CSC540: Evaluating Usability without Users
Cognitive Walkthrough (Fall 2003)

Approaches to evaluation (ch. 11 & ch. 6.6 - 6.12):

- Without users
  - analytical methods:
    - task-based: Cognitive Walkthrough
    - guideline-based: Heuristic Evaluation
    - review-based evaluation
    - cognitive simulation methods: GOMS (ch. 6)

- With users
  - observational methods:
    - "Think aloud" protocols
    - recording and logging
  - query techniques
    - questionnaires
    - interviews
  - field testing
  - controlled testing in usability lab
Cognitive Walkthrough

• a structured approach to evaluating usability for first-time use

• not the same as a code walkthrough (CSC340/640)

• advantage: can be done cheaply by developers on prototype to discover problems early on

• It's "… really a tool for developing the interface, not for validating it. You should go into a walkthrough expecting to find things that can be improved." (Lewis & Rieman, 1994)

• Requirements before starting a cognitive walkthrough:

  • detailed design of interface or partly implemented prototype

  • description of a user task that the interface needs to support

  • list of interface actions that the user will use to perform the task

  • user profile describing assumptions about users' relevant experience and knowledge
Process for performing cognitive walkthrough:

• Prepare for walkthrough: example:
  • User profile: first-time MS Windows user with 5 years Unix experience
  • Task: “turn computer off”
  • Actions:
    • Click on Start (to see restart/shutdown options)
    • Mouse-select Shut Down (on menu that pops up from Start)
    • In radio box that appears, click on Shut Down
    • In same radio box, click OK

• For each action in list of actions that you prepared, imagine that you are the user in the user profile, then answer each of these questions:

Q1. Will the users be trying to produce whatever effect the action has?
  • Example: if task is to turn computer off, and the first action is Click on Start (to see restart/shutdown options), will the user think it is the action he needs to do now? In other words, will the user think that he needs to see restart/shutdown options now?
Q2. Will users be able to notice that the correct action is available? i.e. is the way to perform the action visible? (not will they recognize which control for performing the action)
  • Example: will the user notice “Start” down in the left hand corner of the screen?

Q3. Once users find the correct action in the interface, will they know that it is the right one for the effect they are trying to produce?
  • Example: will they realize that Start is the command to see restart/shutdown options?

Q4. After the action is taken, will users understand the feedback they get?
  • Example: after the user clicks on Start will the user understand the system’s feedback? (The only feedback is to make the next action visible.)

Walkthrough process continued:

• Document the answer to each question for each action until the task is completed

• Document each negative answer on a separate usability problem report sheet.

• Fix the interface!
Types of problems that a cognitive walkthrough can find:

• discover actions/controls that are obvious to the designers but not to the expected users

• discover inadequate feedback

Example of preparing for Cognitive Walkthrough:

• User Profile: experienced with Word, never used a slide presentation tool

• Task: Create a Power Point presentation with one slide with a blue background with the title Cognitive Walkthrough centered and in large, white font

• Actions:
  0. start PowerPoint
  1. select create-blank-presentation in PowerPoint subdialogue
  2. select OK in PowerPoint subdialogue
  3. choose Title Slide AutoLayout in NewSlide subdialogue
  4. select OK in NewSlide subdialogue
  5. click in upper textbox
  6. type Cognitive Walkthrough
  7. click in lower textbox
  8. hit return in lower textbox
  9. select Format menu
  10. choose slide color scheme
11. select Custom tab in Color Scheme subdialogue
12. make sure that Background is selected
13. select Change Color
14. click on shade of blue in Background Color subdialogue
15. select ok in Background Color subdialogue
16. etc.

Example of doing the Cognitive Walkthrough for the previous example user, task, action list:

For each action in list of actions that you prepared, imagine that you are the user in the user profile, then answer each of the 4 questions:

**Actions:**
1. select create-blank-presentation in PowerPoint subdialogue
   - **Q1.** Will the users be trying to produce whatever effect the action has?
     - yes because that is similar to the concept of creating a new document in Word
   - **Q2.** Will users be able to notice that the correct action is available?
     - yes because the PowerPoint subdialogue box will appear automatically and prominently in the center of the screen
   - **Q3.** Once users find the correct action in the interface, will they know that it is the right one for the effect they are trying to produce?
• yes because the radiobox label "Blank Presentation" is clear and unambiguous in this context, and because it accompanies a radiobox option similar to radioboxes that the user is familiar with from Word

• **Q4.** After the action is taken, will users understand the feedback they get?
  • yes because the radiobox will be checked which is consistent with how radioboxes work in Word

In class exercise: now continue for actions 2 and on…