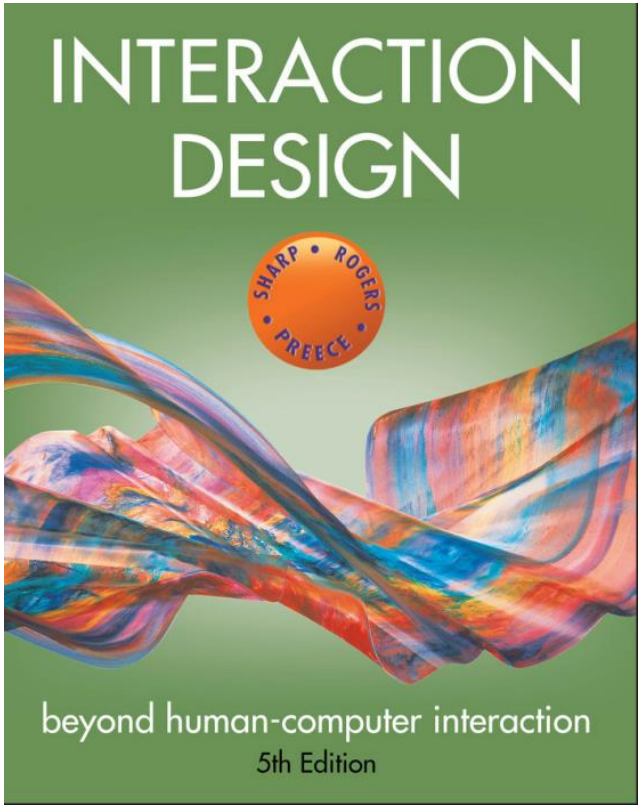

Chapter 8

GATHERING DATA

Aims

- 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 carry out an observation.

Five key issues

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

Data recording

- Notes, audio, video, photographs can be used individually or in combination:
  - 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 the 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, eg. switch recorder off.

Enriching the interview process

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

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.
- You may 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 format

- ‘Yes’ and ‘No’ checkboxes
- Checkboxes that offer many options
- Rating scales
  - Likert scales
  - semantic scales
  - 3, 5, 7 or more points
- Open-ended responses

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

Advantages of 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

Example of an online questionnaire

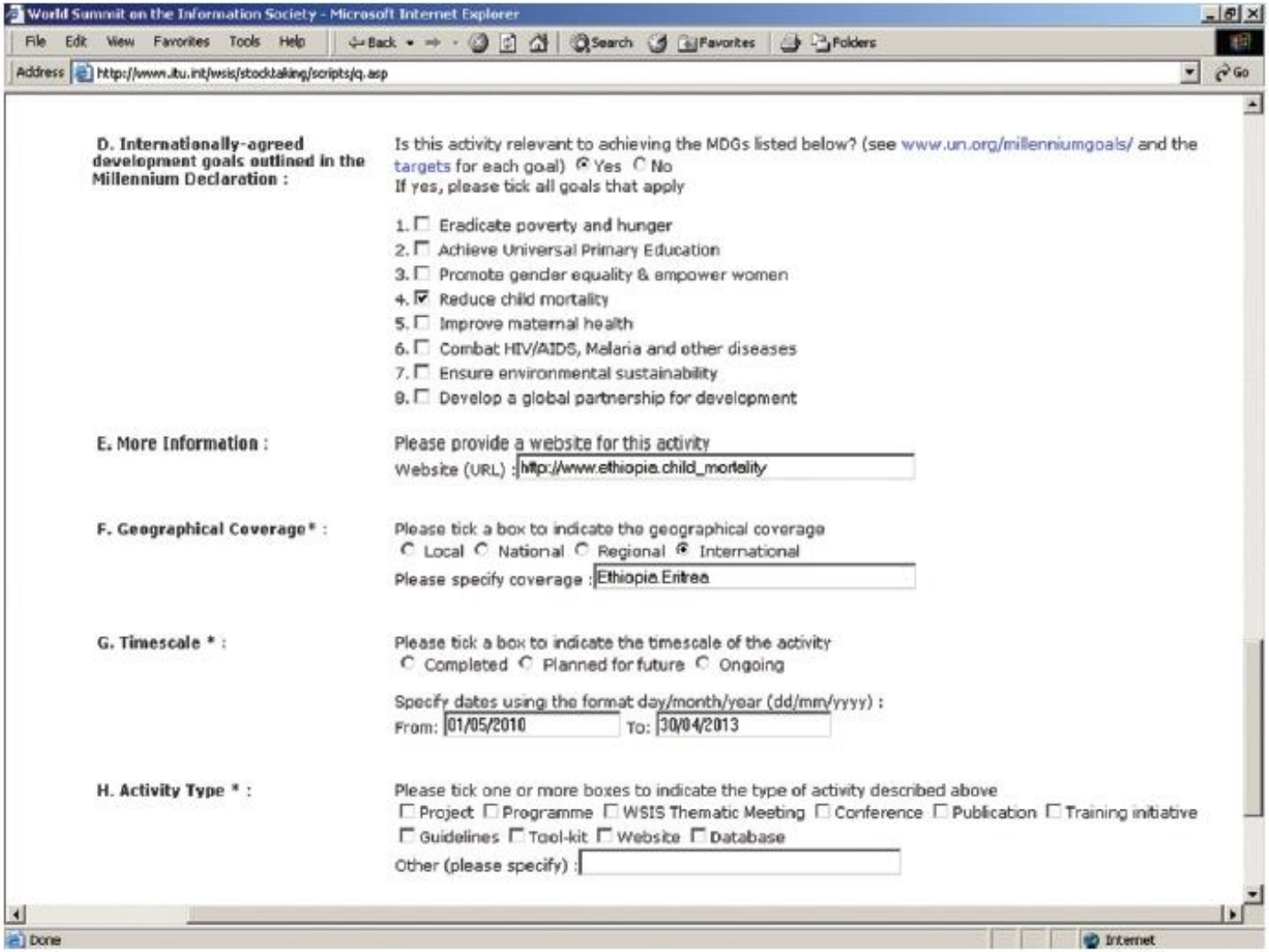

Figure 7.8 An excerpt from a web-based questionnaire showing check boxes, radio buttons, and pull-down menus

Problems with 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

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

Observation

Figure 7.9 Mars Exploration Rover

Source: Reproduced by permission of NASA Jet Propulsion Laboratory (NASA-JPL).

Structuring frameworks to guide observation

- Three easy-to-remember parts:
  - 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 specifi c 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?

Planning and conducting observation in the field

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

Ethnography (1)

- Ethnography is a philosophy with a set of techniques that include participant observation and interviews
- Debate about differences between participant observation and ethnography
- Ethnographers immerse themselves in the culture that they study
- A researcher's degree of participation can vary along a scale from 'outside' to 'inside'
- Analyzing video and data logs can be time-consuming
- Collections of comments, incidents, and artifacts are made

Ethnography (2)

- Co-operation of people being observed is required
- Informants are useful
- Data analysis is continuous
- Interpretivist technique
- Questions get refined as understanding grows
- Reports usually contain examples

Ethnography (2)

(a)

(b)

Figure 7.10 (a) The situation before MERboard; (b) A scientist using MERboard to present information

Source: J. Trimble, R. Wales and R. Gossweiler (2002): "NASA position paper for the CSCW 2002 workshop on Public, Community and Situated Displays: Merboard".

Online Ethnography

- Virtual, Online, Netnography
- Online and offline activity
- Interaction online differs from face-to-face
- Virtual worlds have a persistence that physical worlds do not have
- Ethical considerations and presentation of results are different

Observations and materials that might be collected (Crabtree, 2007)

- Activity or job descriptions.
- Rules and procedures that govern particular activities.
- Descriptions of activities observed.
- Recordings of the talk taking place between parties.
- Informal interviews with participants explaining the detail of observed activities.
- Diagrams of the physical layout, including the position of artifacts.
- Other information collected when observing activities:
  - Photographs of artifacts (documents, diagrams, forms, computers, etc.)
  - Videos of artifacts.
  - Descriptions of artifacts.
  - Workflow diagrams showing the sequential order of tasks.
  - Process maps showing connections between activities.

Observation in a controlled environment

- Direct observation
  - Think aloud techniques
- Indirect observation – tracking users' activities
  - Diaries
  - Interaction logs
  - Web analytics
- Video, audio, photos, notes are used to capture data in both types of observations

Web analytics

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

A section of Google analytics dashboard for id-book.com

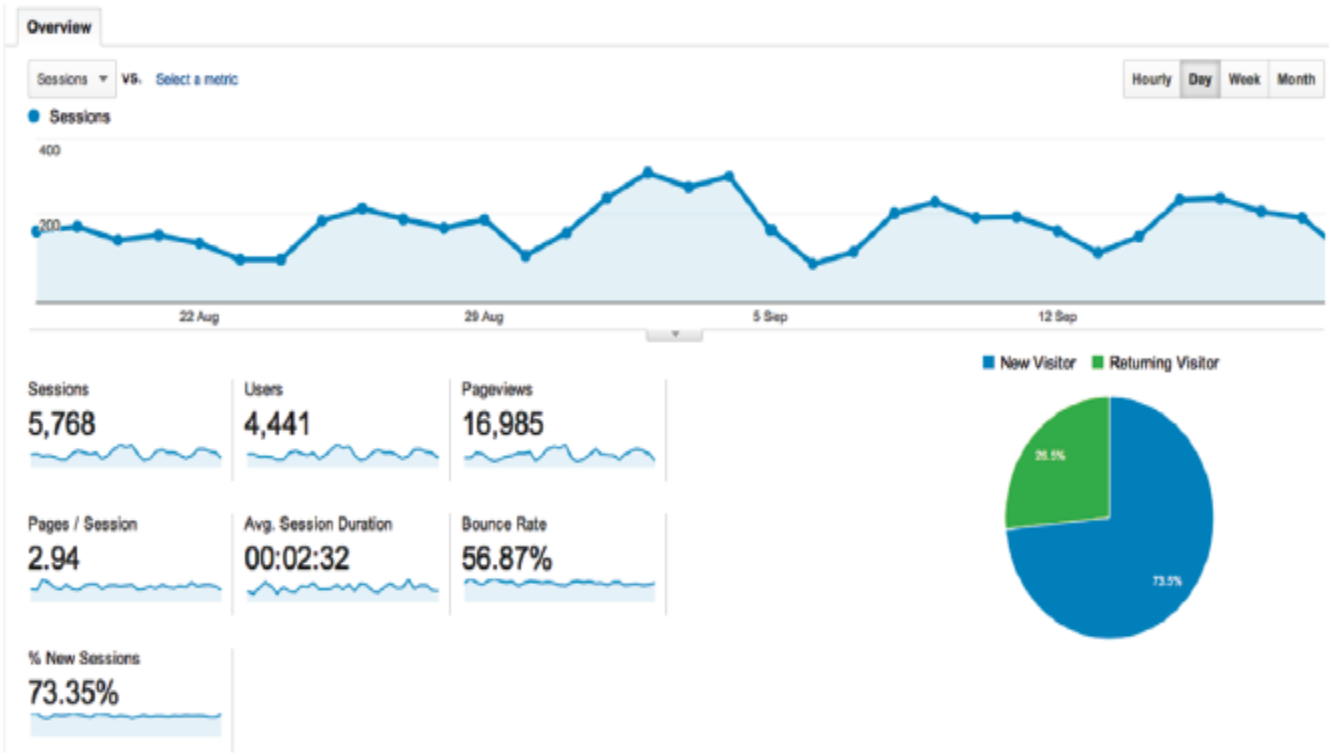

Figure 7.14 Segments of the Google Analytics dashboard for id-book.com in September 2014 (a) audience overview, (b) screen resolution of mobile devices used to view the website

Choosing and 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.