Mixed or Mixing Methods

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Key terms

- Multiple/ multi-methods (often used to denote the use of different methods within a single research paradigm)

- The following terms refer to using methods emanating from different paradigms (combining qualitative and quantitative approaches): mixed methods, triangulation, integrated, combined, etc.

- When can the use of mixed methods be used: data collection, data analysis, interpretation

WHAT ARE YOU DOING?
Conceptual and practical challenges

- Can research paradigms be mixed?
- Can research methods be mixed?
- How do you know if your research lends itself to the mixed methods approach?
- When and why use mixed methods?
- How do you design a mix methods study? What is the sequencing? Why?

- Pluralists argue that the use of mixed methods is misguided and problematic
- Proponents typically adhere to compatibility these and philosophy of pragmatism
Justification of the use of mixed methods

- A mixed method approach is one in which the researcher collects, analyzes, and integrates both quantitative and qualitative data in a single study or in multiple studies in a sustained program of inquiry (Creswell 2003).
- Many research problems are too complex to be understood using one method/approach.
- Used when methods together provide a better understanding than if only one was used.
- Permits an examination of more complex issues/questions.
- Different methods complement each other.
- Some variables can be quantifiable while others are not.
- Clarify and challenge findings.
- Sheds light on the ‘unknown’.

NOT ALWAYS APPROPRIATE! RESEARCH QUESTIONS AND OBJECTIVES WILL GUIDE!
Five main purposes (Greene, 2007)

- **Expansion**: different methods assess different phenomena to expand scope and range of study (address insufficient information – Creswell, 2008)

- **Triangulation**: measure same phenomena using different methods to increase confidence in the conclusions reached (more evidence the better and multiple angles – Creswell, 2008)

- **Complementarity and initiation**: methods used to investigate different aspects or dimensions of same phenomena. Initiation entails using the information to ask “I wonder why?” questions

- **Development**: results from one method informs the development of another methods

Key principle: A mixture or combination of methods that has complementary strengths and non-overlapping weaknesses.
Overview of qualitative and quantitative approaches (Afifi and Lieber, 2007)

<table>
<thead>
<tr>
<th>Qualitative</th>
<th>Quantitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploratory and confirmatory</td>
<td>Confirmatory and exploratory</td>
</tr>
<tr>
<td>Smaller N – flexible structure</td>
<td>Larger N – fixed structure</td>
</tr>
<tr>
<td>Data driven hypotheses:</td>
<td>Hypotheses drive data:</td>
</tr>
<tr>
<td>1. Research questions guide and focus interview protocols</td>
<td>1. Data collection strategy dictated by hypotheses</td>
</tr>
<tr>
<td>2. Findings inspire new hypotheses (and testing) and suggest additional research</td>
<td>2. Hypotheses are tested on data</td>
</tr>
<tr>
<td></td>
<td>3. Findings inspire new questions and suggest additional research</td>
</tr>
<tr>
<td>Holistic</td>
<td>Particularistic</td>
</tr>
<tr>
<td>Context dependent</td>
<td>Context independent</td>
</tr>
<tr>
<td>Experience near</td>
<td>Experience far</td>
</tr>
</tbody>
</table>
### Mixed Methods within Designs

(Tashakkori, nd)

<table>
<thead>
<tr>
<th>Ethnography</th>
<th>Case Study Research</th>
<th>Narrative research</th>
<th>Experimental research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qual</td>
<td>Quan</td>
<td>Qual</td>
<td>Quan</td>
</tr>
<tr>
<td>Qual</td>
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<td>Qual</td>
<td>Quan</td>
<td>Qual</td>
<td>Quan</td>
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</tbody>
</table>
How can types of methods/ data be mixed (Creswell, 2008)

- Converge data

- Connect data

- Embed/ nest the data
Designs Options

**QUAN ⇔ QUAL**
Equal emphasis

- qual ⇔ QUANT
  - qual preliminary

- quant ⇔ QUAL
  - quant preliminary

- QUANT ⇔ qual
  - qual follow-up

- QUAL ⇔ quant
  - quant follow-up
Decision tree for mixed method design (adapted from Smit, 2010)

Mixing of quantitative and qualitative methods (converge, embed or connect) during analysis and interpretation

- Timing of quantitative and qualitative methods
  - Concurrent timing
  - Sequential timing

- Weighting of quantitative and qualitative methods
  - Equal weight
  - Unequal weight
An example of triangulation/mixed methods

Fig. 4. Diagrammatic representation of the hierarchical valuation scheme (HVS).
Steps for conducting a mixed methods study (Smit, 2010)

1. Determine if mixed methods research is feasible
2. Identify a rationale for mixed methods
3. Identify data collection strategy and type of design
4. Develop quantitative and qualitative research questions
5. Collect quantitative and qualitative data
6. Analyse data separately or concurrently
7. Write-up as a one or two phase study

Priority
Sequence
Visualisation

Identify data collection strategy and type of design
Develop quantitative and qualitative research questions
Collect quantitative and qualitative data
Analyze data separately or concurrently
Write-up as a one or two phase study
Identify a rationale for mixed methods
Determine if mixed methods research is feasible
## Taxonomy of Data Collection (Lofgreen, 2006)

<table>
<thead>
<tr>
<th>Data Collection Technique</th>
<th>Setting</th>
<th>Manipulation</th>
<th>Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Controlled</td>
<td>Natural</td>
<td>Yes</td>
</tr>
<tr>
<td>Lab Experiment</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Single-Subject Study</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Field Experiment</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Survey Study</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Relationship Studies</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Prediction Studies</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Archival studies</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Causal-comparative</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Historical Research</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Case/Field Study</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Descriptive Research</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Developmental Research*</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Are you mixing methods?

What data you need and methods you are likely to use?
Data: demographic, perceptions, land use change, etc.
Methods: survey, GIS, focus groups, key informant interviews, media analysis, etc.

Quantitative
GIS, survey

Qualitative
Focus groups, key informant interviews, media analysis
Sequencing of methods/ how to design a mixed method study

- Timing – consider data collection, analysis and interpretation
- What are you using mixed methods for?
  - When will you combine the data?
  - Is data X a sub-set of data Y?
  - How does one set of information link to another?
- Which information is more important and why (time allocation)?
How do you justify use of mixed methods? Example of script (Creswell, 2008)

This mixed methods study will address ____________________ (overall content-aim of the study). A triangulation mixed methods design will be used, and it is a type of design in which different but complementary data will be collected on the same topic. In this study, _______________ (quantitative instruments) will be used to test the theory of _______________ (the theory) that predicts that _______________ (independent variables) will influence _______________ (positively, negatively) the ___________ (dependent variables or outcomes) for _______________ (participants) at _______________ (the research site). Concurrent with this data collection, qualitative _______________ (type of qualitative data, such as interviews) will explore _______________ (the central phenomenon) for _______________ (participants) at _______________ (site). The reason for collecting both quantitative and qualitative data are to bring together the strengths of both forms of research to _______________ (e.g., compare results, validate results, corroborate results).
Key questions (Mills and Airasian, nd)

- Does the study use at least one quantitative and one qualitative research strategy?
- Does the study include a rationale for using a mixed methods design?
- Does the study include a classification of the type of mixed methods design?
- Does the study describe the priority given to quantitative and qualitative data collection and the sequence of their use?
- Was the study feasible given the amount of data to be collected and concomitant issues of resources, time, and expertise?
- Does the study include both quantitative and qualitative research questions?
- Does the study clearly identify qualitative and quantitative data collection techniques?
- Does the study use appropriate data analysis techniques for the type of mixed methods design?
Challenges when using mixed methods

- Time and cost
- Sampling
  - Sequence
  - Concurrent?
  - Multi-stage (one sample population used for another method)
- Increase complexity of study
  - Higher skill set needed
  - Often requires interdisciplinary research teams
- Large volumes of data to interpret with different theoretical orientations Data analysis
- Presentation of findings
  - Linking ideas and issues
  - Identifying patterns and interrelationships
  - Challenges in terms of publishing
- Managing the iterative process
- Relatively new research field
Activity

Consider your research topic/area. Identify and critically examine how you can use mixed methods. Which would you use? What sequence would you follow and why?