

Access in Learning

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This presentation can be viewed at:

http://intranet.landmark.edu/lcirt_presentations/accessibility_issues/

The World is Flat

"The world is being flattened. ...we are now connecting all the knowledge centers on the planet together into a single global network... which could usher in an amazing era of prosperity, innovation and collaboration..."

- Thomas L. Friedman, *The World is Flat*

How does a flat world affect us?

For educators and developers of educational materials, this digitally-connected world opens up infinite new ways to access, use, and effectively design instructional content.

Through the internet, anyone can:

- publish and distribute their ideas
- share learning materials
- explore (some) new technologies

Global connectivity has increased access to evolving assistive technologies, making more of learning materials consumable by people with disabilities.

One used to be more able to predict the alternative ways someone might try to view, listen, or use learning materials. The possibilities are no longer predictable.

Daunted by the possibilities?

Given the breadth of 'new stuff' out there, is the requirement to make your materials usable and accessible overwhelming?

Fear not; background knowledge and available guidelines will get us there!

Today's Assumption

Our common goal is to create content that is:

- accessible

- usable
- intentionally designed

for *all* learners.

Do you agree?

What's your role?

Are you a designer, developer, evaluator, consumer?

In what ways does accessibility affect you?

Today's Agenda

1. Define & explore relationships among:
 - Web Accessibility
 - Usability
 - Universal Design
 2. Look at web accessibility in depth
-

Definition: Web Accessibility

Web accessibility means that people with disabilities can perceive, understand, navigate, and interact with the web, and that they can contribute to the web. Web accessibility also benefits others, including older people with changing abilities due to aging."

- [W3C Web Accessibility Initiative](#)

This definition can be applied beyond the web to electronic materials.

Who faces electronic obstacles?

- people whose disabilities may be: congenital, injury-related, aging-related, temporary, or chronic
 - people with visual, hearing, cognitive, and motor disabilities
 - people with low technical capabilities (either low-bandwidth or low-familiarity)
 - English language learners
 - anyone else?
-

User Profile: *Virginia*



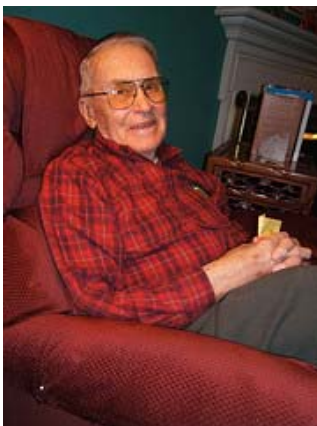
- increases text size
- prefers sans serif
- reviews & updates form entries
- likes control over when to pages update
- is less distracted when navigation and site elements are consistent

Virginia is a college student with ADD who also has some language processing difficulties. She finds sans serif fonts much easier to read and often increases text size once or twice ("Big fonts are my friend"). (** Presenter: show increased text size.) Because of her learning disabilities, her short-term memory is compromised and she can run into trouble following processes with a lot of steps.

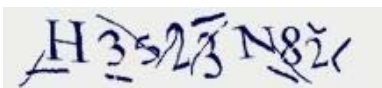
Virginia likes web forms that group the information fields into smaller pieces, but let her go back and forth to see what she entered, to change her answers, and to see what's missing. She says she doesn't read the error messages—she just looks for the red text and tries again. Reading is slow for Virginia, so she hates when her fave sport's team website briefly displays a story and moves on before she can read it.

Inconsistent navigation and changing locations of site elements are distracting for Virginia because of her attention difficulties.

User Profile: *Joe*



- can't read small text or small details in a diagram
- doesn't know about 'long description'—likes text description on the page
- can't read 'captcha' images



- has trouble with pages that open links in new windows

Virginia and her grandfather Joe joke about how they like the same things on the web: the sites that work well for her aid his deteriorating eyesight and memory difficulties.

Joe doesn't use a screen reader, so he doesn't know when a site provides a long description to explain a complicated diagram, but there are many times he can't see the diagram's details. It's helpful when sites just put the explanatory text below the image.

Recently, both Joe and Virginia tried to buy tickets together for the philharmonic, but neither one of them could make out the 'captcha' image they needed to decipher in order to prove they're humans buying tickets.

Joe runs into trouble with web pages that open links in new windows.

User Profile: *Itzel*



- relies on captions and transcripts to make use of videos

Itzel is a deaf news reporter. She does a lot of web research for her stories and relies on sites that caption their videos or provide transcripts.

User Profile: *Jerry*



- uses a screen reader

- likes 'skip navigation' links
- needs data tables coded such that rows and columns are associated with the data
- needs form fields associated with their labels
- likes good link text
- likes good alternative text

Jerry is a statistician who is blind. He uses JAWS when surfing the web, listening at speeds that most people can't follow. (** Presenter: show JAWS reading this page.) Jerry likes sites that provide a link to skip the navigation, so he doesn't have to tab through it and listen to it on every page. For his work, Jerry works with a lot of data; he needs the data tables to be properly coded with the column and row names associated with the pertinent data. He has a very difficult time with web forms that don't associate form fields with their labels: in those cases he can't be sure whether the item he is checking is the one he actually wants.

Good link text can make a huge difference in Jenna's efficiency. It's easy for her to tab through the links on a page as a preview of the content. If the text says "click here for application details," but the only linked text is "click here," Jenna's previewing links will be a waste of her time.

Good alternative text for images also makes a big difference. Some sites use an icon for a link. Sometimes the people who made the site put a description of the icon instead of telling what the target of the link is. A title for the link would also solve the problem, but she doesn't really need to know that the link is an arrow.

User Profile: *Robert*



- uses a screen reader for paragraphs of text
- likes acronyms and abbreviations to be expanded on first use
- gets stuck on colloquialisms
- needs high-contrast in colors
- often applies her own style sheet

Robert is dyslexic and has red-green color blindness. He uses text-to-speech software to read content on a page. He reads along with the screen reader and follows the highlighted text. Robert can spend a long time trying to figure out acronyms and abbreviations, so it is helpful to

him when they are explained the first time they are used. (While this can be done on the back-end in the HTML code, this does not help people who are *not* using screen readers, including people with other cognitive difficulties.) Due to his color blindness, it is important that the text on the screen has a sufficient contrast with the background. When there is not enough contrast, Robert will override the style sheet with his own high-contrast style sheet, but this only works when the original page was created properly, using a style sheet. (** Presenter: show black on white style sheet)

Accessibility Affects Us Daily

- Many students have disabilities and *many are undiagnosed*.
- Our delivery, materials, and assessments can all be *inaccessible*.
- Accessibility promotes independent learning.
- Legal requirements
- Following standards leads to 'interoperability' or 'machine-readability'—materials can be consumed by a variety of technologies.

Why do so many adults with LD go undiagnosed? It's too expensive for many people to be able to afford testing; they may not realize they have a learning disability. Often people think of their difficulties simply as inherited characteristics.

Accessibility of our delivery, materials, and assessments affects the success of more than those who present accommodations requests. Inaccessibility prevents learning! We need to think of accessibility within our class setting, not just in the materials we send home.

As educational institutions, we are affected by the legal requirements of Section 508 of the Rehabilitation Act, the ADA (Americans with Disabilities Act), and IDEA (Individuals with Disabilities Education Act).

There are standards and guidelines which help us ensure that no matter what technology people use, they will be able to access our materials: the materials will be 'machine-readable.'

Machine-readable content can be:

- zoomed to a larger size
- viewed with a user's own style sheet (e.g. high-contrast for people with specific vision trouble)
- read by a screen-reader
- viewed on hand-helds
- translated to different languages
- ideal for the site owner and web developer:
 - indexed properly by search engines
 - rendered very quickly
 - validated by a free online service: excellent troubleshooting method!
 - create 'print' version with no redundant pages (This handout comes from the same 'page' that the screen version came from. The print style sheet removes the 'slides')

and adds in the speaker's notes like this one.)

Resources

The Web Standards Project

<http://www.webstandards.org/>

WebAIM (Web Accessibility in Mind)

<http://www.webaim.org/>

MaxDesign Web Presentation Checklist

<http://maxdesign.com.au/presentation/checklist.htm>

Chris Pedrick's Web Developer Toolbar

<https://addons.mozilla.org/firefox/60/>

Internet Explorer Developer Toolbar

<http://www.microsoft.com/downloads/details.aspx?familyid=e59c3964-672d-4511-bb3e-2d5e1db6>

Accessibility & Learning Disabilities

User interface designs can meet accessibility requirements and follow web standards, but still exacerbate cognitive difficulties with:

- Complex text
- Perception & Processing
- Literal interpretation
- Memory
- Sequential operations
- Fine motor coordination

Readable Text

- Use clear and simple language
- Chunk content: use headings and lists to provide organizational cues.
- Avoid homonyms, figures of speech which may be confusing when interpreted literally
- Offer full names for abbreviations and acronyms on first use, then use <acronym> tags with "title" attributes for subsequent references

Display

- Stick to accepted norms: e.g. underlined links
- Pair text with clearly connected graphics, for additional cue.
- Use audio to augment text
- Toggle display of additional information.
- Increase line height, space between paragraphs,

- Consider using hover effects on links, e.g. highlighting
- Use border-bottom on links instead of underline to give additional space so all descenders will be legible, and increases clickable area.
- Background color on hover for paragraphs and table rows
- Offer high contrast style sheet (i.e. light text on dark background)

Forms

- Error messages as part of label.
- Make labels explicit, using the "for=xxx", not just surrounding the input with <label> tags.
- Allow for extra time—if sessions must be time-based build in easy ways to request extra time

Resources

A List Apart Article

<http://www.alistapart.com/articles/prettyaccessibleforms>

Microsoft Word: Tools > Spelling and Grammar > Options > Show readability statistics

juicystudio.com

<http://juicystudio.com/services/readability.php>

Web Standards Project: Accessible Forms Tutorial

<http://www.webstandards.org/learn/tutorials/accessible-forms>

Definition: Usability

The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.

- ISO Standard 9241-11 (1998) Guidance on Usability

Usability

Is the interaction

- Effective?
- Efficient?
- Satisfying?

There is almost always a tradeoff between aspects of usability.

Measurements of Usability (Examples)

Effectiveness

- % of relevant functions used
- % of tasks completed successfully on first attempt
- amount of task completed successfully
- # of persistent errors
- accuracy

Efficiency

- time to execute instructions
- time taken on first attempt
- number of clicks or key presses required
- time spent correcting errors

Satisfaction

- Rate of voluntary use
- Rate of positive vs. negative comments
- Users feel in control

An example of a tradeoff between usability elements: satisfaction derived from a sparse design with the fewest words possible might need to give way to the efficiency derived from expanding an acronym, necessary for users who might not know the acronym.

Usability Affects Us Daily

When learning approaches and materials are inefficient or ineffective, learning and persistence suffer.

Have you ever experienced this?

Resources

Usability Professionals Association
<http://www.upa.org>

References

- Travis, D. (2003). *E-commerce usability*, NY: Taylor & Francis, pp.76-81.
- Nielsen, J. & Mack, R.L. (1994). *Usability Inspection Methods*, NY: John Wiley & Sons, p. 30.
- Scott, S., Shaw, S., & McGuire, J. (in press). *Universal Design for Instruction: A new paradigm for adult instruction in postsecondary education*. Remedial and Special Education.
- Schneiderman, B. (2004). *Designing the User Interface*. MA: Addison Wesley.
-

Definition: Universal Design

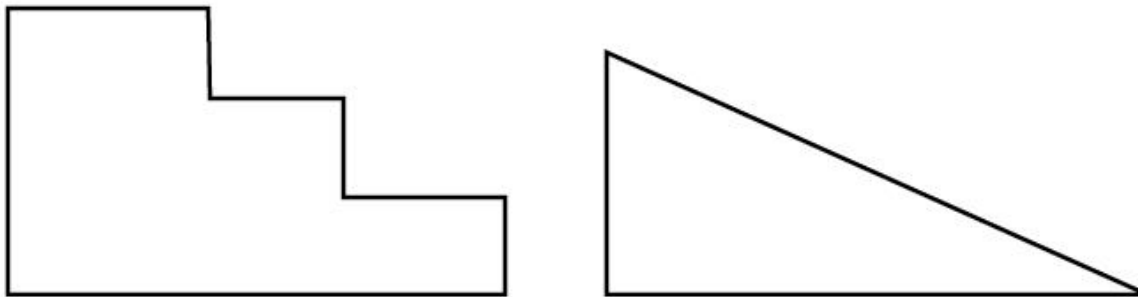
"...the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design"

- Ron Mace, Trace Research and Development Center

Universal Design is an approach that supports accessibility and usability.

Universal Design

Which design is more universally designed: stairs or ramp?



Universal Design

Which web page button is more universally designed?

Contact Us



Why?

Some of the issues with the star-shaped button:

- terrible color contrast: unreadable to those with red-green color blindness
- un-zoomable text: low vision users can't increase text size
- ambiguous result: a link should indicate where it leads when read out of context

Universal Design for Instruction

Shaw, McGuire, Scott, UCONN, 2001

1. Equitable use
2. Flexibility in use
3. Simple and intuitive
4. Perceptible information
5. Tolerance for error
6. Low physical effort
7. Size and space for approach and use
8. A community of learners
9. Instructional climate

Universal Design Helps Us Daily

- With universally designed content, we can reach the widest range of learners (with different learning styles, ethnic backgrounds, skill levels, physical abilities).

- UDI provides a framework so that the work of changing our teaching approaches becomes doable.

Resources

CAST (Center for Applied Special Technology) on Differentiated Instruction
http://www.cast.org/publications/ncac/ncac_diffinstruc.html

CAST UDL Lesson Builder
<http://lessonbuilder.cast.org/>

Facultyware: Tools for the Universal Design of Instruction
<http://www.facultyware.uconn.edu>

Project UDL: Universal Design for Learning (DOE Demonstration Project, Springfield Technical Community College)
<http://www.stcc.edu/ods/doe>

Trace Research and Development Center, University of Wisconsin-Madison
<http://trace.wisc.edu/>

University of Washington's DO-IT (Disabilities, Opportunities, Internetworking, and Technology) Program
<http://www.washington.edu/doit/Brochures/Academics/instruction.html>

References

Shaw, S., Scott, S., & McGuire, J. (2001). Teaching college students with learning disabilities. ERIC Digest #e618 . Arlington , VA: Council for Exceptional Children.

Silver, P., Bourke, A., & Strehorn, K.C. (1998). Universal instructional design in higher education: An approach for inclusion. *Equity & Excellence in Education*, 31(2), 47-51.

Putting the terms together

Accessibility is concerned primarily with making the content and functionality of digital materials accessible—within reach—of all users.

Universal Usability goes one step further, striving to make the content and functionality accessible *and usable*, and hence "successful" for all.

Universal Design for Instruction offers principles on how to design educational content (online or offline) that is accessible, usable, and engaging.

Each of these concepts are part of **Instructional Design**—they facilitate the transfer of knowledge, skills, and attitude to a learner.

Focus on Accessibility

As an e-learning provider:

1. Discover whether your courseware delivery system is accessible (e.g. Blackboard, Moodle)

2. Create accessible materials (PDFs, HTML pages, Powerpoints, Word docs, etc). Evaluate them compared to accessibility guidelines.
3. Try using adaptive technologies (screen readers, voice-recognition, virtual keyboards, screen magnification software)
4. Provide students information about your school's basic computer training options.

What resources does your institution provide to assist students in understanding how to effectively interact with courseware? How about for faculty and staff?

Resources

University of Washington's AccessIT article on accessible powerpoint
<http://www.washington.edu/accessit/articles?28>

Web Accessibility for All: Tutorials
<http://www.cew.wisc.edu/accessibility/tutorials>

Web Content Accessibility Guidelines

1. Provide equivalent alternatives to auditory and visual content.
 2. Don't rely on color alone.
 3. Use markup and style sheets and do so properly.
 4. Clarify natural language usage
 5. Create tables that transform gracefully.
 6. Ensure that pages featuring new technologies transform gracefully.
 7. Ensure direct accessibility of embedded user interfaces.
-

Web Content Accessibility Guidelines

8. Ensure user control of time-sensitive content changes.
9. Design for device-independence.
10. Use interim solutions.
11. Use W3C technologies and guidelines.
12. Provide context and orientation information.
13. Provide clear navigation mechanisms.
14. Ensure that documents are clear and simple.

The Web Content Accessibility Guidelines (WCAG) 1.0 were developed by the World Wide Web Consortium in 1999 as part of the Web Accessibility Initiative.

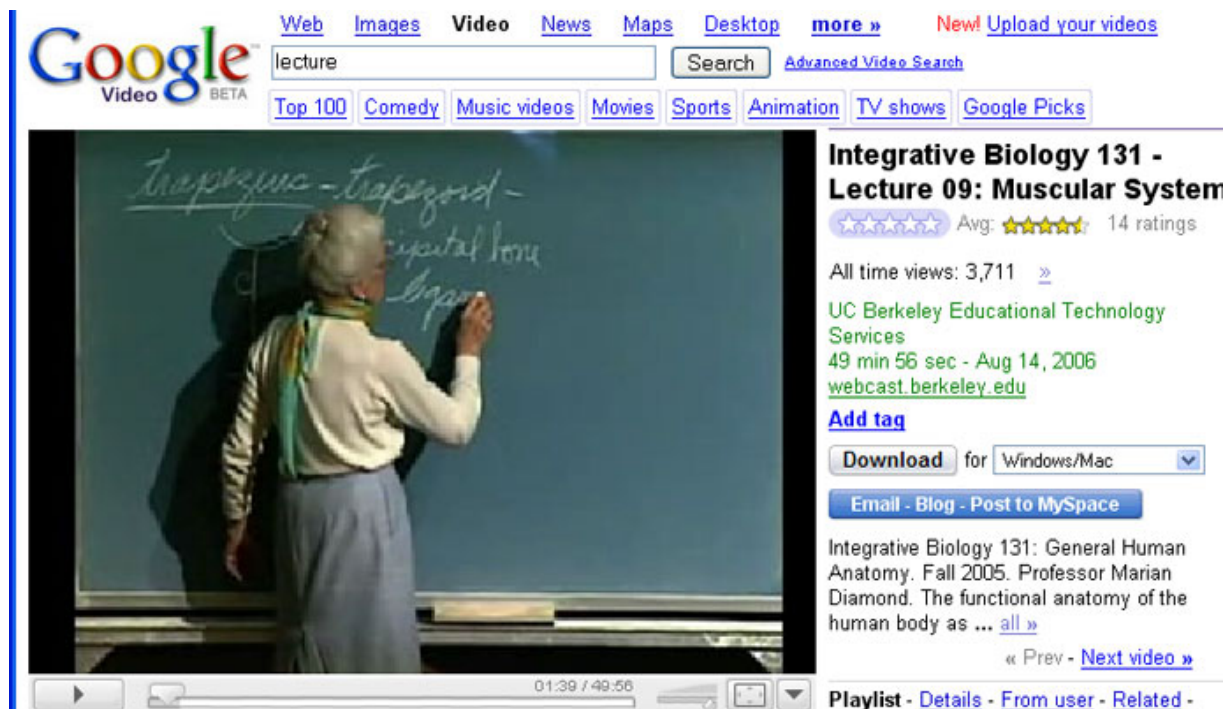
WCAG 1.0

<http://www.w3.org/TR/WAI-WEBCONTENT/>

Web Accessibility Initiative

<http://www.w3.org/WAI/>

Guideline 1: Equivalent Alternatives



The screenshot shows a Google Video search interface. The search term is "lecture". The search results display a video titled "Integrative Biology 131 - Lecture 09: Muscular System" by UC Berkeley Educational Technology Services. The video has 14 ratings with an average of 4.5 stars, 3,711 views, and a duration of 49 minutes and 56 seconds, uploaded on August 14, 2006. The video player shows a person writing on a chalkboard with cursive text. The video player controls at the bottom show a progress bar at 01:39 / 49:56.

Videos must be described and have captioning or a transcript. While it may be better to have the lecture available than not to have it at all, it offers very little to someone who is deaf. The cursive writing on the board will be difficult to decode, as well.

Some schools are currently recording lectures and then running the lectures through voice recognition software in order to create a transcript. The resulting transcript would not be edited or organized until a person did that work.

Video screen shot retrieved February 15, 2007 from:
<http://video.google.com/videoplay?docid=8890622848085869960&q=lecture>

Other related requirement:

Images should provide alternate text. The alt text used varies by the purpose of the image, such as whether it is a navigational icon or an in-text photo.

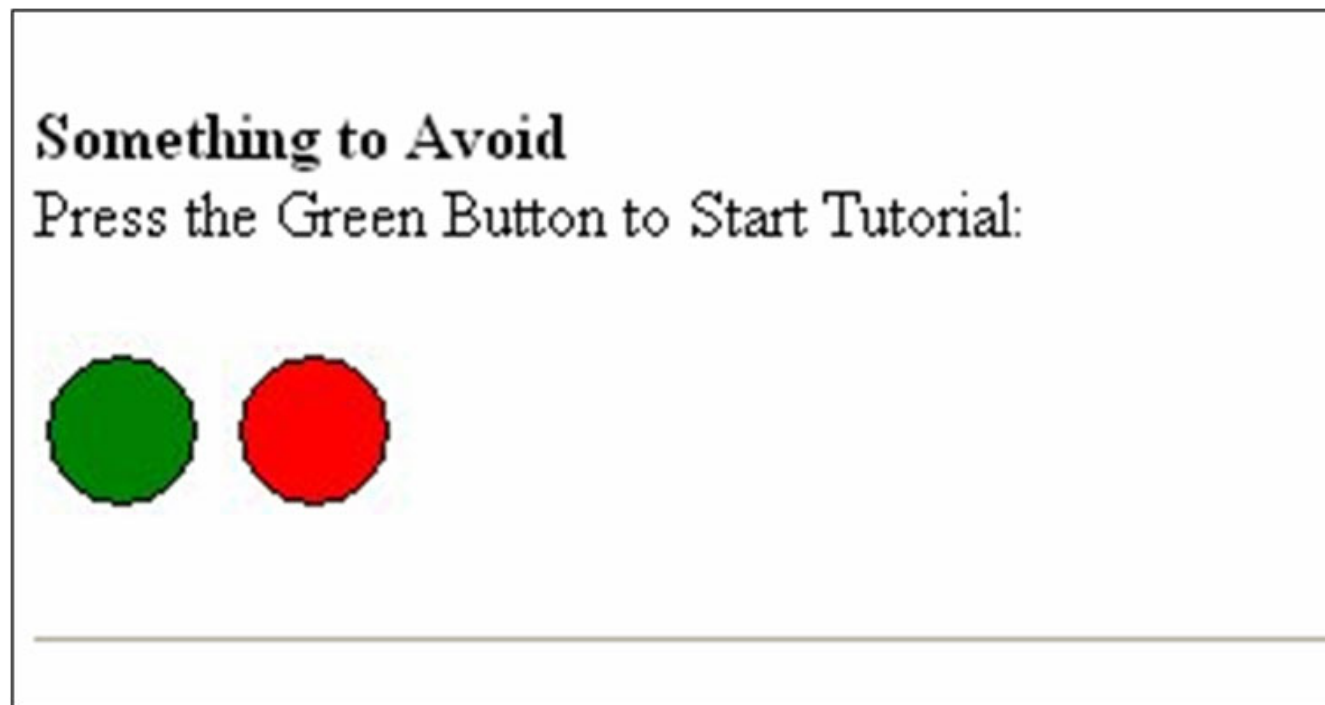
Resources

WebAIM's *Appropriate use of Alt Text*
<http://webaim.org/techniques/alttext/>

Illinois Center for Instructional Technology Accessibility (ICITA) on Text Equivalents
This page offers a very complete listing of alt-text types for a variety of image usage.
<http://cita.rehab.uiuc.edu/html-best-practices/text/>

University of Wisconsin's Web Accessibility for All
<http://www.cew.wisc.edu/accessibility/tutorials/altTextTutorial.htm>

Guideline 2: Don't rely on color alone



People with red/green color blindness would not be able to distinguish between these buttons.

Links with no underline, relying on perhaps a blue color to indicate a link, pose a problem for people with color blindness or low vision. (This is also a usability issue: breaking expected conventions adds to the user's cognitive load, reducing efficiency.)

Guideline 2: Ensure sufficient color contrast



Colour Contrast Analyser

Colour Contrast Results (all tests)

Element	Parent Nodes	Sample	Colour	Background	Luminosity Contrast Ratio	Difference in Brightness	Dif in t
A	<ul style="list-style-type: none"> HTML BODY TABLE#maintable TBODY TR TD 	Sample	#ffffff	#b0c5da	1.75 (fail)	61 (fail)	174

Color contrast tests assess difference in brightness and in color.

The results on this page are from juicystudio.com's Firefox extension that returns information about all of the background and foreground combinations on a page.

These results only return information about the machine-readable color combinations in the page, not images with text in them. (Note the text "More Personal Attention" in the image above: it is difficult to read "Attention" even without color differentiation difficulties!) A quick way to determine the colors in an image is with the 'colorzilla' firefox extension.

There are color contrast checking tools where you enter two 'hex' codes (color numbers) and get results about the specific colors.

Resources

Colorzilla Firefox extension (browser-based 'eyedropper' tool)

<https://addons.mozilla.org/firefox/271/>

Jonathan Snook's Color Contrast Check

(This one has sliders, so it can be used as a color picker as well.)

http://www.snook.ca/technical/colour_contrast/colour.html

Gez Lemon, Juicy Studio: Colour Contrast report—Firefox extension

<http://juicystudio.com/article/colour-contrast-analyser-firefox-extension.php>

Gez Lemon, Juicy Studio: Colour Contrast Check

<http://juicystudio.com/services/colourcontrast.php>

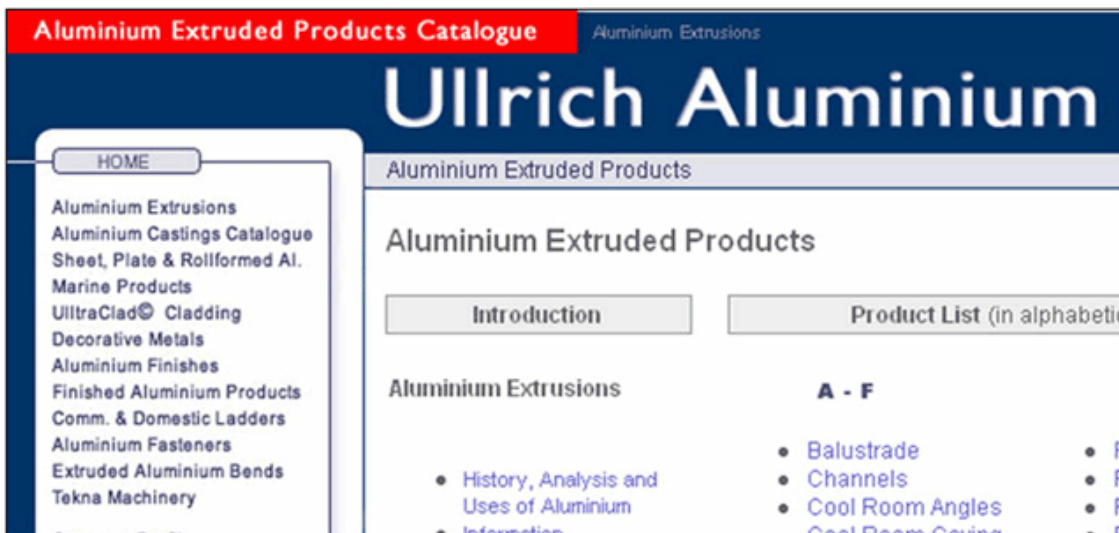
Guideline 3: Use proper markup and style sheets.

Examples:

- use markup not images to convey information
- use markup semantically, i.e. headers not used to increase font size, blockquotes not used to indent text blocks
- tables are used to display data, not for page layout
- use css to control font, not html font tag
- use relative rather than absolute font sizes (e.g. ems or % rather than pixels)

Guideline 4: Clarify natural language usage

Declare language so screen readers can pronounce words properly and pages can be translated.



If the language is declared, the screen reader will recognize "Aluminium" as "Aluminum."

Guideline 4 also refers to abbreviations and acronyms: In the first use of ABBR and ACRONYM tags, specify expansion when first used on a page.

Guideline 5: Create tables that transform gracefully

Item	Cumulative Year to Date								
	August,2006			Estimates with Imputation			Reported only		
	Buildings	Units	Construction cost	Buildings	Units	Construction cost	Buildings	Units	Construction cost
Browse Single Family	6	6	712,370	47	47	6,196,967	37	37	4,875,690
Browse Two Family	0	0	0	1	2	149,600	1	2	149,600
Browse Three and Four Family	0	0	0	14	56	3,599,580	14	56	3,599,580
Browse Five or More Family	0	0	0	4	39	1,743,965	1	18	879,999
Browse Total	6	6	712,370	66	144	11,690,112	53	113	9,504,869

[N/A = Reported data not available for the current month]
 Source: U.S. Bureau of the Census

Building Permit Estimates - U.S., State, and Metropolitan Areas [Click this](#)

Complex data tables should be coded to associate rows and columns with the pertinent data. Otherwise, screen readers will read through tables left-to-right, row by row.

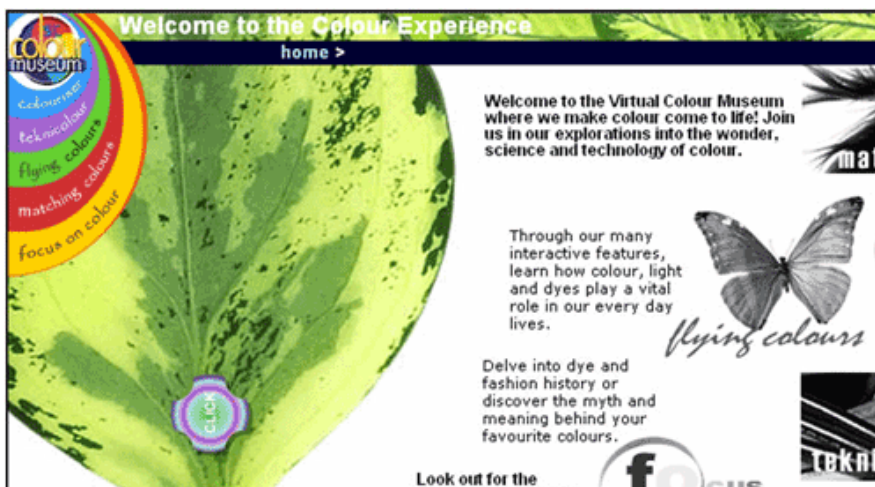
This table also presents a problem in that the 'browse' button comes before the relevant data will be read by the screen reader.

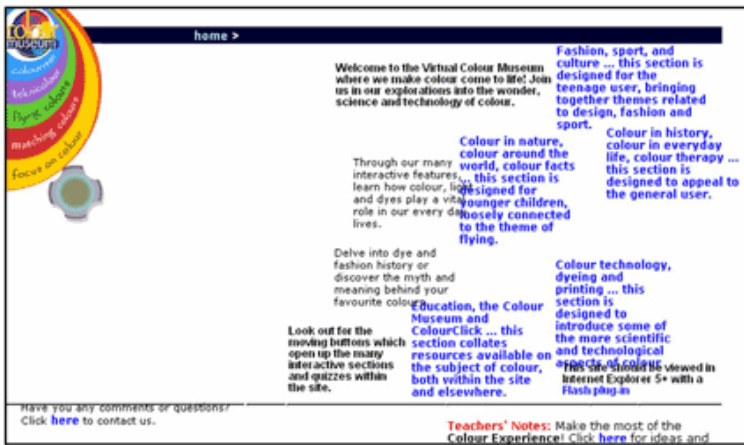
Resources

Roger Hudson, usability.com.au: Accessible Data Tables
<http://www.usability.com.au/resources/tables.cfm>

Web Accessibility in Mind: Creating Accessible Data Tables
<http://www.webaim.org/techniques/tables/>

Guideline 6: Ensure that pages transform gracefully.





(A site requiring Flash and Internet Explorer.)

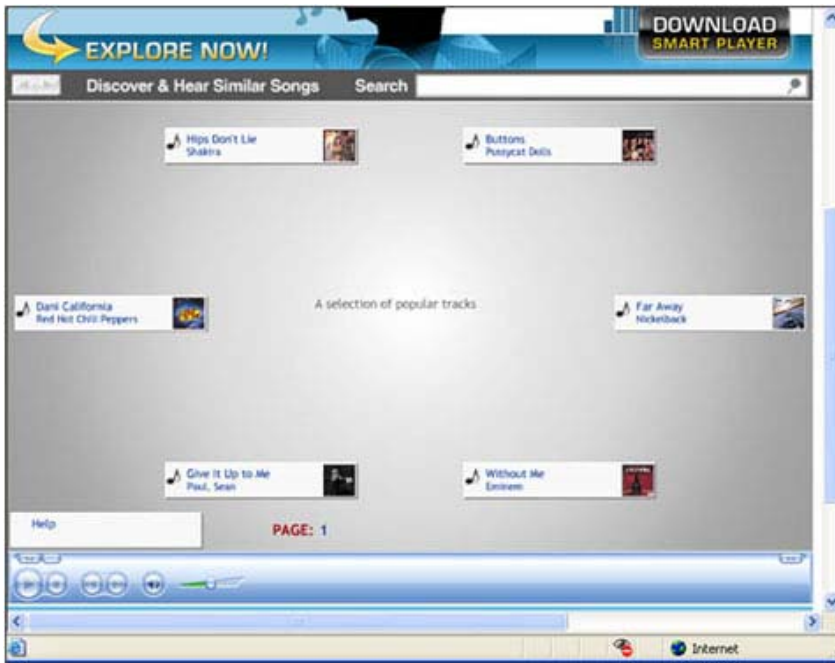
Guideline 7: Ensure user control of time-sensitive info.



Play and rewind controls make it possible for a user to read at their own pace.

Pages should not be made to automatically refresh periodically.

Guideline 8: Ensure access to embedded user interfaces.



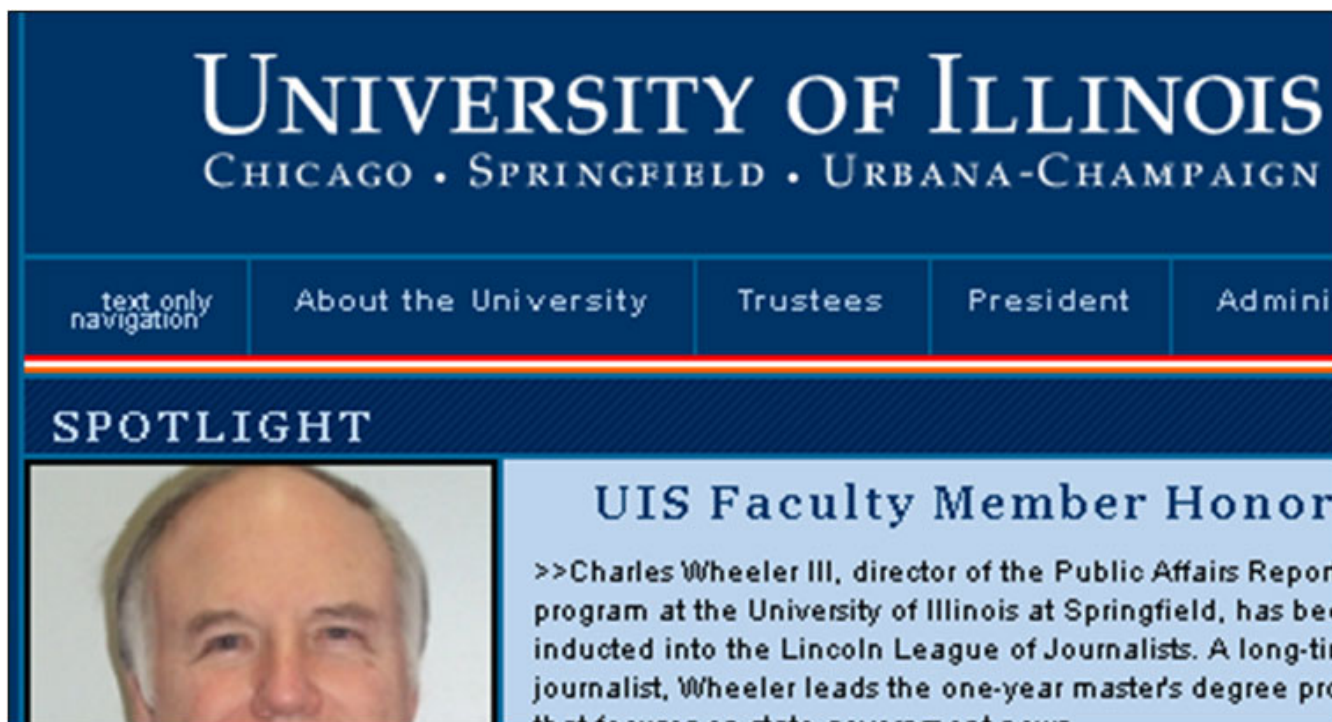
If pages are dependent on particular embedded interfaces, such as an audio player, alternatives should be provided.

Guideline 9: Design for device-independence.



This site requires a mouse, and cannot be accessed by a keyboard, by voice, nor by a screen reader.

Guideline 9: Design for device-independence.



This site's navigation requires a mouse, and cannot be accessed by a keyboard, by voice, nor by a screen reader.

The top four links in the header use an image map, and have no tab order assigned. A screen reader will read Urbana-Champaign, Springfield, Chicago, University of Illinois. This may not affect a screen reader user who is blind, but it might be disorienting for a screen reader user who has reading disabilities or low vision.

There is no link to skip-navigation or skip to a specific set of links. To get to the University of Chicago Academic Programs link, a keyboard user or screen reader user who is blind would need to tab through 27 links to get there.

Each rectangle 'button' with links to 'About the University', 'Trustees', etc. has a drop-down list of links but they can only be accessed with a mouse. This device-specific navigation does degrade gracefully in that the user who can not access the information will have access to it when they click on one of the links and go to that section, however it would be much better if these users had access to the same amount of information on the first page and there are many accessible methods to creating the effects the designers here desired.

Guideline 10: Use interim solutions.

UNIVERSITY OF MISSISSIPPI LIBRARIES

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[Catalog](#) [Subject Guides](#) [Ask a Librarian](#) [Help](#)

LIBRARY QUICK LINKS ▼

For an optimal service experience please enable "pop-ups" in your browser.

You will need to go into your browser settings and disable the popup blocker, if you are currently using it. You will not be able to use the visual features of "Ask a Librarian" if you choose to not allow popups during your session.

Disabling Pop-up Blocking in Popular Browsers for Ask a Librarian Sessions:

To allow pop-ups in Internet Explorer, do the following:

- Bring up the Tools menu, point to Pop-up Blocker and click on Pop-up Blocker Settings.
- In the Address of Web Site to Allow box, paste the following URL:
`http://vriplus.cb.docutek.com/aserl-olemiss`
- Click Add.

When a site element cannot be made accessible, an alternative must be provided. Instead, this site displays a message indicating that the only way to access the site is to comply.

Guideline 11: Use W3C technologies & guidelines.

- HTML & CSS include accessibility features: use them!
- Avoid plug-ins (pdf, shockwave) unless offering a device-independent alternative

Guideline 12: Provide context & orientation info

Date

The announcement will appear on the portal home page *through the date you indicate here.*

*** Date (format: 7/8/2007)**

[Select date from calendar](#)

Should the date display next to this announcement?

Yes (Choose this for a date-based event)

No (Choose this for an announcement that is not date-specific.)

INDEX	ID	NAME	TYPE	VALUE	LABEL
14	event_date	event_date	text		Date (format: 7/8/2007)
15	event_date_alt_0	event_date_alt	radio	0	Yes (Choose this for a date-based event)
16	event_date_alt_1	event_date_alt	radio	1	No (Choose this for an announcement that is not date-specific.)

Group page elements and provide contextual information about the relationship between elements.

- If frames are used, each frame should use the Title attribute.
- Blocks of information should be grouped into manageable pieces of information, such as fieldsets on a form. The date fields on the screen shot here are grouped into a fieldset. A screen reader will read the name of the fieldset before each of the items contained within it.
- Associate labels explicitly with their controls. The second image above shows the labels for the date fields on the form. A screen reader will know to read the label with the form field, so even if the layout of the form would otherwise lead the elements to be read separately, with the labels, they will be read together. Labels also help those with fine motor difficulties, because you can click anywhere on the label to select the element. (The clickable area is much larger. This is a usability boon for all.) [The form information table above was generated by the Web Developer toolbar.]

Resources

Chris Pedrick's Web Developer Toolbar
<https://addons.mozilla.org/firefox/60/>

Guideline 13: Provide clear navigation mechanisms.

The screenshot shows a website page titled "Quality Assurance". At the top, it indicates the user's location: "You are here: [Home](#) → **Quality Assurance**". Below this, there is a "Site Navigation" link. The main content area is titled "Contents" and lists several categories: "Local Tools" (with sub-items: "Hosted Services", "Downloadable Tools", "Greasemonkey Users Scripts", "Firefox Extensions", "Bookmarklets") and "External Tools". To the right, there is a "Search Criteria" section with a search input field and a "Search" button. Below the search section is another "Site Navigation" menu with a green background and white text, listing: "Main Content", "Switch to High Contrast", "Home", "Quality Assurance ←", "Articles Archive", "Privacy Statement", and "Contact".

This site provides consistent navigation mechanisms—orientation information, and navigation bars.

- Each page tells you where you are in multiple ways.
- This site consistently uses the same navigation mechanisms throughout the website.
- The nav bar highlights and gives access to accessibility features and to the navigation

mechanisms (skipping to main content and using high contrast view).

- The target of each link is clearly identified—titles are used on the accessibility feature links.
- Group related links, identify the group (for user agents), and, until user agents do so, provide a way to bypass the group (like a 'skip navigation' link)

Resources

Jim Thatcher's Analysis of Skip Navigation Links

<http://www.jimthatcher.com/skipnav.htm>

Guideline 14: Ensure that docs are clear and simple..

The screenshot shows a Wikipedia article titled "Chain shift". The page layout is clean and organized. On the left side, there is a navigation menu with links to the Main Page, Community Portal, Featured articles, Current events, Recent changes, Random article, Help, Contact Wikipedia, and Donations. Below the navigation menu is a search box with "Go" and "Search" buttons. At the bottom left, there is a toolbox with links for "What links here" and "Related changes". The main content area features a title "Chain shift" with a subtitle "From Wikipedia, the free encyclopedia". The text explains that a chain shift is a type of sound shift in linguistics, where a group of sounds all change at about the same time. It provides examples of historical chain shifts in English, such as the Great Vowel Shift and the Northern cities vowel shift. It also discusses how chain shifts can occur in consonants, using the example of plosives shifting from voiced/voiceless to aspirated/unaspirated. A famous example mentioned is Grimm's Law, which turned the Proto-Indo-European voiceless/voiced/breathy-voiced distinction into a fricative/voiceless/voiced distinction in Germanic. At the bottom of the article, there is a stub notice: "[stlb] This linguistics article is a stub. You can help Wikipedia by expanding it." and a categories box listing "Linguistics stubs" and "Historical linguistics".

- Wikipedia uses a simple page layout, without complex elements.
- The navigation is consistent throughout the site.
- Audio elements are often included which provide supplemental information.
- However, the writing is often complex and difficult to process.

Accessibility Testing Tools

- Use the 508 or WCAG guidelines as your checkpoints.
- Use these tools to get feedback on accessibility:
 - Validate HTML, CSS, & Accessibility with a validation tools

- Disable images and javascript (use the Firefox (or IE) developers toolbar)
- Review with your favorite accessibility checklist
- Do print preview
- Increase the text size
- Minimize the size of the page to a narrow view
- Tab through the page
- Do a color contrast check
- Try listening to the page with a screen reader

(** Presenter: use Firefox toolbar to disable images and look at slide 42 (previous slide). Disable javascript and show that this presentation no longer works.)

Validation tools provided by the World Wide Web Consortium run through the code for a given page, then provide feedback on specific problems. This is an excellent first troubleshooting tool.

Resources

Dive Into Accessibility

<http://www.diveintoaccessibility.org/>

JAWS screen reader demo version

(You can use the demo version indefinitely—it is not a fully functioning version of the software, but is sufficient for testing.)

http://www.freedomscientific.com/fs_products/software_jaws.asp

Juicy Studio Quality Assurance: try the firefox extensions!

<http://juicystudio.com/services.php>

Section 508

<http://www.section508.gov>

Web Accessiblity Initiative's Listing of Evaluation Resources

<http://www.w3.org/WAI/eval/Overview.html>

Web Accessibility in Mind's: Evaluating Web Sites for Accessibility Using with the Firefox Web Developer Toolbar

<http://www.webaim.org/articles/evaluatingwithfirefox/>

World Wide Web Consortium Web Accessibility Guidelines Checklist

(includes techniques for each guideline)

<http://www.w3.org/TR/WCAG/full-checklist.html>

World Wide Web Consortium Validators

<http://www.w3.org/QA/Tools/>

Example: Try tabbing through the page



Tabbing through this page would quickly reveal that the 'Quick Find' is an inaccessible jump menu.

A mouse-user clicks on the drop-down arrow and scrolls the list to the desired link. When they click on the desired link, it causes the page to open, to 'jump' to that link. A keyboard navigator, however, tabs to the Quick Find list and uses their down arrow to move through the options. When the drop-down list is a 'jump' list, as in this case, the keyboard movement will always cause the first item in the list to open.

Example: Use an accessibility validator

HiSoftware® Cynthia Says™ - Web
 Content Accessibility Report
 Powered by [HiSoftware Content Quality Technology](#)

Verified File Name: <http://www.landmark.edu/>
Date and Time: 3/4/2007 11:43:26 AM
Failed Automated Verification

The level of detail setting for the report is to show all detail.

Verification Checklist

Checkpoints	Passed		
	Yes	No	Other
Basic Settings			
1.1 / (a) Provide a text equivalent for every non-text element (e.g., via "alt", "longdesc", or in element content). <i>This includes:</i> images, graphical representations of text (including symbols), image map regions, animations (e.g., animated GIFs), applets and programmatic objects, ascii		No	

The accessibility validator gives specific locations of errors within the page being tested.

Wrap-Up

In what ways does accessibility affect you?

What are first (or next) steps you might take?

Does your institution offer support you can access?

Thank You!

This presentation was developed by Steve Fadden, Annesa Hartman, and Julie Strothman.

We welcome your questions and comments!

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