Research Design

Designing a Research Study

A **research design** refers to the procedure for collecting, analysing, interpreting and reporting data in research studies. A research design is dependent on the researcher's assumptions about the nature of reality and knowledge (see Research Guide 1 Research Traditions). There are three basic research designs – qualitative research, quantitative research and mixed methods research:

- ***Qualitative research***: "Qualitative research claims to describe life worlds 'from the inside out', from the point of view of the people who participate. By so doing it seeks to contribute to a better understanding of social realities and to draw attention to processes, meaning patterns and structural features." (Flick, von Kardorff & Steinke, 2004, p.3). Some common types of qualitative research are:
  - ***Grounded theory:*** "a research methodology designed to develop, through collection and analysis of data that is primarily (but not exclusively) qualitative, a well-integrated set of concepts that provide a theoretical explanation of a social phenomenon" (Kennedy & Lingard, 2006, p.101).
  - ***Ethnography:*** the study of people and groups in their everyday lives (Emerson, Fretz, Shaw, 2011).
  - ***Narrative***: a study of the lives of individuals expressed in a story. The researcher retells the story into a narrative chronology so that the restorying is really a collaborative interpretation between the participant and the researcher (Clandinin & Connelly, 2000).
  - ***Phenomenology:*** "The goal of phenomenological research is to describe participants' experiences in a specific context in order to understand a phenomenon." (Mann & MacLeod, 2015, p. 57). Eg. What people mean by the construct of resilience?
  - ***Case study:*** case studies can be exploratory, descriptive or explanatory. Case studies are used to explore phenomena in depth, in a real-world context (Yin, 2014).

Quantitative research: Quantitative research seeks answers to how many, how often, what level and what direction of relationships between defined variables in settings that can be decontextualized. Some common types of qualitative research are:

  - ***Experiments***: "… experimental research tests whether the independent variable(s) (controlled by the researcher) affects a dependent variable (the variable being measured for change)" (Cleland, 2015, p. 6).

  - ***Cross-sectional design***: "A cross sectional study involves observations of a sample, or cross section, of a population or phenomenon that are made at one point in time" (Babbie, 2008, p. 111).

  - ***Longitudinal design***: "… a longitudinal study is designed to permit observations of the same phenomenon over an extended period" (Babbie, 2008, p. 112).

- ***Mixed methods***: involve the use of both qualitative and quantitative approaches in a research project (Bergman, 2008).

Each of these designs needs to address the following components:

Research questions are the intended and answerable aims of a project, that are generally derived in response to needs, contexts, and a review of the literature on the topic that often determine the direction that should be taken for the project (Andrews, 2003). A researcher's paradigm or underlying assumptions of what constitutes knowledge determine the kinds of questions that can be asked and what counts as an acceptable answer (McMillan, 2015). The cost, time and resources available for a project will also affect the types of research questions that can be answered (Andrews, 2003). These in turn, may determine the project timeline.

Literature reviews can inform the study team if it is practical to study the topic, explore aspects of phenomena, or contain information about major themes and variables, and propose how the project can fill research needs or gaps in the literature (Creswell, 2014).

Data collection includes information on the processes of how data will be collected in the study, for example the sampling involved, type of method used to collect information e.g. interview, questionnaire, observations.

Research methods are ways used to answer the research question.

Some research methods are:

- **Surveys**: help researchers collect data in a structured and straightforward way (De Vaus, 2002). Open-ended survey questions can be used to collect feedback, elaborations and descriptions.
- **Observations**: can be used to provide illustrative data on events or processes, or to describe what is happening, with whom and in what context (Green & Thorogood, 2004).
- **Interviews**: In-depth interviews can be conducted individually or in a group to understand and explore perspectives, decisions, processes, concepts and understand more about phenomena (Green & Thorogood, 2004).

Data analysis is generally conducted after data has been collected. It is a process used to describe, group or categorise data that has been collected in meaningful ways.

Some ways that data can be analysed:

- Survey data can be described as characteristics of cases, comparison or inferences of cases or characteristics (De Vaus, 2002).
- Interview data can be analysed using methods such as thematic content analysis, grounded theory, or framework analysis (Green & Thorogood, 2004). Software such as Atlas.ti and Nvivo can be used to manage data for analysis.
- Observations: Depending on the nature of the data collected, observational data could be analysed by counting the amount of time the participant spent in the activity, by analysing the transcripts of conversations, or by analysing artefacts observed in the setting. Empirical field notes should be kept separate from views and interpretations.

Ethics approval

Participation in research is voluntary and needs to be formalised in obtaining participants' informed consent. Ethics approval has to be obtained from NHG DSRB (www.research.nhg.com.sg), or the relevant ethics approving authority in your organisation before commencing your research project.

Some resources you could refer to:

Andrews, R. (2003). Continuum research methods: Research questions. Continuum.

Babbie, E. (2008). *The basics of social research* (4th edition). Thomson Wadsworth.

Bergman, M. M. (2004). Introduction: Whither mixed methods? In M. M. Bergman (Ed.), *Advances in mixed methods research.* Sage.

Clandinin, D.J., & Connelly, F.M. (2000). *Narrative inquiry: Experience and story in qualitative research.* Jossey-Bass.

Cleland, J. (2015). Exploring versus measuring: considering the fundamental differences between qualitative and quantitative research. In J. Cleland, & S. J. Durning (Eds.), *Researching medical education.* Wiley Blackwell.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches (4th ed.).* Sage.

Creswell, J., & Plano Clark, V. (2007). Designing and conducting mixed methods research. Sage.

Creswell, J.W., & Poth, C.N. (2017). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). Sage.

Crotty, M. (1998). *The foundations of social research: Meaning and perspectives in the research process.* Sage Publications.

De Vaus, D. A. (2002). *Surveys in social research* (5th ed.). Allen & Unwin.

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes* (2nd ed.). The University of Chicago Press.

Flick, U., von Kardoff, E., & Steinke, I. (2004). What is qualitative research? An introduction to the field. In U. Flick, E. von Kardoff & I. Steinke (Eds.), *A companion to qualitative research*. Sage.

Green, J., & Thorogood, N. (2004). *Qualitative methods for health research.* Sage.

Kennedy, T. J. T., & Lingard, L. A. (2006). Making sense of grounded theory in medical education. *Medical Education, 40,* 101-108.

Mann, K., & MacLeod, A. (2015). Constructivism: Learning theories and approaches to research. In J. Cleland & S. J. Durning (Eds.), *Researching medical education.* Wiley Blackwell.

McMillan, W. (2015). Theory in healthcare education research: the importance of worldview. In J. Cleland & S. Durning (Eds.), *Researching medical education.* Wiley-Blackwell.

Silver, C., & Lewins, A. (2014). *Using software in qualitative research: A step-by-step guide* (2nd ed.). Sage.

Yin, R. K. (2014). *Case study research*. Sage.