Focusing on the Distinctions Between Quantitative, Qualitative, and Mixed Methodology for Developing YOUR Dissertation

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What is “Mixed Methods” Research?

• Must include both qualitative and quantitative methodology in same study

• Therefore, one needs to understand the basic features of both qualitative and quantitative data.
Some Steps for Carrying Out Mixed Methods Research

1. Know distinction between quantitative and qualitative research, including sources of data
2. Know how to formulate research questions that make effective use of mixed methods
3. Familiarize yourself with published mixed methods studies
4. Plan your own study that will effectively answer your research questions.
Purpose of this Workshop

• Introduce and illustrate some uses of mixed methods research for answering specific research questions.

• This includes
  • Introducing conceptual understanding of mixed methods research
  • Understanding some strategies for implementing mixed methods research by presenting brief descriptions of illustrative studies.
  • Brainstorming with YOU some potential mixed method studies.
Quantitative Methods

• Data derived from tests, surveys, archived data bases
• Hypotheses are constructed **before** data collected.
• Statistics usually used to confirm or disconfirm hypotheses
  • Usually, comparisons made between means, or correlations examined among variables.
  • Need to make sure there is sufficient sample size for the appropriate statistical test.
Quantitative Methods

- **Examples:**
  - Are there differences between a control group and another group that received supplemental reading instruction on a reading test?
  - Is there a correlation between student’s rated levels of motivation to learn math and student’s beliefs about their own math abilities?
Qualitative Methods

- Data derived from interviews, focus groups, transcripts, historical documents, observations
- Data used to explore how and why a phenomena occurs (not how many).
- Statistics usually not used to make conclusions.
  - Data “analyzed” to determine themes or construct a conceptual framework to explain the processes, impressions, opinions of participants, etc.
- Sample size is relatively smaller than quantitative methodology.
Qualitative Methods

• Examples
  • In a focus group setting, what are the stated reasons for why female students do not want to have a career that includes a heavy emphasis on math and science skills. Are the themes that emerge from this focus group similar to themes from a male student focus group.
  • A intervention for helping children with learning difficulties learn how to read. Based on observations, a conceptual model is developed to understand the barriers and facilitators of the intervention effectiveness.
Mixed Methods

• Why combine qualitative and quantitative methods?
  • Development—Sequential designs: phase 1 results used to inform/develop phase 2 of the study
  • Triangulation—Convergence of findings from qualitative and quantitative data
  • Clarification—Findings from one method are used to clarify findings from other method.
  • Expansion—Qualitative and quantitative research used together produces more complete knowledge to inform theory/practice.
  • Instrument Development—Qual employed to design instrument
Examples of Mixed Methods Research

Explanatory Sequential Design

• Qualitative data used to explain quantitative results
The Effective Provision of Preschool Education Study (Sylva et al., 2008)

- **Purpose:** EPPE project investigated effects of preschool on children’s development (1997 thru 2014).
- **Quan analysis** used to look at influences of cognitive and social skills on student’s progress.
- **Quan analysis** used to look at influences of quality of preschool centers on student progress.
- **Qual case studies** *subsequently* sought to establish link between preschool quality (and pedagogy underpinning it) and child progress.
EPPE Study – QUAN Part

Child factors
Family factors
Home learning environment
Preschool
Primary School

Child Cognitive And social / Behavioral outcomes
EPPE Study – QUAL Part Yielded Conceptual Framework

Figure 27.3 The EPPE Model of Effective Pedagogy in the Early Years

Effective Pedagogy in the Early Years

- Community relations
- Parents
- Pedagogical Framing
- Pedagogical Interventions
  - Face-to-face interactions
  - Arrangement of space
  - Development of behavior routines for collaborative play
- Resources
- Management structure
- Liaison with outside professionals
- Planning
  - Staff development
The Effective Provision of Preschool Education Study (Sylva et al, 2008)

Explanatory Sequential Design

• **QUAN data** used to identify high and low quality centers.

• **QUAL data** was used to explain differing characteristics of high and low quality centers
  • Case studies used to document processes
  • Data gathering included document analysis, interviews, and observations
Variations in Teachers’ Work, Lives and their Effects on Students (VITAE)(Day et al., 2007)

- **Purpose**: to identify factors associated with teacher effectiveness.
- **QUAN data** was student English and Math performance and questionnaire surveys to students
- **QUAL data** were case study interviews
VITAE Study – Sequential Iterative Design (aka Multiphase)

**Quan Questionnaire** to large sample of teachers - - - - > informed development of case study interviews of 300 teachers.

**Quan Questionnaire** to large sample of students- - - - > informed development of case study interviews of 30% of participating students. Also, student achievement measured.
VITAE Study – Sequential Iterative Design (aka Multiphase)

- QUAN Questionnaire \(\rightarrow\) QUAL interviews
- \(\rightarrow\) comparisons of QUAL between groups of teachers

- Teachers grouped according to QUAN levels of commitment (based on questionnaire)
- Teachers also grouped based on effectiveness, according to student performance.
Case study interviews used to develop conceptual framework grounded in emerging QUAL data:

- Initially, teacher effectiveness assumed to be due to student attitudes and achievement, policy, and pedagogical practice factors.
- QUAL analysis led to reassessing initial conceptualization
  - Decided that teacher’s perceived selves should be seen as central.
  - See next slide for new conceptual framework of perceived selves.
VITAE Study – Sequential Iterative Design (aka Multiphase)

Case study interviews used to develop conceptual framework grounded in emerging QUAL data:
Examples of Mixed Methods Research

Convergent Parallel Design

- Both types of data collected concurrently and compared and related in interesting ways......

Quantitative Data

Qualitative Data

compared

Interpretation
Examples of Mixed Methods Research

Convergent Parallel Design
• Both types of data collected concurrently and compared and related in interesting ways......for example:
  • Adolescents given quantitative survey concerning values about using alcohol. Then, students are interviewed in focus groups to see how attitudes about alcohol use diverge and converge.
  • Note that the QUAN and QUAL data are given equal priority in this design!
Examples of Mixed Methods Research

Embedded Design

- Used to examine effects of reading intervention
- Both types of data collected, with one type collected before, during, or after other type.

- In this example, the main focus is quantitative, but the qualitative data can provide important information about implementation process;
  - e.g., fidelity of treatment implementation evidence from observations, barriers/facilitators of implementation, etc.
The Schools with Challenging Circumstances (Jang et al., 2008)

- **Purpose**: to identify contextual factors associated with student success in low SES schools.
- **QUANT data** was survey of principals and teachers concerning best practices.
- **QUAL data** was case study interviews with principals and teachers and focus groups with students and parents.
  - Themes emerged from the QUAL data.
  - Quantitative data provided nine factors via factor analysis (a statistical method that reduces data into “quantitative themes”).
  - Integration of QUAL and QUANT data provided 3 common themes and 6 non-overlapping themes.
    - Identification of themes enabled rich interpretation of findings, such as how schools went about dealing with low parental involvement.
Examples of Mixed Methods Research

Embedded Design

• Light et al.’s (2009) study looked at impact of faculty development program for enhancing pre-tenure faculty’s teaching styles.

  - Quantitative data- how did intervention affect measureable teacher’s approaches to teaching?
  - Qualitative: (central question) = how did teaching strategies change as reported by participants?
  - Qualitative: (sub question) = what steps did teachers take to implement the changes to teaching?
Let’s Brainstorm!

Exploratory Sequential Design

• Can you think of a study that involves first collecting qualitative data and then using that data to inform the quantitative data phase of study?
Let’s Brainstorm!

Convergent Parallel Design

• When would it be useful to collect both QUANT and QUAL data and compare the two. Can you give an example of study involving “triangulation”?

Quantitative Data

Qualitative Data

compared

Interpretation
Can you describe a study that would use both QUAN and QUAL data, with emphasis on QUAN data as depicted below?
Conclusion

• Mixed methods research **is usual** for answering specific research questions....

• Extra data collection is obviously needed to incorporate both a QUAL and QUAN components to your research...

...but, it’s well worth the extra effort!!!!!


