 12.2**

12.3 Divide large blocks of information into more manageable groups where natural and appropriate. [Priority 2]

For example, in HTML, use OPTGROUP to group OPTION elements.
inside a SELECT; group form controls with FIELDSET and LEGEND; use
nested lists where appropriate; use headings to structure documents,
etc. Refer also to guideline 3.
Techniques for checkpoint 12.3

12.4 Associate labels explicitly with their controls. [Priority 2]
For example, in HTML use LABEL and its "for" attribute.
Techniques for checkpoint 12.4

Guideline 13. Provide clear navigation mechanisms.

Provide clear and consistent navigation mechanisms -- orientation information,
navigation bars, a site map, etc. -- to increase the likelihood that a person will find
what they are looking for at a site.

Clear and consistent navigation mechanisms are important to people with cognitive
disabilities or blindness, and benefit all users.

Checkpoints:

13.1 Clearly identify the target of each link. [Priority 2]
Link text should be meaningful enough to make sense when read out of
context -- either on its own or as part of a sequence of links. Link text
should also be terse.
For example, in HTML, write "Information about version 4.3" instead of
"click here". In addition to clear link text, content developers may
further clarify the target of a link with an informative link title (e.g., in
HTML, the "title" attribute).
Techniques for checkpoint 13.1

13.2 Provide metadata to add semantic information to pages and sites.
[Priority 2]
For example, use RDF ([RDF]) to indicate the document's author, the
type of content, etc.
Note. Some HTML user agents can build navigation tools from
document relations described by the HTML LINK element and "rel" or
"rev" attributes (e.g., rel="next", rel="previous", rel="index", etc.). Refer
also to checkpoint 13.5.
Techniques for checkpoint 13.2

13.3 Provide information about the general layout of a site (e.g., a site map
or table of contents). [Priority 2]
In describing site layout, highlight and explain available accessibility
features.
Techniques for checkpoint 13.3

13.4 Use navigation mechanisms in a consistent manner. [Priority 2]
Techniques for checkpoint 13.4

13.5 Provide navigation bars to highlight and give access to the navigation
mechanism. [Priority 3]
13.6 Group related links, identify the group (for user agents), and, until user agents do so, provide a way to bypass the group. [Priority 3]

13.7 If search functions are provided, enable different types of searches for different skill levels and preferences. [Priority 3]

13.8 Place distinguishing information at the beginning of headings, paragraphs, lists, etc. [Priority 3]

    Note. This is commonly referred to as “front-loading” and is especially helpful for people accessing information with serial devices such as speech synthesizers.

13.9 Provide information about document collections (i.e., documents comprising multiple pages.). [Priority 3]

    For example, in HTML specify document collections with the LINK element and the "rel" and "rev" attributes. Another way to create a collection is by building an archive (e.g., with zip, tar and gzip, stuffit, etc.) of the multiple pages.

    Note. The performance improvement gained by offline processing can make browsing much less expensive for people with disabilities who may be browsing slowly.

13.10 Provide a means to skip over multi-line ASCII art. [Priority 3]

    Refer to checkpoint 1.1 and the example of ascii art in the glossary.

Guideline 14. Ensure that documents are clear and simple.

Ensure that documents are clear and simple so they may be more easily understood.

Consistent page layout, recognizable graphics, and easy to understand language benefit all users. In particular, they help people with cognitive disabilities or who have difficulty reading. (However, ensure that images have text equivalents for people who are blind, have low vision, or for any user who cannot or has chosen not to view graphics. Refer also to guideline 1.)

Using clear and simple language promotes effective communication. Access to written information can be difficult for people who have cognitive or learning disabilities. Using clear and simple language also benefits people whose first language differs from your own, including those people who communicate primarily in sign language.
Appendix A. -- Validation

Validate accessibility with automatic tools and human review. Automated methods are generally rapid and convenient but cannot identify all accessibility issues. Human review can help ensure clarity of language and ease of navigation.

Begin using validation methods at the earliest stages of development. Accessibility issues identified early are easier to correct and avoid.

Following are some important validation methods, discussed in more detail in the section on validation in the Techniques Document.

1. Use an automated accessibility tool and browser validation tool. Please note that software tools do not address all accessibility issues, such as the meaningfulness of link text, the applicability of a text equivalent, etc.
2. Validate syntax (e.g., HTML, XML, etc.).
3. Validate style sheets (e.g., CSS).
4. Use a text-only browser or emulator.
5. Use multiple graphic browsers, with:
   - sounds and graphics loaded,
   - graphics not loaded,
   - sounds not loaded,
   - no mouse,
   - frames, scripts, style sheets, and applets not loaded
6. Use several browsers, old and new.
7. Use a self-voicing browser, a screen reader, magnification software, a small display, etc.
8. Use spell and grammar checkers. A person reading a page with a speech synthesizer may not be able to decipher the synthesizer's best guess for a word with a spelling error. Eliminating grammar problems increases comprehension.
9. Review the document for clarity and simplicity. Readability statistics, such as
those generated by some word processors may be useful indicators of clarity and simplicity. Better still, ask an experienced (human) editor to review written content for clarity. Editors can also improve the usability of documents by identifying potentially sensitive cultural issues that might arise due to language or icon usage.

10. Invite people with disabilities to review documents. Expert and novice users with disabilities will provide valuable feedback about accessibility or usability problems and their severity.

Appendix B. -- Glossary

Accessible

Content is accessible when it may be used by someone with a disability.

Applet

A program inserted into a Web page.

Assistive technology

Software or hardware that has been specifically designed to assist people with disabilities in carrying out daily activities. Assistive technology includes wheelchairs, reading machines, devices for grasping, etc. In the area of Web Accessibility, common software-based assistive technologies include screen readers, screen magnifiers, speech synthesizers, and voice input software that operate in conjunction with graphical desktop browsers (among other user agents). Hardware assistive technologies include alternative keyboards and pointing devices.

ASCII art

ASCII art refers to text characters and symbols that are combined to create an image. For example `; (~)` is the smiley emoticon. The following is an ASCII figure showing the relationship between flash frequency and photoconvulsive response in patients with eyes open and closed [skip over ASCII figure or consult a description of chart]:

```
0 10 15 20 25 30 35 40 45 50 55 60 65 70
0 10 20 30 40 50 60 70
100 90 80 70 60 50 40 30 20 10
```

5/22/01
Flash frequency (Hertz)

**Authoring tool**

HTML editors, document conversion tools, tools that generate Web content from databases are all authoring tools. Refer to the "Authoring Tool Accessibility Guidelines" ([WAI-AUTOOLS](#)) for information about developing accessible tools.

**Backward compatible**

Design that continues to work with earlier versions of a language, program, etc.

**Braille**

Braille uses six raised dots in different patterns to represent letters and numbers to be read by people who are blind with their fingertips. The word "Accessible" in braille follows:

```
• • • • •
• • • • • •
• • • • • •
```

A **braille display**, commonly referred to as a "dynamic braille display," raises or lowers dot patterns on command from an electronic device, usually a computer. The result is a line of braille that can change from moment to moment. Current dynamic braille displays range in size from one cell (six or eight dots) to an eighty-cell line, most having between twelve and twenty cells per line.

**Content developer**

Someone who authors Web pages or designs Web sites.

**Deprecated**

A deprecated element or attribute is one that has been outdated by newer constructs. Deprecated elements may become obsolete in future versions of HTML. The index of HTML elements and attributes in the Techniques Document indicates which elements and attributes are deprecated in HTML 4.0.

Authors should avoid using deprecated elements and attributes. User agents should continue to support for reasons of backward compatibility.

**Device independent**

Users must be able to interact with a user agent (and the document it renders) using the supported input and output devices of their choice and according to their needs. Input devices may include pointing devices, keyboards, braille
devices, head wands, microphones, and others. Output devices may include monitors, speech synthesizers, and braille devices.

Please note that "device-independent support" does not mean that user agents must support every input or output device. User agents should offer redundant input and output mechanisms for those devices that are supported. For example, if a user agent supports keyboard and mouse input, users should be able to interact with all features using either the keyboard or the mouse.

**Document Content, Structure, and Presentation**

The content of a document refers to what it says to the user through natural language, images, sounds, movies, animations, etc. The structure of a document is how it is organized logically (e.g., by chapter, with an introduction and table of contents, etc.). An *element* (e.g., P, STRONG, BLOCKQUOTE in HTML) that specifies document structure is called a structural element. The presentation of a document is how the document is rendered (e.g., as print, as a two-dimensional graphical presentation, as an text-only presentation, as synthesized speech, as braille, etc.) An *element* that specifies document presentation (e.g., B, FONT, CENTER) is called a presentation element.

Consider a document header, for example. The content of the header is what the header says (e.g., "Sailboats"). In HTML, the header is a structural element marked up with, for example, an H2 element. Finally, the presentation of the header might be a bold block text in the margin, a centered line of text, a title spoken with a certain voice style (like an aural font), etc.

**Dynamic HTML (DHTML)**

DHTML is the marketing term applied to a mixture of standards including HTML, *style sheets*, the Document Object Model [DOM1] and scripting. However, there is no W3C specification that formally defines DHTML. Most guidelines may be applicable to applications using DHTML, however the following guidelines focus on issues related to scripting and style sheets: guideline 1, guideline 3, guideline 6, guideline 7, and guideline 9.

**Element**

This document uses the term "element" both in the strict SGML sense (an element is a syntactic construct) and more generally to mean a type of content (such as video or sound) or a logical construct (such as a header or list). The second sense emphasizes that a guideline inspired by HTML could easily apply to another markup language.

Note that some (SGML) elements have content that is rendered (e.g., the P, LI, or TABLE elements in HTML), some are replaced by external content (e.g., IMG), and some affect processing (e.g., STYLE and SCRIPT cause information to be processed by a style sheet or script engine). An element that causes text characters to be part of the document is called a text element.
Equivalent

Content is "equivalent" to other content when both fulfill essentially the same function or purpose upon presentation to the user. In the context of this document, the equivalent must fulfill essentially the same function for the person with a disability (at least insofar as is feasible, given the nature of the disability and the state of technology), as the primary content does for the person without any disability. For example, the text "The Full Moon" might convey the same information as an image of a full moon when presented to users. Note that equivalent information focuses on fulfilling the same function. If the image is part of a link and understanding the image is crucial to guessing the link target, an equivalent must also give users an idea of the link target. Providing equivalent information for inaccessible content is one of the primary ways authors can make their documents accessible to people with disabilities.

As part of fulfilling the same function of content an equivalent may involve a description of that content (i.e., what the content looks like or sounds like). For example, in order for users to understand the information conveyed by a complex chart, authors should describe the visual information in the chart.

Since text content can be presented to the user as synthesized speech, braille, and visually-displayed text, these guidelines require text equivalents for graphic and audio information. Text equivalents must be written so that they convey all essential content. Non-text equivalents (e.g., an auditory description of a visual presentation, a video of a person telling a story using sign language as an equivalent for a written story, etc.) also improve accessibility for people who cannot access visual information or written text, including many individuals with blindness, cognitive disabilities, learning disabilities, and deafness.

Equivalent information may be provided in a number of ways, including through attributes (e.g., a text value for the "alt" attribute in HTML and SMIL), as part of element content (e.g., the OBJECT in HTML), as part of the document's prose, or via a linked document (e.g., designated by the "longdesc" attribute in HTML or a description link). Depending on the complexity of the equivalent, it may be necessary to combine techniques (e.g., use "alt" for an abbreviated equivalent, useful to familiar readers, in addition to "longdesc" for a link to more complete information, useful to first-time readers). The details of how and when to provide equivalent information are part of the Techniques Document ([TECHNIQUES]).

A text transcript is a text equivalent of audio information that includes spoken words and non-spoken sounds such as sound effects. A caption is a text transcript for the audio track of a video presentation that is synchronized with the video and audio tracks. Captions are generally rendered visually by being superimposed over the video, which benefits people who are deaf and hard-of-hearing, and anyone who cannot hear the audio (e.g., when in a crowded room).
A **collated text transcript** combines (collates) captions with text descriptions of video information (descriptions of the actions, body language, graphics, and scene changes of the video track). These text equivalents make presentations accessible to people who are deaf-blind and to people who cannot play movies, animations, etc. It also makes the information available to search engines.

One example of a non-text equivalent is an **auditory description** of the key visual elements of a presentation. The description is either a prerecorded human voice or a synthesized voice (recorded or generated on the fly). The auditory description is synchronized with the audio track of the presentation, usually during natural pauses in the audio track. Auditory descriptions include information about actions, body language, graphics, and scene changes.

**Image**

A graphical presentation.

**Image map**

An image that has been divided into regions with associated actions. Clicking on an active region causes an action to occur.

When a user clicks on an active region of a client-side image map, the user agent calculates in which region the click occurred and follows the link associated with that region. Clicking on an active region of a server-side image map causes the coordinates of the click to be sent to a server, which then performs some action.

Content developers can make client-side image maps accessible by providing device-independent access to the same links associated with the image map's regions. Client-side image maps allow the user agent to provide immediate feedback as to whether or not the user's pointer is over an active region.

**Important**

Information in a document is important if understanding that information is crucial to understanding the document.

**Linearized table**

A table rendering process where the contents of the cells become a series of paragraphs (e.g., down the page) one after another. The paragraphs will occur in the same order as the cells are defined in the document source. Cells should make sense when read in order and should include **structural elements** (that create paragraphs, headers, lists, etc.) so the page makes sense after linearization.

**Link text**

The rendered text content of a link.
Natural Language

Spoken, written, or signed human languages such as French, Japanese, American Sign Language, and braille. The natural language of content may be indicated with the "lang" attribute in HTML ([HTML40], section 8.1) and the "xml:lang" attribute in XML ([XML], section 2.12).

Navigation Mechanism

A navigation mechanism is any means by which a user can navigate a page or site. Some typical mechanisms include:

navigation bars
A navigation bar is a collection of links to the most important parts of a document or site.

site maps
A site map provides a global view of the organization of a page or site.

tables of contents
A table of contents generally lists (and links to) the most important sections of a document.

Personal Digital Assistant (PDA)

A PDA is a small, portable computing device. Most PDAs are used to track personal data such as calendars, contacts, and electronic mail. A PDA is generally a handheld device with a small screen that allows input from various sources.

Screen magnifier
A software program that magnifies a portion of the screen, so that it can be more easily viewed. Screen magnifiers are used primarily by individuals with low vision.

Screen reader
A software program that reads the contents of the screen aloud to a user. Screen readers are used primarily by individuals who are blind. Screen readers can usually only read text that is printed, not painted, to the screen.

Style sheets
A style sheet is a set of statements that specify presentation of a document. Style sheets may have three different origins: they may be written by content providers, created by users, or built into user agents. In CSS ([CSS2]), the interaction of content provider, user, and user agent style sheets is called the cascade.

Presentation markup is markup that achieves a stylistic (rather than structuring) effect such as the B or I elements in HTML. Note that the STRONG and EM elements are not considered presentation markup since they convey
information that is independent of a particular font style.

**Tabular information**

When tables are used to represent logical relationships among data -- text, numbers, images, etc., that information is called "tabular information" and the tables are called "data tables". The relationships expressed by a table may be rendered visually (usually on a two-dimensional grid), aurally (often preceding cells with header information), or in other formats.

**Until user agents ...**

In most of the checkpoints, content developers are asked to ensure the accessibility of their pages and sites. However, there are accessibility needs that would be more appropriately met by user agents (including assistive technologies). As of the publication of this document, not all user agents or assistive technologies provide the accessibility control users require (e.g., some user agents may not allow users to turn off blinking content, or some screen readers may not handle tables well). Checkpoints that contain the phrase "until user agents ..." require content developers to provide additional support for accessibility until most user agents readily available to their audience include the necessary accessibility features.

**Note.** The W3C WAI Web site (refer to [WAI-UA-SUPPORT]) provides information about user agent support for accessibility features. Content developers are encouraged to consult this page regularly for updated information.

**User agent**

Software to access Web content, including desktop graphical browsers, text browsers, voice browsers, mobile phones, multimedia players, plug-ins, and some software assistive technologies used in conjunction with browsers such as screen readers, screen magnifiers, and voice recognition software.

---

**Acknowledgments**

**Web Content Guidelines Working Group Co-Chairs:**  
Chuck Letourneau, Starling Access Services  
Gregg Vanderheiden, Trace Research and Development

**W3C Team contacts:**  
Judy Brewer and Daniel Dardailler

**We wish to thank the following people who have contributed their time and valuable comments to shaping these guidelines:**  
Harvey Bingham, Kevin Carey, Chetz Colwell, Neal Ewers, Geoff Freed, Al Gilman, Larry Goldberg, Jon Gunderson, Eric Hansen, Phill Jenkins, Leonard Kasday, George Kerscher, Marja-Riitta Koivunen, Josh Krieger, Scott Luebking,
William Loughborough, Murray Maloney, Charles McCathieNevile, MegaZone (Livingston Enterprises), Masafumi Nakane, Mark Novak, Charles Oppermann, Mike Paciello, David Pawson, Michael Pieper, Greg Rosmaita, Liam Quinn, Dave Raggett, T.V. Raman, Robert Savellis, Jutta Treviranus, Steve Tyler, Jaap van Lelieveld, and Jason White

The original draft of this document is based on "The Unified Web Site Accessibility Guidelines" ([UWSAG]) compiled by the Trace R & D Center at the University of Wisconsin. That document includes a list of additional contributors.

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For the latest version of any W3C specification please consult the list of W3C Technical Reports.

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[WAI-AUTOOLS]
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http://www.w3.org/TR/WAI-AUTOOLS/

[WAI-UA-SUPPORT]
This page documents known support by user agents (including assistive technologies) of some accessibility features listed in this document. The page is available at: http://www.w3.org/WAI/Resources/WAI-UA-Support

[WAI-USERAGENT]
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Information about conformance icons for this document and how to use them is available at http://www.w3.org/WAI/WCAG1-Conformance.html

[UWSAG]
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The latest version of XML 1.0 is available at: http://www.w3.org/TR/REC-xml
Appendix C

Non-ADA Web site
## Home Security Co.

PSV Home Security Co. products do not require pooper scoopers or forty pounds of dog food monthly to do their job. PSV Home Security Co. has been a leader in home security industry since 1994. We offer a broad range of product to meet your needs.

Homesaffe.com is a subsidiary of PSV Home Securities Inc.

---

http://www.students.dsu.edu/schmide/homepage1.htm

5/22/01
Products

Premier Wired System
Covers all doors with local alarm and alarm to law enforcement.
Hardware for two doors and professional installation included in purchase price. $1,199.99

Elite Wired System
Covers all doors with silent local alarm and alarm to law enforcement.
Hardware for two doors and professional installation included in purchase price. $899.99

Basic Wired System
Covers all doors with local alarm.
Hardware for two doors and professional installation included in purchase price. $699.99

The following are user installed products...

Uncle Elmo’s Eye in Jar
A video-camera system that provides closed circuit TV coverage for one entrance.
Camera activated by motion detection. Cost $599.99
Dog in a Can

Motion detection sensors activate this loud dog audio. The one, the only...

Cost $49.99
Product Order Form

SALE - Dog In a Can 39.99

Please complete this form to order products from homesafe.com.
Thank You!

Please provide the following home address information:
(all fields must be filled)

Name
Street
Address
City
State Alabama
Zip Code
Phone # (___)___-___
E-mail

Please provide the following ordering information:

<table>
<thead>
<tr>
<th>ITEM DESCRIPTION</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premier Wired System</td>
<td>$1,199.99</td>
</tr>
<tr>
<td>Elite Wired System</td>
<td>$899.99</td>
</tr>
<tr>
<td>Basic Wired System</td>
<td>$699.99</td>
</tr>
<tr>
<td>Additional door coverage</td>
<td>$99.99</td>
</tr>
<tr>
<td>Wired System batteries</td>
<td>$59.99</td>
</tr>
<tr>
<td>Uncle Elmo's Eye in a Jar</td>
<td>$599.99</td>
</tr>
<tr>
<td>Video-camera batteries</td>
<td>$29.99</td>
</tr>
<tr>
<td>Dog in a Can</td>
<td>$49.99</td>
</tr>
<tr>
<td>Dog in a Can batteries</td>
<td>$9.99</td>
</tr>
</tbody>
</table>
ALL FIELDS MUST BE FILLED

Credit Card

Cardholder Name

Card Number

Expiration Date

Continue  Reset

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Revised:
Appendix C

ADA Web site
WELCOME TO

homesaffe.com

Home Security co.

PSV Home Security Co. products do not require pooper scoopers or forty pounds of dog food monthly to do their job. PSV Home Security Co. has been a leader in home security industry since 1994. We offer a broad range of product to meet your needs.

homesaffe.com is a subsidiary of PSV Home Securities Inc.
Products

Premier Wired System
Covers all doors with local alarm and alarm to law enforcement. Hardware for two doors and professional installation included in purchase price. $1,199.99

Elite Wired System
Covers all doors with silent local alarm and alarm to law enforcement. Hardware for two doors and professional installation included in purchase price. $899.99

Basic Wired System
Covers all doors with local alarm. Hardware for two doors and professional installation included in purchase price. $699.99

The following are user installed products...

Uncle Elmo's Eye in Jar
A video camera system that provides closed circuit TV coverage for one entrance. Camera activated by motion detection. Cost $599.99

Dog in a Can
Motion detection sensors activate this loud dog audio. The one, the only...

Cost $49.99
Product Order Form

SALE - Dog In a Can 39.99

Please complete this form to order products from homesaffe.com. Thank You!

Please provide the following home address information:
(all fields must be filled)

Name ________________________________

Street Address ________________________________

City ________________________________

State Alabama

Zip Code ________________________________

Phone # ________________________________

E-mail ________________________________

Please provide the following ordering information:

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Premier Wired System</td>
<td>$1,199.99</td>
</tr>
<tr>
<td>0</td>
<td>Elite Wired System</td>
<td>$899.99</td>
</tr>
<tr>
<td>0</td>
<td>Basic Wired System</td>
<td>$699.99</td>
</tr>
<tr>
<td>0</td>
<td>Additional door coverage</td>
<td>$99.99</td>
</tr>
<tr>
<td>0</td>
<td>Wired System batteries</td>
<td>$59.99</td>
</tr>
<tr>
<td>0</td>
<td>Uncle Elmo's Eye in a Jar</td>
<td>$599.99</td>
</tr>
<tr>
<td>0</td>
<td>Video camera batteries</td>
<td>$29.99</td>
</tr>
<tr>
<td>0</td>
<td>Dog in a Can</td>
<td>$49.99</td>
</tr>
<tr>
<td>0</td>
<td>Dog in a Can batteries</td>
<td>$9.99</td>
</tr>
</tbody>
</table>
BILLING  (all fields must be filled)

  Credit Card
  Cardholder Name
  Card Number
  Expiration Date

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Revised:

[HOME]  [PRODUCTS]
Appendix D

Bobby Report

For
Non-ADA Web site
About this report

To be Bobby Approved, a page must pass all of the Priority 1 accessibility checkpoints established by the WAI. For more information on the report, please read "How to Read the Bobby Report."
Home Security Co. has been a leader in home security industry since 1994. We offer a broad range of product to meet your needs.

Homesafe.com is a subsidiary of PSV Home Securities Inc.

Priority 1 Accessibility

This page does not meet the requirements for Bobby Approved status. Below is a list of 1 Priority 1 accessibility errors found:

1. Provide alternative text for all images. (3 instances)
   Line 17, Line 20, Line 51

User Checks

User checks are triggered by something specific on the page; however, you need to determine whether they apply. Bobby Approval requires that none of them apply to your page. Please review these 8 item(s):

1. If you use color to convey information, make sure the information is also represented another way.

2. Make sure pages are still usable if programmatic objects do not function. (2 instances)
   Line 26, Line 36

3. If this is a data table (not used for layout only), identify headers for the table rows and columns. (1 instance)
   Line 14

4. If an image conveys important information beyond what is in its alternative text, provide an extended description. (3 instances)
   Line 17, Line 20, Line 51

5. If sounds are played automatically, provide visual notification and transcripts. (1 instance)
   Line 9

6. If style sheets are ignored or unsupported, are pages still readable and usable?

7. If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship. (1 instance)

8. If a page contains a list with less than 4 items, use a bulleted or numbered list.
Line 14
8. Make sure that the page does not cause the screen to flicker rapidly.

The following 4 item(s) are not triggered by any specific feature on your page, but are still important for accessibility and are required for Bobby Approved status.

9. Use the simplest and most straightforward language that is possible.

10. If ASCII art is present, consider substituting it with an accessible image.

11. Identify any changes in the document's language.

12. If you can't make a page accessible, construct an alternate accessible version.

This page does not yet meet the requirements for Bobby Approved status.

Priority 2 Accessibility

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 2 Priority 2 issue(s) that Bobby has identified are presented below.

1. Use a public text identifier in a DOCTYPE statement.

2. Use relative sizing and positioning (% values) rather than absolute (pixels). (11 instances)

User Checks

6 Priority 2 issue(s) that Bobby has identified are presented below:

1. If objects use event handlers, make sure they do not require use of a mouse.

2. Avoid use of obsolete language features if possible. (13 instances)

3. Check that the foreground and background colors contrast sufficiently with each other.

4. If this gif image is animated, make sure it does not contain fast or distracting motion. (2 instances)
   Line 17, Line 51

5. As appropriate, use metadata to add computer-understandable information about the page.

6. Use style sheets to control layout and presentation wherever possible.

The following 7 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

7. Where it's possible to mark up content (for example mathematical equations) instead of using images, use a markup language (such as MathML).

8. Make sure your document validates to formal published grammars.

9. Group related elements when possible.

10. Is there a site map or table of contents, a description of the general layout of the site, the access features used, and how to use them?

11. Make sure that all link phrases make sense when read out of context.

12. Is there a clear, consistent navigation structure?

13. Use the latest technology specification available whenever possible.

Priority 3 Accessibility

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 2 Priority 3 issue(s) that Bobby has identified are presented below.

1. Identify the language of the text *(1 instance)*
   Line 1

2. Provide a summary for tables *(1 instance)*
   Line 14

User Checks

2 Priority 3 issue(s) that Bobby has identified are presented below:

1. If this is a data table (not used for layout only), provide a caption *(1 instance)*
   Line 14

2. Use the ABBR and ACRONYM elements to denote and expand any abbreviations and acronyms that are present.

The following 6 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

3. Are there navigation bars for easy access to the navigation structure?

4. Is there a consistent style of presentation between pages?

5. Is there distinguishing information at the beginning of headings, paragraphs, lists, etc.?

6. If ASCII art is present, provide a means to skip over it.
7. If there is a search feature, are there different types of searches for different skill levels and preferences?

8. Do you allow users to customize their experience of the web page?

---

**Browser Compatibility Errors**

The following section contains a list of 6 browser compatibility errors. Browser compatibility errors help to determine when HTML tags and their attributes are not compatible with certain web browsers or HTML specifications. Browser compatibility errors do not affect the accessibility rating of a page.

1. **Unknown attribute** `BORDERCOLOR` in element `TABLE` for browser(s): HTML4.0 (1 instance)
   Line 14

2. **Unknown element name** `BGSOIND` for browser(s): HTML4.0 (1 instance)
   Line 9

3. **Unknown attribute** `V:SHAPES` in element `IMG` for browser(s): HTML4.0 (1 instance)
   Line 51

4. **Unknown element name** `O:PI` for browser(s): HTML4.0 (2 instances)
   Line 87, Line 88

5. **Required attribute** `ALT` is missing from tag `IMG` for browser(s): HTML4.0 (3 instances)
   Line 17, Line 20, Line 51

6. **Unknown attribute** `HEIGHT` in element `TABLE` for browser(s): HTML4.0 (1 instance)
   Line 14

---

**Download Time**

The following three-column table gives download time statistics for the images, applets, and objects on this page. The first column contains the URL of each item, the second column the item size in kilobytes, and the third column the approximate download time for each item when using a 28,800 baud modem. At the end of the report, an arbitrary delay of 0.5 seconds is added for each file to account for slow-downs caused by HTTP connection times.

<table>
<thead>
<tr>
<th>URL</th>
<th>Size</th>
<th>Time (secs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.students.dsu.edu/schmidc/homepage1.htm">http://www.students.dsu.edu/schmidc/homepage1.htm</a></td>
<td>4.71 K</td>
<td>1.31</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmidc/homepa6.gif">http://www.students.dsu.edu/schmidc/homepa6.gif</a></td>
<td>1.58 K</td>
<td>0.44</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmidc/homepa2.jpg">http://www.students.dsu.edu/schmidc/homepa2.jpg</a></td>
<td>9.16 K</td>
<td>2.54</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmidc/Homepa1.gif">http://www.students.dsu.edu/schmidc/Homepa1.gif</a></td>
<td>1.25 K</td>
<td>0.35</td>
</tr>
<tr>
<td>Total</td>
<td>16.69 K</td>
<td>4.64</td>
</tr>
<tr>
<td>HTTP Request Delays</td>
<td>--</td>
<td>2.00</td>
</tr>
<tr>
<td>Total + Delays</td>
<td>--</td>
<td>6.64</td>
</tr>
</tbody>
</table>

© 2000 CAST. Send feedback to bobby@cast.org. Additional information available at cast.org/bobby.
About this report

To be Bobby Approved, a page must pass all of the Priority 1 accessibility checkpoints established by the WAI. For more information on the report, please read "How to Read the Bobby Report".

PSV

Products

Premier Wired System

Covers all doors with local alarm and alarm to law enforcement.
Hardware for two doors and professional installation included in purchase price. $1,199.99

Elite Wired System

Covers all doors with silent local alarm and alarm to law enforcement.
The following are user installed products...

**Uncle Elmo's Eye in a Jar**

A video camera system that provides closed circuit TV coverage for one entrance. Camera activated by motion detection. Cost $599.99?

**Dog in a Can**

Motion detection sensors activate this loud dog audio. The one, the only...

Cost $49.99
Priority 1 Accessibility

This page does not meet the requirements for Bobby Approved status. Below is a list of 1 Priority 1 accessibility errors found:

1. **Provide alternative text for all images.** *(7 instances)*
   Line 15, Line 16, Line 46, Line 59, Line 70, Line 91, Line 106

**User Checks**

User checks are triggered by something specific on the page; however, you need to determine whether they apply. Bobby Approval requires that none of them apply to your page. Please review these 7 item(s):

1. **If you use color to convey information, make sure the information is also represented another way.**
2. **Make sure pages are still usable if programmatic objects do not function.** *(2 instances)*
   Line 21, Line 30
3. **If this is a data table (not used for layout only), identify headers for the table rows and columns.** *(3 instances)*
   Line 42, Line 87, Line 12
4. **If an image conveys important information beyond what is in its alternative text, provide an extended description.** *(7 instances)*
   Line 15, Line 16, Line 46, Line 59, Line 70, Line 91, Line 106
5. **If style sheets are ignored or unsupported, are pages still readable and usable?**
6. **If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship.** *(1 instance)*
   Line 12
7. **Make sure that the page does not cause the screen to flicker rapidly.**

The following 4 item(s) are not triggered by any specific feature on your page, but are still important for accessibility and are required for Bobby Approved status.

8. **Use the simplest and most straightforward language that is possible.**
9. **If ASCII art is present, consider substituting it with an accessible image.**
10. **Identify any changes in the document's language.**
11. **If you can't make a page accessible, construct an alternate accessible version.**

This page does not yet meet the requirements for Bobby Approved status.
Priority 2 Accessibility

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 2 Priority 2 issue(s) that Bobby has identified are presented below.

1. Use a public text identifier in a DOCTYPE statement.

2. Use relative sizing and positioning (% values) rather than absolute (pixels). (24 instances)
   123, Line 126

User Checks

8 Priority 2 issue(s) that Bobby has identified are presented below:

1. If objects use event handlers, make sure they do not require use of a mouse.

2. Avoid use of obsolete language features if possible. (29 instances)
   Line 63, Line 70, Line 72, Line 74, Line 78, Line 84, Line 91, Line 94, Line 97, Line 101, Line 106,
   Line 109, Line 111, Line 114, Line 127
3. Add a descriptive title to links when needed.

4. Check that the foreground and background colors contrast sufficiently with each other.

5. If this gif image is animated, make sure it does not contain fast or distracting motion. (3 instances)
   Line 15, Line 70, Line 91

6. As appropriate, use metadata to add computer-understandable information about the page.

7. Mark up any quotations with the Q and BLOCKQUOTE elements.

8. Use style sheets to control layout and presentation wherever possible.

The following 7 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

9. Where it's possible to mark up content (for example mathematical equations) instead of using images, use
   a markup language (such as MathML).

10. Make sure your document validates to formal published grammars.

11. Group related elements when possible.

12. Is there a site map or table of contents, a description of the general layout of the site, the access features
    used, and how to use them?

13. Make sure that all link phrases make sense when read out of context.
14. Is there a clear, consistent navigation structure?

15. Use the latest technology specification available whenever possible.

Priority 3 Accessibility

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 2 Priority 3 issue(s) that Bobby has identified are presented below:

1. Identify the language of the text. (1 instance)
   Line 1
2. Provide a summary for tables. (3 instances)
   Line 42, Line 87, Line 12

User Checks

4 Priority 3 issue(s) that Bobby has identified are presented below:

1. If this is a data table (not used for layout only), provide a caption. (3 instances)
   Line 42, Line 87, Line 12
2. Consider adding keyboard shortcuts to frequently used links.
3. Where appropriate, use icons or graphics (with accessible alternatives) to facilitate comprehension of the page.
4. Use the ABBR and ACRONYM elements to denote and expand any abbreviations and acronyms that are present.

The following 6 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

5. Are there navigation bars for easy access to the navigation structure?
6. Is there a consistent style of presentation between pages?
7. Is there distinguishing information at the beginning of headings, paragraphs, lists, etc.?
8. If ASCII art is present, provide a means to skip over it.
9. If there is a search feature, are there different types of searches for different skill levels and preferences?
10. Do you allow users to customize their experience of the web page?
Browser Compatibility Errors

The following section contains a list of 3 browser compatibility errors. Browser compatibility errors help to determine when HTML tags and their attributes are not compatible with certain web browsers or HTML specifications. Browser compatibility errors do not affect the accessibility rating of a page.

1. **Unknown attribute** BORDERCOLOR **in element** TABLE **for browser(s):** HTML4.0 *(1 instance)*
   Line 12

2. **Required attribute** ALT **is missing from tag** IMG **for browser(s):** HTML4.0 *(7 instances)*
   Line 15, Line 16, Line 46, Line 59, Line 70, Line 91, Line 106

3. **Unknown attribute** HEIGHT **in element** TABLE **for browser(s):** HTML4.0 *(2 instances)*
   Line 12, Line 87

Download Time

The following three-column table gives download time statistics for the images, applets, and objects on this page. The first column contains the URL of each item, the second column the item size in kilobytes, and the third column the approximate download time for each item when using a 28,800 baud modem. At the end of the report, an arbitrary delay of 0.5 seconds is added for each file to account for slow-downs caused by HTTP connection times.

<table>
<thead>
<tr>
<th>URL</th>
<th>Size</th>
<th>Time (secs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.students.dsu.edu/schmidec/products1.htm">http://www.students.dsu.edu/schmidec/products1.htm</a></td>
<td>6.92 K</td>
<td>1.92</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmidec/producl2.gif">http://www.students.dsu.edu/schmidec/producl2.gif</a></td>
<td>1.58 K</td>
<td>0.44</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmidec/producl8.jpg">http://www.students.dsu.edu/schmidec/producl8.jpg</a></td>
<td>9.16 K</td>
<td>2.54</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmidec/producl3.jpg">http://www.students.dsu.edu/schmidec/producl3.jpg</a></td>
<td>3.99 K</td>
<td>1.11</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmidec/producl4.jpg">http://www.students.dsu.edu/schmidec/producl4.jpg</a></td>
<td>3.22 K</td>
<td>0.89</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmidec/producl5.gif">http://www.students.dsu.edu/schmidec/producl5.gif</a></td>
<td>6.08 K</td>
<td>1.69</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmidec/producl6.gif">http://www.students.dsu.edu/schmidec/producl6.gif</a></td>
<td>7.24 K</td>
<td>2.01</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmidec/producl7.jpg">http://www.students.dsu.edu/schmidec/producl7.jpg</a></td>
<td>3.36 K</td>
<td>0.93</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41.54 K</strong></td>
<td><strong>11.54</strong></td>
</tr>
<tr>
<td><strong>HTTP Request Delays</strong></td>
<td></td>
<td>4.00</td>
</tr>
<tr>
<td><strong>Total + Delays</strong></td>
<td></td>
<td>15.54</td>
</tr>
</tbody>
</table>

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About this report

To be Bobby Approved, a page must pass all of the Priority 1 accessibility checkpoints established by the WAI. For more information on the report, please read "How to Read the Bobby Report".

Product Order Form

SALE - Dog In a Can 39.99

Please complete this form to order products from homesafec.com.
Thank You!

Please provide the following home address information:
(all fields must be filled)
Please provide the following ordering information:

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premier Wired System</td>
<td>$1,199.99</td>
</tr>
<tr>
<td>Elite Wired System</td>
<td>$899.99</td>
</tr>
<tr>
<td>Basic Wired System</td>
<td>$699.99</td>
</tr>
<tr>
<td>Additional door coverage</td>
<td>$99.99</td>
</tr>
<tr>
<td>Wired System batteries</td>
<td>$59.99</td>
</tr>
<tr>
<td>Uncle Elmo's Eye in a Jar</td>
<td>$999.99</td>
</tr>
<tr>
<td>Video-camera batteries</td>
<td>$29.99</td>
</tr>
<tr>
<td>Dog in a Can</td>
<td>$49.99</td>
</tr>
<tr>
<td>Dog in a Can batteries</td>
<td>$9.99</td>
</tr>
</tbody>
</table>

Billing (all fields must be filled)

- Credit Card: VISA
- Cardholder Name:
- Card Number: [___] [___] [___] [___]
- Expiration Date: [_____] [_____]

Continue  Reset

Copyright © 2000 homesafe.com. All rights reserved.
Priority 1 Accessibility

This page does not meet the requirements for Bobby Approved status. Below is a list of 1 Priority 1 accessibility errors found:

1. Provide alternative text for all images. (3 instances)
   Line 15, Line 16, Line 375

User Checks

User checks are triggered by something specific on the page; however, you need to determine whether they apply. Bobby Approval requires that none of them apply to your page. Please review these 6 item(s):

1. If you use color to convey information, make sure the information is also represented another way.
2. Make sure pages are still usable if programmatic objects do not function. (2 instances)
   Line 21, Line 30
3. If this is a data table (not used for layout only), identify headers for the table rows and columns. (4 instances)
   Line 53, Line 143, Line 305, Line 12
4. If an image conveys important information beyond what is in its alternative text, provide an extended description. (3 instances)
   Line 15, Line 16, Line 375
5. If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship. (1 instance)
   Line 12
6. Make sure that the page does not cause the screen to flicker rapidly.

The following 4 item(s) are not triggered by any specific feature on your page, but are still important for accessibility and are required for Bobby Approved status.

7. Use the simplest and most straightforward language that is possible.
8. If ASCII art is present, consider substituting it with an accessible image.
9. Identify any changes in the document's language.
10. If you can't make a page accessible, construct an alternate accessible version.

Priority 2 Accessibility

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 4 Priority 2 issue(s) that Bobby has identified are presented below.

1. Use relative sizing and positioning (% values) rather than absolute (pixels). (24 instances)
2. Avoid scrolling text created with the MARQUEE element. (1 instance)
   Line 42
3. Use a public text identifier in a DOCTYPE statement.
4. Explicitly associate form controls and their labels with the LABEL element. (13 instances)

User Checks

12 Priority 2 issue(s) that Bobby has identified are presented below:

1. Consider grouping long lists of selections into a hierarchy. (12 instances)
2. If objects use event handlers, make sure they do not require use of a mouse.
3. As appropriate, use metadata to add computer-understandable information about the page.
4. If this gif image is animated, make sure it does not contain fast or distracting motion. (2 instances)
   Line 15, Line 375
5. Make sure that labels of all form controls are properly placed. (13 instances)
6. Avoid use of obsolete language features if possible. (67 instances)
7. Make sure header elements are not used only for bold text.

8. If there are logical groupings of form controls, use FIELDSET with LEGEND on each group. (1 instance)
   Line 48
9. Avoid using tables to format text documents in columns unless the table can be linearized.
10. Check that the foreground and background colors contrast sufficiently with each other.
11. Make sure BLOCKQUOTE is used only for quotations, not indentation.
12. Mark up any quotations with the Q and BLOCKQUOTE elements.

The following 7 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

13. Where it's possible to mark up content (for example mathematical equations) instead of using images, use a markup language (such as MathML).
14. Make sure your document validates to formal published grammars.
15. Group related elements when possible.
16. Is there a site map or table of contents, a description of the general layout of the site, the access features used, and how to use them?
17. Make sure that all link phrases make sense when read out of context.
18. Is there a clear, consistent navigation structure?
19. Use the latest technology specification available whenever possible.

Priority 3 Accessibility

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 2 Priority 3 issue(s) that Bobby has identified are presented below.

1. Identify the language of the text. (1 instance)
   Line 1
2. Provide a summary for tables. (4 instances)
   Line 53, Line 143, Line 305, Line 12

User Checks

5 Priority 3 issue(s) that Bobby has identified are presented below:

1. Use the ABBR and ACRONYM elements to denote and expand any abbreviations and acronyms that are present.

2. If this is a data table (not used for layout only), provide a caption. (4 instances)

3. Consider furnishing keyboard shortcuts for form elements.

4. Where appropriate, use icons or graphics (with accessible alternatives) to facilitate comprehension of the page.

5. If this is a layout table used for formatting text in columns, provide a linear text alternative.

The following 6 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

6. Are there navigation bars for easy access to the navigation structure?

7. Is there a consistent style of presentation between pages?

8. Is there distinguishing information at the beginning of headings, paragraphs, lists, etc.?

9. If ASCII art is present, provide a means to skip over it.

10. If there is a search feature, are there different types of searches for different skill levels and preferences?

11. Do you allow users to customize their experience of the web page?

---

**Browser Compatibility Errors**

The following section contains a list of 5 browser compatibility errors. Browser compatibility errors help to determine when HTML tags and their attributes are not compatible with certain web browsers or HTML specifications. Browser compatibility errors do not affect the accessibility rating of a page.

1. **Unknown attribute** BORDERCOLOR in element TABLE, for browser(s): HTML4.0 (1 instance)
   Line 12

2. **Required attribute** ALT is missing from tag IMG for browser(s): HTML4.0 (3 instances)
   Line 15, Line 16, Line 375

3. **Unknown element name** MARQUEE for browser(s): HTML4.0 (1 instance)
   Line 42

4. **Unknown attribute** NAME in element FORM, for browser(s): HTML4.0 (1 instance)
   Line 48

5. **Unknown attribute** HEIGHT in element TABLE, for browser(s): HTML4.0 (1 instance)
   Line 12

Download Time

The following three-column table gives download time statistics for the images, applets, and objects on this page. The first column contains the URL of each item, the second column the item size in kilobytes, and the third column the approximate download time for each item when using a 28,800 baud modem. At the end of the report, an arbitrary delay of 0.5 seconds is added for each file to account for slow-downs caused by HTTP connection times.

<table>
<thead>
<tr>
<th>URL</th>
<th>Size</th>
<th>Time (secs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/order1.htm">http://www.students.dsu.edu/schmide/order1.htm</a></td>
<td>18.66 K</td>
<td>5.18</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/order14.gif">http://www.students.dsu.edu/schmide/order14.gif</a></td>
<td>1.58 K</td>
<td>0.44</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/order110.jpg">http://www.students.dsu.edu/schmide/order110.jpg</a></td>
<td>9.15 K</td>
<td>2.54</td>
</tr>
<tr>
<td>Total</td>
<td>44.26 K</td>
<td>12.30</td>
</tr>
<tr>
<td>HTTP Request Delays</td>
<td>--</td>
<td>2.00</td>
</tr>
<tr>
<td>Total + Delays</td>
<td>--</td>
<td>14.30</td>
</tr>
</tbody>
</table>

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Appendix D

Bobby Report

For

ADA Web site
About this report

To be Bobby Approved, a page must pass all of the Priority 1 accessibility checkpoints established by the WAI. For more information on the report, please read "How to Read the Bobby Report".

<table>
<thead>
<tr>
<th>Product Order Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>SALE - Dog In a Can 39.99</td>
</tr>
</tbody>
</table>

Please complete this form to order products from homesafe.com. Thank You!

Please provide the following home address information:
(all fields must be filled)

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street</td>
</tr>
<tr>
<td>Address</td>
</tr>
</tbody>
</table>
Please provide the following ordering information:

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Premier Wired System</td>
<td>$1,199.99</td>
</tr>
<tr>
<td>0</td>
<td>Elite Wired System</td>
<td>$899.99</td>
</tr>
<tr>
<td>0</td>
<td>Basic Wired System</td>
<td>$699.99</td>
</tr>
<tr>
<td>0</td>
<td>Additional door coverage</td>
<td>$99.99</td>
</tr>
<tr>
<td>0</td>
<td>Wired System batteries</td>
<td>$59.99</td>
</tr>
<tr>
<td>0</td>
<td>Uncle Elmo's Eye in a Jar</td>
<td>$599.99</td>
</tr>
<tr>
<td>0</td>
<td>Video camera batteries</td>
<td>$29.99</td>
</tr>
<tr>
<td>0</td>
<td>Dog in a Can</td>
<td>$49.99</td>
</tr>
<tr>
<td>0</td>
<td>Dog in a Can batteries</td>
<td>$9.99</td>
</tr>
</tbody>
</table>

 BILLING (all fields must be filled)

<table>
<thead>
<tr>
<th>Credit Card</th>
<th>VISA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardholder Name</td>
<td></td>
</tr>
<tr>
<td>Card Number</td>
<td></td>
</tr>
<tr>
<td>Expiration Date</td>
<td>01/2000</td>
</tr>
</tbody>
</table>

Continue   Reset
Priority 1 Accessibility

This web page does not contain any Priority 1 accessibility errors that Bobby can detect. However, certain items require human judgment; these are listed below. Please review these items; if none of these apply to your page, it qualifies for Bobby Approved status.

User Checks

User checks are triggered by something specific on the page; however, you need to determine whether they apply. Bobby Approval requires that none of them apply to your page. Please review these 6 item(s):

1. If you use color to convey information, make sure the information is also represented another way.

2. Make sure pages are still usable if programmatic objects do not function. (2 instances)
   Line 20, Line 29

3. If this is a data table (not used for layout only), identify headers for the table rows and columns. (4 instances)
   Line 51, Line 141, Line 303, Line 12

4. If an image conveys important information beyond what is in its alternative text, provide an extended description. (3 instances)
   Line 15, Line 16, Line 373

5. If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship. (1 instance)
   Line 12

6. Make sure that the page does not cause the screen to flicker rapidly.

The following 4 item(s) are not triggered by any specific feature on your page, but are still important for accessibility and are required for Bobby Approved status.

7. Use the simplest and most straightforward language that is possible.

8. If ASCII art is present, consider substituting it with an accessible image.

9. Identify any changes in the document's language.

10. If you can't make a page accessible, construct an alternate accessible version.

If the Priority 1 issues listed do not apply to your page, then it qualifies as Bobby Approved and you are entitled to use the Bobby Approved icon. To obtain the icon and learn how to place it in your page, visit the Icon Guidelines page on the CAST web site.
Priority 2 Accessibility

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 3 Priority 2 issue(s) that Bobby has identified are presented below.

1. **Use relative sizing and positioning (%) values rather than absolute (pixels)**. *(24 instances)*

2. **Use a public text identifier in a DOCTYPE statement.**

3. **Explicitly associate form controls and their labels with the LABEL element**. *(13 instances)*

User Checks

13 Priority 2 issue(s) that Bobby has identified are presented below:

1. **Consider grouping long lists of selections into a hierarchy**. *(12 instances)*

2. **If objects use event handlers, make sure they do not require use of a mouse.**

3. **As appropriate, use metadata to add computer-understandable information about the page.**

4. **If this gif image is animated, make sure it does not contain fast or distracting motion**. *(1 instance)*
   Line 15

5. **Make sure that labels of all form controls are properly placed**. *(13 instances)*

6. **Avoid use of obsolete language features if possible**. *(69 instances)*

7. **Make sure header elements are not used only for bold text.**

8. **If there are logical groupings of form controls, use FIELDSET with LEGEND on each group**. *(1 instance)*
   Line 45

9. **Add a descriptive title to links when needed.**

10. **Avoid using tables to format text documents in columns unless the table can be linearized.**

11. **Check that the foreground and background colors contrast sufficiently with each other.**

12. Make sure BLOCKQUOTE is used only for quotations, not indentation.

13. Mark up any quotations with the Q and BLOCKQUOTE elements.

The following 7 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

14. Where it's possible to mark up content (for example mathematical equations) instead of using images, use a markup language (such as MathML).

15. Make sure your document validates to formal published grammars.

16. Group related elements when possible.

17. Is there a site map or table of contents, a description of the general layout of the site, the access features used, and how to use them?

18. Make sure that all link phrases make sense when read out of context.

19. Is there a clear, consistent navigation structure?

20. Use the latest technology specification available whenever possible.

Priority 3 Accessibility

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 2 Priority 3 issue(s) that Bobby has identified are presented below.

1. Identify the language of the text. (1 instance)
   Line 1
2. Provide a summary for tables. (4 instances)
   Line 51, Line 141, Line 303, Line 12

User Checks

5 Priority 3 issue(s) that Bobby has identified are presented below:

1. Use the ABBR and ACRONYM elements to denote and expand any abbreviations and acronyms that are present.

2. If this is a data table (not used for layout only), provide a caption. (4 instances)
   Line 51, Line 141, Line 303, Line 12

3. Consider furnishing keyboard shortcuts for form elements.

4. Consider adding keyboard shortcuts to frequently used links.

5. If this is a layout table used for formatting text in columns, provide a linear text alternative.

The following 6 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

6. Are there navigation bars for easy access to the navigation structure?
7. Is there a consistent style of presentation between pages?
8. Is there distinguishing information at the beginning of headings, paragraphs, lists, etc.?
9. If ASCII art is present, provide a means to skip over it.
10. If there is a search feature, are there different types of searches for different skill levels and preferences?
11. Do you allow users to customize their experience of the web page?

---

**Browser Compatibility Errors**

The following section contains a list of 3 browser compatibility errors. Browser compatibility errors help to determine when HTML tags and their attributes are not compatible with certain web browsers or HTML specifications. Browser compatibility errors do not affect the accessibility rating of a page.

1. **Unknown attribute** BORDERCOLOR in element TABLE, for browser(s): HTML4.0 (1 instance)
   Line 12
2. **Unknown attribute** NAME in element FORM, for browser(s): HTML4.0 (1 instance)
   Line 45
3. **Unknown attribute** HEIGHT in element TABLE, for browser(s): HTML4.0 (1 instance)
   Line 12

---

**Download Time**

The following three-column table gives download time statistics for the images, applets, and objects on this page. The first column contains the URL of each item, the second column the item size in kilobytes, and the third column the approximate download time for each item when using a 28,800 baud modem. At the end of the report, an arbitrary delay of 0.5 seconds is added for each file to account for slow-downs caused by HTTP connection times.

---

<table>
<thead>
<tr>
<th>URL</th>
<th>Size</th>
<th>Time (secs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/order2.htm">http://www.students.dsu.edu/schmide/order2.htm</a></td>
<td>18.87 K</td>
<td>5.24</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/order26.gif">http://www.students.dsu.edu/schmide/order26.gif</a></td>
<td>1.59 K</td>
<td>0.44</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/order110.jpg">http://www.students.dsu.edu/schmide/order110.jpg</a></td>
<td>9.15 K</td>
<td>2.54</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/Still_calculator.jpg">http://www.students.dsu.edu/schmide/Still_calculator.jpg</a></td>
<td>19.02 K</td>
<td>5.28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48.63 K</strong></td>
<td><strong>13.51</strong></td>
</tr>
<tr>
<td><strong>HTTP Request Delays</strong></td>
<td>--</td>
<td><strong>2.00</strong></td>
</tr>
<tr>
<td><strong>Total + Delays</strong></td>
<td>--</td>
<td><strong>15.51</strong></td>
</tr>
</tbody>
</table>

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About this report

To be Bobby Approved, a page must pass all of the Priority 1 accessibility checkpoints established by the WAI. For more information on the report, please read "How to Read the Bobby Report".

PSV

HOMESAFE.COM

Welcome to

homesafef.com

Home Security co.

? PSV Home Security Co. products do not require pooper scoopers or forty pounds of dog food monthly to do their job. PSV Home Security Co. has been a leader in home security industry since 1994. We offer a broad range of product to meet your needs.

? homesafef.com is a subsidiary of PSV Home Securities Inc.
Priority 1 Accessibility

This web page does not contain any Priority 1 accessibility errors that Bobby can detect. However, certain items require human judgment; these are listed below. Please review these items; if none of these apply to your page, it qualifies for Bobby Approved status.

User Checks

User checks are triggered by something specific on the page; however, you need to determine whether they apply. Bobby Approval requires that none of them apply to your page. Please review these 8 item(s):

1. If you use color to convey information, make sure the information is also represented another way.

2. Make sure pages are still usable if programmatic objects do not function. (2 instances)
   Line 23, Line 32
3. If this is a data table (not used for layout only), identify headers for the table rows and columns. (1 instance)
   Line 14
4. If an image conveys important information beyond what is in its alternative text, provide an extended description. (4 instances)
   Line 17, Line 19, Line 49, Line 128
5. If sounds are played automatically, provide visual notification and transcripts. (1 instance)
   Line 9
6. If style sheets are ignored or unsupported, are pages still readable and usable?
7. If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship. (1 instance)
   Line 14
8. Make sure that the page does not cause the screen to flicker rapidly.

The following 4 item(s) are not triggered by any specific feature on your page, but are still important for accessibility and are required for Bobby Approved status.

9. Use the simplest and most straightforward language that is possible.
10. If ASCII art is present, consider substituting it with an accessible image.
11. Identify any changes in the document's language.
12. If you can't make a page accessible, construct an alternate accessible version.

If the Priority 1 issues listed do not apply to your page, then it qualifies as Bobby Approved and you are entitled to use the Bobby Approved icon. To obtain the icon and learn how to place it in your page, visit the Icon Guidelines page on the CAST web site.

Priority 2 Accessibility

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 2 Priority 2 issue(s) that Bobby has identified are presented below.

1. Use a public text identifier in a DOCTYPE statement.

2. Use relative sizing and positioning (% values) rather than absolute (pixels). (11 instances)

User Checks

8 Priority 2 issue(s) that Bobby has identified are presented below:

1. If objects use event handlers, make sure they do not require use of a mouse.

2. Avoid use of obsolete language features if possible. (15 instances)

3. Add a descriptive title to links when needed.

4. Check that the foreground and background colors contrast sufficiently with each other.

5. If this gif image is animated, make sure it does not contain fast or distracting motion. (3 instances)
   Line 17, Line 49, Line 128

6. As appropriate, use metadata to add computer-understandable information about the page.

7. Avoid using tables to format text documents in columns unless the table can be linearized.

8. Use style sheets to control layout and presentation wherever possible.

The following 7 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

9. Where it's possible to mark up content (for example mathematical equations) instead of using images, use a markup language (such as MathML).

10. Make sure your document validates to formal published grammars.

11. Group related elements when possible.
12. Is there a site map or table of contents, a description of the general layout of the site, the access features used, and how to use them?

13. Make sure that all link phrases make sense when read out of context.

14. Is there a clear, consistent navigation structure?

15. Use the latest technology specification available whenever possible.

Priority 3 Accessibility

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 2 Priority 3 issue(s) that Bobby has identified are presented below.

1. Identify the language of the text. (1 instance)
   Line 1
2. Provide a summary for tables. (1 instance)
   Line 14

User Checks

4 Priority 3 issue(s) that Bobby has identified are presented below:

1. Use the ABBR and ACRONYM elements to denote and expand any abbreviations and acronyms that are present.

2. If this is a data table (not used for layout only), provide a caption. (1 instance)
   Line 14
3. Consider adding keyboard shortcuts to frequently used links.

4. If this is a layout table used for formatting text in columns, provide a linear text alternative.

The following 6 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

5. Are there navigation bars for easy access to the navigation structure?

6. Is there a consistent style of presentation between pages?

7. Is there distinguishing information at the beginning of headings, paragraphs, lists, etc.?

8. If ASCII art is present, provide a means to skip over it.

9. If there is a search feature, are there different types of searches for different skill levels and preferences?

10. Do you allow users to customize their experience of the web page?
Browser Compatibility Errors

The following section contains a list of 5 browser compatibility errors. Browser compatibility errors help to determine when HTML tags and their attributes are not compatible with certain web browsers or HTML specifications. Browser compatibility errors do not affect the accessibility rating of a page.

1. **Unknown attribute BORDERCOLOR in element TABLE** for browser(s): HTML4.0 (1 instance)
   Line 14
2. **Unknown element name BGSOUND** for browser(s): HTML4.0 (1 instance)
   Line 9
3. **Unknown attribute V:SHAPES in element IMG** for browser(s): HTML4.0 (2 instances)
   Line 49, Line 128
4. **Unknown element name O:P** for browser(s): HTML4.0 (2 instances)
   Line 84, Line 85
5. **Unknown attribute HEIGHT in element TABLE** for browser(s): HTML4.0 (1 instance)
   Line 14

Download Time

The following three-column table gives download time statistics for the images, applets, and objects on this page. The first column contains the URL of each item, the second column the item size in kilobytes, and the third column the approximate download time for each item when using a 28,800 baud modem. At the end of the report, an arbitrary delay of 0.5 seconds is added for each file to account for slow-downs caused by HTTP connection times.

<table>
<thead>
<tr>
<th>URL</th>
<th>Size</th>
<th>Time (secs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/homepage2.htm">http://www.students.dsu.edu/schmide/homepage2.htm</a></td>
<td>6.26 K</td>
<td>1.74</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/homepa3.gif">http://www.students.dsu.edu/schmide/homepa3.gif</a></td>
<td>1.59 K</td>
<td>0.44</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/homepa2.jpg">http://www.students.dsu.edu/schmide/homepa2.jpg</a></td>
<td>9.16 K</td>
<td>2.54</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/Homepa1.gif">http://www.students.dsu.edu/schmide/Homepa1.gif</a></td>
<td>1.25 K</td>
<td>0.35</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/homepa5.gif">http://www.students.dsu.edu/schmide/homepa5.gif</a></td>
<td>3.04 K</td>
<td>0.85</td>
</tr>
<tr>
<td>Total</td>
<td>21.30 K</td>
<td>5.92</td>
</tr>
<tr>
<td>HTTP Request Delays</td>
<td>--</td>
<td>2.50</td>
</tr>
<tr>
<td>Total + Delays</td>
<td>--</td>
<td>8.42</td>
</tr>
</tbody>
</table>

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About this report

To be Bobby Approved, a page must pass all of the Priority 1 accessibility checkpoints established by the WAI. For more information on the report, please read "How to Read the Bobby Report".

Products

Premier Wired System

Covers all doors with local alarm and alarm to law enforcement. Hardware for two doors and professional installation included in purchase price. $1,199.99

Elite Wired System

Covers all doors with silent local alarm and alarm to law enforcement. Hardware for two doors and professional installation included in...
purchase price. $899.99

Basic Wired System

Covers all doors with local alarm. Hardware for two doors and professional installation included in purchase price. $699.99

The following are user installed products...

Uncle Elmo's Eye in Jar

A video camera system that provides closed circuit TV coverage for one entrance. Camera activated by motion detection. Cost $599.99

Dog in a Can

Motion detection sensors activate this loud dog audio. The one, the only...

Cost $49.99

Priority 1 Accessibility

This web page does not contain any Priority 1 accessibility errors that Bobby can detect. However, certain items require human judgment; these are listed below. Please review these items; if none of these apply to your page, it qualifies for Bobby Approved status.

User Checks

User checks are triggered by something specific on the page; however, you need to determine whether they
apply. Bobby Approval requires that none of them apply to your page. Please review these 7 item(s):

1. **If you use color to convey information, make sure the information is also represented another way.**
   Line 20, Line 30

2. **Make sure pages are still usable if programmatic objects do not function.** *(2 instances)*
   Line 45, Line 90, Line 12

3. **If this is a data table (not used for layout only), identify headers for the table rows and columns.** *(3 instances)*
   Line 45, Line 90, Line 12

4. **If an image conveys important information beyond what is in its alternative text, provide an extended description.** *(7 instances)*

5. **If style sheets are ignored or unsupported, are pages still readable and usable?**

6. **If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship.** *(1 instance)*
   Line 12

7. **Make sure that the page does not cause the screen to flicker rapidly.**

The following 4 item(s) are not triggered by any specific feature on your page, but are still important for accessibility and are required for Bobby Approved status.

8. **Use the simplest and most straightforward language that is possible.**

9. **If ASCII art is present, consider substituting it with an accessible image.**

10. **Identify any changes in the document's language.**

11. **If you can't make a page accessible, construct an alternate accessible version.**

If the Priority 1 issues listed do not apply to your page, then it qualifies as Bobby Approved and you are entitled to use the Bobby Approved icon. To obtain the icon and learn how to place it in your page, visit the **Icon Guidelines** page on the CAST web site.

**Priority 2 Accessibility**

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 2 Priority 2 issue(s) that Bobby has identified are presented below.

1. **Use a public text identifier in a DOCTYPE statement.**

2. **Use relative sizing and positioning (% values) rather than absolute (pixels).** *(24 instances)*

**User Checks**

8 Priority 2 issue(s) that Bobby has identified are presented below:

1. If objects use event handlers, make sure they do not require use of a mouse.

2. Avoid use of obsolete language features if possible. (31 instances)

3. Add a descriptive title to links when needed.

4. Check that the foreground and background colors contrast sufficiently with each other.

5. If this gif image is animated, make sure it does not contain fast or distracting motion. (3 instances)
   Line 15, Line 73, Line 94

6. As appropriate, use metadata to add computer-understandable information about the page.

7. Mark up any quotations with the Q and BLOCKQUOTE elements.

8. Use style sheets to control layout and presentation wherever possible.

The following 7 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

9. Where it's possible to mark up content (for example mathematical equations) instead of using images, use a markup language (such as MathML).

10. Make sure your document validates to formal published grammars.

11. Group related elements when possible.

12. Is there a site map or table of contents, a description of the general layout of the site, the access features used, and how to use them?

13. Make sure that all link phrases make sense when read out of context.

14. Is there a clear, consistent navigation structure?

15. Use the latest technology specification available whenever possible.

Priority 3 Accessibility

Bobby Approved status is assigned on the basis of Priority 1 items in the Web Content Guidelines. For a higher level of accessibility you may also want to examine Priority 2 and Priority 3 items. 2 Priority 3 issue(s) that Bobby has identified are presented below.

1. Identify the language of the text. (1 instance)
   Line 1
2. Provide a summary for tables. (3 instances)
   Line 45, Line 90, Line 12

User Checks

4 Priority 3 issue(s) that Bobby has identified are presented below:

1. Use the ABBR and ACRONYM elements to denote and expand any abbreviations and acronyms that are present.

2. If this is a data table (not used for layout only), provide a caption. (3 instances)
   Line 45, Line 90, Line 12

3. Consider adding keyboard shortcuts to frequently used links.

4. Consider specifying a logical tab order among form controls, links and objects.

The following 6 item(s) are not triggered by any specific feature on your page, but are still important for accessibility.

5. Are there navigation bars for easy access to the navigation structure?

6. Is there a consistent style of presentation between pages?

7. Is there distinguishing information at the beginning of headings, paragraphs, lists, etc.?

8. If ASCII art is present, provide a means to skip over it.

9. If there is a search feature, are there different types of searches for different skill levels and preferences?

10. Do you allow users to customize their experience of the web page?

---

Browser Compatibility Errors

The following section contains a list of 2 browser compatibility errors. Browser compatibility errors help to determine when HTML tags and their attributes are not compatible with certain web browsers or HTML specifications. Browser compatibility errors do not affect the accessibility rating of a page.

1. **Unknown attribute **BORDERCOLOR** in element **TABLE, for browser(s): HTML4.0** (2 instances)
   Line 12, Line 45

2. **Unknown attribute **HEIGHT** in element **TABLE, for browser(s): HTML4.0** (2 instances)
   Line 12, Line 90
Download Time

The following three-column table gives download time statistics for the images, applets, and objects on this page. The first column contains the URL of each item, the second column the item size in kilobytes, and the third column the approximate download time for each item when using a 28,800 baud modem. At the end of the report, an arbitrary delay of 0.5 seconds is added for each file to account for slow-downs caused by HTTP connection times.

<table>
<thead>
<tr>
<th>URL</th>
<th>Size</th>
<th>Time (secs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/products2.htm">http://www.students.dsu.edu/schmide/products2.htm</a></td>
<td>7.41 K</td>
<td>2.06</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/product7.gif">http://www.students.dsu.edu/schmide/product7.gif</a></td>
<td>1.59 K</td>
<td>0.44</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/product8.jpg">http://www.students.dsu.edu/schmide/product8.jpg</a></td>
<td>9.16 K</td>
<td>2.54</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/product3.jpg">http://www.students.dsu.edu/schmide/product3.jpg</a></td>
<td>3.99 K</td>
<td>1.11</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/product4.jpg">http://www.students.dsu.edu/schmide/product4.jpg</a></td>
<td>3.22 K</td>
<td>0.89</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/product5.gif">http://www.students.dsu.edu/schmide/product5.gif</a></td>
<td>6.08 K</td>
<td>1.69</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/product6.gif">http://www.students.dsu.edu/schmide/product6.gif</a></td>
<td>7.24 K</td>
<td>2.01</td>
</tr>
<tr>
<td><a href="http://www.students.dsu.edu/schmide/product7.jpg">http://www.students.dsu.edu/schmide/product7.jpg</a></td>
<td>3.36 K</td>
<td>0.93</td>
</tr>
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<td><strong>Total</strong></td>
<td><strong>42.05 K</strong></td>
<td><strong>11.68</strong></td>
</tr>
<tr>
<td><strong>HTTP Request Delays</strong></td>
<td></td>
<td><strong>4.00</strong></td>
</tr>
<tr>
<td><strong>Total + Delays</strong></td>
<td></td>
<td><strong>15.68</strong></td>
</tr>
</tbody>
</table>

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Appendix E

Survey Form

For

ADA Web site
Website Survey

Please go to the following website:  http://www.students.dsu.edu/schmide/homepage1.htm

Answer the following question regarding the above captioned website. Circle one number.

Please use the following scale when responding to questions 1 - 11:

Strongly Disagree  No Opinion  Strongly Agree
1  2  3  4  5

1. The font style is effective in conveying the message of this site.
   1  2  3  4  5

2. The font color is effective in conveying the message of this site.
   1  2  3  4  5

3. The background color is effective in conveying the message of this site.
   1  2  3  4  5

4. The pictures and images were helpful on this site.
   1  2  3  4  5

5. The calculator on the Order page is effective in conveying the message of this site.
   1  2  3  4  5

6. The sound was appealing on this site.  NO SOUND HEARD
   1  2  3  4  5

7. Navigation from page to page was accomplished with ease.
   1  2  3  4  5

8. The content was easy to read on this site.
   1  2  3  4  5

9. The colors were appealing on this site.
   1  2  3  4  5

10. When you opened the order page, were you drawn to the “SALE” banner.
    1  2  3  4  5

11. I found this site generally effective in conveying the message.
    1  2  3  4  5

OVER
12. Would the website make you more likely to buy a product from the site.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No not at all</td>
<td>not likely</td>
<td>undecided</td>
<td>likely to buy</td>
<td>yes definitely</td>
</tr>
</tbody>
</table>

13. I regularly use ___________________ computer equipment.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do not use</td>
<td>Other</td>
<td>DSU</td>
<td>My friends</td>
<td>My own</td>
</tr>
<tr>
<td></td>
<td>A computer</td>
<td>Lab</td>
<td>personal</td>
<td>personal</td>
<td></td>
</tr>
</tbody>
</table>

14. I would consider myself to be a(n) ___________________ computer user.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do not use</td>
<td>Novice</td>
<td>Average</td>
<td>Advanced</td>
<td>Expert</td>
</tr>
<tr>
<td></td>
<td>A computer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Please tell us a little bit about yourself.**

15. I am currently a ___________________ at DSU.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freshman</td>
<td>Sophomore</td>
<td>Junior</td>
<td>Senior</td>
<td>Grad student</td>
</tr>
</tbody>
</table>

16. My major is represented by the ___________________ college here at DSU.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BIS</td>
<td>Education</td>
<td>Natural Science</td>
<td>Liberal Arts</td>
<td>other</td>
</tr>
</tbody>
</table>

17. I began using computers regularly in ___________________ school.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do not use</td>
<td>Elementary</td>
<td>Middle</td>
<td>High</td>
<td>College</td>
</tr>
</tbody>
</table>

18. My gender is:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
</tbody>
</table>
Appendix E

Survey Form

For

ADA Web site
Website Survey

Please go to the following website:  http://www.students.dsu.edu/schmide/homepage2.htm

Answer the following question regarding the above captioned website. Circle one number.

Please use the following scale when responding to questions 1 - 11:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>No Opinion</td>
<td>Strongly Agree</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. The font style is effective in conveying the message of this site.
   1 2 3 4 5

2. The font color is effective in conveying the message of this site.
   1 2 3 4 5

3. The background color is effective in conveying the message of this site.
   1 2 3 4 5

4. The pictures and images were helpful on this site.
   1 2 3 4 5

5. The calculator on the Order page is effective in conveying the message of this site.
   1 2 3 4 5

6. The sound was appealing on this site. NO SOUND HEARD
   1 2 3 4 5

7. Navigation from page to page was accomplished with ease.
   1 2 3 4 5

8. The content was easy to read on this site.
   1 2 3 4 5

9. The colors were appealing on this site.
   1 2 3 4 5

10. When you opened the order page, were you drawn to the “SALE” banner.
    1 2 3 4 5

11. I found this site generally effective in conveying the message.
    1 2 3 4 5

OVER
12. Would the website make you more likely to buy a product from the site.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>No not at all</td>
<td>not likely</td>
<td>undecided</td>
<td>likely to buy</td>
<td>yes definitively</td>
</tr>
</tbody>
</table>

13. I regularly use __________________ computer equipment.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not use</td>
<td>Other</td>
<td>DSU</td>
<td>My friends</td>
<td>My own</td>
</tr>
<tr>
<td>A computer</td>
<td>Lab</td>
<td>personal</td>
<td>personal</td>
<td></td>
</tr>
</tbody>
</table>

14. I would consider myself to be a(n) __________________ computer user.

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*Please tell us a little bit about yourself.*

15. I am currently a __________________ at DSU.

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16. My major is represented by the __________________ college here at DSU.

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</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
</tr>
</tbody>
</table>
Appendix F

Work Breakdown Structure

Gantt Chart
105 classes
Survey four sections of CSC
Students in CSC 105 classes
Obtain permission to survey
Students
Administer survey to

Prepare Presentation
Arrange Date, Time and Place
Give Presentation
Complete Final Draft
Complete First Draft of Paper
Write up Results in Form
Perform SAS T-Tests
Convert Results to Usable Form for SAS
Presentation
Results and Paper

105 classes
Students in CSC 105 classes
Obtain permission to survey
Students
Administer survey to
<table>
<thead>
<tr>
<th>Task Name</th>
<th>Start</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design &amp; Research of Project</td>
<td>1/1/01</td>
<td>90 days</td>
</tr>
<tr>
<td>Design &amp; Build Models</td>
<td>1/2/01</td>
<td>10 days</td>
</tr>
<tr>
<td>Design Questionnaire</td>
<td>1/3/01</td>
<td>10 days</td>
</tr>
<tr>
<td>Conduct Preliminary Study</td>
<td>1/4/01</td>
<td>5 days</td>
</tr>
<tr>
<td>Conduct Test With Ccc 105 Class</td>
<td>1/5/01</td>
<td>6 days</td>
</tr>
<tr>
<td>Write Results of Study</td>
<td>1/6/01</td>
<td>7 days</td>
</tr>
<tr>
<td>Combine Introduction and Draft</td>
<td>1/7/01</td>
<td>7 days</td>
</tr>
<tr>
<td>Write Resource Page Appendix</td>
<td>1/8/01</td>
<td>6 days</td>
</tr>
<tr>
<td>Plan Presentation</td>
<td>1/9/01</td>
<td>2 days</td>
</tr>
<tr>
<td>Second Draft to Advisory Committee</td>
<td>1/10/01</td>
<td>3 days</td>
</tr>
<tr>
<td>Make Revisions to First Draft</td>
<td>1/11/01</td>
<td>3 days</td>
</tr>
<tr>
<td>Write Final Draft</td>
<td>1/12/01</td>
<td>6 days</td>
</tr>
<tr>
<td>Present Final Draft</td>
<td>1/13/01</td>
<td>1 day</td>
</tr>
<tr>
<td>Complete Final Draft</td>
<td>1/14/01</td>
<td>3 days</td>
</tr>
<tr>
<td>Complete Material Submission</td>
<td>1/15/01</td>
<td>10 days</td>
</tr>
<tr>
<td>Conduct Test With Ccc 105 Class</td>
<td>1/16/01</td>
<td>6 days</td>
</tr>
<tr>
<td>Design Questionnaire</td>
<td>1/17/01</td>
<td>10 days</td>
</tr>
<tr>
<td>Design &amp; Build Models</td>
<td>1/18/01</td>
<td>10 days</td>
</tr>
<tr>
<td>Conduct Preliminary Study</td>
<td>1/19/01</td>
<td>5 days</td>
</tr>
<tr>
<td>Design &amp; Research of Project</td>
<td>1/20/01</td>
<td>90 days</td>
</tr>
<tr>
<td>Task Name</td>
<td>Start</td>
<td>Duration</td>
</tr>
<tr>
<td>-----------</td>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>Design &amp; Research of Project</td>
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<td>1/3/01</td>
<td>10 days</td>
</tr>
<tr>
<td>Conduct Preliminary Study</td>
<td>1/4/01</td>
<td>5 days</td>
</tr>
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