Research Methodology for PhDs

GBSB GLOBAL
BUSINESS SCHOOL

Session 6-1 Topics

- Qualitative, Quantitative and mixed methods

Research Methods. Definitions

Research methods are specific procedures for collecting and analyzing data. Developing your research methods is an integral part of your research design.

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Research Methods refer to the techniques, procedures, and processes used by researchers to collect, analyze, and interpret data in order to answer research questions or test hypotheses. The methods used in research can vary depending on the research questions, the type of data that is being collected, and the research design.

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Methods to Collect Data

Qualitative vs. quantitative:	Primary vs. secondary:	Descriptive vs. experimental:
• Will your data take the form of words or numbers?	• Will you collect original data yourself, or will you use data that has already been collected by someone else?	• Will you take measurements of something as it is, or will you perform an experiment?

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Methods to Analyze Data

For quantitative data, you can use statistical analysis methods to test relationships between variables.

For qualitative data, you can use methods such as thematic analysis to interpret patterns and meanings in the data.

Qualitative Method. Definition & Description

Qualitative research methods are used to collect and analyze non-numerical data.

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- This type of research is useful when the objective is to explore the meaning of phenomena, understand the experiences of individuals, or gain insights into complex social processes.
- Qualitative research methods include interviews, focus groups, ethnography, and content analysis.

Qualitative Method. Definition & Description

Qualitative research methods are designed to help researchers understand people and what they say and do. They are designed to help researchers understand the social and cultural contexts within which people live.

One of the key benefits of qualitative research is that it allows a researcher to see and understand the *context* within which decisions and actions take place. It is often the case that human decisions and actions can only be understood in context – it is the context that helps to 'explain' why someone acted as they did. And this context (or multiple contexts) is best understood by talking to people.

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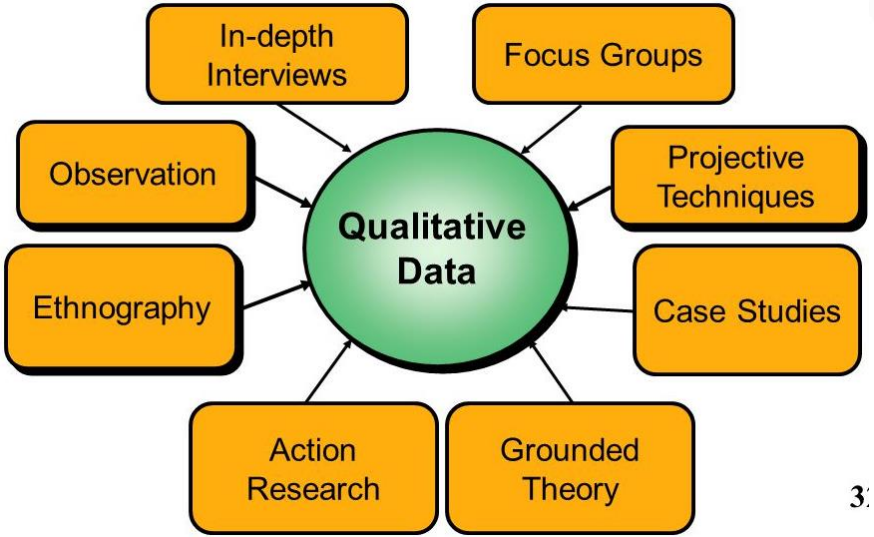
Qualitative Method. Tools and Methods Overview

Qualitative research: A focus on text
Action research
Case study research
Ethnography
Grounded theory
Semiotics
Discourse analysis
Hermeneutics
Narrative and metaphor



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Semiotics & Hermeneutics

Semiotics is the study of signs and sign processes, from cultural representations to languages, to brands and emojis.

Hermeneutics is a study of meaning and interpretation. It now deals with the meaning—or lack of meaning—of human life: it is turned into an existential task.

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Qualitative Method. Preferrable Application Areas

One of the primary motivations for doing qualitative, as opposed to quantitative, research comes from the **observation** that, if there is one thing which distinguishes humans from the natural world, it is their ability to talk. It is only by talking to people, or reading what they have written, that we can find out what they are thinking, and understanding their thoughts goes a long way towards explaining their actions.

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Quantitative Method. Definition

Quantitative research methods are used to collect and analyze numerical data.

- This type of research is useful when the objective is to test a hypothesis, determine cause-and-effect relationships, and measure the prevalence of certain phenomena.
- Quantitative research methods include surveys, experiments, and secondary data analysis.

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Quantitative Method. Definition & Description

Quantitative research methods were originally developed in the natural sciences to study natural phenomena. Examples of quantitative methods now well accepted in the social sciences include survey methods, laboratory experiments, formal methods (e.g. econometrics) and numerical methods such as mathematical modelling. All quantitative researchers emphasize numbers more than anything else. That is, the numbers represent values or levels of various theoretical constructs and these numbers are viewed as strong scientific evidence of how a phenomenon works. Most quantitative researchers use statistical tools and packages to analyse their data.

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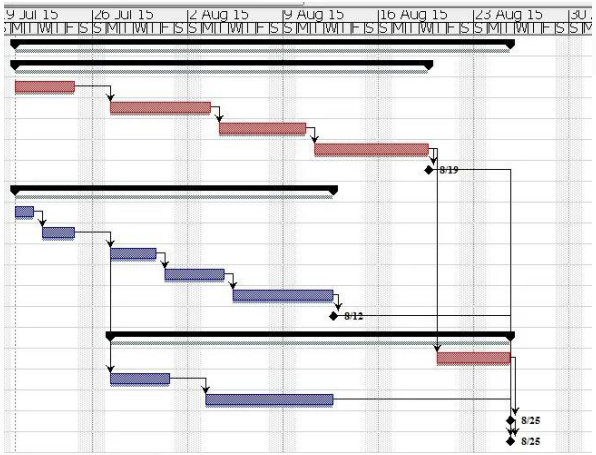
Quantitative Method. Tools and Methods Overview

System Operational Design

Systemic Operational Design (SOD) is an application of systems theory to operational art.

It is an attempt to rationalize complexity through systemic logic employing a holistic approach that translates strategic direction and policy into operational level designs.

SOD focuses upon the relationships



Deductive Reasoning

- **Deductive reasoning** is the process of making a logical argument by applying known facts, definitions, properties, and the laws of logic

- **If-then** statements are typically used in deductive reasoning
  - ***If*** something is true ***then*** something else must be true
  - The “if” part of the statement is the **hypothesis**
  - The “then” part is the **conclusion**

Qualitative vs Quantitative Methods

Areas	Quantitative Research	Qualitative Research
Nature of reality	Assumes there is a single reality.	Assumes existence of dynamic and multiple reality.
Goal	Test and confirm hypotheses.	Explore and understand phenomena.
Data collection methods	Highly structured methods like questionnaires, inventories and scales.	Semi structured like in-depth interviews, observations and focus group discussions.
Design	Predetermined and rigid design.	Flexible and emergent design.
Reasoning	Deductive process to test the hypothesis.	Primarily inductive to develop the theory or hypothesis.
Focus	Concerned with the outcomes and prediction of the causal relationships.	Concerned primarily with process, rather than outcomes or products.
Sampling	Rely largely on random sampling methods.	Based on purposive sampling methods.
Sample size determination	Involves a-priori sample size calculation.	Collect data until data saturation is achieved.
Sample size	Relatively large.	Small sample size but studied in-depth.
Data analysis	Variable based and use of statistical or mathematical methods.	Case based and use non statistical descriptive or interpretive methods.

Qualitative vs Quantitative Application Areas

	Qualitative Research	Quantitative Research
Objective	To gain a qualitative understanding of the underlying reasons and motivations	To quantify the data and generalize the results from the sample to the population of interest
Sample	Small number of non-representative cases	Large number of representative cases
Data collection	Unstructured	Structured
Data analysis	Non-statistical	Statistical
Outcome	Develop an initial understanding	Recommend a final course of action

Q vs Q Pro & Contra

	✔ Pros	✖ Cons
Qualitative	• Flexible – you can often adjust your methods as you go to develop new knowledge. • Can be conducted with small samples.	• Can't be analyzed statistically, and not generalizable to broader populations. • Difficult to standardize research, at higher risk for research bias.
Quantitative	• Can be used to systematically describe large collections of things. • Generates reproducible knowledge.	• Requires statistical training to analyze data. • Requires larger samples.

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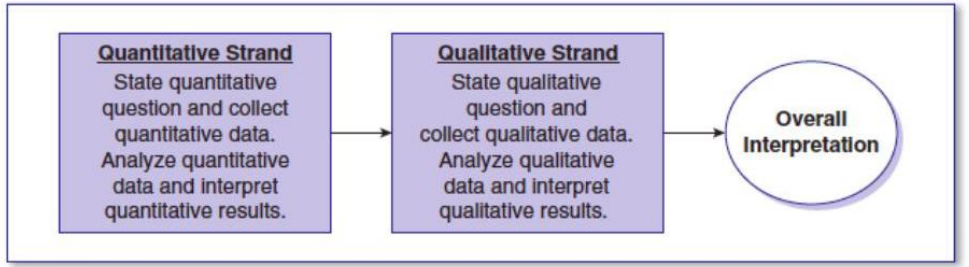
Mixed Methods

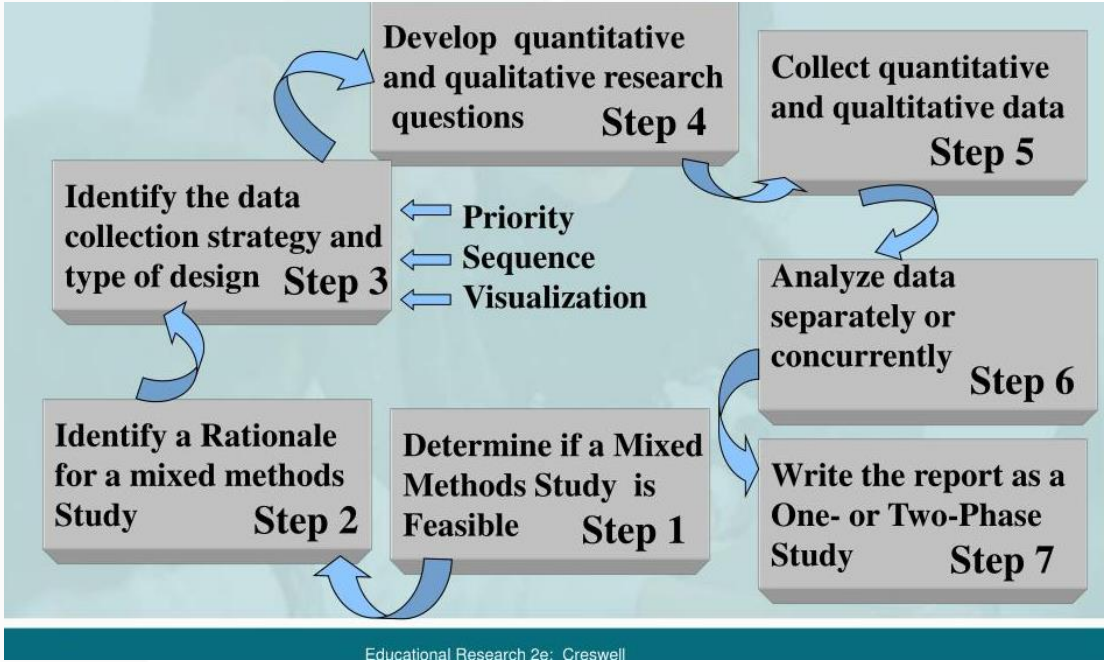
- Mixed methods studies include at least one quantitative strand and one qualitative strand.
- Design needs to be matched to research problem and questions.

Figure 3.1 Example of Quantitative and Qualitative Strands in a Mixed Methods Study



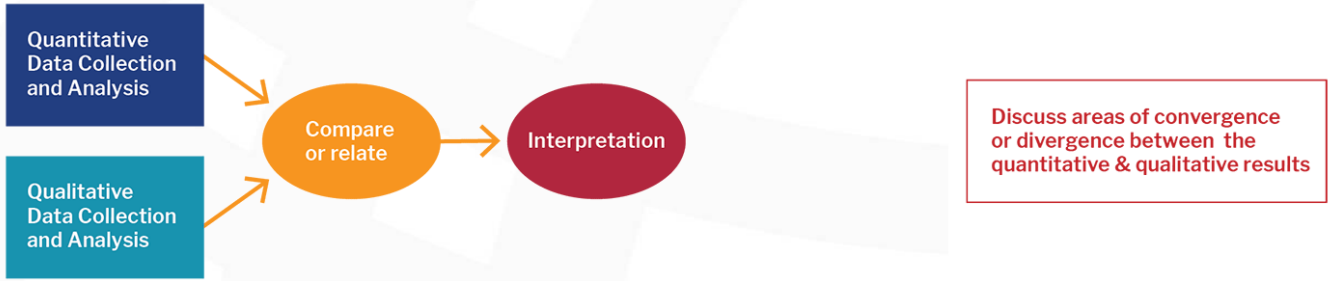
Creswell & Clark

Mixed Methods General Algorithm



Mixed Methods Examples

Convergent Parallel Design



Discuss areas of convergence or divergence between the quantitative & qualitative results

Explanatory Sequential Design

Determine what quantitative results need further explanation

Exploratory Sequential Design

Use qualitative results to develop a new instrument or taxonomy for quantitative strand

Session 6-2 Topics

- Mixed methods
  - - convergent parallel design,
  - - embedded design,
  - -explanatory sequential design,
  - Meta-analysis
- Critically examine the stated question/problem

When to Use Mixed Methods

Generalizability:

- Qualitative research usually has a smaller sample size, and thus is not generalizable. In mixed methods research, this comparative weakness is mitigated by the comparative strength of “large N,” externally valid quantitative research.

Contextualization:

- Mixing methods allows you to put findings in context and add richer detail to your conclusions. Using qualitative data to illustrate quantitative findings can help “put meat on the bones” of your analysis.

Credibility:

- Using different methods to collect data on the same subject can make your results more credible. If the qualitative and quantitative data converge, this strengthens the validity of your conclusions. This process is called triangulation.

Convergent Parallel Design

In a convergent parallel design, you collect quantitative and qualitative data at the same time and analyze them separately. After both analyses are complete, compare your results to draw overall conclusions

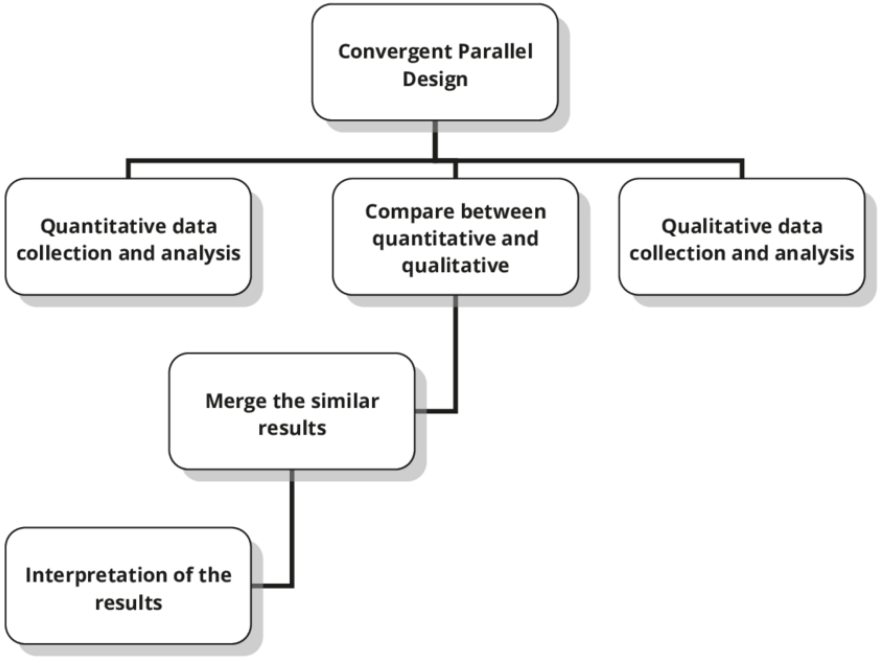
Convergent Parallel Design

The convergent-parallel approach is a concurrent approach and involves the simultaneous collection of qualitative and quantitative data (usually both QUAL and QUAN are the emphasis), followed by the combination and comparisons of these multiple data sources (i.e., the two methods are ultimately merged).

This approach involves the collection of different but complementary data on the same phenomena. Thus, it is used for the converging and subsequent interpretation of quantitative and qualitative data.

This approach is often referred to as the concurrent triangulation design (single-phase) because the data is collected and analyzed individually but at the same time.

Convergent Parallel Design



Convergent Parallel Design. My Example

Case: Explore the Impact of Virtual Learning on Education Quality

Quantitative: Statistical data from CRM, Learning, and Financial systems

- - Customer satisfaction (measurable surveys, NPS)
- - Secondary buys
- - Test results
- - Financial results

Qualitative: Informal data

- - Customer open feedback
- - Interviews with customers and staff
- - Monitoring social nets

- Compare
- Understand context
- Find similarities
- Find differences
- Analyze
- Propose improvements

Embedded Design

In an embedded design, you collect and analyze both types of data at the same time, but within a larger quantitative or qualitative design. One type of data is secondary to the other.

This is a good approach to take if you have limited time or resources. You can use an embedded design to strengthen or supplement your conclusions from the primary type of research design.

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Embedded Design

The embedded approach is a nested approach and is used when one type of data (QUAN or QUAL) is most critical to the researcher.

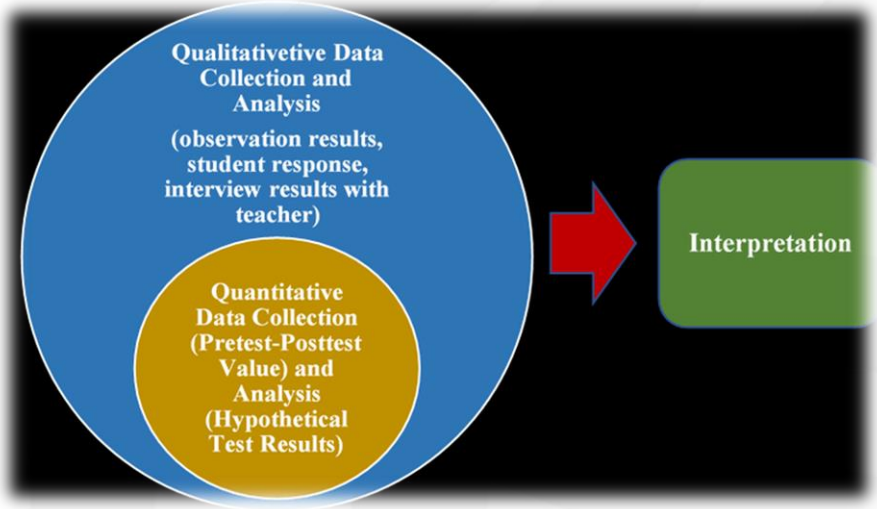
This approach is used when different questions require different types of data (qualitative and quantitative).

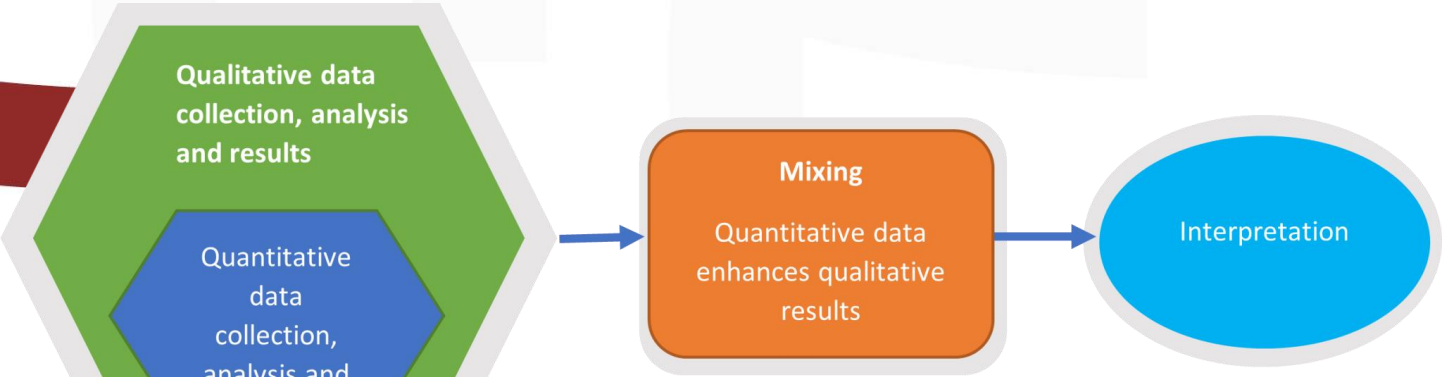
The embedded approach is appropriate when one type of data clearly plays a secondary role and would not be meaningful if not embedded within the primary data set.

The embedded approach is also useful when the researcher logistically cannot place equal priority on both types of data or simply has little experience with one of the forms of data.

https://methods.sagepub.com/book/an-applied-guide-to-research-designs-2e/i1213.xml

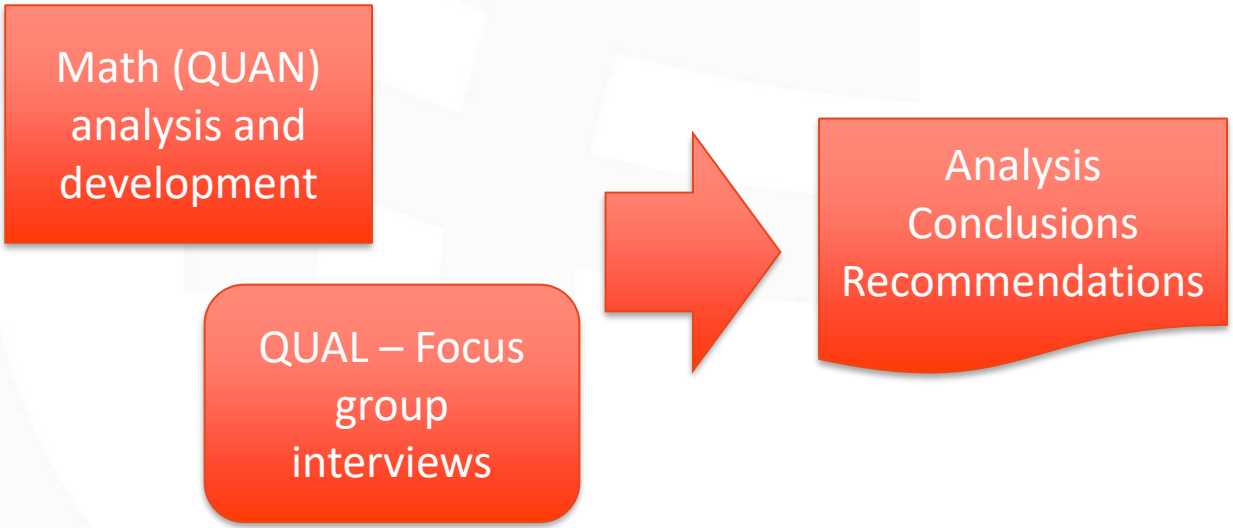
Embedded Design





Embedded Design. Example

Development Math algorithms for Apps for hard of hearing people



Explanatory/Exploratory Sequential Design

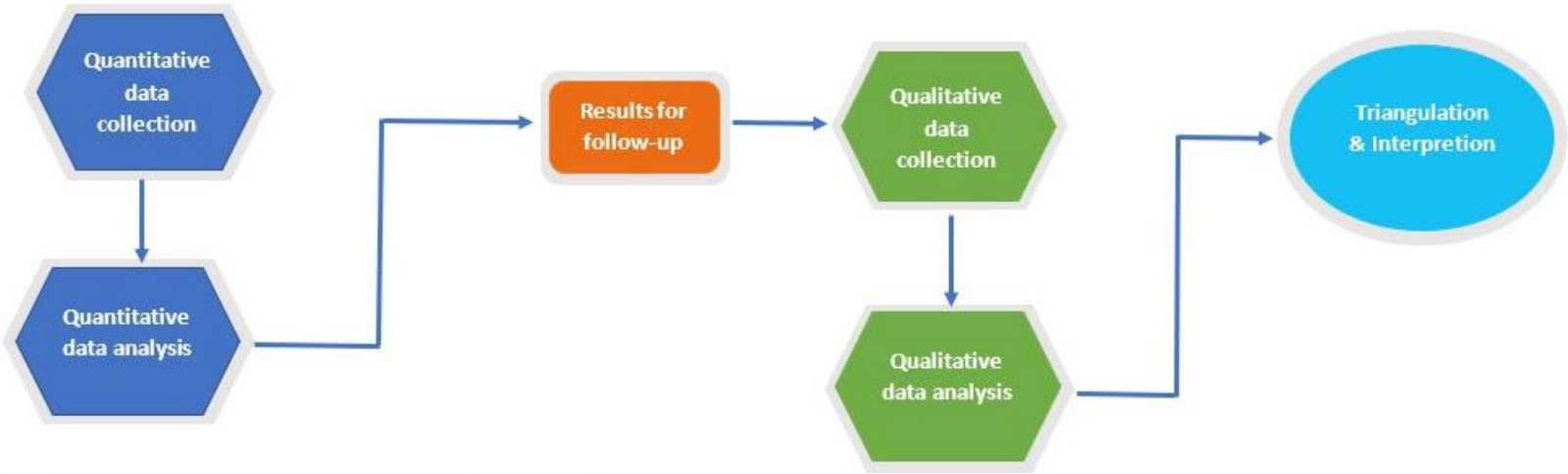
In an **explanatory** sequential design, your quantitative data collection and analysis occurs first, followed by qualitative data collection and analysis.

- You should use this design if you think your qualitative data will explain and contextualize your quantitative findings.

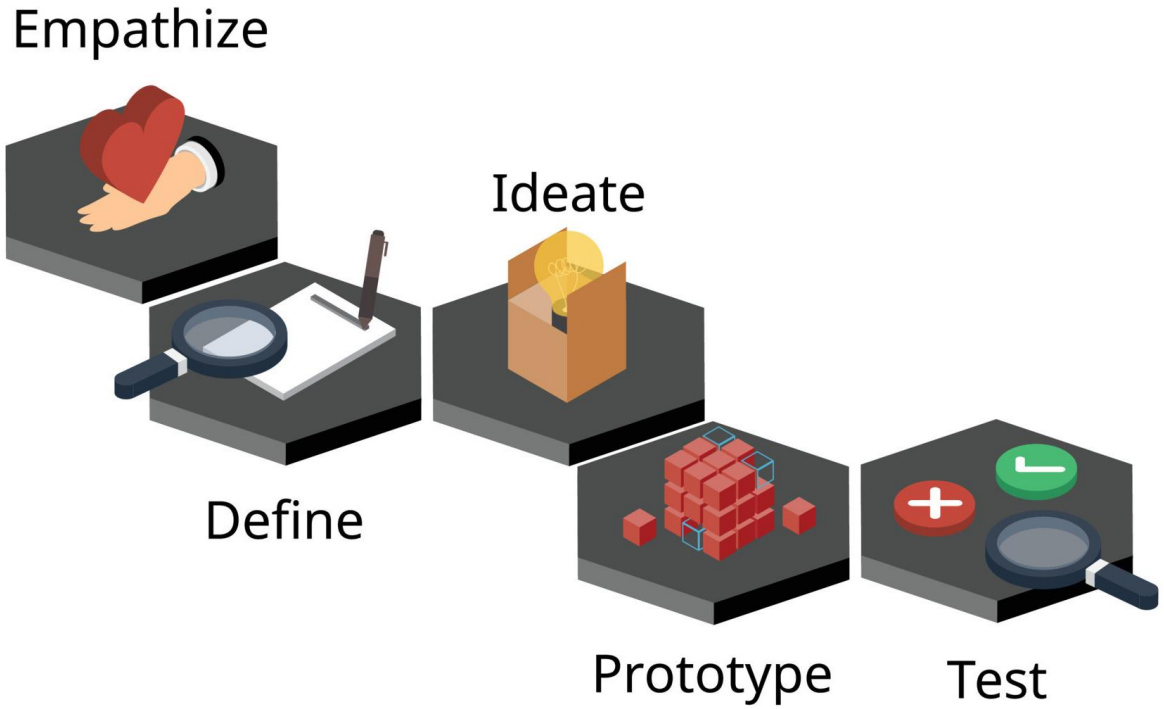
In **an exploratory** sequential design, qualitative data collection and analysis occurs first, followed by quantitative data collection and analysis.

- You can use this design to first explore initial questions and develop hypotheses. Then you can use the quantitative data to test or confirm your qualitative findings.

Explanatory Sequential Design



Explanatory/Exploratory Sequential Design. Example



Meta-analysis

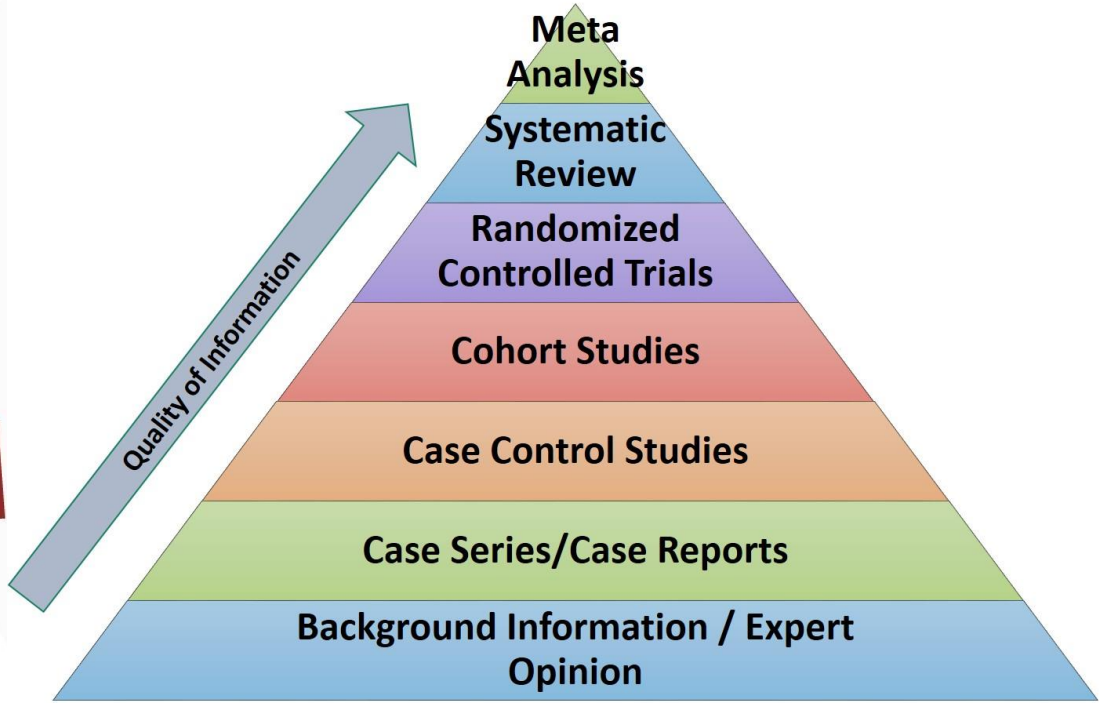
Meta-analysis is the quantitative, scientific synthesis of research results

Meta-analysis is the statistical combination of the results of multiple studies addressing a similar research question.

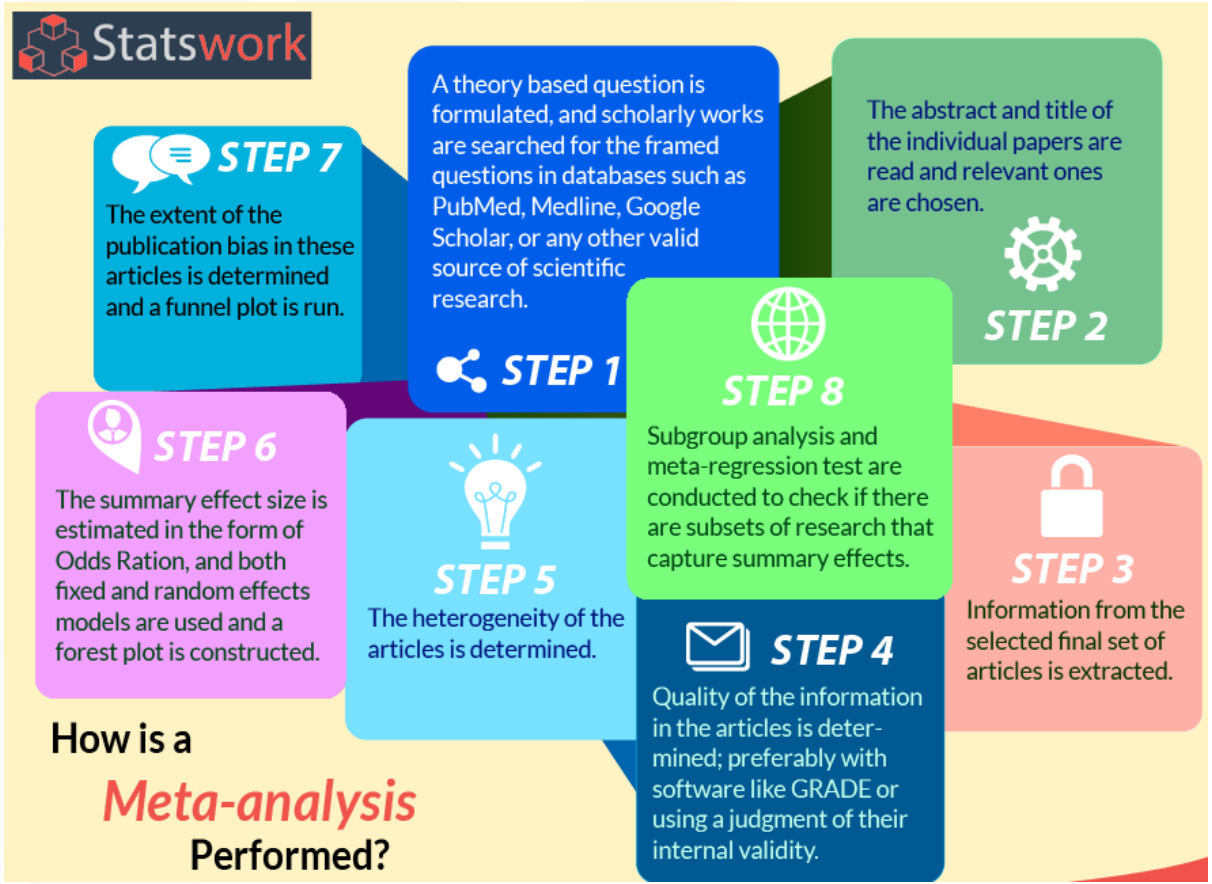
An important part of this method involves computing a combined effect size across all of the studies.

This approach involves extracting effect sizes and variance measures from various studies

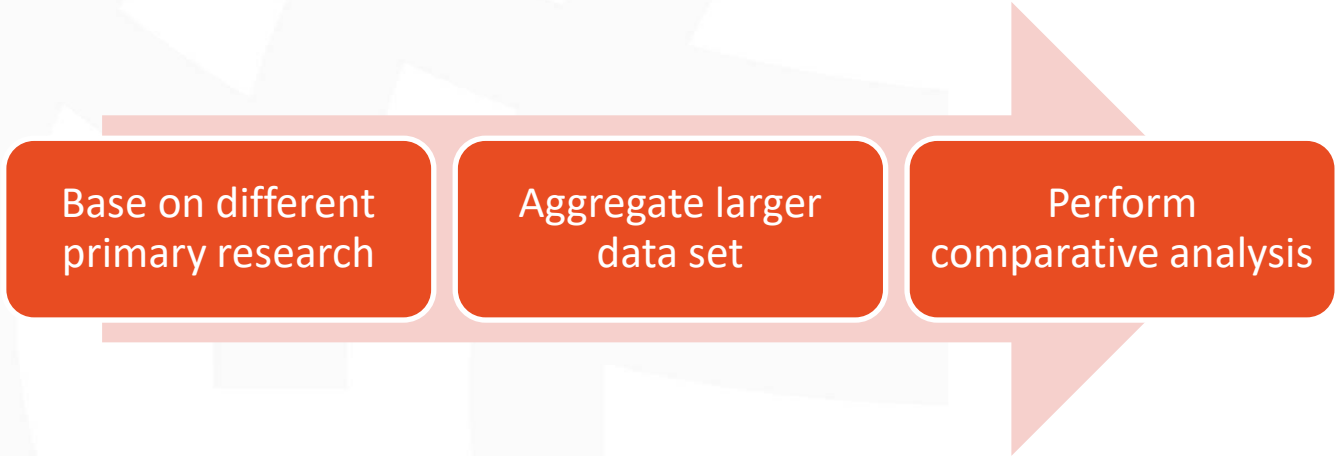
Components of Meta-analysis



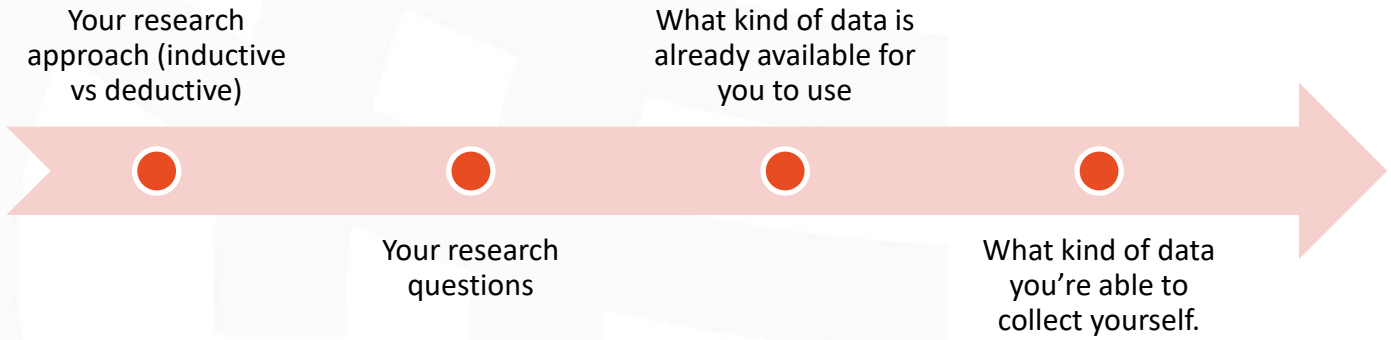
8 steps in Meta-analysis



Advantages of Meta-analysis



Tips for Designing Your Own Mixed Method



Self-paced work.
Read Chapter 15 from
Pan, M. (2017). Preparing Literature Reviews.
Continue Design of your Research method

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