SWEN 422 Lecture 2
Study Design

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TE HERENGA WAKA

1897

Agenda

- Why studies?

- Scientific process

- Rigour

- Examples of study design

- Glassick criteria

- Intro to assignment 1

Why bother with studies?

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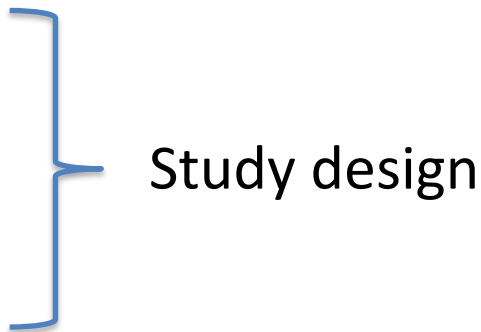- We need <u>evidence</u> for our argument if anybody is to be convinced of our ideas

Answering a question

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  - Pick a method(s)
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Study design

Critique!

Scientific Process

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  - Report the results

Study design

Critique!

- How do we know this is a "good study" or that we can trust the results?
  - It's about **rigour**, not about right or wrong
  - "We say that the *process* was rigorous, and therefore validates the claim of the outcome. We would <u>not</u> say the *outcome* was rigorous." (Biggs & Buchler, 2007)
  - Ethical, Moral, Legal

Has this question already been answered?

==IF YES:==
- Modify the question/hypothesis
- Conduct a Systematic Literature Review
- Do it anyway (replication)

==IF NO:==
- Design, conduct, report your study

Rigour in **Qualitative** and **Quantitative** Research

- **Quantitative**
  - Math/stats measurement of *something* (e.g. length of time to complete a task)
  - Data translated into numbers (e.g. a count of subjective opinions).

- **Qualitative**
  - Analysis of phenomena often with non-numerical observation, interviews, images, or other complex data.
  - Consists of themes, patterns, or stories that relate to participants' experiences and meanings.

Rigour in Qualitative and Quantitative Research

- "Under what conditions would we agree that something satisfactory has been said in response to the [research] question."

- Features that enhances trustworthiness and minimises researcher bias

- Literature search –> presence or absence of knowledge

  - Not found?

- Quantitative: *reliability*, *replication*, and *validity*

- Qualitative: *credibility, dependability, transferability*

Rigour in Qualitative and **Quantitative** Research

- **Validity**: "Measurements… we have produced *accurately reflects* the presence/magnitude of the target property in the objects we have measured…at the appropriate scale."

- **Reliability**: Findings are *robust* i.e. different methods produce similar outcomes

- **Replicability**: if we have validity and reliability

(Hammersley, 1987)

Rigour in **Qualitative** and Quantitative Research

- **Credibility**: Others can recognise the experiences contained within the study

- **Dependability**: Another researcher can follow the decision trail used by the researcher.

- **Transferability**: We can apply the same methods to different demographics and geographic boundaries of the study

https://online.queens.edu/resources/article/guide-to-qualitative-rigor-in-research/

Example 1 - BAD

- Example Question: **How should a user be notified when they are mentioned in a LinkedIn post, someone likes their post, or they get a new follower?**

- *Method*: Lab-based study

- *Data collection*: Measure the time it takes for a notification to arrive

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  Ecological validity/ Transferability?

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Internal validity / Dependability?

Example 1 - BETTER

- Example Question: **How should a user be notified when they are mentioned in a LinkedIn post, someone likes their post, or they get a new follower?**

- *Method*: real-world study, user goes about their normal day, download a logger on their phone

- *Data collection*: logs from the phone, mini diary

Example 2 - BAD

- Research Goal: "**Compare five of the most common input methods on a smartphone (physical Qwerty, onscreen Qwerty, tracing, handwriting, and voice) among a population of younger and older adults**."

- *Participants*: average age 38

Example 2 - BAD

- Research Goal: "**Compare five of the most common input methods on a smartphone (physical Qwerty, onscreen Qwerty, tracing, handwriting, and voice) among a population of younger and older adults**."

- *Participants*: average age 38   **External validity?**

Example 2 - BETTER

- Research Goal: "**Compare five of the most common input methods on a smartphone (physical Qwerty, onscreen Qwerty, tracing, handwriting, and voice) among a population of younger and older adults**."

- *Participants*: split into two groups – younger adults' average age 24.4 years, older adults' average age 68.8 years

- Smith & Chaparro (2017) [Smartphone Text Input Method Performance, Usability, and Preference With Younger and Older Adults](#)

Glassick Criteria

Table 1. Glassick's Criteria for Assessing the Quality of Scholarship of a Research Study[18]

1. Clear purpose – goal or research question and supporting rationale
2. Adequate preparation – thorough, integrated review of relevant literature and prior work
3. Appropriate methods – research approach and methods align to answer research question
4. Significant results – obtain results that advance knowledge and/or practice in the targeted field
5. Effective presentation – presented in a way that others can emulate and/or build upon the work
6. Reflective critique – regular, systematic approach to question and learn from and during research process

(Glassick et al., 1997)

Further Reading

- Biggs, Michael AR, and Daniela Büchler. "Rigor and practice-based research." *Design issues* 23.3 (2007): 62-69.

- Glassick CE, Huber MT, Maeroff GI, Boyer EL. Scholarship Assessed: Evaluation of the Professoriate. San Francisco, CA: Jossey-Bass; 1997.

- Design Flaws to Avoid: https://libguides.usc.edu/writingguide/designflaws

- Common Flaws of Poor Research Design

- https://scientific-publishing.webshop.elsevier.com/research-process/how-avoid-poor-research-design/