

Asking users and experts

The aims

- Discuss the role of interviews and questionnaires in evaluation
- Teach basic questionnaire design
- Describe how to do interviews, heuristic evaluation and walkthroughs
- Describe how to collect, analyze and present data
- Discuss strengths and 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 replicability and richness

Basics of interviewing

- Remember the DECIDE framework
- Goals and questions guide all interviews
- Two types of questions
 - “closed questions” have a predetermined format e.g 'yes' or 'no'
 - “open questions” don't 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 might not understand
- Leading questions that make assumptions e.g, why do you like ?
- Unconscious biases e.g gender stereotypes

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 and non-threatening
- Main body – present questions in logical order
- Cool-off – include a few easy questions to defuse tension at the end
- Closure: thank interviewee, signal the end

The interview process

- Use the DECIDE framework for guidance
- Dress in 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

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

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 easier to analyze and maybe done by computer
- Can be administered to large populations
- Paper, email and the web used for dissemination
- Advantage of electronic questionnaires is that data goes into a database & 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 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 offline 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 and consult a statistician if necessary

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 don't have time to complete a long questionnaire
- Follow-up with emails, phone calls, letters
- Provide an incentive
- 40% response rate is high, 20% is often acceptable

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 for responding more than once

Questionnaire data analysis and presentation

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

Asking experts

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

Heuristic Evaluation

- Developed by J. 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 and recover from errors
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalistic 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 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 and 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 or more experts walkthrough the design prototype with the scenario
- Expert is told the assumptions about user population, context of use, task details
- Experts are guided by three questions

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 ?
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- As the experts walkthrough the scenario they note problems

Pluralistic walkthrough

- Variation on the cognitive walkthrough scheme
- 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, and questionnaires
- Closed questions are easier to analyze and can be replicated
- Open questions are richer
- Check boxes, Likert & semantic scales
- Expert evaluation: heuristics & walkthroughs
- Relatively inexpensive because no users
- Heuristic evaluation relatively easy to learn
- May miss key problems, identify false ones