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
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

- **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

Frank Gehry No Longer Allowed To Make Sandwiches For Grandkids
Separating Style from Content

Example 1a. With Style Sheet

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

34. Why did you turn it down?
   - 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
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

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
### Example 2a. With Style Sheet

<table>
<thead>
<tr>
<th></th>
<th>Disagree - This would not be helpful</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Agree - This would be helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items in an accessible place for...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services (is there enough down &amp; maintenance,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Too many computers / users for 1</td>
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<tr>
<td>etc / space scheduler</td>
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<td></td>
</tr>
<tr>
<td>Sheet needs (with web/email we need any more demands for quick access)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Example 2b. Without Style Sheet

<table>
<thead>
<tr>
<th></th>
<th>Disagree— This would not be helpful</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Agree— This would be helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items in an accessible place for</td>
<td><img src="image" alt="Vote" /> <img src="image" alt="Vote" /> <img src="image" alt="Vote" /> <img src="image" alt="Vote" /> <img src="image" alt="Vote" /></td>
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</tr>
<tr>
<td>Gig/space scheduler</td>
<td><img src="image" alt="Vote" /> <img src="image" alt="Vote" /> <img src="image" alt="Vote" /> <img src="image" alt="Vote" /> <img src="image" alt="Vote" /></td>
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</tr>
</tbody>
</table>

Note: this is a different slide from the last.
## Separating Style from Content

**Example 2c. High Contrast Style Sheet**

<table>
<thead>
<tr>
<th></th>
<th>Disagree - This would not be helpful</th>
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<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Agree - This would be helpful</th>
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<tbody>
<tr>
<td>a accessible place for</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>(is there enough</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a scheduler</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>beds (with web/email we had enough for with)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Applying A Logical Layout

Example 4a. Application in a Form

<table>
<thead>
<tr>
<th>First Name</th>
<th>Email</th>
<th>Home Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Middle Initial</th>
<th>Computer type</th>
<th>Work Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mac ☐ PC ☐</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Last Name</th>
<th>Internet speed</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28.8 ☐ 56k ☐ T1</td>
<td></td>
</tr>
</tbody>
</table>

Courtesy of: WebAIM.org
Example 4b. Application in this form
Logical Layout

Example 4c. Applying the logical layout

<table>
<thead>
<tr>
<th>First Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Name</td>
<td></td>
</tr>
<tr>
<td>Middle Initial</td>
<td></td>
</tr>
<tr>
<td>Home Phone</td>
<td></td>
</tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>PC</td>
<td>56k</td>
</tr>
<tr>
<td>Linux</td>
<td>T1</td>
</tr>
</tbody>
</table>
## Applying UD to Common Web Survey Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Challenge to UD</th>
<th>UD Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sophisticated layout / Navigation Process</td>
<td>• Looks “pretty” but underneath “broken.”</td>
<td>• Use headers to indicate new page.</td>
</tr>
<tr>
<td></td>
<td>• High volume of content on each form.</td>
<td>• Split survey into manageable forms.</td>
</tr>
<tr>
<td></td>
<td>• Tasks not clearly delineated to user.</td>
<td>• Clearly indicate tasks.</td>
</tr>
<tr>
<td></td>
<td>• Use headers to indicate new page.</td>
<td>• Tasks use fewest steps possible.</td>
</tr>
<tr>
<td>Grid layout / Likert scales</td>
<td>• Difficult to locate response options with response categories.</td>
<td>• Uses logical layout.</td>
</tr>
<tr>
<td></td>
<td>• Can’t be sole means of communication.</td>
<td>• Has identifiers and labels.</td>
</tr>
<tr>
<td>Color / Graphics &amp; Pop-Ups</td>
<td>• Can’t be sole means of communication.</td>
<td>• Keep color within CSS</td>
</tr>
<tr>
<td></td>
<td>• Without description of content – graphic useless.</td>
<td>• Don’t convey ideas using color alone (add bold or other ways for emphasis).</td>
</tr>
<tr>
<td></td>
<td>• Can confuse focus of users and breaks down navigation.</td>
<td>• Announce pop-ups.</td>
</tr>
</tbody>
</table>
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

- 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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