Think Aloud Protocol

Jon Kolko
Savannah College of Art & Design

Overview
- Where we left off
- Underlying principles
- How to do it
- Presenting the findings

Think Aloud: Where We Left Off

<table>
<thead>
<tr>
<th>Think Aloud Protocol</th>
<th>Usability Evaluation</th>
<th>Cognitive Walkthrough</th>
<th>Model Human Processor</th>
<th>GOMS</th>
<th>Experiment</th>
<th>Competitive Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>task</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardware</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td>Fast</td>
<td>Medium</td>
<td>Slow</td>
<td>Slow</td>
<td>Fast</td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>Cheap</td>
<td>Cheap</td>
<td>Cheap</td>
<td>Cheap</td>
<td>Expensive</td>
<td>Cheap</td>
</tr>
<tr>
<td># of users required</td>
<td>2-6</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>20+</td>
<td>8</td>
</tr>
<tr>
<td># of evaluators required</td>
<td>2-3</td>
<td>2-8</td>
<td>2-6</td>
<td>1-2</td>
<td>1-6</td>
<td>1-2</td>
</tr>
</tbody>
</table>

Developed by Allan Newell & Herb Simon at CMU in 1972

Think Aloud: Background
- Developed by Allan Newell & Herb Simon at CMU in 1972
- Newell & Simon wanted to understand how people solve problems; needed to understand the sequence of thoughts people experience as they work through a problem.
- Ultimate goal was to simulate human problem solving with Artificial Intelligence
- Developed experiments where one set of participants "verbalized their thoughts as they went about a task" and the other set did not

Think Aloud: Why It Works
- The basics:
  - Take your prototype
  - Show it to real users
  - Have them use your prototype, and...
  - ... have them think out loud while they use it.

(It really is that easy)

Think Aloud: Why It Works
- No affect on thought sequences, as long as there is no introspection:
  - Without affecting the outcome of a task, people can successfully verbalize WHAT they are doing but not WHY!
    - Specifically, people can verbalize the contents of working memory.
  - When the information is not linguistic (i.e., when it is visual), this will slow down the task, but will not alter the validity of the task
- Formally called the Think Aloud Protocol
  - (A Protocol is a standard procedure for regulating data transmission – in this case, the tasks a person is completing)
Think Aloud: How To Do It: Before

• Before running a think aloud session:
  • Develop a prototype
    • Can be of any fidelity – even paper!
  • Develop tasks that represent typical user goals
    • Our scenarios are a great place to start
    • There must be a complete path through the interface to solve these goals (don’t give the user impossible tasks, it’s mean!)
  • Schedule sessions with users that match our Personas
    • 2-8 users, one per session
  • Organize yourself – get video camera, batteries, audio camera, tapes, pens, etc.

Think Aloud: How To Do It: During

• While running a think aloud session:
  • Get written consent to tape
  • Start taping
  • Explain to the user:
    • who you are & what you are doing
    • that you are testing your interface, and not testing them
    • that they can quit at any time
    • that you won’t be able to help them
    • that you require them to continue talking, and you will remind them to “please keep talking” if they fall silent
  • To simply verbalize what it is they are doing, as they are doing it
  • Verify that the user understands the tasks (have them read the tasks aloud too, and ask if there are any questions)

Think Aloud: How To Do It: After

• After the session:
  • Determine the critical incidents that occurred:
    • By an incident is meant any observable human activity that is sufficiently complete to permit inferences and predictions to be made about the person performing the act.
    • To be critical, an incident must occur in a situation where the purpose or nature of the activity is sufficiently definite to permit an observer to draw inferences as to what is going on (p. 127).
    • The term incident is defined in extreme situations, either extraneous or ineffective with respect to attaining the general aims of the activity (p. 128).
    • A Critical Incident can be either Bad or Good

Some (not all) criteria for identifying a Bad Critical Incident:

• The user articulates a goal and cannot succeed in attaining that goal within two minutes
• The user articulates a goal, tries several things and explicitly gives up
• The user articulates a goal, tries several things and explicitly gives up
• The user expresses surprise
• The user expresses some negative sentiment, either about the interface or about their own skills
• The user makes a design decision
### Think Aloud: Presenting The Findings

- Document your findings, using a spreadsheet:

<table>
<thead>
<tr>
<th>Incident ID</th>
<th>Priority of the Incident</th>
<th>Description of the Incident</th>
<th>How the Incident was Found</th>
<th>Grade or Bad</th>
<th>Potential Solution to the Incident, if Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>User clicked on the image of a computer, but that took them to the statistics area of the site; they tried logging in to the administrative section, but didn’t see the icon for regular-user login</td>
<td>Low</td>
<td>User could not log in after clicking on the image of a computer. They tried logging in to the administrative section, but didn’t see the icon for regular-user login.</td>
<td>On page 12, user clicked on the image of a computer. They tried logging in to the administrative section, but didn’t see the icon for regular-user login</td>
<td>Bad</td>
<td>Change the icon to a word or phrase (e.g., “Click here to login”) or simply move the login information to the first page.</td>
</tr>
</tbody>
</table>

### Wrap Up

- Real Users
- Real Tasks
- Using a Real Prototype

... Coming up: How to test without users