

Creswell (2015) Ch.16: Mixed Methods Research Designs

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What are Mixed Method Research Designs?

- ▶ Combine Quantitative and Qualitative data & methods
- ▶ Either one or a series of studies
- ▶ Provides better understanding than either approach alone
- ▶ Requires more skills and time than either approach alone

MM Research involves:

- ▶ Merging
- ▶ Connecting
- ▶ Building
- ▶ Embedding

One type of database with another

When should we use *Mixed Methods*?

- When neither a Quantitative or Qualitative approach alone can answer the research question(s)
- When we need more data to expand, elaborate or explain one set of data
- When we want to use the strength of both Quantitative & Qualitative approaches

Quantitative Strengths

- ▶ Offers 'numbers' for justifying decisions
- ▶ Can generate statistical trends
- ▶ Enables comparative analysis
- ▶ Can help legitimize unique perspectives
- ▶ Bird's Eye View of the big picture 'outcomes' of a study

Qualitative Strengths

- ▶ Offers complex picture through relatable 'stories'
- ▶ Can help identify variables to test
- ▶ Can help identify an instrument
- ▶ Can obtain more detailed information
- ▶ Worm's Eye View of a study's 'process'

How did Mixed Methods Develop?

- ▶ Researchers have collected multiple types & methods of data since 1930s
- ▶ Campbell and Fisk (1959) established use of matrix studies
- ▶ Correlating results from multiple types of data improves validity
- ▶ Sieber (1973) suggested “integration” of quantitative & qualitative data through combination of case studies and surveys

How did Mixed Methods Continue to Develop?

- ▶ Jick (1979) combined sources to “triangulate” data, creating a “rich and comprehensive picture”
- ▶ 1980-1990’s Paradigm Debate: Incompatible worldviews vs. False dichotomy
- ▶ Mixed Method procedures (Morse, 1991)
- ▶ Distinct Mixed Method design (Creswell, 2014)
- ▶ Latest trends in MM: mapping, criticism, and expansion

Philosophies of Mixed Methods Researchers

- ▶ **Pragmatist:** use procedures that best “work” for a research problem (Tashakkori & Teddlie, 1998)
- ▶ **Dialectical:** researcher has and should report multiple worldviews (Greene & Caracelli, 1997)
- ▶ **Transformative:** social justice for under-represented perspectives (Mertens, 2009)
- ▶ **Critical Realist:** combine objective and subjective assessments (Maxwell, 2012)
- ▶ **Dialectical Pluralism:** embrace multiple approaches of difference (Johnson & Stefurak, 2013)

Morse's Notation System for Mixed Methods (1991)

FIGURE 16.1

Notation System for a Mixed Methods Study

Study #1 QUAL + QUAN

Study #2 QUAN → qual

Notation Used:

+ indicates the simultaneous or concurrent collection of quantitative and qualitative data.

→ shows the sequential collection of quantitative and qualitative data.

Uppercase letters indicate a priority or increased weight for either the quantitative or qualitative data.

Lowercase letters indicate a lower priority or weight for either the quantitative or qualitative data.

(Creswell, 2015, p. 540)

How to Identify a Mixed Methods Study

- Look at the title, data and purpose statement for reference to both qualitative and quantitative data
- Are the data bases being linked together?
- Does one data base explain the other?
- Does one database build on the other?
- Consider the sequencing of data collection
- Is more priority given to one form of data?

What are the types of Mixed Method Research Designs?

Basic Design

- Convergent
- Explanatory Sequential
- Exploratory Sequential

Advanced Framework

- Experimental
- Social Justice
- Multistage Evaluation

Basic design + Advanced framework = Advanced design

Convergent Design

- ▶ Qualitative and quantitative data are collected at the same time
- ▶ Data is merged
- ▶ Qualitative data and quantitative data sets offset the weaknesses of each other

Convergent Design

Advantages

- ▶ Quantitative data for generalizing
- ▶ Qualitative data provides context and setting

Disadvantages

- ▶ How to merge the data
- ▶ How to assess results that diverge

Convergent Design

Ethical Issues

- ▶ Important not to minimize the data of one sample over another
- ▶ Smaller sample deemed as less important

Explanatory Sequential Design

- ▶ First quantitative data collected
- ▶ Qualitative data collected after to refine results of quantitative data
- ▶ Qualitative data smaller sample
- ▶ Used to explain or elaborate the quantitative data

Explanatory Sequential

Advantages

- ▶ Both quantitative and qualitative data
- ▶ Don't have to converge results

Disadvantages

- ▶ Researcher decides which quantitative data to follow up
- ▶ Time consuming and labour intensive

Explanatory Sequential

Ethical Issues

- ▶ Initial data base is large quantitative, followed by smaller qualitative
- ▶ Identifier needed to link qualitative study to quantitative data

Exploratory Sequential

- ▶ First qualitative data collected to explore a phenomenon
- ▶ Quantitative data collected to explain the relationships in the qualitative data

Exploratory Sequential

Advantages

- ▶ Topics identified through research, not predetermined

Disadvantages

- ▶ Time consuming
- ▶ Researchers decide qualitative data to be followed up with quantitative data

Exploratory Sequential

Ethical Issues

- ▶ Participants may not want their quantitative data released
- ▶ Can't use names without permission

Experimental Design

- ▶ Encase a basic design within an experiment
- ▶ Qualitative aspect can be added before, during or after experiment
- ▶ Both sets of data are collected in a single study
- ▶ Both sets analyzed separately
- ▶ Address 2 different research questions

Experimental Design

Advantages

- ▶ Both forms of data collected
- ▶ Emphasizes quantitative
- ▶ Legitimizes the use of qualitative data

Disadvantages

- ▶ Two different research questions
- ▶ Qualitative may influence the outcome of the quan data
- ▶ Labour intensive

Experimental

Ethical Issues

- ▶ Use of qualitative interviews
 - ▶ May influence outcome variables
 - ▶ Unfair to build interventions then create a control group not receiving intervention

Social Justice Design

- ▶ Change an injustice that exists within society
- ▶ Study viewed through “an overall orienting lens” (Creswell, 2015, p. 550)
- ▶ Calls for reform or changes at the end of the study

Social Justice Design

Advantages

- ▶ Value based and ideological

Disadvantages

- ▶ Best method of integrating social justice yet to be defined

Social Justice Design

Ethical Issues

- ▶ Participants placed in stereotypical groupings
- ▶ Data collection further marginalize groups
- ▶ Data decisions should involve community members and cultural issues

Multistage Evaluation Design

- ▶ Researchers evaluate impact of a project or program
- ▶ Formative and summative evaluation steps
- ▶ Distinct stages
 1. Needs assessment
 2. Development of theory
 3. Design of instrument and test of program
 4. Revision of program based on formative and summative evaluations

Multistage Evaluation Design

- ▶ Combination of basic designs
- ▶ Used in large scale health research and program evaluation research
- ▶ One stage informs the other

Multistage Evaluation Design

Ethical Issues

- ▶ Research design favoured over participant needs
- ▶ Research phases not connected
- ▶ Phases don't contribute to objectives of project

Mixed Method Design Mini Jeopardy

Uses and
Development

\$200

\$400

\$600

\$800

Mixed Method
Design Types

\$200

\$400

\$600

\$800

Ethical
Issues

\$200

\$400

\$600

\$800

What are the Key Characteristics of Mixed Method Research Designs?

- ▶ Includes both Quan & Qual Data
- ▶ Uses rigorous methods
- ▶ Integrated databases
- ▶ Uses a specific MM design
- ▶ Study is Framed (Theory and Philosophy)
- ▶ Prioritize or balance both types of research
- ▶ Sequenced Methods
- ▶ Diagramed Procedures

Characteristic 1: Quan & Qual Data

- ▶ Clearly indicate both types of data
- ▶ Use data forms that specify the types of data and the methods of collection
- ▶ See Figure 16.1 for sample data form (Creswell, 2015, p. 552)
- ▶ Incorporate discussion of both in methods/procedure section of study

TABLE 16.1
Quantitative and Qualitative Methods of Data Collection and Types of Data

Quantitative Research		Qualitative Research	
Methods of Data Collection	Data	Methods of Data Collection	Data
Instruments (e.g., questionnaire, closed-ended interview, or closed-ended observation)	Numeric scores	Open-ended interviews	Text data from transcribed interviews
Documents (e.g., census or attendance records)	Numeric scores	Open-ended questions on questionnaires	Text data transcribed from questionnaires
		Open-ended observations	Field notes (text) from researcher's notes
		Documents (e.g., private or public)	Text data optically scanned from diaries, journals, letters, or official documents
		Visual materials	Image data from pictures, photography, or audiotapes

Characteristic 2: Use Rigorous Methods

- ▶ Sampling
- ▶ Recruitment
- ▶ Sample size
- ▶ Forms of data collection
- ▶ Methods for recording data
- ▶ Software for organizing data
- ▶ Cleaning database
- ▶ Initial analysis
- ▶ Advanced analysis
- ▶ Involvement of stakeholders

Characteristic 3: Integrated Databases

- ▶ **Merging:** combine results eg: convergent design
- ▶ **Connecting:** mix data eg: explanatory sequential design
- ▶ **Building:** mix data eg: exploratory sequential design
- ▶ **Embedding:** integrate data eg: experimental MM design

Characteristic 4: Use a Specific MM Design

- ▶ **Researcher Expertise:** New researchers prefer basic designs
- ▶ **Researcher Intent:** Merge data to compare quan & qual results? Or use one type of data to create a better experiment or instrument?
- ▶ **Researcher Familiarity:** Quan researchers prefer explanatory vs. Qual researchers favour exploratory design
- ▶ **Availability of Time & Resources:** Convergent data all gathered at one time; other types require more stages & time
- ▶ **Type preferred by field:** some more popular than others in particular fields (eg: explanatory prioritizes quant results)

Characteristic 5: Frame Study (within Theory and Philosophy)

- ▶ Theory may guide development of Quan & Qual questions
- ▶ Explicit mention of Philosophy / Worldview justifies use of MM such as **Pragmatist, Dialectical, Transformative, Critical Realist, or Dialectical Pluralism**

Characteristic 6: Prioritize Qual / Quan or Balance both types of research

- ▶ In some MM studies, Quan & Qual research is balanced
- ▶ Others skew emphasis in purpose statement, methods/results sections and/or data collection
- ▶ Choice to emphasize certain types of data based on:
 - ▶ Audience preferences
 - ▶ Value of different data types
 - ▶ Sequence of data collection

Characteristic 7: Sequence Methods

- ▶ Collect both Quan & Qual data at the same time (Convergent)
- ▶ First collect Quan data, then Qual data (Explanatory)
- ▶ First collect Qual Data, then Quan data (Exploratory)
- ▶ Collect both Quan & Qual data at the same time, then more data in sequence (Multistage Evaluation)

Characteristic 8: Diagram Procedures

Why?

- ▶ MM research provides visual depiction of process of data collection, analysis and interpretation
- ▶ MM procedures are more complex than either Quan or Qual research
- ▶ Diagrams using Morse's notation system help readers of MM understand sequence of procedures

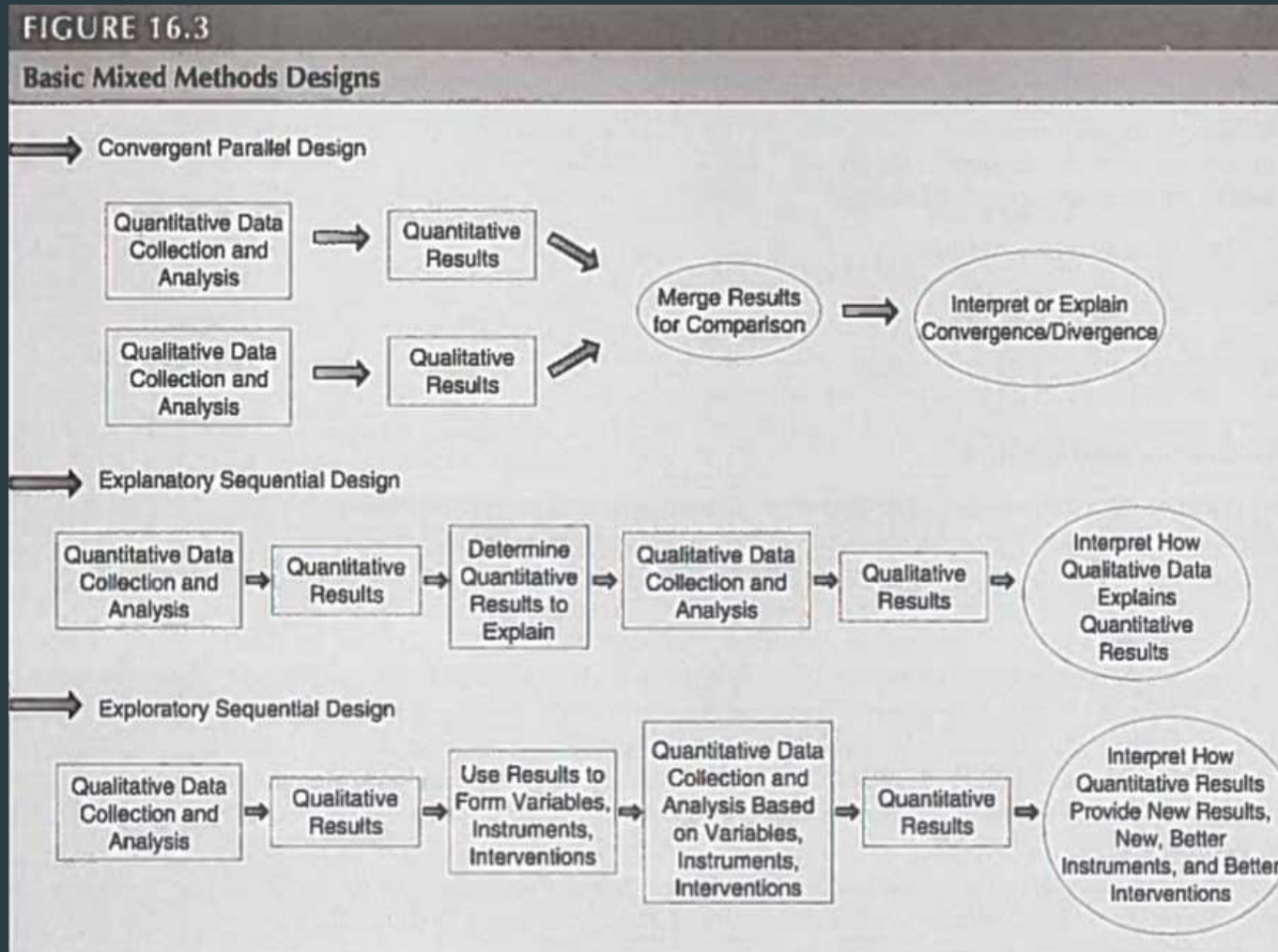
Sequencing and Diagramming Basic MM Designs

Convergent

Explanatory

Exploratory

(Creswell , 2015, p. 544)



Sequencing and Diagramming Advanced MM Designs

Experimental

Social Justice

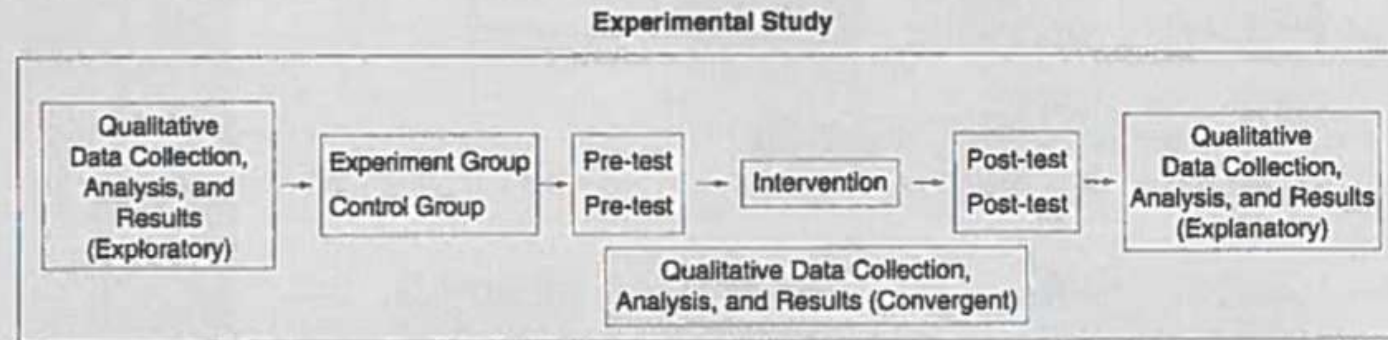
Multistage
Evaluation

(Creswell, 2015, p. 548)

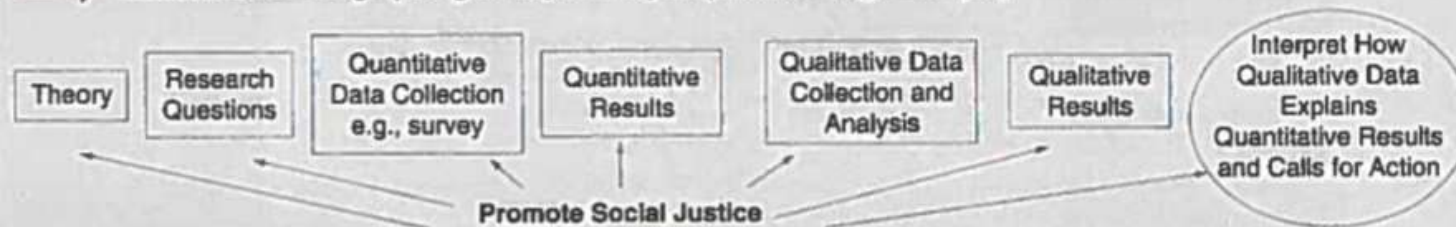
FIGURE 16.4

Advanced Mixed Methods Designs

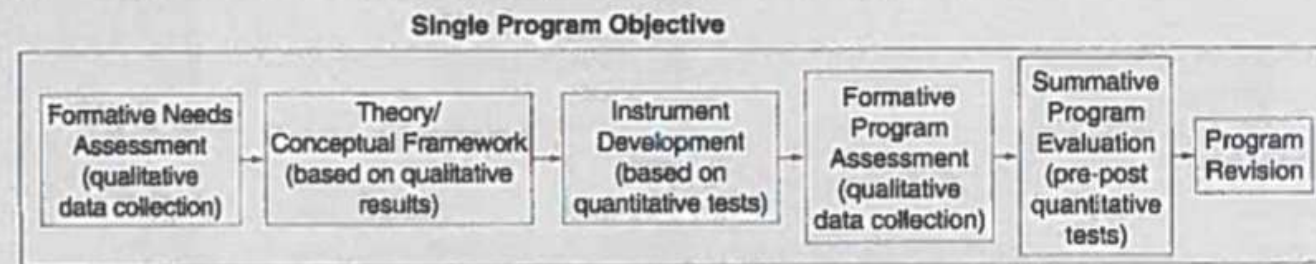
Experimental Mixed Methods Design



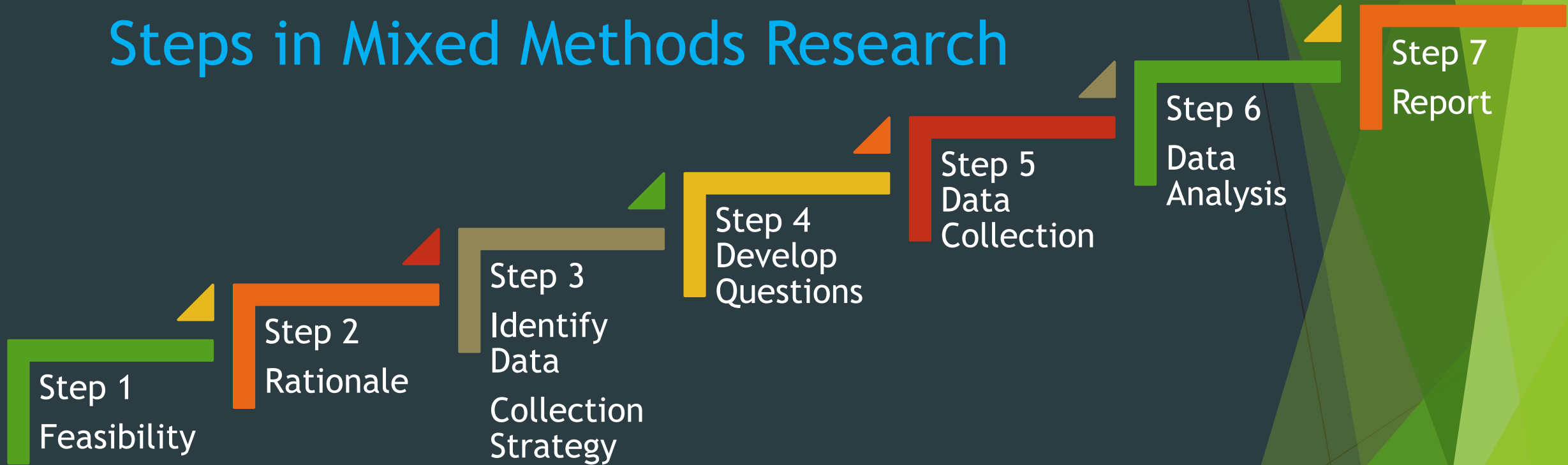
Social Justice Design (using an Explanatory Sequential Design example)



Multistage Evaluation Design (using an Exploratory Sequential Design example)



Steps in Mixed Methods Research



Mixed Methods Study Steps

1: Feasibility

- ▶ Does the researcher have skills in quantitative and qualitative data collection, time to collect data and knowledge of different design types?
- ▶ Will the audience appreciate the complexity of design?

Mixed Methods Study Steps

2: Rationale

- ▶ Purpose of collecting both quantitative and qualitative data

3: Identify Data Collection Strategy

- ▶ Forms of data collecting
- ▶ Priority between quantitative and qualitative
- ▶ Sequence of data collection

Mixed Methods Study Steps

4: Quantitative, Qualitative or MM Questions

- ▶ Developed before or during study
- ▶ Usually have analytic-variable and exploratory questions
- ▶ Quantitative questions address relationship between variables
- ▶ Quantitative are open ended, try to describe a phenomenon

Mixed Methods Study Steps

5: Collecting Quantitative and Qualitative Data

- ▶ Sequence depends on the design
- ▶ Follows rigorous procedures
- ▶ Collection is long
- ▶ Good organization of information

Mixed Methods Study Steps

6: Data Analysis

- ▶ Depends on type of mixed method design
- ▶ Can be analyzed separately (explanatory & exploratory) or concurrently (convergent)

Mixed Methods Study Steps

7: Report

▶ One or two phase study

- One section identifies the problem and literature
- Quantitative and Qualitative sections each have data collection, analysis and interpretation

▶ Multistage study

- Integrates quantitative and qualitative phases of each section in report

Evaluating a Mixed Methods Study

Higher Quality

- ▶ Use of “mixed methods” in title
- ▶ Details rigorous Quan & Qual methods
- ▶ Specifies how databases were integrated
- ▶ Identifies, sequences and diagrams MM design procedures
- ▶ Cites MM literature to frame study
- ▶ Detailed picture with generalizable results

Lower Quality

- ▶ Refers to “quan and qual” or forms of Q & Q data
- ▶ No/few details on data collection
- ▶ Does not use or mention database integration
- ▶ Does not specify, explain or diagram type of MM design
- ▶ Does not review relevant literature
- ▶ Confuses reader instead of deepening understanding

Remember, to Produce MM Research:

- ▶ Rigor in both Quan & Qual and integrating two databases takes more time and expertise than one
- ▶ Identify and justify advantages of specific MM design
- ▶ Pick design type based on cost/benefit analysis:
 - ▶ basic designs are easier than advanced ones
 - ▶ sequential designs are easier than convergent ones.
- ▶ Remember your overall intent when prioritizing and sequencing your study
- ▶ Create diagram of procedural steps in your process

Mixed Method Design Mini Jeopardy

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Characteristics

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\$800

References

Creswell, J. C. (2015). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. (5th ed.). Boston, MA: Pearson.