Considering your research design

Research design is the "blueprint" for your research project. It will help you make sure that the evidence you collect will help you answer your research question. The most important thing to do when designing a research project is ask yourself: what information do I need so I can answer my research question *in a convincing way?*

Another way of thinking about research design is pretending you are constructing a building. First, do you order materials, or do you decide what kind of building you want to make? Building a factory, or a skyscraper, or a small home will require different approaches and different materials.[1]

[1] De Vaus, David A. 2001. *Research Design in Social Research.* Sage Publications, page 8.

What kind of "buildings" can we build in research?

There are three key types of research: **quantitative**, **qualitative**, and **mixed methods.**

Qualitative

This type of research focuses on lived experiences, emotions, or behaviours and the meaning be-hind them. It helps people under-stand complex ideas, like social interactions.

Quantitative

This type of research gathers nu-merical data which can be ranked, measured or categorized. It's really good for uncovering patterns or relationships, and can be used to make generalizations.

Mixed Methods

A combination of both qualitative and quantitative research, where the deeper context can be matched with statistical data.

What sort of research designs are out there?

Research Design	Type	Description	What is this design good for?	What are the limits of this design?	Example Study
Action Research	Usually qualitative, but can be quantitative	The researcher starts with a hypothesis, and makes plans in order to test the hypothesis. The tests are carried out and observations are made. The researcher then adapts the original idea and the process repeats.	• Great for community work, as it's collaborative and adaptive • Tends to focus on solution-driven research, as opposed to testing theories • Usually good for studies with direct and obvious relevance to improving a problem	• It can be difficult, as the researcher has to advocate for change within the project as well as doing the actual research • It can be more difficult to report on or write up in a paper • Tends to be time-consuming!	The Beaufort-Delta school board wants to improving learning in elementary school classrooms. First, they hire a Teacher's Aide for every classroom in the school board. When this shows only moderate success, they then try other ideas (like providing a Teacher's Aide *and* extra money for supplies).
Participatory Action Research	Qualitative	Like Action Research, the researcher tests our a theory, observations are made, and then the tests are adapted based on a new hypothesis. In Participatory Action Research, the subject of the study is intimately involved in the direction of the project.	• Great for specific communities, as the participants are treated as 'experts' in their own lives and are equal partners in the project • Can result in a project that is very responsive to community needs	• Building true equality between researchers and participants can be very tricky, and can easily be done poorly if you are not careful • Often time consuming, especially if you are not part of the community you are studying.	A caribou monitoring study brings researchers alongside hunters on to the land, so they become part of the hunting community under the direction of community leaders. Data is collected as they participate in traditional practices.

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Causal Design	Quantitative	The researcher wants to prove that a particular action *causes* a specific result. This is generally considered conclusive research.	• If done successfully, it produces a very strong result • Can help researchers understand how and why the world works	• It can be very tricky to *prove* causality and often you can only infer results (which isn't strong enough for many research conclusions) • Proving causality is complex and new researchers may want to work with a mentor with a greater understanding of the potential pitfalls	A researcher is studying the effects of arsenic in lakes around Yellowknife on local fish populations. What are the impacts of arsenic on Whitefish populations in Back Bay?
Cohort Design	Quantitative	Often used in medicine, but sometimes in other fields, these designs happen over a period of time and the subjects are united by some commonality or similarity.	• Very flexible, and can provide good insights into effects over time, or over many different factors	• Sometimes can be complicated by other factors not taken into account by the research question • Very time-consuming, as many of these studies last years	A medical study that looks at how people with COVID-19 react when given a particular drug. Does it work better than other drugs? What are their long-term health outcomes?

For further resources about research designs, please see the links below:

https://research.tlicho.ca/sites/default/files/2019_ekwo_naxoede_ke_results_report_1.pdf
https://lo.unisa.edu.au/mod/page/view.php?id=489317
https://www.researchgate.net/publication/321491126_Chapter_8_Selecting_an_Appropriate_Research_Design
https://health.ucdavis.edu/ctsc/area/biostatistics/Documents/StudyDesigns_July2016_Kim_Final.pdf
https://onlinelibrary.wiley.com/doi/full/10.1002/9781118519639.wbecpx113#:~:text=Experimental%20research%20design%20is%20centrally,threats%20to%20their%20causal%20validity

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Descriptive Design	Quantitative	This design is used to understand the current status of a phenomena and to describe what already exists—this research design asks who, what, where, and when but *cannot* answer why.	• Since the researchers do not 'interrupt' the natural state of things by testing hypotheses or introducing changes, it's the best way to gather data about normal behaviour • Generally a good starting place—if you don't know much about a phenomena, descriptive studies can be great at helping to figure out what future research should include	• You can't disprove or prove anything with a descriptive design • Because it's observational, the results cannot be replicated	An Indigenous government is trying to figure out who is moving to their region and what their needs might be, to better offer the social services that people need.
Field Research Design	Qualitative	Research based on observation or interviews with subjects (as opposed to something like surveys or questionnaires)	• Very useful to fill in gaps of understanding, particularly when the research problem is applied to local conditions or specific groups • Can be useful to confirm or refute findings made in prior studies • Really good for reflecting the specific cultural context of the setting being investigated	• Since it's so in-depth, it requires a lot of time and resources • It's unpredictable, so you have to be quite flexible in the field • Findings can be difficult to interpret or verify • The results can't be generalized	A researcher wants to know about northern experiences with residential schools, and so interviews Elders in communities to ask them about their experiences.

Research Design	Type	Description	What is this design good for?	What are the limits of this design?	Example Study
Longitudinal Design	Quantitative or Qualitative	This study follows the same sample over time and makes repeated observations. This is used to describe patterns of change	• Tends to direct the researcher towards possible causal explanations, without doing other intensive experiments, but cannot prove causation • Can measure differences or changes over time • Great for predicting future outcomes based on pre-existing factors	• Data collection method might change over time • The integrity of the original sample can be difficult—how many people want to participate in a 20-year study? • Often needs qualitative research as well • It's very time-consuming, and you typically need a large sample size	A study tracks newlyweds for 40 years after their wedding. The researchers are trying to understand how different styles of conflict resolution can affect the happiness of a marriage. They interview the couples once a year for the life of the study and track the number of divorced couples.
Case Studies	Qualitative	The researcher analyzes a small number of examples or situations to get information. It is often used to narrow a broad research field into easily researchable topics or examples.	• Very useful when not much is known about a topic • Excellent at understanding complex issues through detailed analysis • Often used to comment on the application of theories in the real world	• Difficult to generalize as there are typically a small number of case studies • This design does not help you determine cause and effect	How has the global pandemic affected internet use in Ulukhaktok, Fort Simpson, and Yellowknife?

Information in this document has been adapted from:

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