

Observational Methods

Think Aloud
Cooperative evaluation
Protocol analysis
Automated analysis
Post-task walkthroughs

Think Aloud

- user observed performing task
- user asked to describe what he is doing and why, what he thinks is happening etc.
- Advantages
 - simplicity - requires little expertise
 - can provide useful insight
 - can show how system is actually use
- Disadvantages
 - subjective
 - selective
 - act of describing may alter task performance

Cooperative evaluation

- variation on think aloud
- user collaborates in evaluation
- both user and evaluator can ask each other questions throughout
- Additional advantages
 - less constrained and easier to use
 - user is encouraged to criticize system
 - clarification possible

Protocol analysis

- paper and pencil – cheap, limited to writing speed
- audio – good for think aloud, difficult to match with other protocols
- video – accurate and realistic, needs special equipment, obtrusive
- computer logging – automatic and unobtrusive, large amounts of data difficult to analyze
- user notebooks – coarse and subjective, useful insights, good for longitudinal studies
- Mixed use in practice.
- audio/video transcription difficult and requires skill.
- Some automatic support tools available

Post-task walkthrough

- user reacts on action after the event
- used to fill in intention
- Advantages
 - analyst has time to focus on relevant incidents
 - avoid excessive interruption of task
- Disadvantages
 - lack of freshness
 - may be post-hoc interpretation of events

Query Techniques

Interviews
Questionnaires

Interviews

- analyst questions user on one-to-one basis usually based on prepared questions
- informal, subjective and relatively cheap
- Advantages
 - can be varied to suit context
 - issues can be explored more fully
 - can elicit user views and identify unanticipated problems
- Disadvantages
 - very subjective
 - time consuming

Questionnaires

- Set of fixed questions given to users
- Advantages
 - quick and reaches large user group
 - can be analyzed more rigorously
- Disadvantages
 - less flexible
 - less probing

The screenshot shows a web browser window displaying a feedback survey. The survey title is "Computer Science Website Feedback Survey". Below the title, there is a section titled "Before you begin" with a disclaimer: "This survey is anonymous, feel free to be totally honest. The information you provide will be used by the Webmaster to improve the Computer Science website service." The survey is divided into two main sections: "Design" and "Features". The "Design" section contains three questions, each with a "Choose one" dropdown menu: "How would you rate the layout of the front page?", "How would you rate the general appearance of the website?", and "How easy is the site to navigate?". Below these questions is a text input field for "Please add any other comments about the design or navigation used in the site:". The "Features" section contains two text input fields: "What features of the website do you really like?" and "What features of the website do you really dislike?".

Questionnaires (ctd)

- Need careful design
 - what information is required?
 - how are answers to be analyzed?
- Styles of question
 - general
 - open-ended
 - scalar
 - multi-choice
 - ranked

Physiological methods

Eye tracking
Physiological measurement

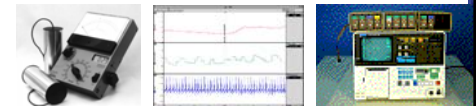
eye tracking



- head or desk mounted equipment tracks the position of the eye
- eye movement reflects the amount of cognitive processing a display requires
- measurements include
 - fixations: eye maintains stable position. Number and duration indicate level of difficulty with display
 - saccades: rapid eye movement from one point of interest to another
 - scan paths: moving straight to a target with a short fixation at the target is optimal

physiological measurements

- emotional response linked to physical changes
- these may help determine a user's reaction to an interface
- measurements include:
 - heart activity, including blood pressure, volume and pulse.
 - activity of sweat glands: Galvanic Skin Response (GSR)
 - electrical activity in muscle: electromyogram (EMG)
 - electrical activity in brain: electroencephalogram (EEG)
- some difficulty in interpreting these physiological responses - more research needed



Choosing an Evaluation Method

when in process: design vs. implementation
style of evaluation: laboratory vs. field
how objective: subjective vs. objective
type of measures: qualitative vs. quantitative
level of information: high level vs. low level
level of interference: obtrusive vs. unobtrusive
resources available: time, subjects,
equipment, expertise