The Human Factor (THF)

Usability and User Experience Methods

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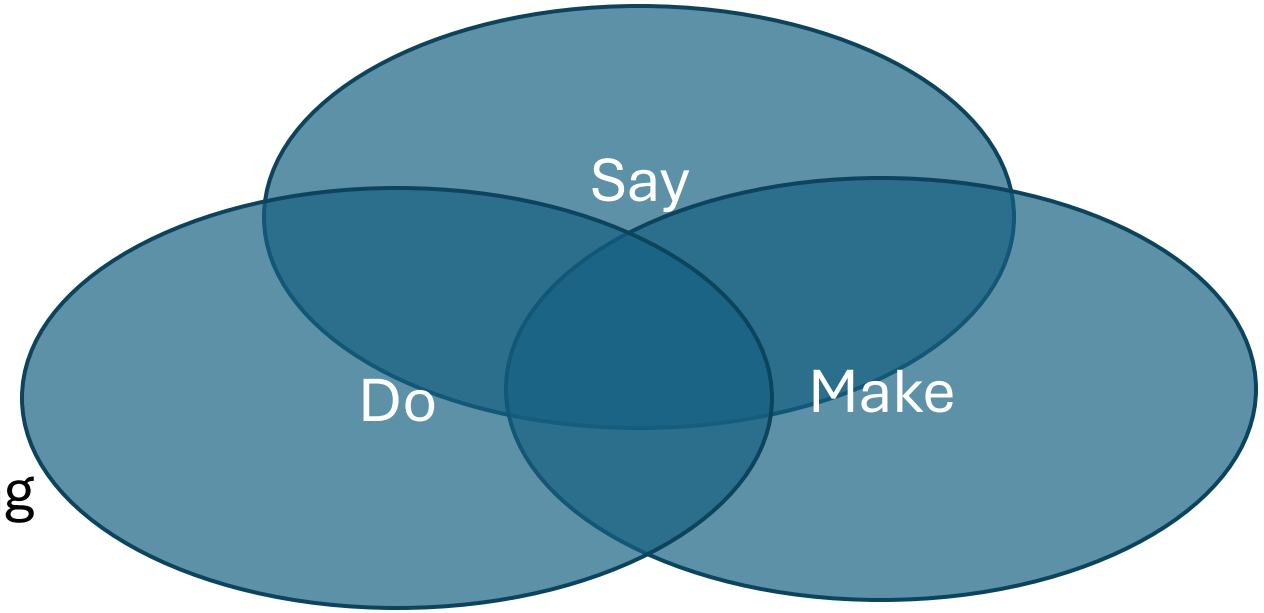
In this video:

- Usability and UX methods overview
  - Say, Do, Make model
  - Why we use different methods
- Examples of Say Methods
- Examples of Do Methods
- Examples of Make Methods

Usability and UX Methods Overview

Say, Do, Make Model

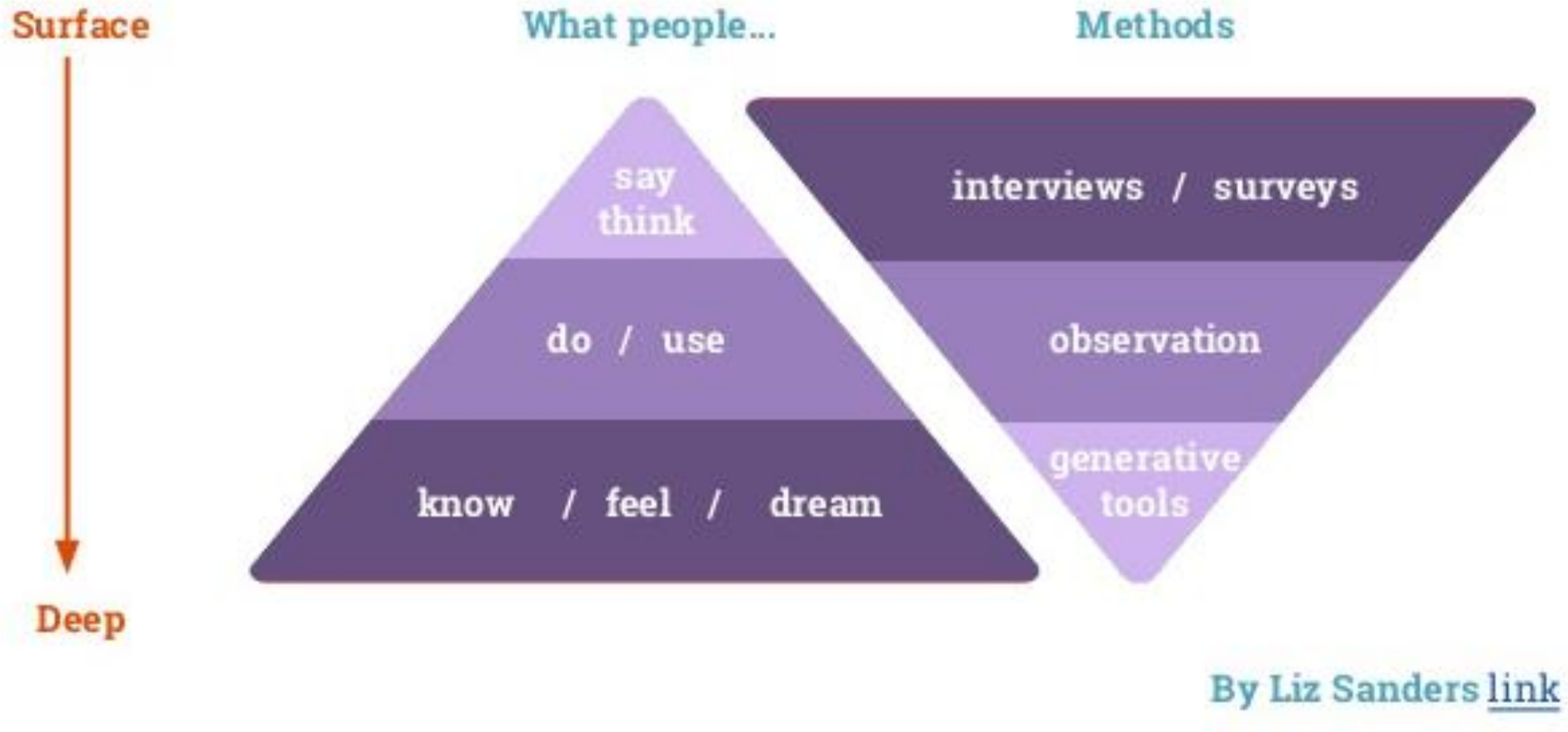
- Interviews
- Focus Groups



- Observation
- Diary
- Usability testing

- Collage
- Mapping
- Card sorting
- Photo elicitation
- Probes

Why Use (Different) Methods?



- Aim for a deep understanding of experiences by combining different methods (triangulation)

http://www.maketools.com/articles-papers/FromUsercenteredtoParticipatory_Sanders_%2002.pdf

Examples of Say Methods

Interviews, Focus Groups

Interview (Say Method)

- Interviews are a “conversation with a purpose” (Kahn & Cannell 1957)
- Common research method in many different disciplines BUT there is an art to doing them well
- Three different types of interview:
    - Unstructured
    - Semi Structured
    - Structured

Unstructured Interviews

When to use:

- Unstructured interviews are best when you have little to no understanding of the topic being discussed

Pros:

- High flexibility - you follow up on anything you feel is relevant
- The participant gets to do most of the talking

Cons:

- No planning means that your odds of missing important things are high
- Challenging to identify what exactly to follow-up on in real-time

Structured Interviews

When to use:

- When you know your topic very well
- When you want structured data
- Many people will be interviewed, possibly by several interviews

Pros:

- Well-defined script, very clear what you will ask the participant
- Easy to replicate between participants and interviewers

Cons:

- Inflexible – no way to follow up with participant
- Difficult to identify if you have the correct questions or answers

Semi-Structured Interviews

When to use:

- When you know the topic area well enough to predict key areas, but not well enough to know what people are likely to say

Pros:

- Loose script that makes sure you cover key topics
- Possible to somewhat replicate between participants and interviewers

Cons:

- Interview is more topic-constrained than unstructured, may miss key ideas because they are not in the script
- Follow-up possible, but more time limited

Focus Groups

- Group interviews
- Structured and attentively moderated.
- Often used at early stage of gathering insights, or later to gain reactions to prototypes

✓ Good at gaining a consensus view and/or highlighting areas of conflict

✓ Good at getting reaction to what presently exists, e.g., to compare different products or prototype ideas and features

✓ Efficient, less time consuming

✓ Participants can build on each other's knowledge

- ✗ places greater responsibility on the moderator
- ✗ can't replace methods that provide insight into context, such as diary-study or observations

For more information see https://www.annualreviews.org/doi/abs/10.1146/annurev.soc.22.1.129

Interview tips

- Allow respondents time to think (don’t rush for responses)
- Listen more than you speak
- Ask simple, open-ended questions
  “Can you tell me more about …”
- Ask about concrete experiences
  “When was the last time you noticed a bird outside? Where and when did this happen?
- Help respondents to develop information (probing)
  “Can you tell me more about x?” “Where/When did this happen?”
  “How did it start?” “What happened next?”
  “Who else was there and what did they do?” “What did you think about that?”
  “What were your feelings about that?”
- Record and transcribe interviews word for word

Interview Guide

- Prepare a list of questions that covers all your key questions and includes follow-up questions.
  - Easy beginning
  - Covers all topics
  - Moves from general to specific
  - Uses open-ended questions asking about concrete experiences
  - Use the time wisely
- Brainstorm questions
- Identify and order topics

- INTRODUCTION

  Welcome

  Thank you for your time

  Let me briefly tell you about the aim of this interview: …

  Please read the consent form and let me know if you have any questions.

  Is it ok if I start recording?

- TOPIC 1: X
- Can you tell me about the last time you did X?
  - What started X?
  - What were the key steps/challenges?
  - How long did it take?
  - What was the outcome?
  - …
- TOPIC 2: Y
- …
- Is there anything else that I have missed in this interview?
- I will now stop recording.
- Thank you for support

Examples of Do Methods

Observations, Usability Test, Diary Study

Observation

- Watch participants as they carry out an activity and take notes
- Different degrees of participation by the observer
  - Watching from afar but not interfering
  - Taking an active part in the activities
  - BUT make people aware that you are observing them
- Immersive fieldwork/observation: Through participation in everyday life, very detailed knowledge can be obtained
  - ✓ Gain insights into stakeholders' activities
  - ✓ Good for understanding the nature and context of the activities
  - ✗ But, it requires time and commitment, and it can result in a huge amount of data

Contextual Inquiry

A combination of interviewing people and observing them while they carry out activities in their natural environment, usually for several hours

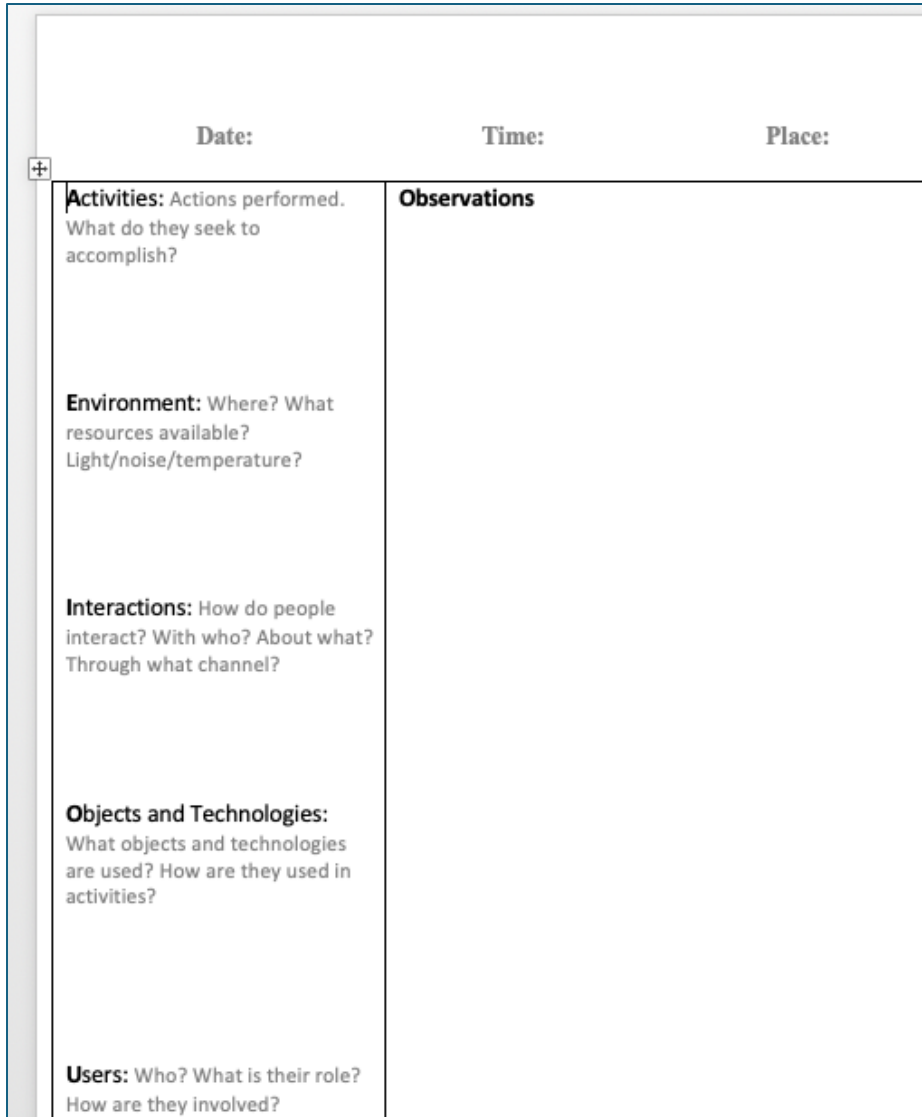
About understanding what people do, rather than what they say they do!

Focussing on how and why they do it

A simple interview on campus or in someone's home etc. is NOT a contextual inquiry

Tips for observing and taking field notes

- Take notes (on paper) while you are in the field, or as soon as you can afterwards; extend and complete your notes immediately after the field visit
- **Note the AEIOU**: activities, environments, interactions, objects (and technologies), and users
  - **Describe activities** in the order in which they occur
  - Use exact **quotes** of interactions when possible
  - Use **pseudonyms** to protect confidentiality of users/people
  - Take **photos & create video recordings** of interactions with participants, if you can
  - Create **maps** to describe environment and to locate objects and users
- **Separate your observations from your thoughts and assumptions**
  - Have **two columns** in your notes – one for observations, one for thoughts and assumptions about your observations
- Record date, time, place, and name of researcher on each set of notes



Date:	Time:	Place:
Activities: Actions performed. What do they seek to accomplish? **Environment:** Where? What resources available? Light/noise/temperature? **Interactions:** How do people interact? With who? About what? Through what channel? **Objects and Technologies:** What objects and technologies are used? How are they used in activities? **Users:** Who? What is their role? How are they involved?	**Observations**	

Usability Testing

- Practical method where **representative users** attempt **representative tasks** and **think aloud** as they work through the tasks.
- Typically includes surveys a/o interviews to reflect on usability
- Helps to identify
  - what is **working well**,
  - what **problems** users have with the design,
  - and what and how the design can be **improved**
- We are researching the technology, not the user, e.g.,
  - Fully-functional designs
  - Paper prototypes
  - Somewhat-functional software…
- Can be done in a lab, a person's workplace, over the web, …
- Aim for multiple rounds of usability tests

Thinking Aloud

- Users speak their thoughts while doing the task
  - *NOT what they are doing,* but
  - what they are trying to do
  - why they took an action
  - how they interpret what the system did
- Gives insight into what the user is thinking
  - most widely used evaluation method in industry
    - may alter the way users do the task
    - unnatural (awkward and uncomfortable)
    - hard to talk if they are concentrating

Steps for Preparing a Simple Usability Test

1. Define the audience and their goals
2. Create tasks that address these goals
3. Get the right people
4. Watch them try to perform the tasks (run the actual usability test)
5. Record the usability test so you can analyse and present insights later on – ensure you capture screen interactions and audio
6. Analyse your observations

- For example,

1. people who want to book flights, i.e., who are value conscious, want flexible time options, compare different airlines and dates, shop online, …
2. You decided to visit a friend in London over a weekend in June. Starting from the Skyscanner homepage, find the cheapest flights in June that suit your time preferences.
   …

   Find out if you can cancel the flight and get fully reimbursed
3. Recruit people who fit your target audience
4. --
5. --
6. What worked well? What problems did you observe? How can the design be improved

Diary

- Participants self-record activities and experiences on schedule
- Useful to study long-term phenomena where observation would be impractical
- Flexible in content, duration, and media (paper, online, audio/video recording)
- Can vary from structured to open-ended
- Can be done over a distance
- Used at different stages of design
  - Early stage of empathizing with experiences
  - Reactions to some prototype ideas
- Elaborate on diary entries through interview

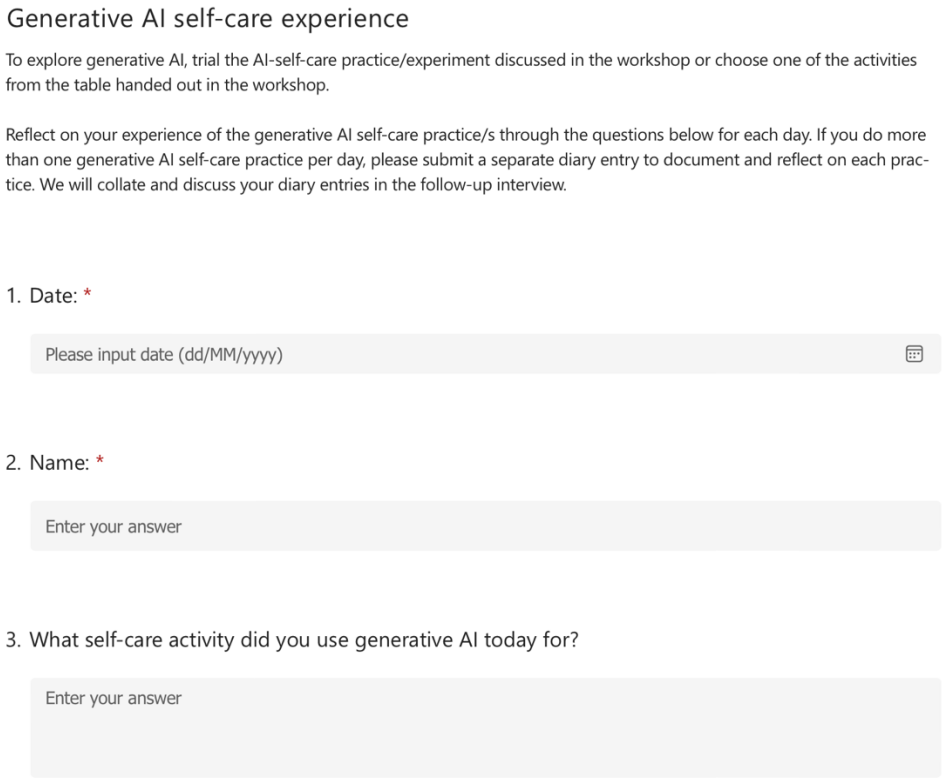
Example: simple online GenAI for self-care diary and follow-up interview

Event-based diary: ask participants to **log every time they use generative AI for self-care**

- Keep diary entry brief
- Include an image / screenshot to prompt reflection in follow-up interview

Follow-up interview to go through the responses and ask participants to elaborate:

- **Activity details**: can you walk me through the different steps of the activity? What triggered the activity? What was the outcome?
- **Digital technology and other things**: how does it work? what role does it play?
- **Context**: where, when, who was involved?
- **Why** do you do it? What got you started? Where did you get the idea from?
- **Timing**: how long does it it take? How often do you do this?


Generative AI self-care experience

To explore generative AI, trial the AI-self-care practice/experiment discussed in the workshop or choose one of the activities from the table handed out in the workshop.

Reflect on your experience of the generative AI self-care practice/s through the questions below for each day. If you do more than one generative AI self-care practice per day, please submit a separate diary entry to document and reflect on each practice. We will collate and discuss your diary entries in the follow-up interview.

1. Date: *

Please input date (dd/MM/yyyy)

2. Name: *

Enter your answer

3. What self-care activity did you use generative AI today for?

Enter your answer

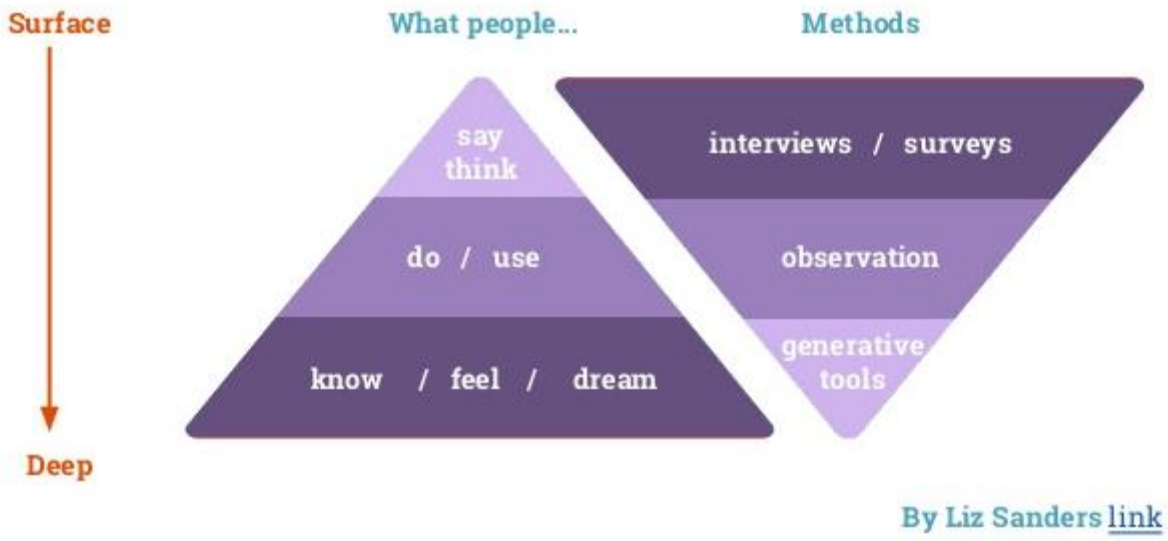
https://dl.acm.org/doi/pdf/10.1145/3643834.3661614

Examples of Make Methods

Collage, Photo Elicitation, Card Sorting, Mapping, Probes

Make Methods

- Also known as
  - Object-based techniques
  - Generative tools
- Assumption: everyone is creative
- Process:
  1. Prepare a range of materials and text prompts
  2. Invite participants to make things during the interview or workshop
  3. Ask participant interview questions to reflect on what they made to gain insights into tacit knowledge, experiences, and desires



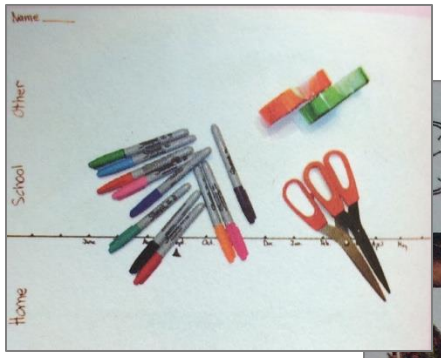
http://www.maketools.com/articles-papers/FromUsercenteredtoParticipatory_Sanders_%2002.pdf

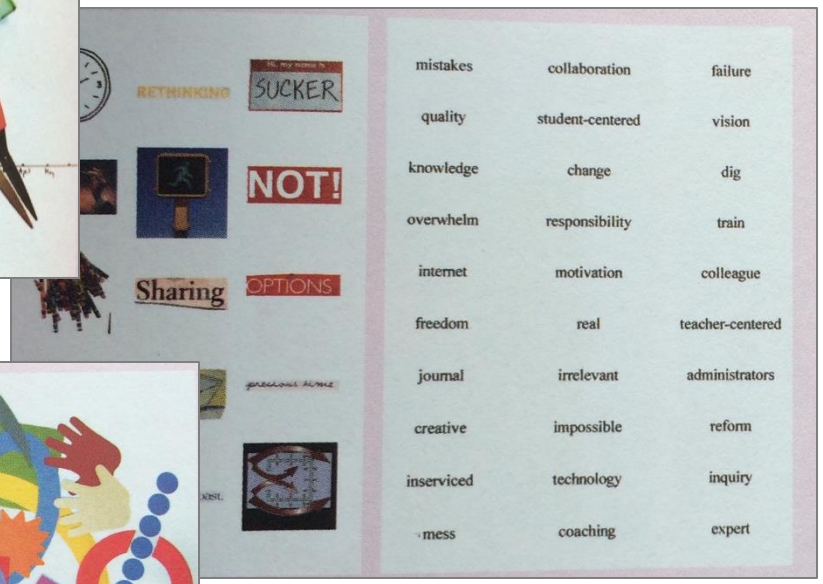
Collage

- Creative exercise of making collages from a set of visual data
- Helps participants express themselves by making and talking about the collage.
- Don’t worry about aesthetics of the collage – we are interested in the personal stories behind the collages
- Can be a group activity

Collage Process

- Prepare visual data (images, icons, shapes, words) relevant to your topic
  - Some background research is necessary
  - Balance positive vs negative; concrete vs abstract
  - A large variety in content
- Provide extra material
  - Scissors and glue
  - Geometric paper cutouts such as stars, squares, and circles
  - Colored markers and pens for annotation and drawing
  - Sheets of plain paper (A3 or larger) as the backing for the collage
- Provide instructions on the topic of the collage
- Take part in creating collages
- Once the collage is ready, ask participants to share their stories with the help of the collage
- Listen and ask follow-up questions





Sanders, E. B. N., & Stappers, P. J. (2012). *Convivial toolbox: Generative research for the front end of design*. Amsterdam: BIS, p.88.

Example: Journeys of a stroke survivor from hospital to home

Ploderer, Bernd, Muller, Jennifer, Busato, Matthew, Tariq, Amina, Clark, Kevin, & Green, Theresa (2022) Co-Design with People Who Have Had a Stroke to Better Understand the Transition from Hospital to Home: A Narrative Account. In Proc. *OzCHI '22* https://eprints.qut.edu.au/238180/

Photo Elicitation

- Show images to participants and ask appropriate questions related to your research topic.
- Photos can be generated by the researcher *or* participant
- Discuss photos in interviews to learn about people and context
    - Photos stimulate different parts of the brain than words do
    - Personal photos can evoke stories
    - Ambiguity can evoke reflection
- Also known as ‘photovoice’

Photo Elicitation to Explore Women's Experiences in a Community Centre

- 13 participants who attended a community centre
- Each participant was given a camera pack to capture certain experiences in their lives over 1-2 weeks
- Images were used to inform a follow-up interview where participants talked about each photo

"I love animals they give such unconditional love, they don't have the ego that humans have. They're such a joy to be around and animals have been my lifeline I think." P4

Capel, T., Vyas, D., & Brereton, M. (2017, September). Women in crisis situations: Empowering and supporting women through ICTs. In *IFIP Conference on Human-Computer Interaction* (pp. 64-84). Springer, Cham.

Card Sorting

- Prepare a set of cards with a word or single image related to your research topic
- Ask participants to select, cluster, or rank cards in order of preference
- Ask questions about their card choices, the way they order them, or the meaning of cards for them

Useful to elicit

- Terminology (what people call things)
- Categories (groups and their names)
- Relationships (proximity, similarity, hierarchy)
- Reflections on activities and experiences

- From https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/card-sorting http://www.designkit.org/methods/24

Card sorting to reflect on emotions and experiences

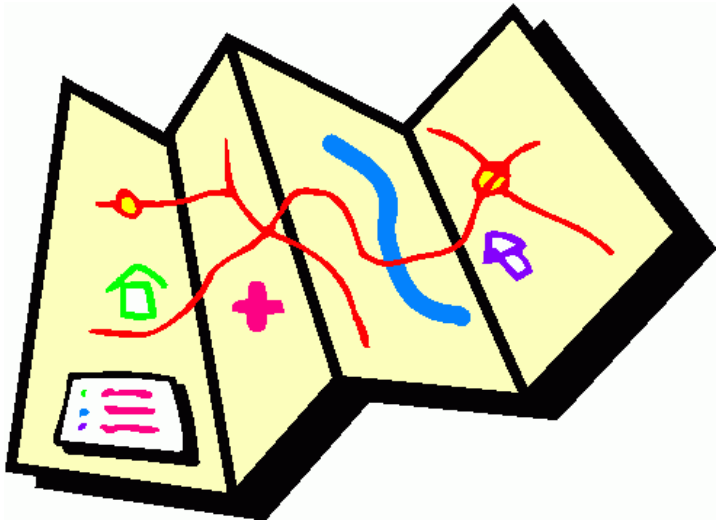
- Ask participant to discuss a particular **experience**, e.g., the last time you stayed in hospital
- Ask participant to identify and describe **key moments**, e.g., how you got to the hospital, experience during assessments, stay in room, debrief before going home.
- Lay out the cards on the table, and ask participant to **select an emotion** card that best describes how they felt at a key moment.
- Include **blank cards** to fill in their own emotion words
- Invite participant to **describe why they felt that way**
- Reflect on **what could have been done differently** to improve the experience in that key moment

- Dewar, B., Mackay, R., Smith, S., Pullin, S., & Tocher, R. (2010). Use of emotional touchpoints as a method of tapping into the experience of receiving compassionate care in a hospital setting. *Journal of Research in Nursing, 15*(1), 29-41. doi: https://doi-org.ezp01.library.qut.edu.au/10.1177%2F1744987109352932

- emotion cards are available on http://myhomelife.org.uk/wp-content/uploads/2014/11/MHL_Toolkit_FeelingsWords.pdf

Mapping

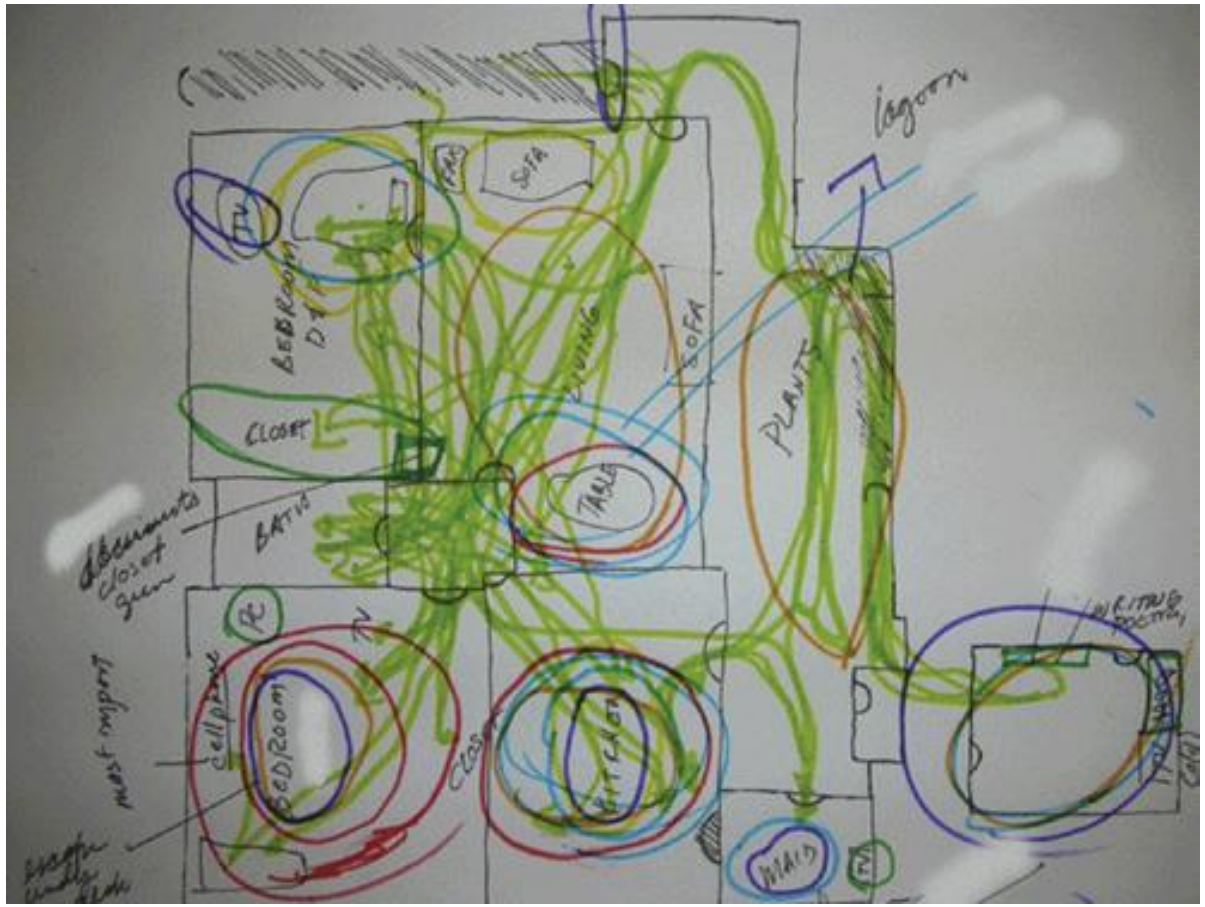
- Participants create maps to represent their relationships between people, objects, or spaces.
  - helps externalize people's beliefs, perceptions and experiences to enrich an interview



Mapping Process

- Ask user(s) to draw a map on a sheet of paper.
  - Provide them with required materials
  - Audio/video record their process
  - E.g. “can you draw the ‘flow of money’ in your household?”
  - E.g. “can you draw a map of your home and your activities in the afternoon and evening?”
- Ask questions based on the final map
  - Can you talk me through your map?
  - Can you tell me how these two boxes are connected?
  - Why have you emphasized on this object in your map?

Mapping Places and Activities/Movements



Goodman et al. (2012) Observing the User Experience.p.197

Probes

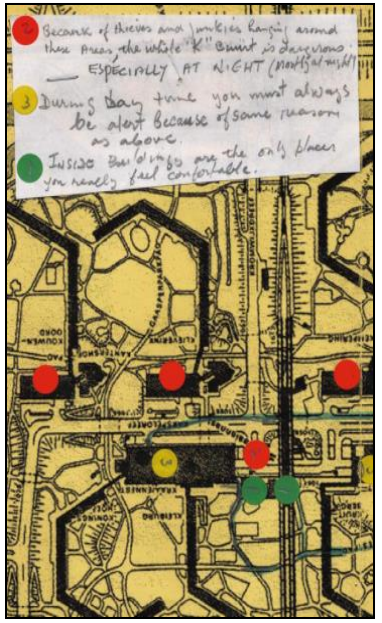
Gaver et al. (1999) Cultural probes. interactions, 6(1), 21-29. https://interactions.acm.org/archive/view/jan.-feb.-1999/design-cultural-probes1

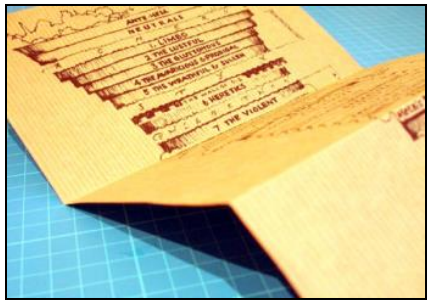
Probes are "self-reporting" kits that are intended to **capture users' feelings, emotions and experiences**.

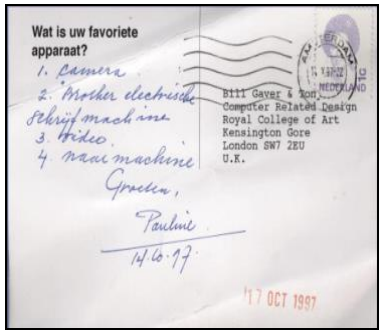
- Designed for specific research aim
- Open-ended tasks
- Tangible tool kit
- Playful & fun exercises
- Used early in the design process
- Provide design inspiration and insight into experiences

Cultural Probes for Older Adults

- Materials are customised to research aims, for example,
  - Disposable camera with prompts (e.g., your home, something desirable, …)
  - Postcards with image and question, e.g., “Tell us about your favourite device”
  - Maps, e.g., “Where have you been in the world?”
  - Voice recorder, e.g., to record dreams



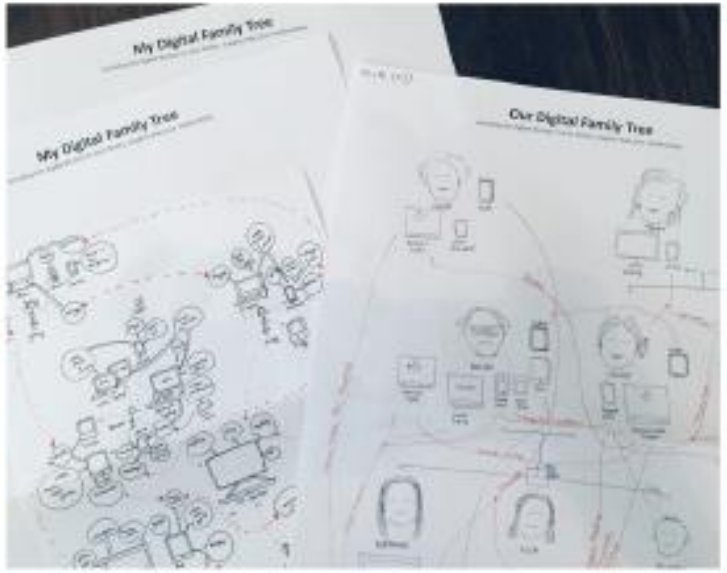


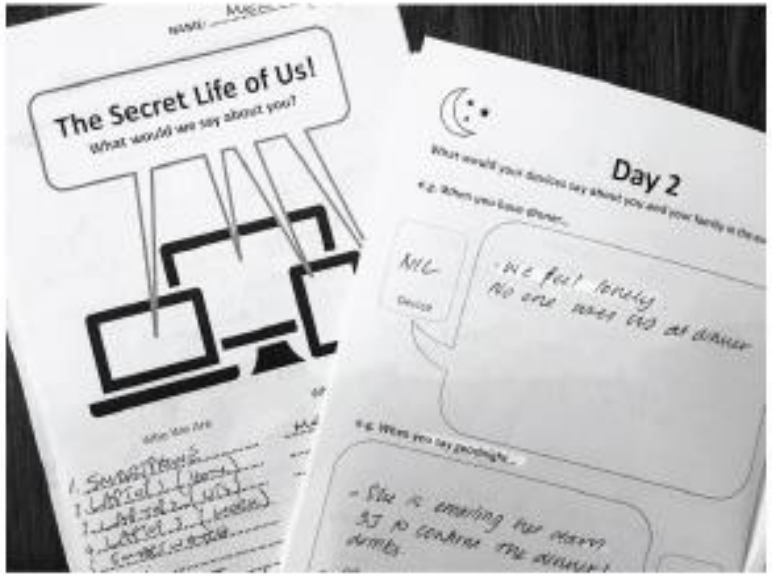


https://probetools.net/

Gaver et al. (1999) Cultural probes. interactions, 6(1), 21-29. https://interactions.acm.org/archive/view/jan.-feb.-1999/design-cultural-probes1

Cultural Probes to Study Digital Technologies with Families





- Family Experience Jar
- Digital Family Tree
- & Device Journal

- Eleanor Chin Derix and Tuck Wah Leong. 2019. Towards a Probe Design Framework. In Proc. of OZCHI'19. ACM, New York, 117–127. https://doi.org/10.1145/3369457.3369467

Why materials matter in design?

- Materials stimulate creativity, allow tangible exploration, and foster collaboration
- Facilitating engagement with new tools and materials, we can open up new areas of design by allowing new opportunities for self-expression, dialog and reflection between the participants themselves, participants and researchers, and participants and the items they create

- Categories of Materials:
  - Physical materials: paper, videos, photos, Lego, clay, fabric, wood
  - Digital materials: software and hardware tools, cameras (video/photo), mock-ups, prototypes
  - Cultural materials: objects, artefacts, stories, experiences

Thank you!