The Human Factor (THF)

Week 9: Report Writing

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Week 9 Outline

- CW2 Report Structure/Writing and Marking Rubric
- Student Led Inquiry: Conducting usability tests and observations remotely
- Activity: Report Structure

CW2 Report

Report Content

- Introduction
- Methods
- Findings
- Design Ideas
  - Ideation
  - Sketches
- Prototype
- References
- Acknowledgement of use of GenAI
- Appendices
  - A: Method instruments used
  - B: Anonymised study data

The Brief

- Your goal for this coursework is to create an interactive technology prototype.
- You will generate a range of design ideas and sketches based on the findings from usability and user experience research in a real-world context. These will be refined into an interactive prototype that presents novel and original ideas that reflect your analysis and that has the potential to be tested with target users.
- **Indicative length:** 4000-5000 words (not counting references and appendices; references and appendices have no word limit)

Introduction

Succinctly introduce your study

- Introduce the project topic, and problem you are addressing
- Describe the aim and scope of the work within the broader project topic
- Reference literature to define key terms and to provide further insights into the project
- Write in simple and clear language

Methods (Brief)

Choosing methods

- Each group will utilise at least **one say, one make, and one do method** to investigate 1) the usability and user experience of an existing technology of your choice, and 2) the broader context in which the use of that technology is situated. You are asked to combine one say, one do, and one make method as this will provide you with a richer understanding of people, context and technology use.
- You will use the instruments you have created for your say, do and make methods (for example, interview guide, usability test, collage - see week 2 materials) to study the experiences, needs, and technology use of your participants. Your participants will be another group from the course.

Methods (Report Section)

Describe and justify the methods applied in the study

- Clearly state the project aim
- Describe participants and their context (these will be the members of the other group)
- Explain and justify the methods used; study covers one say, one do, and one make method
- Describe the data analysis process
- Acknowledge the limitations of your research

Findings (Brief)

Gathering and analysing data

- You are asked to record each of your methods either via audio recording and/or video recording. For example, we recommend video and audio recording a usability test to capture the screen as your participant interacts with the technology. Tools such as Microsoft Teams and Zoom provide the ability to record video and audio and provide an AI-generated transcript as a starting point for you to transcribe your recordings. Each of your recordings must be transcribed and included in your appendices.
- Ensure that you anonymise the data that you collect. For example, anonymise transcripts by changing names to pseudonyms or P1 and P2. Anonymise any photos or images by covering faces.
- You will then analyse your data through thematic analysis to give an overview of key findings that relate to your project aim. You must present data from all methods and all participants. Within your findings section, present each theme with evidence from your methods (for example, an interview quote, or an image).
- You should include appendices with all method instruments used and all data collected (see template for details).

Findings (Report Section)

- Describe key findings as relevant to your project aim and topic.
- Structure your findings by key themes that relate to your topic and project aim
- Under each theme, describe concrete experiences supported by evidence from interview quotes, pictures, observations, objects (e.g., collages), etc. Apply human factors to illustrate different aspects of the experience. Describe what was unexpected, interesting, typical, problematic etc.

Findings Example

- Describe each theme in general terms
- Then illustrate your theme through examples of specific experiences
  - Include a quote from your interview or an image from you say-do-make research
  - Give the reader context to understand how this example illustrates your theme

Findings Example

Figure 4. Picture of P1's running playlist

This is supported by our survey where over 80% of the participants agreed that they were motivated to do sports because they wanted to stay healthy. Furthermore, we found out that specific personal goals as well as improvement and achievement acted as motivators. P5 describes her goal like this: "*We have cheerleaders on the side [of the football field] or dance teams and I want to be one of those girls. I have to train hard for that. I really want it* (P5, 21)". With the agreement of two-thirds of the participants the survey results strengthened specific goals and self-improvement as leading factors for motivation.

In the returned probe packs, P1 and P2's exercise diary revealed an unconscious dependency between the participants' mood and their exercise behaviour. The better the mood was on a day, the more they worked out. When the participants had not worked out, they reflected on why, and what could have motivated them. They mentioned this activity had helped them reflect on their individual barriers and change their behaviour afterwards. The maps and photographs in the returned probes pointed towards scenic locations for exercise acting as a motivating factor.

Barriers

The barriers we observed that prevented people from participating in sports were lack of time, lack of energy, prioritising other activities, weather and scheduling. The strongest barrier mentioned was the lack of time to participate in sport. The value of the cultural probes here was the additional insight regarding the causes behind participants reported lack of time. Most participants' diary entries showed that the reasons for not exercising were due to tiredness from university work or paid employment. When asked about his lack of motivation, P1 replied: "*When I'm super tired and I haven't slept because I have an assignment due that I haven't done… It's kind of like a lack of time and energy*" (P1, 19). Many participants enjoyed training or exercising with others, however scheduling activities to mutually acceptable times was a difficulty. For others, exercise became a low priority: "*You've got to cook dinner yourself or you go and see your parents and it's just kind of one of the things that gets shoved to the back*" (P6, 24). More than 60% of the survey participants agreed with the statement that 'there are other things with a higher priority' than sport. Further barriers identified in the returned probe materials and in interviews were scheduling sport amongst other activities and the weather: "*Winter is the hardest because it's cold and the days are shorter*" (P6, 24).

Technology

Five of the six participants used technology in their everyday physical activities. These ranged from a GPS watch used to track running speed, distance and location (P2, 24), to mp3 players used for listening to music while exercising (see Figure 4). These technologies played a key role in motivation: "*I really like running with the GPS watch. If your goal is to run a specific pace or get better it's really hard to do it without knowing how fast you run*" (P2, 24). P2's map, included as part of his returned probe, allowed us to see how he used this technology. He first tracks his run along the river, and then does a strength workout by the outdoor gym equipment (see Figure 5) where he requires his hands free for the activities. The use of favourite music at the right time scored high in the survey as a motivator. Through the interviews it emerged that people favoured lighter devices. For

https://dl.acm.org/doi/pdf/10.1145/2702613.2732800

Design Ideas (Brief)

Ideate

- Based on the findings your group will generate novel and original design ideas for re-imagining the technology you have investigated. Provide reasoning for your design suggestions based on the findings from your say, do and make methods, and the categories of human factors that they address (for example, cognitive, behavioural, social).

Brainstorming Process:

- Based on your findings, generate at least 10 alternative design ideas.
- Avoid dismissing ideas too early, focus on quantity first and then assess quality and feasibility later.
- You can apply the following criteria for selecting and refining existing ideas. Ask each of the following questions for each of your ideas:
  - Experience: how does it enhance the experience of potential target users?
  - Insight: what will you learn from its deployment?
  - Innovation: is the design novel?
  - Feasibility: can you build a prototype to test it?
- Write a short 2-3 sentence description for each idea, explaining its core concept and how it considers human factors (usability, user experience, accessibility, social, cognitive, behavioural, etc).

Design Ideas (Report Section)

- Describe how you have reimagined the technology.

4.1 Ideation

- Describe your 10 design ideas and how they were ideated. Write a short 2-3 sentence description for each of the ideas, explaining its core concept, and how it considers human factors (usability, user experience, accessibility, social, cognitive, behavioural, etc).
- Ensure that the design suggestions are clearly connected to your findings and consider human factors.

Design Ideas (Brief)

Sketch

- Once your group has brainstormed a variety of novel and original design ideas for re-imagining the technology, you will create sketches for 3 of the most promising or interesting ideas. Sketching helps to visualise how users might interact with the design and can highlight potential usability or user experience issues early in the process.

Selection of Ideas:

- As a group, select three ideas that you believe have the most potential. You can apply the following criteria for selecting ideas. Ask each of the following questions for each of your ideas:
    - Experience: how does it enhance the experience of potential target users?
    - Insight: what will you learn from its deployment?
    - Innovation: is the design novel?
    - Feasibility: can you build a prototype to test it?

Sketching Process:

- Create simple hand-drawn or digital sketches that illustrate how a user would interact with the design. These do not need to be highly detailed, but should clearly communicate functionality.
- If applicable, include different views. For example, multiple screens for an application interface or different states of an interaction.
- Write a short paragraph for each sketch explaining what the design aims to achieve, how the user interacts with it, and any key features that support human factors (usability, user experience, accessibility, social, cognitive, behavioural, etc).

Design Ideas (Report Section)

Sketches

- Describe your 3 sketches and how they were selected from the initial 10 design ideas. Write a short paragraph for each sketch explaining what the design aims to achieve, how the user interacts with it, any key features that support human factors (usability, user experience, accessibility, social, cognitive, behavioural, etc).
- Ensure that the sketches remain connected to your findings and consider human factors.

Prototype (Brief)

- Your group will now select one of the three sketched ideas to develop into a prototype. While this prototype will not be evaluated by real users, it must be created in a way that a potential user could interact with it or in a way that it could be demonstrated to a potential user. The goal is to create a tangible representation of the design that reflects human factors considerations (usability, user experience, accessibility, social, cognitive, behavioural, etc). You can create a paper prototype, interactive wireframe, a high-fidelity prototype, a video prototype, or a wizard-of-oz prototype.

Prototype (Report Section)

- Describe your chosen prototype and include a short rationale for choosing this idea (or combination of ideas) to prototype based on the experience, insight, innovation and feasibility criteria above.
- Explain key functionality and how users can interact with it.
- Include a link to a demonstration of the prototype (this could be a video demonstration of a wireframe or paper prototype, a link to a Figma prototype we can interact with, etc). If you are unsure how best to include a demonstration of your prototype, ask a member of the teaching team.

References

- Provide the list of references. These can be course materials, textbooks, academic papers or news articles. There is no minimum number of references. You may choose the reference style of your choice, as long as it remains consistent.

Acknowledgement of use of GenAI

- If you have used Generative AI to support your work you should include a statement (up to 100 words) explaining how you have done this and with which AI tools. This statement does not count towards the word limit. Remove this section if you did not use Generative AI.

Appendices

- Structure your appendix well so that it is easy to find information and cross-reference appendices in the main report. Include the following sections
- **Appendix A: Method Instruments Used**
- Instruments used in investigation e.g., e.g., interview guide, diary instructions
- **Appendix B: Anonymized Study Data**
- Include anonymised study data e.g., coded interview transcripts, photos, drawings; evidence of your analysis e.g., affinity diagrams

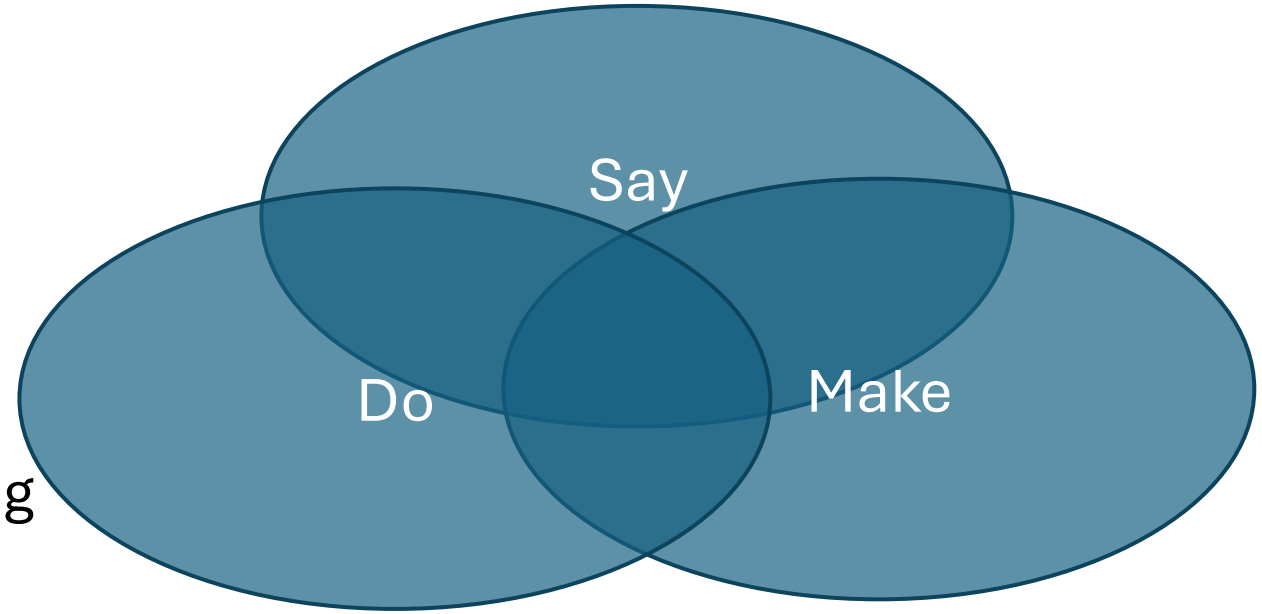
Conducting Usability Tests and Observations Remotely

Remote Methods

- Remote research has become common in both academia and industry
- It enables access to distributed participants, lower costs, and more naturalistic environments (participants using their own devices, in their own homes, etc)
- Also introduces challenges:
  - Reduced contextual awareness
  - Technical issues
  - Harder to observe non-verbal cues
- The core method stays the same, but the facilitation and the set-up change

Say, Do, Make Methods

- Interviews
- Focus Groups



- Observation
- Diary
- Usability testing

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

Remote Usability Testing

What stays the same?

- Task-based evaluation
- Think-aloud protocol
- Observation of interaction
- Identifying usability issues

What changes online?

- Technical set up
- Facilitation
- Environmental control

Technical Setup

Typical tools:

- Tools that enable screen sharing and video/audio recording
  - Zoom
  - Microsoft Teams

As a researcher, you should:

- Share link to prototype/app/website
- Ensure participants can share their screen and ask them to turn on their video if they are able
- Record screen, video and audio
- Test software beforehand

Facilitation

Remote moderation requires more explicit communication

As a researcher, you need to:

- Send clear instructions
- Prompt think-aloud more frequently
- Clarify tasks
- Ensure people can recover from errors

Environment

Less control of the environment

Participants may:

- Receive notifications
- Get distracted
- Use various devices
- Be in various locations

Strategies:

- Ask participants to silence notifications or close programs down
- Confirm the location and device they are using beforehand
- Allow time for technical troubleshooting

Observing Remotely

- Observation is more difficult as you cannot see the full context of interaction
- Screen-based observation: navigation behaviour, cursor movement, hesitation/pauses
- Camera observation: facial expressions
- Contextual explanation: ask participants to describe their context

Video Tools

- Video is a well-established tool for in-direct observation
- Deploy technology with video camera and prompts
- Invite participants to film things like interactions, features they like or don’t like, what they have learned from it, etc

Fig. 1 Ecosphere interface

Fig. 2 Camera with flip cards

https://www.researchgate.net/profile/Stephen-Snow/publication/272362231_When_an_eco-feedback_system_joins_the_family/links/557f64ee08ae26eada8f55f5/When-an-eco-feedback-system-joins-the-family.pdf

Activity

- Start to create the structure of your report based on the report template

Any questions?