



Gathering Data

BTH745 – Human-Computer Interaction

Aims of this chapter...

- Discuss how to plan and run a successful data gathering program.
- Enable you to plan and run an interview.
- Enable you to design a simple questionnaire.
- Enable you to plan and execute an observation.

Five key issues

- Setting goals
 - Decide how to analyze data once collected
- Identifying participants
 - Decide who to gather data from
- Relationship with participants
 - Clear and professional
 - Informed consent when appropriate
- Triangulation
 - Look at data from more than one perspective
 - Collect more than one type of data. For example, qualitative from experiments and qualitative from interviews
- Pilot studies
 - Small trial of main study

Data recording

- Notes, audio, video, photographs
- Notes plus photographs
- Audio plus photographs
- Video
- Different challenges and advantages with each combination



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.
- *Focus groups* – a group interview.

Interview questions

- Two types:
 - ‘Closed questions’ have a predetermined answer format, e.g., ‘yes’ or ‘no’
 - ‘Open questions’ do not have a predetermined format
- Closed questions are easier to analyze
- Avoid:
 - Long questions
 - Compound sentences - split them into two
 - Jargon and language that the interviewee may not understand
 - Leading questions that make assumptions e.g., why do you like ...?
 - Unconscious biases e.g., gender stereotypes

Running the interview

- *Introduction* – introduce yourself, explain the goals of the interview, reassure about the ethical issues, ask to record, present any informed consent form.
- *Warm-up* – make first questions easy and 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.

Enriching the interview

- Props - devices for prompting interviewee, e.g., a prototype, scenario



Questionnaires



Questionnaires

- Questions can be closed or open
- Closed questions are easier to analyze, and may be distributed and analyzed by computer
- Can be administered to large populations
- Disseminated by paper, email and the web
- Sampling can be a problem when the size of a population is unknown as is common online evaluation

Questionnaire design

- The impact of a question can be influenced by question order
- Do you need different versions of the questionnaire for different populations
- Provide clear instructions on how to complete the questionnaire
- Strike a balance between using white space and keeping the questionnaire compact
- Avoid very long questionnaires
- Decide on whether phrases will all be positive, all negative or mixed

Question and response

- 'Yes' and 'No' checkboxes
- Checkboxes that offer many options
- Rating scales
 - Likert scales
 - Semantic scales
 - 3, 5, 7 or more points?
- Open-ended responses

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 stamped addressed envelope
- Follow-up with emails, phone calls, letters
- Provide an incentive
- 40% response rate is high, 20% is often acceptable

Online questionnaires

- Relatively easy and quick to distribute
- 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

The screenshot displays the CareerRedesign website interface. On the left is a vertical navigation menu with sections: Careers (Plan the Change, Thrive In Transition, Start the New Career), Services Center (Seminars, etc., Schools, Assoc's & Non-Profits, Counselors, etc., Financial Services, Public Sector, Recruiters), Colleague Center (Register Now!, Colleague Directory, Local Chapters, My Notebook, E-news Letter, My Homepage, Discussions), and Shopping Center (Publications, Health & Fitness). The main content area features a search form for finding colleagues. It includes a privacy statement, a registration prompt, a text input for 'Colleague ID', and three search options: 'Match My Profile', 'Career Change Process Step' (with a dropdown menu showing 'None', 'Assess and Test', 'Break into the New Career', 'Investigate Careers', and 'Plan the Change'), and 'Thrive in Transition'. There are also input fields for 'State' and 'Geography', and a 'Find Colleagues' button. On the right, there are sections for 'Share Your Experience' (with links to add personal experience, article reviews, book reviews, and test tips), 'Recommend a:' (with links for service center provider, career showcase, and success story candidate), 'Rate this website!', and 'Ask Others' (with links for directory email service, online discussion groups, and asking a question).

Online questionnaires

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

Observations



Observation

- Direct observation in the field
 - Structuring frameworks
 - Degree of participation (insider or outsider)
 - Ethnography
- Direct observation in controlled environments
- Indirect observation: tracking users' activities
 - Diaries
 - Interaction logging
 - Video and photographs collected remotely by drones or other equipment



Conducting observations

- *The person*. Who?
- *The place*. Where?
- *The thing*. What?
- A more detailed framework (Robson, 2014):
 - *Space*: What is the physical space like and how is it laid out?
 - *Actors*: What are the names and relevant details of the people involved?
 - *Activities*: What are the actors doing and why?
 - *Objects*: What physical objects are present, such as furniture
 - *Acts*: What are specific individual actions?
 - *Events*: Is what you observe part of a special event?
 - *Time*: What is the sequence of events?
 - *Goals*: What are the actors trying to accomplish?
 - *Feelings*: What is the mood of the group and of individuals?

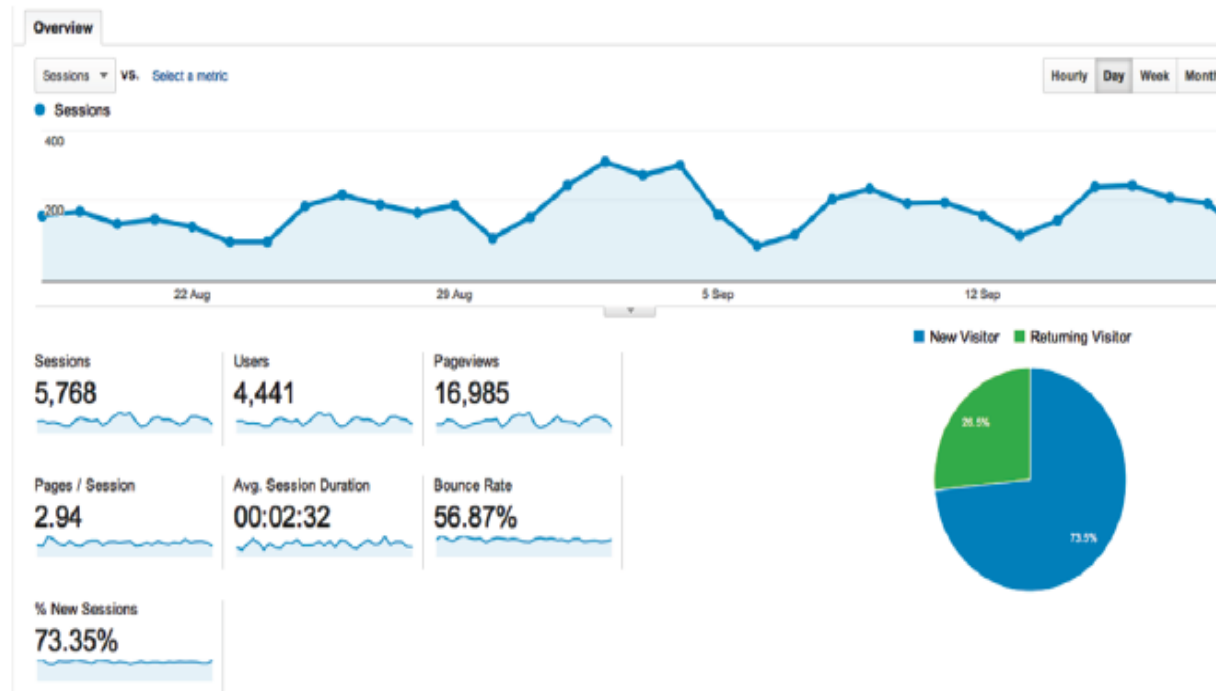
Conducting observations

- Decide on how involved you will be:
 - Passive observer to active participant
- How to gain acceptance
- How to handle sensitive topics, e.g.: culture, private spaces, etc.
- How to collect the data:
 - What data to collect
 - What equipment to use
 - When to stop observing

Web analytics

- A system of tools and techniques for optimizing web usage by:
 - Measuring,
 - Collecting,
 - Analyzing,
 - Reporting web data
- Typically focus on the number of web visitors and page views

Web analytics (Google)



(a)

Figure 7.14 Segments of the Google Analytics dashboard for id-book.com in September 2014
(a) audience overview, (b) screen resolution of mobile devices used to view the website

Combining techniques

- Depends on the:
 - Focus of the study
 - Participants involved
 - Nature of the technique(s)
 - Resources available
 - Time available

Summary

- Data gathering sessions should have clear goals
- An informed consent may be needed
- Five key issues of data gathering are: goals, choosing participants, triangulation, participant relationship, pilot
- Data may be recorded using handwritten notes, audio or video recording, a camera, or any combination of these
- Interviews may be structured, semi-structured or unstructured
- Focus groups are group interviews
- Questionnaires may be on paper, online or telephone
- Observation may be direct or indirect, in the field or in controlled settings
- Techniques can be combined depending on the study focus, participants, nature of technique, available resources and time