

## ACTIVITY 8.1

Imagine that you are a consultant who is employed to help develop a new augmented reality garden planning tool to be used by amateur and professional garden designers. The goal is to find out how garden designers use an early prototype as they walk around their clients' gardens sketching design ideas, taking notes, and asking the clients about what they like and how they and their families use the garden. What are the advantages and disadvantages of the three approaches (note-taking, audio recording with photographs, and video) for data recording in this environment?

### Comment

Handwritten notes do not require specialized equipment. They are unobtrusive and flexible but difficult to do while walking around a garden. If it starts to rain, there is no equipment to get wet, but notes may get soggy and difficult to read (and write!). Garden planning is a highly visual, aesthetic activity, so supplementing notes with photographs would be appropriate.

Video captures more information, for example, continuous panoramas of the landscape, what the designers are seeing, sketches, comments, and so on, but it is more intrusive and will also be affected by the weather. Short video sequences recorded on a smartphone may be sufficient as the video is unlikely to be used for detailed analysis. Audio may be a good compromise, but synchronizing audio with activities such as looking at sketches and other artifacts later can be tricky and error prone. ■

## 8.4 Interviews

Interviews can be thought of as a “conversation with a purpose” (Kahn and Cannell, 1957). How much like an ordinary conversation the interview will be depends on the type of interview. There are four main types of interviews: open-ended or unstructured, structured, semi-structured, and group interviews (Fontana and Frey, 2005). The first three types are named according to how much control the interviewer imposes on the conversation by following a predetermined set of questions. The fourth type, which is often called a *focus group*, involves a small group guided by a facilitator. The facilitation may be quite informal or follow a structured format.

The most appropriate approach to interviewing depends on the purpose of the interview, the questions to be addressed, and the interaction design activity. For example, if the goal is first to gain impressions about users' reactions to a new design concept, then an informal, open-ended interview is often the best approach. But if the goal is to get feedback about a particular design feature, such as the layout of a new web browser, then a structured interview or questionnaire is often better. This is because the goals and questions are more specific in the latter case.

### 8.4.1 Unstructured Interviews

Open-ended or unstructured interviews are at one end of a spectrum of how much control the interviewer has over the interview process. They are exploratory and are similar to conversations around a particular topic; they often go into considerable depth. Questions posed by

the interviewer are open, meaning that there is no particular expectation about the format or content of answers. For example, the first question asked of all participants might be: “What are the pros and cons of having a wearable?” Here, the interviewee is free to answer as fully or as briefly as they want, and both the interviewer and interviewee can steer the interview. For example, often the interviewer will say: “Can you tell me a bit more about . . .” This is referred to as *probing*.

Despite being unstructured and open, the interviewer needs a plan of the main topics to be covered so that they can make sure that all of the topics are discussed. Going into an interview without an agenda should not be confused with being open to hearing new ideas (see section 8.4.5, “Planning and Conducting an Interview”). One of the skills needed to conduct an unstructured interview is getting the balance right between obtaining answers to relevant questions and being prepared to follow unanticipated lines of inquiry.

A benefit of unstructured interviews is that they generate rich data that is often interrelated and complex, that is, data that provides a deep understanding of the topic. In addition, interviewees may mention issues that the interviewer has not considered. A lot of unstructured data is generated, and the interviews will not be consistent across participants since each interview takes on its own format. Unstructured interviews can be time-consuming to analyze, but they can also produce rich insights. Themes can be identified across interviews using techniques from grounded theory and other analytic approaches, as discussed in Chapter 9, “Data Analysis, Interpretation, and Presentation.”

### 8.4.2 Structured Interviews

In structured interviews, the interviewer asks predetermined questions similar to those in a questionnaire (see section 8.5, “Questionnaires”), and the same questions are used with each participant so that the study is standardized. The questions need to be short and clearly worded, and they are typically closed questions, which means that they require an answer from a predetermined set of alternatives. (This may include an “other” option, but ideally this would not be chosen often.) Closed questions work well if the range of possible answers is known or if participants don’t have much time. Structured interviews are useful only when the goals are clearly understood and specific questions can be identified. Example questions for a structured interview might be the following:

- “Which of the following websites do you visit most frequently: Amazon.com, Google.com, or msn.com?”
- “How often do you visit this website: every day, once a week, once a month, less often than once a month?”
- “Do you ever purchase anything online: Yes/No? If your answer is Yes, how often do you purchase things online: every day, once a week, once a month, less frequently than once a month?”

Questions in a structured interview are worded the same for each participant and are asked in the same order.

### 8.4.3 Semi-structured Interviews

Semi-structured interviews combine features of structured and unstructured interviews and use both closed and open questions. The interviewer has a basic script for guidance so that the same topics are covered with each interviewee. The interviewer starts with preplanned

questions and then probes the interviewee to say more until no new relevant information is forthcoming. Here's an example:

*Which music websites do you visit most frequently?*

*Answer: Mentions several but stresses that they prefer hottestmusic.com*

*Why?*

*Answer: Says that they like the site layout*

*Tell me more about the site layout.*

*Answer: Silence, followed by an answer describing the site's layout*

*Anything else that you like about the site?*

*Answer: Describes the animations*

*Thanks. Are there any other reasons for visiting this site so often that you haven't mentioned?*

It is important not to pre-empt an answer by phrasing a question to suggest that a particular answer is expected. For example, "You seemed to like this use of color . . ." assumes that this is the case and will probably encourage the interviewee to answer that this is true so as not to offend the interviewer. Children are particularly prone to behave in this way (see Box 8.3, "Working with different kinds of users.") The body language of the interviewer, for example whether they are smiling, scowling, looking disapproving, and so forth, can have a strong influence on whether the interviewee will agree with a question, and the interviewee needs to have time to speak and not be rushed.

Probes are a useful device for getting more information, especially neutral probes such as "Do you want to tell me anything else?" and prompts that remind interviewees if they forget terms or names help to move the interview along. Semi-structured interviews are intended to be broadly replicable, so probing and prompting aim to move the interview along without introducing bias.

## BOX 8.3

### Working with Different Kinds of Users

Focusing on the needs of users and including users in the design process is a central theme of this book. But users vary considerably based on their age, educational, life, and cultural experiences, and physical and cognitive abilities. For example, children think and react to situations differently than adults. Therefore, if children are to be included in data gathering sessions, then child-friendly methods are needed to make them feel at ease so that they will communicate with you. For very young children of pre-reading or early reading age, data gathering sessions need to rely on images and chat rather than written instructions or questionnaires. Researchers who work with children have developed sets of "smileys," such as those shown in Figure 8.2, so that children can select the one that most closely represents their feelings (see Read et al., 2002).



**Figure 8.2** A smileyometer gauge for early readers

Source: Read et al. (2002)

Similarly, different approaches are needed when working with users from different cultures (Winschiers-Theophilus et al., 2012). In their work with local communities in Namibia, Heike Winschiers-Theophilus and Nicola Bidwell (2013) had to find ways of communicating with local participants, which included developing a variety of visual and other techniques to communicate ideas and collect data about the collective understanding and feelings inherent in the local cultures of the people with whom they worked.

Laurianne Sitbon and Shanjana Farhin (2017) report a study in which researchers interacted with people with intellectual disabilities, where they involved caregivers who knew each participant well and could appropriately make the researchers' questions more concrete. This made it more understandable for the participants. An example of this was when the interviewer assumed that the participant understood the concept of a phone app to provide information about bus times. The caregiver made their questions more concrete for the participant by relating the concept of the phone app to familiar people and circumstances and bringing in a personal example (for instance, "So you don't have to ring your mom to say 'Mom, I am lost'").

Another group of technology users are studied by the field of Animal-Computer Interaction (Mancini et al., 2017). Data gathering with animals poses additional and different challenges. For example, in their study of dogs' attention to TV screens, Ilyena Hirskyj-Douglas et al. (2017) used a combination of observation and tracking equipment to capture when a dog turns their head. But interpreting the data, or checking that the interpretation is accurate, requires animal behavior expertise. ■

The examples in Box 8.3 demonstrate that technology developers need to adapt their data collection techniques to suit the participants with whom they work. As the saying goes, "One size doesn't fit all."

#### 8.4.4 Focus Groups

Interviews are often conducted with one interviewer and one interviewee, but it is also common to interview people in groups. One form of group interview that is sometimes used in interaction design activities is the focus group. Normally, three to ten people are involved, and the discussion is led by a trained facilitator. Participants are selected to provide a representative sample of the target population. For example, in the evaluation of a university website, a group of administrators, faculty, and students may form three separate focus groups because they use the web for different purposes. In requirements activities, a focus group may be held in order to identify conflicts in expectations or terminology from different stakeholders.



The focus group hated it. So he showed it to an out-of-focus group.

Source: Mike Baldwin / Cartoon Stock

The benefit of a focus group is that it allows diverse or sensitive issues to be raised that might otherwise be missed, for example in the requirements activity to understand multiple points within a collaborative process or to hear different user stories (Unger and Chandler, 2012). The method is more appropriate for investigating shared issues rather than individual experiences. Focus groups enable people to put forward their own perspectives. A preset agenda is developed to guide the discussion, but there is sufficient flexibility for the facilitator to follow unanticipated issues as they are raised. The facilitator guides and prompts discussion, encourages quiet people to participate, and stops verbose ones from dominating the discussion. The discussion is usually recorded for later analysis, and participants may be invited to explain their comments more fully at a later date.

Focus groups can be useful, but only if used for the right kind of activities. For a discussion of when focus groups don't work, see the following links:

<https://www.nomensa.com/blog/2016/are-focus-groups-useful-research-technique-ux>

<http://gerrymcgovern.com/why-focus-groups-dont-work/>

The format of focus groups can be adapted to fit within local cultural settings. For example, a study with the Mbeere people of Kenya aimed to find out how water was being used, any plans for future irrigation systems, and the possible role of technology in water management (Warrick et al., 2016). The researcher met with the elders from the community, and the focus group took the form of a traditional Kenyan “talking circle,” in which the elders sit in a circle and each person gives their opinions in turn. The researcher, who was from the Mbeere community, knew that it was impolite to interrupt or suggest that the conversation needed to move along, because traditionally each person speaks for as long as they want.

### 8.4.5 Planning and Conducting an Interview

Planning an interview involves developing the set of questions or topics to be covered, collating any documentation to give to the interviewee (such as consent form or project description), checking that recording equipment works, structuring the interview, and organizing a suitable time and place.

#### *Developing Interview Questions*

Questions may be open-ended (or open) or closed-ended (or closed). Open questions are best suited where the goal of the session is exploratory; closed questions are best suited where the possible answers are known in advance. An unstructured interview will usually consist mainly of open questions, while a structured interview will usually consist of closed questions. A semi-structured interview may use a combination of both types.

## DILEMMA

### What They Say and What They Do

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What users say isn't always what they do. People sometimes give the answers that they think show them in the best light, they may have forgotten what happened, or they may want to please the interviewer by answering in the way they think will satisfy them. This may be problematic when the interviewer and interviewee don't know each other, especially if the interview is being conducted remotely by Skype, Cisco Webex, or another digital conferencing system.

For example, Yvonne Rogers et al. (2010) conducted a study to investigate whether a set of twinkly lights embedded in the floor of an office building could persuade people to take the stairs rather than the lift (or elevator). In interviews, participants told the researchers that they did not change their behavior but logged data showed that their behavior did, in fact, change significantly. So, can interviewers believe all of the responses they get? Are the respondents telling the truth, or are they simply giving the answers that they think the interviewer wants to hear?

It isn't possible to avoid this behavior, but an interviewer can be aware of it and reduce such biases by choosing questions carefully, by getting a large number of participants, or by using a combination of data gathering techniques. ■

The following guidelines help in developing interview questions (Robson and McCartan, 2016):

- Long or compound questions can be difficult to remember or confusing, so split them into two separate questions. For example, instead of “How do you like this smartphone app compared with previous ones that you have used?” say, “How do you like this smartphone app?” “Have you used other smartphone apps?” If so, “How did you like them?” This is easier for the interviewee to respond to and easier for the interviewer to record.
- Interviewees may not understand jargon or complex language and might be too embarrassed to admit it, so explain things to them in straightforward ways.
- Try to keep questions neutral, both when preparing the interview script and in conversation during the interview itself. For example, if you ask “Why do you like this style of interaction?” this question assumes that the person does like it and will discourage some interviewees from stating their real feelings.

## ACTIVITY 8.2

Several devices are available for reading ebooks, watching movies, and browsing photographs (see Figure 8.3). The design differs between makes and models, but they are all aimed at providing a comfortable user experience. An increasing number of people also read books and watch movies on their smartphones, and they may purchase phones with larger screens for this purpose.



(a)



(b)



(c)



(d)

**Figure 8.3** (a) Sony's eReader, (b) Amazon's Kindle, (c) Apple's iPad, and (d) Apple's iPhone  
 Source: (a) Sony Europe Limited, (b) Martyn Landi / PA Archive / PA Images, (c) Mark Lennihan / AP Images, and (d) Helen Sharp

The developers of a new device for reading books online want to find out how appealing it will be to young people aged 16–18, so they have decided to conduct some interviews.

1. What is the goal of this data gathering session?
2. Suggest ways of recording the interview data.

3. Suggest a set of questions for use in an unstructured interview that seeks to understand the appeal of reading books online to young people in the 16–18 year old age group.
4. Based on the results of the unstructured interviews, the developers of the new device have found that an important acceptance factor is whether the device can be handled easily. Write a set of semi-structured interview questions to evaluate this aspect based on an initial prototype and run a pilot interview with two of your peers. Ask them to comment on your questions and refine them based on their comments.

### Comment

1. The goal is to understand what makes devices for reading books online appealing to people aged 16–18.
2. Audio recording will be less cumbersome and distracting than taking notes, and all important points will be captured. Video recording is not needed in this initial interview as it isn't necessary to capture any detailed interactions. However, it would be useful to take photographs of any devices referred to by the interviewee.
3. Possible questions include the following: Why do you read books online? Do you ever read print-based books? If so, what makes you choose to read online versus a print-based format? Do you find reading a book online comfortable? In what way(s) does reading online versus reading from print affect your ability to become engrossed in the story you are reading?
4. Semi-structured interview questions may be open or closed-ended. Some closed-ended questions that you might ask include the following:
  - Have you used any kind of device for reading books online before?
  - Would you like to read a book online using this device?
  - In your opinion, is the device easy to handle?
 Some open-ended questions, with follow-on probes, include the following:
  - What do you like most about the device? Why?
  - What do you like least about the device? Why?
  - Please give me an example of where the device was uncomfortable or difficult to use. ■

It is helpful when collecting answers to closed-ended questions to list possible responses together with boxes that can be checked. Here's one way to convert some of the questions from Activity 8.2:

1. Have you used a device for reading books online before? (Explore previous knowledge.)  
*Interviewer checks box:*    *Yes*    *No*    *Don't remember/know*
2. Would you like to read a book using a device designed for reading online? (Explore initial reaction; then explore the response.)  
*Interviewer checks box:*    *Yes*    *No*    *Don't know*
3. Why?  
*If response is "Yes" or "No," interviewer asks, "Which of the following statements represents your feelings best?"*



For “Yes,” interviewer checks one of these boxes:

- I don’t like carrying heavy books.
- This is fun/cool.
- My friend told me they are great.
- It’s the way of the future.
- Another reason (interviewer notes the reason).

For “No,” interviewer checks one of these boxes:

- I don’t like using gadgets if I can avoid it.
- I can’t read the screen clearly.
- I prefer the feel of paper.
- Another reason (interviewer notes the reason).

4. In your opinion, is the device for reading online easy to handle or cumbersome?

Interviewer checks one of these boxes:

- Easy to handle
- Cumbersome
- Neither

### *Running the Interview*

Before starting, make sure that the goals of the interview have been explained to the interviewee and that they are willing to proceed. Finding out about the interviewee and their environment before the interview will make it easier to put them at ease, especially if it is an unfamiliar setting.

During the interview, it is better to listen more than to talk, to respond with sympathy but without bias, and to appear to enjoy the interview. The following is a common sequence for an interview (Robson and McCartan, 2016):

1. An introduction in which the interviewer introduces themselves and explains why they are doing the interview, reassures interviewees regarding any ethical issues, and asks if they mind being recorded, if appropriate. This should be exactly the same for each interviewee.
2. A warm-up session where easy, nonthreatening questions come first. These may include questions about demographic information, such as “What area of the country do you live in?”
3. A main session in which the questions are presented in a logical sequence, with the more probing ones at the end. In a semi-structured interview, the order of questions may vary between participants, depending on the course of the conversation, how much probing is done, and what seems more natural.
4. A cooling-off period consisting of a few easy questions (to defuse any tension that may have arisen).
5. A closing session in which the interviewer thanks the interviewee and switches off the recorder or puts their notebook away, signaling that the interview has ended.

### 8.4.6 Other Forms of Interview

Conducting face-to-face interviews and focus groups can be impractical, but the prevalence of Skype, Cisco WebEx, Zoom, and other digital conferencing systems, email, and phone-based interactions (voice or chat), sometimes with screen-sharing software, make remote interviewing a good alternative. These are carried out in a similar fashion to face-to-face sessions, but poor connections and acoustics can cause different challenges, and participants may be tempted to multitask rather than focus on the session at hand. Advantages of remote focus groups and interviews, especially when done through audio-only channels, include the following:

- The participants are in their own environment and are more relaxed.
- Participants don't have to travel.
- Participants don't need to worry about what they wear.
- For interviews involving sensitive issues, interviewees can remain anonymous.

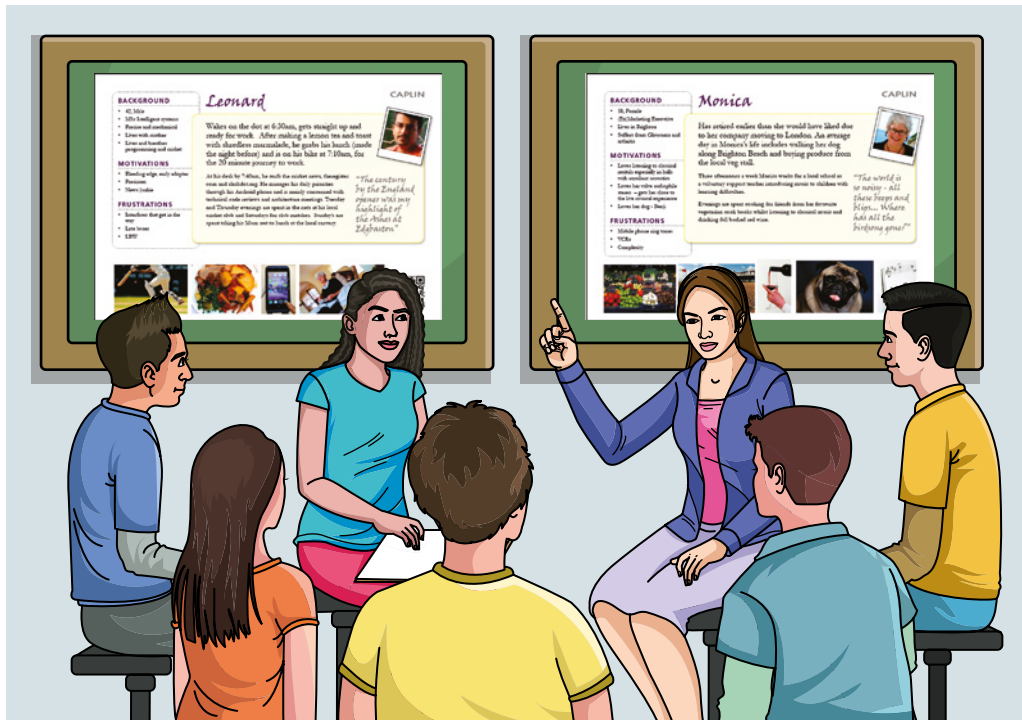
In addition, participants can leave the conversation whenever they want to by just cutting the connection, which adds to their sense of security. From the interviewer's perspective, a wider set of participants can be reached easily, but a potential disadvantage is that the facilitator does not have a good view of the interviewees' body language.

For more information and some interesting thoughts on remote usability testing, see <http://www.uxbooth.com/articles/hidden-benefits-remote-research/>.

Retrospective interviews, that is, interviews that reflect on an activity or a data gathering session in the recent past, may be conducted with participants to check that the interviewer has correctly understood what was happening. This is a common practice in observational studies where it is sometimes referred to as *member checking*.

### 8.4.7 Enriching the Interview Experience

Face-to-face interviews often take place in a neutral location away from the interviewee's normal environment. This creates an artificial context, and it can be difficult for interviewees to give full answers to the questions posed. To help combat this, interviews can be enriched by using props such as personas prototypes or work artifacts that the interviewee or interviewer brings along, or descriptions of common tasks (examples of these kinds of props are scenarios and prototypes, which are covered in Chapter 11, "Discovering Requirements," and Chapter 12, "Design, Prototyping, and Construction"). These props can be used to provide context for the interviewees and help to ground the data in a real setting. Figure 8.4 illustrates the use of personas in a focus group setting.



**Figure 8.4** Enriching a focus group with personas displayed on the wall for all participants to see

As another example, Clara Mancini et al. (2009) used a combination of questionnaire prompts and deferred contextual interviews when investigating mobile privacy. A simple multiple-choice questionnaire was sent electronically to the participants' smartphones, and they answered the questions using these devices. Interviews about the recorded events were conducted later, based on the questionnaire answers given at the time of the event.

## 8.5 Questionnaires

Questionnaires are a well-established technique for collecting demographic data and users' opinions. They are similar to interviews in that they can have closed or open-ended questions, but once a questionnaire is produced, it can be distributed to a large number of participants without requiring additional data gathering resources. Thus, more data can be collected than would normally be possible in an interview study. Furthermore, participants who are located in remote locations or those who cannot attend an interview at a particular time can be involved more easily. Often a message is sent electronically to potential participants directing them to an online questionnaire.

Effort and skill are needed to ensure that questions are clearly worded and the data collected can be analyzed efficiently. Well-designed questionnaires are good for getting answers to specific questions from a large group of people. Questionnaires can be used on their own