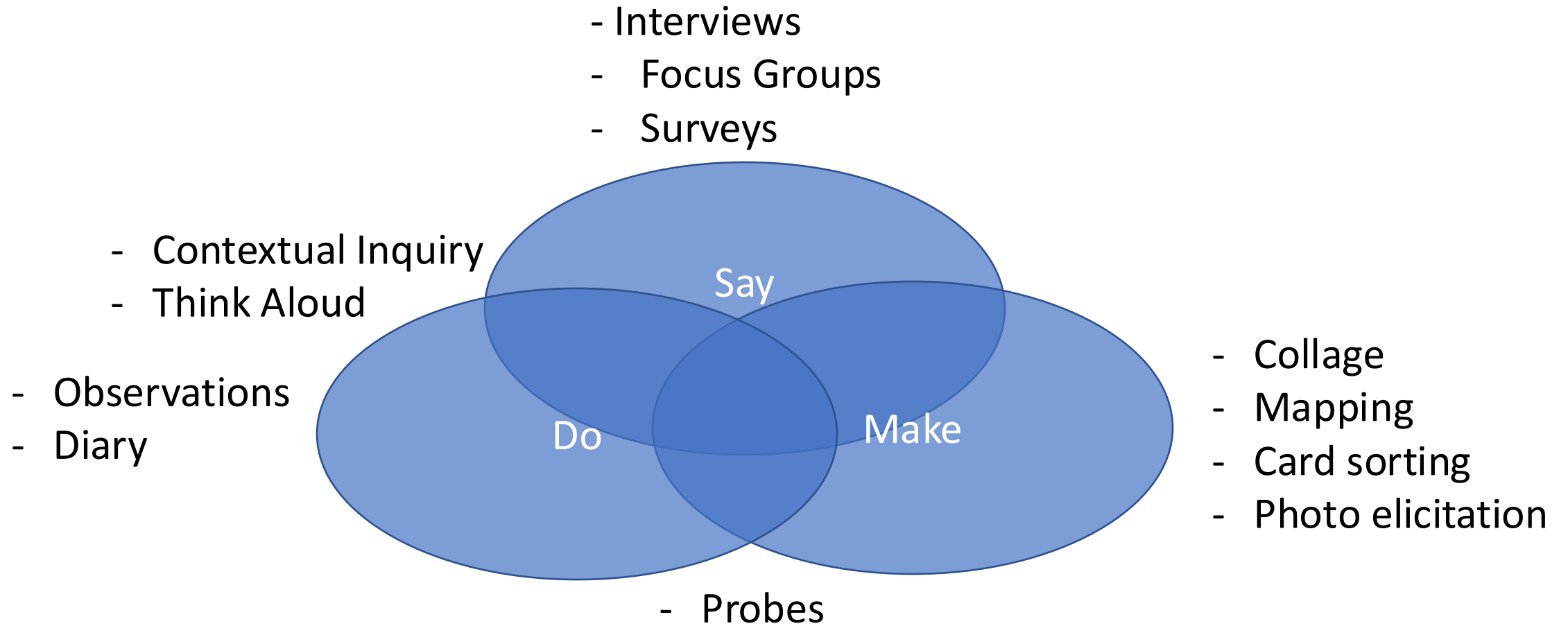


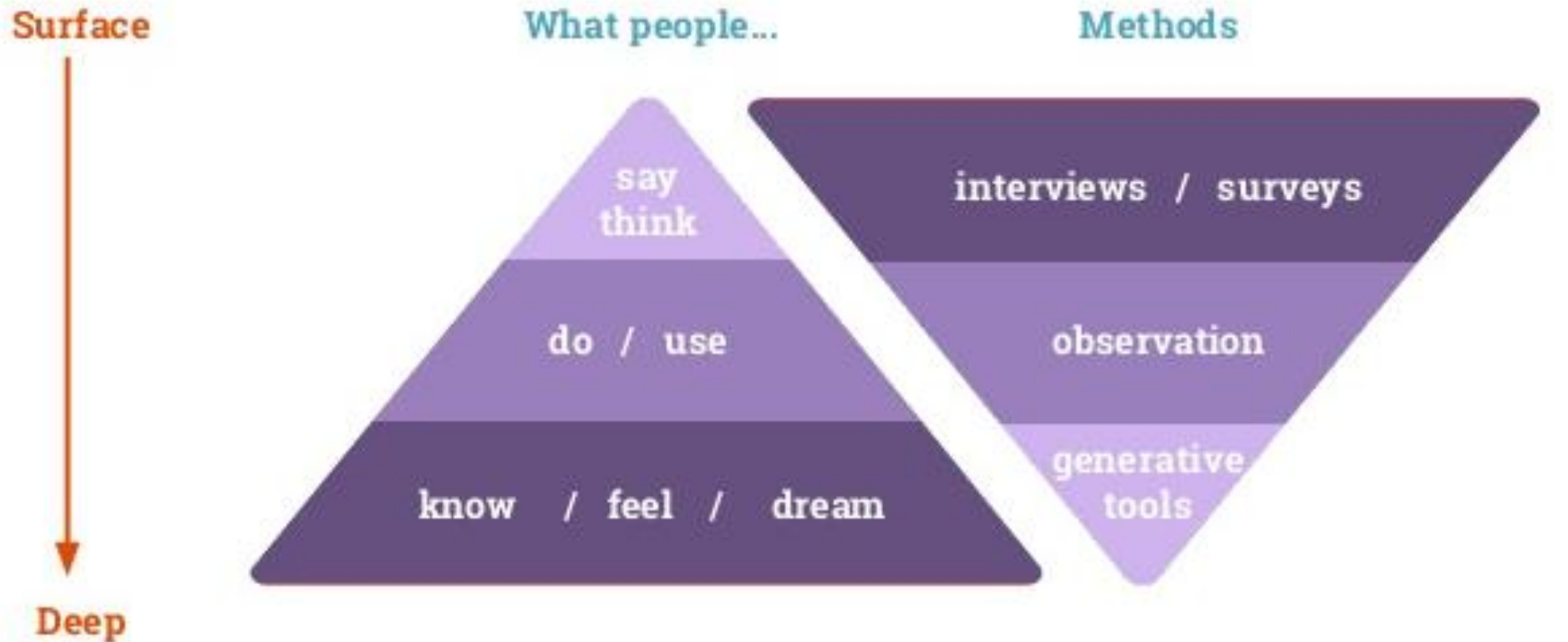
Design Research Methods: Making, Materials and Co-Design

Dr Tara Capel

Say, Do, Make Model



Why Use (Different) Methods?



By Liz Sanders [link](http://www.maketools.com/articles-papers/FromUsercenteredtoParticipatory_Sanders_%2002.pdf)

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

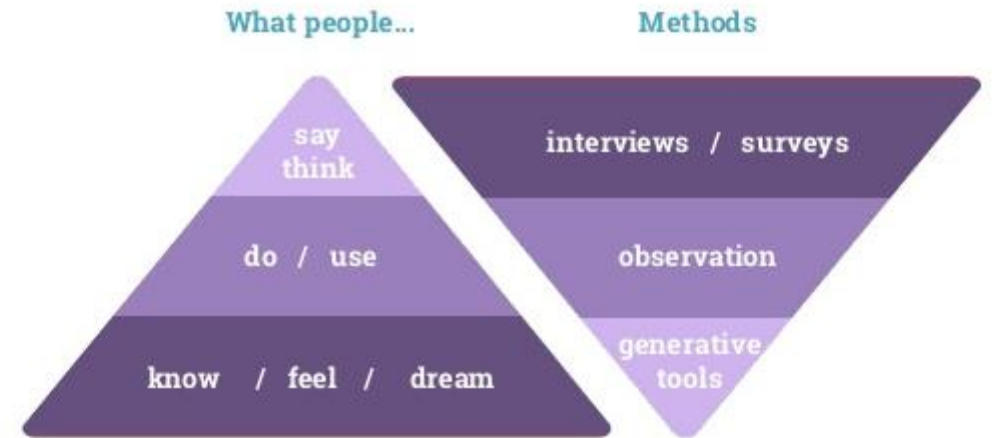
Make Methods

- 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

Surface



Deep



By Liz Sanders [link](http://www.maketools.com/articles-papers/FromUsercenteredtoParticipatory_Sanders_%2002.pdf)

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

Examples of Make Methods

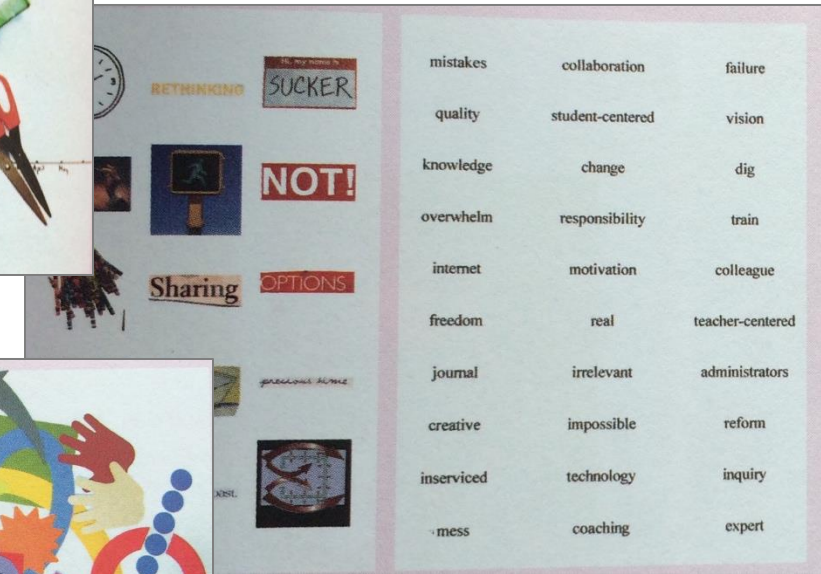
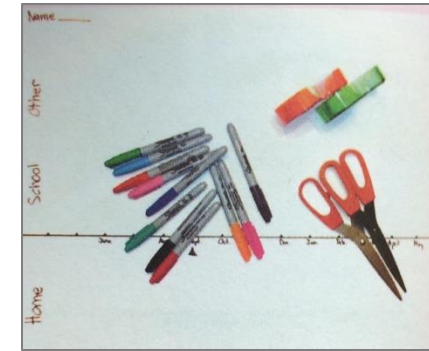
Collage, Photo Elicitation, Probes

Collage

- Creative exercise of making collages from a set of visual data
- Helps participants express themselves by making the collage & talk 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](https://eprints.qut.edu.au/238180/). 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 Study Health Values



Figure 1. Examples of photographs participants took to demonstrate values: a) religious images on display, b) photographs of grandchildren, c) a backyard patio, d) a pair of golden retrievers, e) hats received as gifts from grandchildren.

- Instant camera provided
- “Please take up to 10 photos of things that are important to your health or well-being.”
- Interview begins by asking the patient or caregiver to tell us what is important in each photo.
- Berry et al. 2017. How Values Shape Collaboration Between Patients with Multiple Chronic Conditions and Spousal Caregivers. In *Proceedings of CHI 2017*. DOI: [https://doi-org.ezp01.library.qut.edu.au/10.1145/3025453.3025923](https://doi.org.ezp01.library.qut.edu.au/10.1145/3025453.3025923)

CG4 said the following when we asked what she did to manage her health: “...we have 11 grandchildren. We go to their sports functions...we're never home...The neighbour next door just said to us, ‘You are the most people on the go that I've ever seen.’ So, we just do a lot with our church and with our kids. When you have four and five kids, there's a lot to do—and 11 grandkids. Keeps me busy...we probably need to take more time for—to take care of our body in a sense of exercising, yes...but on the other hand, if we weren't on the go, we might just be sitting here and doing nothing.” (CG4)

Probes



Gaver et al. (1999) Cultural probes.
interactions, 6(1), 21-29.

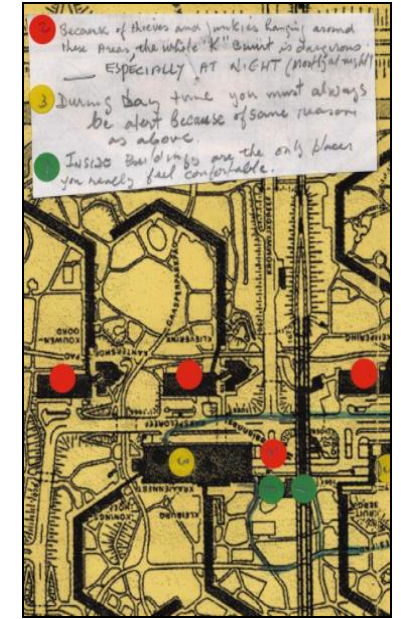
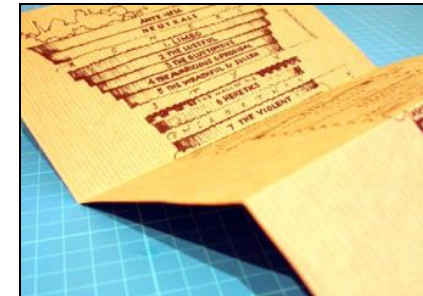
<https://interactions.acm.org/archive/view/jan.-feb.-1999/design-cultural-probes1>

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

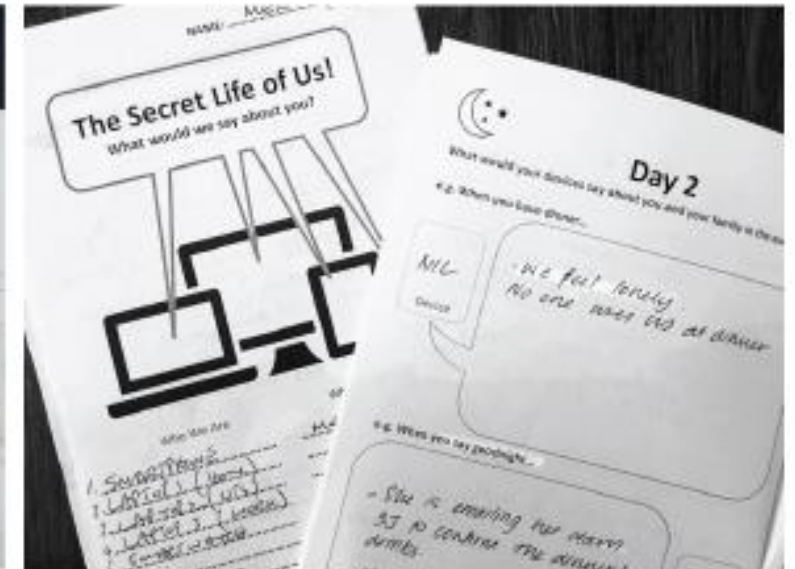
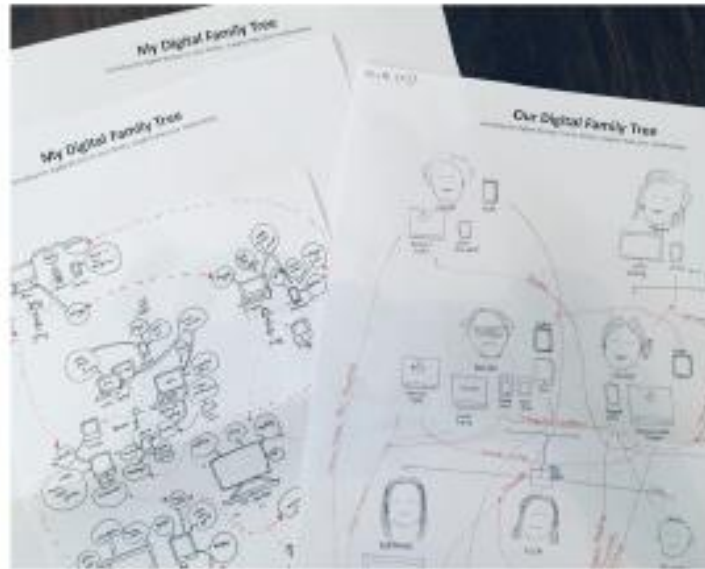


<https://probetools.net/>

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>

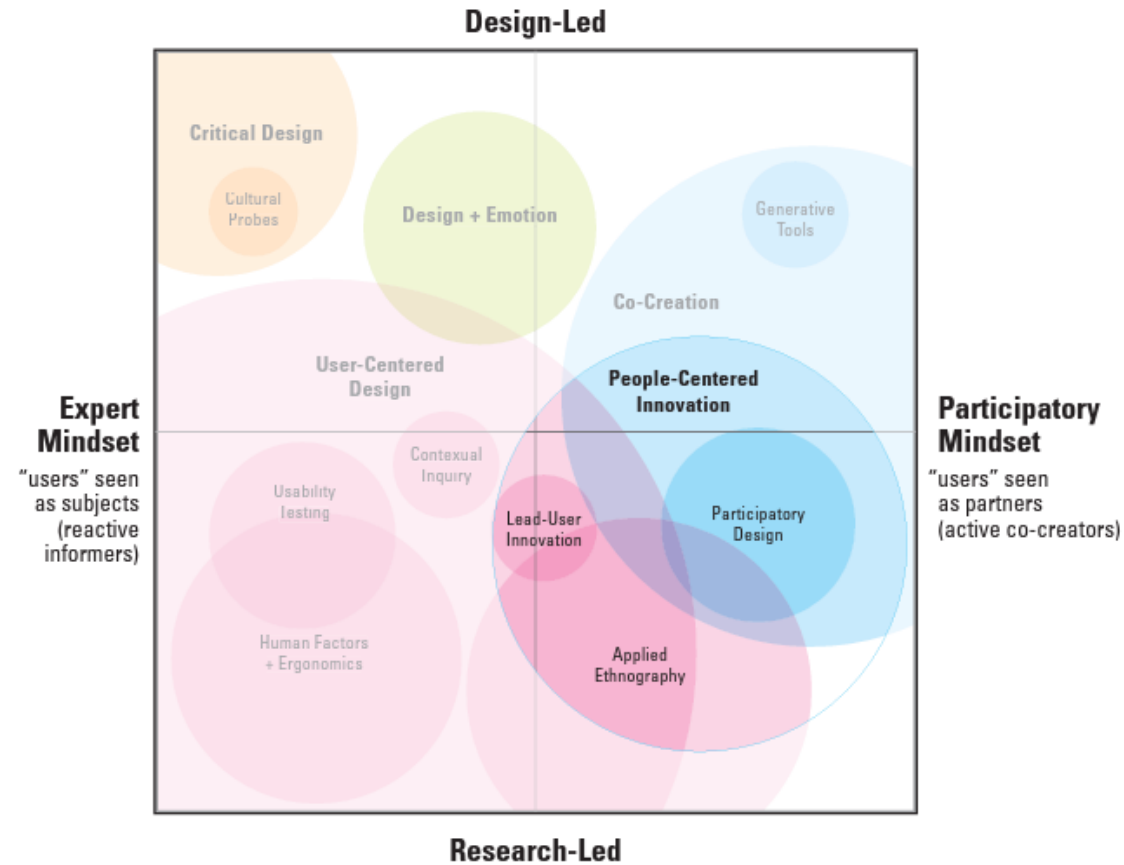
Why materials matter in design?

- 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

Co-Designing with Women at a Community Centre

Co-Design

- Co-design represents a shift from people acting as a subject or informant to involving people in the design process itself
- Co-design in this research refers broadly to the *“creativity of designers and people not trained in design working together in the design development process”* (Sanders and Stappers 2008, p.6)
- People are positioned as ‘experts of their experience’



Elizabeth B-N. Sanders, and Pieter Jan Stappers. 2008. Co-creation and the new landscapes of design. Co-design 4, no. 1 , 5-18.

Liz Sanders. 2008. ON MODELING: An evolving map of design practice and design research. interactions 15, 6 (November + December 2008), 13–17.

Study 1: Exploring the Experiences of Women in a Community Centre

Exploring the Experiences of Women in a Community Centre

Aim:

- Design technology to support the wellbeing and empowerment of women at the community centre
- Understand the lived experiences of women at the community centre

Methods:

- Collaborated with a non-profit community centre
- Undertook qualitative study with 15 women who attended the centre
- Data was gathered through self-reporting probe kits and semi-structured interviews
- Self-reporting probe kits contained video camera, disposable camera and prompts



Capel, T., Taylor, J. L., & Vyas, D. (2016, November). Using self-reported experiences to explore the issues of women in crisis situations. In *Proceedings of the 28th Australian Conference on Computer-Human Interaction* (pp. 483-488).

Exploring the Experiences of Women in a Community Centre

Findings:

- Stories and experiences related to three main issues
 - Housing insecurity
 - Social isolation
 - Stigma
- Participants had stories, experiences and advice that they had captured that they wanted to share with other women within the community centre



Photos from Tara Capel, all rights reserved

Exploring the Experiences of Women in a Community Centre

Findings:

- Participants engaged in making activities, such as knitting and craft, in order to both support their wellbeing and engage in social activities



Photos from Tara Capel, all rights reserved

Exploring the Experiences of Women in a Community Centre

Design Implications:

- Participants suggested an online community platform within a women-only space
- Trialled the creation of an e-zine through a zine kit



Photos from Tara Capel, all rights reserved

Study 2: Women-Only Makerspace

Understanding Women's Participation in Makerspaces

Three important qualities:

- Women-only space
- Learning occurred through structured workshops and the design of the space that enables access to tools, materials, the instructor and other participants
- Resulting artefact that enabled learning and turned learning into concrete item that held meaning



Capel, T., Ploderer, B., Brereton, M., & O'Connor Solly, M. (2021). The making of women: creating trajectories for women's participation in makerspaces. *Proceedings of the ACM on human-computer interaction*, 5(CSCW1), 1-38.

Study 3: The Wooden Quilt: Designing with Personal Narratives in a Makerspace

The Wooden Quilt

Aim:

- Explore the concept of a digital noticeboard in the community centre which also enabled participants to engage in a group making activity
- Establish an understanding of how researchers can leverage participation in a makerspace, making activities and storytelling in the design of technologies to support wellbeing and empowerment



Capel, T., Ploderer, B., & Brereton, M. (2020, July). The wooden quilt: carving out personal narratives in a women-only makerspace. In *Proceedings of the 2020 ACM Designing Interactive Systems Conference* (pp. 1059-1071).

The Wooden Quilt

Wooden Quilt Probe:

- Participants carved personal narratives into a wooden panel
- Recorded a video to accompany their individual panel
- Individual panels formed a collective wooden quilt probe

Makerspace Environment:

- Created a women-only makerspace environment at the community centre
- Ran structured workshops to learn to carve the wooden panel
- The wooden panel artefact enabled learning and turned learning into concrete thing that held meaning
- The space facilitated sharing with other women within the community centre



Capel, T., Ploderer, B., & Brereton, M. (2020, July). The wooden quilt: carving out personal narratives in a women-only makerspace. In *Proceedings of the 2020 ACM Designing Interactive Systems Conference* (pp. 1059-1071).

The Wooden Quilt

Methods:

- Design Workshops
 - 10 workshops over 3 months
 - Workshops held weekly for 2-3 hours each
- Post-Workshop Semi-Structured Interviews
 - Conducted semi-structured interviews with two participants at their homes



Capel, T., Ploderer, B., & Brereton, M. (2020, July). The wooden quilt: carving out personal narratives in a women-only makerspace. In *Proceedings of the 2020 ACM Designing Interactive Systems Conference* (pp. 1059-1071).

The Wooden Quilt

Findings:

- Stories of personal trajectories and life disruptions
- Making and materials
- Wellbeing and empowerment



Capel, T., Ploderer, B., & Brereton, M. (2020, July). The wooden quilt: carving out personal narratives in a women-only makerspace. In *Proceedings of the 2020 ACM Designing Interactive Systems Conference* (pp. 1059-1071).

Claire's Panel

"My tile represents my interpretation of life. It is abstract, and although it's not my life, some of it is indicative of what has happened to me. The top section represents the steps, we go up and down throughout our lives. Sometimes there can be a major sudden disruption and we find ourselves at the bottom. The second part of my tile represents the twists and turns life takes. Tracing from the bottom up, time passes slowly and as we move on time passes more quickly. The twists and turns get shorter. In this tile at the top of the curve, there are three dots indicating that life is not over yet there is still more to come. My initials are on the tile and the flower was just me playing."



Capel, T., Ploderer, B., & Brereton, M. (2020, July). The wooden quilt: carving out personal narratives in a women-only makerspace. In *Proceedings of the 2020 ACM Designing Interactive Systems Conference* (pp. 1059-1071).

Claire's Panel

- Suffered two strokes – had to learn to read again and lost many memories
- Spoke fondly of her travels when she was younger
- Shared stories of being a medical laboratory technician
- Was housing insecure and learning how to apply for housing online
- Was very close with her children and grandchildren, had children living overseas and would stay connected to her children and grandchildren via photos sent to her phone
- Was not allowed to participate in woodworking at school but was interested in learning more woodworking skills and power tools in order to do her own repair work

Questions?