Asking users & experts

The aims

- Discuss the role of interviews & questionnaires in evaluation.
- Teach basic questionnaire design.
- Describe how do interviews, heuristic evaluation & walkthroughs.
- Describe how to collect, analyze & present data.
- Discuss strengths & limitations of these techniques

Interviews

- Unstructured - are not directed by a script. Rich but not replicable.
- Structured - are tightly scripted, often like a questionnaire. Replicable but may lack richness.
- Semi-structured - guided by a script but interesting issues can be explored in more depth. Can provide a good balance between richness and replicability.

Basics of interviewing

- Remember the DECIDE framework
- Goals and questions guide all interviews
- Two types of questions:
  'closed questions' have a predetermined answer format, e.g., 'yes' or 'no'
  'open questions' do not have a predetermined format
- Closed questions are quicker and easier to analyze

Things to avoid when preparing interview questions

- Long questions
- Compound sentences - split into two
- Jargon & language that the interviewee may not understand
- Leading questions that make assumptions e.g., why do you like …?
- Unconscious biases e.g., gender stereotypes

5

Components of an interview

- *Introduction* - introduce yourself, explain the goals of the interview, reassure about the ethical issues, ask to record, present an informed consent form.

- *Warm-up* - make first questions easy & non-threatening.

- *Main body* – present questions in a logical order

- *A cool-off period* - include a few easy questions to defuse tension at the end

- *Closure* - thank interviewee, signal the end, e.g, switch recorder off.

6

The interview process

- Use the DECIDE framework for guidance
- Dress in a similar way to participants
- Check recording equipment in advance
- Devise a system for coding names of participants to preserve confidentiality.
- Be pleasant
- Ask participants to complete an informed consent form

7

Probes and prompts

- Probes - devices for getting more information. e.g., 'would you like to add anything?'
- Prompts - devices to help interviewee, e.g.,   help with remembering a name
- Remember that probing and prompting should not create bias.
- Too much can encourage participants to try to guess the answer.

8

Group interviews

- Also known as 'focus groups'
- Typically 3-10 participants
- Provide a diverse range of opinions
- Need to be managed to:
  - ensure everyone contributes
  - discussion isn't dominated by one person
  - the agenda of topics is covered

Analyzing interview data

- Depends on the type of interview
- Structured interviews can be analyzed like questionnaires
- Unstructured interviews generate data like that from participant observation
- It is best to analyze unstructured interviews as soon as possible to identify topics and themes from the data

Questionnaires

- Questions can be closed or open
- Closed questions are easiest to analyze, and may be done by computer
- Can be administered to large populations
- Paper, email & the web used for dissemination
- Advantage of electronic questionnaires is that data goes into a data base & is easy to analyze
- Sampling can be a problem when the size of a population is unknown as is common online

Questionnaire style

- Varies according to goal so use the DECIDE framework for guidance
- Questionnaire format can include:
  - 'yes', 'no' checkboxes
  - checkboxes that offer many options
  - Likert rating scales
  - semantic scales
  - open-ended responses
- Likert scales have a range of points
- 3, 5, 7 & 9 point scales are common
- Debate about which is best

Developing a questionnaire

- Provide a clear statement of purpose & guarantee participants anonymity
- Plan questions - if developing a web-based questionnaire, design off-line first
- Decide on whether phrases will all be positive, all negative or mixed
- Pilot test questions - are they clear, is there sufficient space for responses
- Decide how data will be analyzed & consult a statistician if necessary

13

Encouraging a good response

- Make sure purpose of study is clear
- Promise anonymity
- Ensure questionnaire is well designed
- Offer a short version for those who do not have time to complete a long questionnaire
- If mailed, include a s.a.e.
- Follow-up with emails, phone calls, letters
- Provide an incentive
- 40% response rate is high, 20% is often acceptable

14

Advantages of online questionnaires

- Responses are usually received quickly
- No copying and postage costs
- Data can be collected in database for analysis
- Time required for data analysis is reduced
- Errors can be corrected easily
- Disadvantage - sampling problematic if population size unknown
- Disadvantage - preventing individuals from responding more than once

15

Problems with online questionnaires

- Sampling is problematic if population size is unknown
- Preventing individuals from responding more than once
- Individuals have also been known to change questions in email questionnaires

16

Questionnaire data analysis & presentation

- Present results clearly - tables may help
- Simple statistics can say a lot, e.g., mean, median, mode, standard deviation
- Percentages are useful but give population size
- Bar graphs show categorical data well
- More advanced statistics can be used if needed

Add

- SUMI
- MUMMS
- QUIS

Asking experts

- Experts use their knowledge of users & technology to review software usability
- Expert critiques (crits) can be formal or informal reports
- Heuristic evaluation is a review guided by a set of heuristics
- Walkthroughs involve stepping through a pre-planned scenario noting potential problems

Heuristic evaluation

- Developed Jacob Nielsen in the early 1990s
- Based on heuristics distilled from an empirical analysis of 249 usability problems
- These heuristics have been revised for current technology, e.g., HOMERUN for web
- Heuristics still needed for mobile devices, wearables, virtual worlds, etc.
- Design guidelines form a basis for developing heuristics

Nielsen's heuristics

- Visibility of system status
- Match between system and real world
- User control and freedom
- Consistency and standards
- Help users recognize, diagnose, recover from errors
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help and documentation

Discount evaluation

- Heuristic evaluation is referred to as discount evaluation when 5 evaluators are used.

- Empirical evidence suggests that on average 5 evaluators identify 75-80% of usability problems.

3 stages for doing heuristic evaluation

- Briefing session to tell experts what to do
- Evaluation period of 1-2 hours in which:
  - Each expert works separately
  - Take one pass to get a feel for the product
  - Take a second pass to focus on specific features
- Debriefing session in which experts work together to prioritize problems

Advantages and problems

- Few ethical & practical issues to consider
- Can be difficult & expensive to find experts
- Best experts have knowledge of application domain & users
- Biggest problems
  - important problems may get missed
  - many trivial problems are often identified

Cognitive walkthroughs

- Focus on ease of learning
- Designer presents an aspect of the design & usage scenarios
- One of more experts walk through the design prototype with the scenario
- Expert is told the assumptions about user population, context of use, task details
- Experts are guided by 3 questions

The 3 questions

- Will the correct action be sufficiently evident to the user?
- Will the user notice that the correct action is available?
- Will the user associate and interpret the response from the action correctly?

  As the experts work through the scenario they note problems

Pluralistic walkthrough

- Variation on the cognitive walkthrough theme
- Performed by a carefully managed team
- The panel of experts begins by working separately
- Then there is managed discussion that leads to agreed decisions
- The approach lends itself well to participatory design

Key points

- Structured, unstructured, semi-structured interviews, focus groups & questionnaires
- Closed questions are easiest to analyze & can be replicated
- Open questions are richer
- Check boxes, Likert & semantic scales
- Expert evaluation: heuristic & walkthroughs
- Relatively inexpensive because no users
- Heuristic evaluation relatively easy to learn
- May miss key problems & identify false ones

A project for you …

- Activeworlds.com
- Questionnaire to test reactions with friends
- http://www.acm.org/~perlman/question.html
- http://www.ifsm.umbc.edu/djenni1/osg/
- Develop heuristics to evaluate usability and sociability aspects

A project for you …

http://www.id-book.com/catherb/

-provides heuristics and a template so that you can evaluate different kinds of systems. More information about this is provided in the interactivities section of the id-book.com website.

A project for you …

- Go to the The Pew Internet & American Life Survey www.pewinternet.org/ (or to another survey of your choice)
- Critique one of the recent online surveys
- Critique a recent survey report