Usability Testing

Credit: Slides adapted from H. Kiewe
Recap of last class

- Contrasted low-fidelity with high-fidelity prototyping
- Described low-fidelity prototyping techniques
- Carried out a brief paper-prototyping exercise
Now...

- what do we do with that prototype?
- In other words, how do we decide if our design is any good?
Agenda:

- What is a Usability Test?
- Who are the Test Participants?
- Why Usability Test?
- Why Doesn’t Everyone Test?
- When to Usability Test?
- Where to Usability Test?
- How to Usability Test?
Usability Testing

What:
Real users test drive a prototype or production system. Usually one-on-one, with a participant and observer (“moderator”), the participant thinks out loud as they complete representative tasks. Typically 6-8 participants per user segment.

Why:
Understand what works and what doesn’t. Often included in iterative development with each cycle so that the product continually improves. Excels at finding specific interface problems, including layout, labeling, and interaction.

Credit: nForm User Experience Consulting Inc.
What is a Usability Test?

Real users test drive a prototype or production system. Usually one-on-one, with a participant and observer, the participant thinks out loud as they complete representative tasks. Typically 6-8 participants per user segment.

Key Concepts:

- User not Usability Expert (unlike a heuristic evaluation)
- User Behavior not User Opinion (unlike a survey)
- Direct Observation not Indirect Observation (unlike a server log)
- Structured Task not Any Task (unlike ethnography)
Why Doesn’t Everyone Test?

It takes time and costs money:

<table>
<thead>
<tr>
<th>Step</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design test plan &amp; materials</td>
<td>32</td>
</tr>
<tr>
<td>Design test environment</td>
<td>8</td>
</tr>
<tr>
<td>Run pilot test</td>
<td>8</td>
</tr>
<tr>
<td>Revise test tasks/materials</td>
<td>8</td>
</tr>
<tr>
<td>Run test/collect data</td>
<td>32</td>
</tr>
<tr>
<td>Summarize data</td>
<td>16</td>
</tr>
<tr>
<td>Document/present results</td>
<td>40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>144</strong></td>
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Why invest the resources when:
- my users are like me or
- my users can explain their usability issues

*Adapted from Mayhew (1999) The Usability Engineering Lifecycle*
Quiz: Why Usability Test?

- Why can’t you test on yourself (or teammate)?
- Why can’t you just ask your users to explain their usability issues?
Why Usability Test?

Understand what works and what doesn’t. Often included in iterative development so that the product continually improves. Excels at finding specific interface problems, including layout, labeling, and interaction.

Key Concepts:

• Find usability issues
• Essential to iteration: Verify that the UI moves toward its usability goals
• Choose between competing designs
• One more not mentioned: brings all members of development team on board
When to Usability Test?

**Prerequisites**
- Usability requirements & goals
- Prototype

**Phases**
- Low fidelity
- High fidelity
Where to Usability Test?

**User’s Environment**
- High ecological validity
- Inexpensive
- Convenient for the user
- Poorly controlled
- Potential interruptions
- Videotaping inconvenient
- Third-party observations intrusive

**Usability Lab**
- Low ecological validity
- Expensive
- Inconvenient for the user
- Well controlled
- No interruptions
- Videotaping convenient
- Third-party observations non-intrusive
How to Usability Test?

- Complete Prerequisites
- Plan and Develop Materials
- Pilot Test
- Recruit Participants
- Test
- Summarize, Analyze, & Report
Prerequisites & Plan

**Prerequisites**
1. Usability requirements & goals
2. Prototype

**Plan**
1. Choose test focus e.g., *ease or learning vs. ease of use*
2. Choose a user focus *cannot test everyone*
3. Design a test task *cannot test all tasks*
Develop Materials

1. Observer briefing
2. *User introduction*
3. Informed consent
4. Non Disclosure Agreement
5. Pretest questionnaire
6. User or training documentation (optional)
7. Test tasks
8. *Data collection sheet*
9. *Posttest questionnaire*
10. Test script
Develop Materials (cont.)

**User introduction**
- “Thank you” and tell them briefly about the product
- “We are testing the interface, not you.”
- “It’s weird. I’m just going to observe.”

**Data collection sheet**

<table>
<thead>
<tr>
<th>Action</th>
<th>User comments</th>
<th>Observations</th>
</tr>
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<tbody>
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</table>

**Post-test questionnaire** *(mostly affect, usually a Likert Scale)*
- e.g., The instructions and prompts are helpful
  
    Strongly Agree 1 2 3 4 5 Strongly Disagree

Standard instruments available, i.e., Software Usability Measurement Inventory (SUMI)
Pilot Test

1. Recruit pilot user
2. Set up test environment
3. Run pilot test
4. Revise materials & environment
5. Adjust timing

Don’t skip the pilot!
Recruit Participants

1. 3-10 users per test run
2. 1-2 hours per test, 30 min between them.
3. Consider participant motivation
4. Consider an incentive
5. Recruitment is work. Be persistent.
Test

Facilitator Role

- Consider think aloud, pair testing, or posttest review
- Don’t lead or help
- Ask questions to gain insight
- Avoid distracting users
- Ask post-test questions

Observer Role

- Take notes
Test can (not “must”) be quantitative e.g., Laboratory Experiment

- possible measures:
  - learning time before user is able to use the system as intended
  - number of mistakes users make before invoking intended function
- could involve comparison against an existing system (performance comparisons)
Questions to Gain Insight

✓ Ask
  - What are you thinking?
  - Is that what you expected?
  - What would you like to accomplish?

✗ Avoid
  - Why? (encourages justification)
Summarize, Analyze, & Report

Summarize & Analyze
- Count # of errors, time per task or per error
- Use only descriptive statistics like averages

Report
- List elements that work
- List issues, including frequency & severity
- Make suggestions for improvement