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# **Universal Accessibility in Web Survey Design: Practical Guidelines for Implementation**

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# Presentation Overview

- **Summary of existing literature**
- **Why make web surveys accessible?**
- **Programming examples and guidelines**
- **Testing for accessibility**
- **Conclusions and areas for future research**



# Existing Literature Summary

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- Web survey design is a rapidly expanding field. Main focus to date on who responds, how, when, and differences between web and other modes.
- In social sciences few publications address issues of technical design or its potential relationship to unit or item non-response.
- Gap exists in social science literature on creating and testing web surveys for accessible design.

# What Is an Accessible Web Survey?

- 1. Usable by all users, regardless of ability or disability.**
- 2. Has logical layout and navigation.**
- 3. Takes advantage of assistive technologies:**
  - Screen readers
  - Head pointers/keyboard only users
- 4. Accessible to all situations:**
  - Users with old technology or slow connection speed
  - Users with a disability
  - Users accessing web via hand-held devices



# Why Make Web Surveys Accessible?

## ■ Reduce non-response bias:

- Technology of users
  - At high end: smart phones and PDAs
  - At low end: slow dial-up connections
- 12.1% of U.S. population ages 21-64 report a disability (ACS, 2008)
  - Persons blind or vision impaired – use of assistive technology
  - Persons mobility – use of keyboard only
  - Persons with intellectual disabilities - cognitive load

## ■ Comply with Federal legislation

- Section 508 of Rehabilitation Act of 1973 applies to “real” & virtual spaces.

## ■ Universal Design (UD) is of benefit to all users.

- Examples: curb cuts in sidewalks, hands free access to sinks

# How Is a Web Survey Made Accessible?

## 1. Properly crafted HTML forms

- Separate content from style using CSS
- Flash?



## 2. Capacity to interface with Assistive Technology

- Taking advantage of the HTML forms' UD features (labels/IDs)
- Avoids inaccessible traps

## 3. Adheres to governing standards

- Set by World Wide Web (W3.org) consortium
- Section 508 of the Rehabilitation Act

# Design Pitfalls: What to Avoid

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- **Avoid “conditions” such as surveys which function:**
  - Only with JavaScript
  - Only with Internet Explorer Browser
  - Only with specific formatting or font sizes
  - Have a time limit for responses
  
- **Avoid media which have no alternatives:**
  - Images with no alt text
  - Audio with no transcript
  - Video without captioning

# Separating Style from Content

## *Form v. Function*

Applying Lessons Learned: Case Example - M.I.T. Strata Center

NEWS IN PHOTOS



**Frank Gehry No Longer Allowed To Make Sandwiches For Grandkids**



# Separating Style from Content

A LIST APART  
THE WEB DESIGN SURVEY 2007  
*\* compiled annually*

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## Example 1a. With Style Sheet

33. What was the last job opportunity that you turned down?

34. Why did you turn it down?

*Check all that apply.*

- Lack of time
- Lack of money
- Too much risk
- Other

35. What is your next career move?

- Get my first job in the field
- Stay where I am
- Get a promotion at my current job
- New job in a new organization
- Start my own business
- Other

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# Separating Style from Content

**SURVEY** | *annually*

## Example 1b. Without Style Sheet

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**33. What was the last job opportunity that you turned down?**

**34. Why did you turn it down?**

Check all that apply.

- Lack of time
- Lack of money
- Too much risk
- Other

**35. What is your next career move?**

- Get my first job in the field
- Stay where I am

# Separating Style from Content

## Example 1c. High Contrast Style Sheet

*computed annually*

34. Why did you turn it down?

***Check all that apply.***

- Lack of time
- Lack of money
- Too much risk
- Other

35. What is your next career move?

- Get my first job in the field
- Stay where I am

# Separating Style from Content

## Example 2a. With Style Sheet

	Disagree- This would not be helpful	Somewhat Disagree	Neutral	Somewhat Agree	Agree- This would be helpful
ns in an accessible place for	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
esses (is there enough t-downs & maintenance,	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
o many computers /users for 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g/space scheduler	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
meet needs (with web/email we any more demands for quick	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# Separating Style from Content

## Example 2b. Without Style Sheet

	Disagree- This would not be helpful	Somewhat Disagree	Neutral	Somewhat Agree	Agree- This would be helpful
ns in an accessible place for	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
esses (is there enough t-downs & maintenance,	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
o many computers /users for 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g/space scheduler	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
meet needs (with web/email we any more demands for quick	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Note: this is a different slide from the last.**

# Separating Style from Content

## Example 2c. High Contrast Style Sheet

	Disagree- This would not be helpful	Somewhat Disagree	Neutral	Somewhat Agree	Agree- This would be helpful
accessible place for	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(is there enough s & maintenance,	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
computers /users for 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e scheduler	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
eds (with web/email we demands for visit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# Applying A Logical Layout

## Example 4a. Application in a Form

First Name	Email <input type="text"/>	Home Phone	<input type="text"/>
<input type="text"/>	Middle Initial	Computer type	Work Phone <input type="text"/>
Last Name	<input type="text"/>	<input type="radio"/> Mac <input type="radio"/> PC	Country
<input type="text"/>	Internet speed <input type="radio"/> 28.8 <input type="radio"/> 56k <input type="radio"/> T1	<input type="text"/>	

Courtesy of: WebAIM.org

# Logical Layout

First Name	Email <input type="text"/>		Home Phone	<input type="text"/>
<input type="text"/>	Middle Initial	Computer type	Work Phone	<input type="text"/>
Last Name	<input type="text"/>	<input type="radio"/> Mac <input type="radio"/> PC	Country	
<input type="text"/>	Internet speed <input type="radio"/> 28.8 <input type="radio"/> 56k <input type="radio"/> T1		<input type="text"/>	

Example 4b. Application in this form

1	2		3
4	5	6	7
8	9	10	11
12	13		14



# Logical Layout

## Example 4c. Applying the logical layout

First Name	<input type="text"/>
Last Name	<input type="text"/>
Middle Initial	<input type="text"/>
Home Phone	<input type="text"/>
Work Phone	<input type="text"/>
Country	<input type="text"/>
Computer Type	Internet Speed
<input type="radio"/> Mac	<input type="radio"/> 28.8
<input type="radio"/> PC	<input type="radio"/> 56k
<input type="radio"/> Linux	<input type="radio"/> T1

# Applying UD to Common Web Survey Features

Feature	Challenge to UD	UD Applied
<b>Sophisticated layout / Navigation Process</b>	<ul style="list-style-type: none"> <li>• Looks “pretty” but underneath “broken.”</li> <li>• High volume of content on each form.</li> <li>• Tasks not clearly delineated to user.</li> </ul>	<ul style="list-style-type: none"> <li>• Use headers to indicate new page.</li> <li>• Split survey into manageable forms.</li> <li>• Clearly indicate tasks.</li> <li>• Tasks use fewest steps possible.</li> </ul>
<b>Grid layout / Likert scales</b>	<ul style="list-style-type: none"> <li>• Difficult to locate response options with response categories.</li> </ul>	<ul style="list-style-type: none"> <li>• Uses logical layout.</li> <li>• Has identifiers and labels.</li> </ul>
<b>Color / Graphics &amp; Pop-Ups</b>	<ul style="list-style-type: none"> <li>• Can’t be sole means of communication.</li> <li>• Without description of content – graphic useless.</li> <li>• Can confuse focus of users and breaks down navigation.</li> </ul>	<ul style="list-style-type: none"> <li>• Keep color within CSS</li> <li>• Don’t convey ideas using color alone (add bold or other ways for emphasis).</li> <li>• Announce pop-ups.</li> </ul>

# Testing for Accessibility

- **Replicate actual environment of possible respondents**
  - Smartphones, PDAs
  - Slow dialup connections
  - Assistive technology
- **Testing with use of online tools such as:**
  - Cynthia Says, LIFT, WAVE, WebXact.
- **Ask for VPAT**
  - If using vendors and service providers

- **Additional testing can include: (Firefox WebDeveloper toolbar)**
  - Style sheets and images are disabled
  - Without javascript
  - Without use of mouse (keyboard only)
  - Use of alternate style sheet (high contrast/large text)
  - With screen reader JAWS (demo version available, or try FANGS)

# Conclusions

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- **Creating accessible environments in virtual spaces is less complex than you think:**
  - Learn the tools and use them
  - Follow guidelines for best practice and test against them
- **Creating accessible web surveys:**
  - Reduces non-response bias
  - Potential for increasing data quality
- **Learn from past mistakes (now in web 2.0). Technology is advancing rapidly – as new techniques emerge – we must decide whether and how to use them.**
- **Great opportunity for research & publication on accessible design and how/whether it impacts response.**

# For More Information

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## ■ Publication:

- Matulewicz, Holly H. and Jeff Coburn. “Universal Design for Web Surveys: Practical Guidelines.” [\*Survey Practice\*](#), November 2008.