

CPE/CSC 484: User-Centered Design and Development

Franz J. Kurfess

***Computer Science Department
California Polytechnic State University
San Luis Obispo, CA, U.S.A.***



Chapter 7

Data Gathering



Logistics

- ❖ **Open House: Fri, April 13 + Sat, April 14**

- ❖ thanks to the teams who participated

- ❖ **Assignments**

- ❖ presentations for A2 - UCD Tools
 - ❖ Tue, April 17: Balsamiq
 - ❖ Thu, April 19: Morae
 - ❖ ??: Usabilla
 - ❖ ??: ClickHeat
 - ❖ ??
 - ❖ ??

Overview

- Five key issues of data gathering
- Data recording
- Interviews
- Questionnaires
- Observation
- Choosing and combining techniques

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

5. Pilot studies

- Small trial of main study

Data recording

- Notes, audio, video, photographs
- Notes plus photographs
- Audio plus photographs
- Video



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.

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 process

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



Questionnaires

- Questions can be closed or open
- Closed questions are easier to analyze, and may be done by computer
- Can be administered to large populations
- Paper, email and the web used for dissemination
- Sampling can be a problem when the size of a population is unknown as is common online

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.
- Decide on whether phrases will all be positive, all negative or mixed.

Question and response format

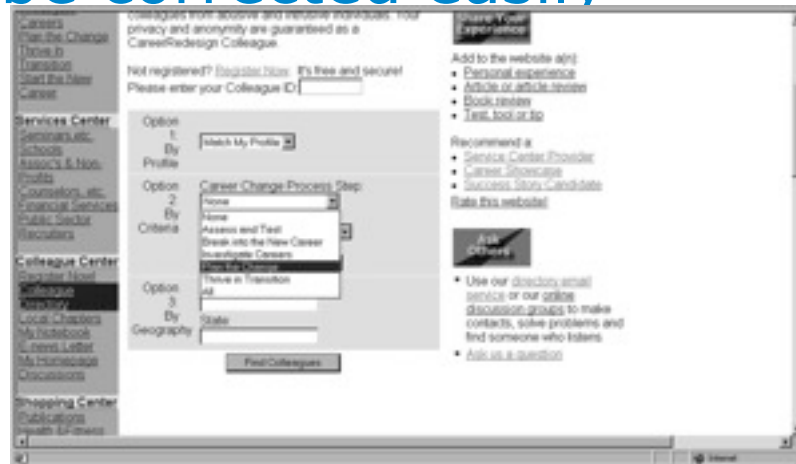
- 'Yes' and 'No' checkboxes
- Checkboxes that offer many options
- Rating scales
 - Likert scales
 - semantic scales
 - 3, 5, 7 or more points?
- Open-ended responses

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 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



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

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



Structuring frameworks to guide observation

- - *The person*. Who?
 - *The place*. Where?
 - *The thing*. What?
- The Goetz and LeCompte (1984) framework:
 - *Who* is present?
 - What is their role?
 - *What* is happening?
 - *When* does the activity occur?
 - *Where* is it happening?
 - *Why* is it happening?
 - *How* is the activity organized?

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

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 issues are different

An ethnographic project for you ...

- Join www.ActiveWorlds.com or go to another chat room of your choice
- ActiveWorlds is a 3-D chatroom environment in which you can visit different environments and chat with the people that you meet there
- To use ActiveWorlds you will need to check the instructions that they provide and download the appropriate software to run on your computer

- Select one of the worlds to visit and choose an avatar (a graphical personification) to represent you.
- Spend one to two hours doing an ethnographic study.
- Use one of the frameworks discussed in the previous slides to guide you and write a one or two page report about your study.
- Also notice and report on any usability issues you encounter and on user experiences in this environment.

Direct observation in a controlled environment

- Think-aloud technique

Indirect observation



Diaries

Interaction logs

Web analytics

Choosing and combining techniques

- Depends on
 - The focus of the study
 - The participants involved
 - The nature of the technique
 - The resources available



Summary

- Three main data gathering methods: interviews, questionnaires, observation
- Five key issues of data gathering: goals, choosing participants, triangulation, participant relationship, pilot
- Interviews may be structured, semi-structured or unstructured
- Questionnaires may be on paper, online or telephone
- Observation may be direct or indirect, in the field or in controlled setting
- Techniques can be combined depending on study focus, participants, nature of technique and available resources