
Mixed-Methods Research Methodologies

Steven R. Terrell, PhD and W. Alex Edmonds, PhD BCB

Mixed-Methods Studies

Studies that are products of the pragmatist paradigm and that combine the qualitative and quantitative approaches within different phases of the research process (Tashakkori & Teddlie, 2008, p.22).

Mixed Methods Research, Defined

- A mixed methods research design is a procedure for collecting, analyzing, and “mixing” both quantitative and qualitative research and methods in a single study to understand a research problem.
 - To utilize this design effectively, you must understand *both* quantitative and qualitative research.
 - Philosophical Approaches
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Quantitative Research

- A type of educational research in which the researcher decides what to study; asks specific, narrow questions, collects quantifiable data from participants (a large number of participants); analyzes these numbers using statistics; and conducts the inquiry in an unbiased, objective manner.
 - Postpositivism – singular reality; objective; deductive
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Quantitative Research (cont'd)

- Generally attempts to quantify variables of interest; questions must be measurable.
 - Example:
 - What is the relationship between graduate students' level of interaction, measured by the number of 'hits' in the course, and students' grades in an online research methods course?
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Quantitative Methodology

- Generally involves collecting numerical data that can be subjected to statistical analysis.
 - Examples of data collection methodologies
 - Performance Tests
 - Personality Measures
 - Questionnaires (with closed-ended questions or open-ended but transferred to quan data)
 - Content Analysis
 - The data is generally referred to as “hard” data.
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Qualitative Research

- A type of educational research in which the researcher relies on the views of participants; asks broad, general questions; collects data consisting largely of words (or text) from participants; describes and analyzes these words for themes; and conducts the inquiry in a subjective, biased manner.
 - Constructivism – multiple realities; biased; inductive
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Qualitative Research (cont'd)

- “There are times we wish to know not how many or how well, but simply how” (Shulman, 1988, p. 7).
 - Example:
 - “What are the factors that influence a graduate students’ experience in an online research methods course?”
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Qualitative Methodology

Generally involves listening to the participants' voice and subjecting the data to analytic induction (e.g., finding common themes)

More Exploratory in nature

Examples of data collection methods

- ▣ Interviews
 - ▣ Open-ended questionnaires
 - ▣ Observations
 - ▣ Content analysis
 - ▣ Focus Groups
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Defining Features of Mixed Methods

- Uses quantitative and qualitative data (e.g., numeric scores, open- and closed-ended questions etc.).
 - Data can be collected concurrently or sequentially; depending upon the design.
 - Priority can be given to either data type or they can be considered equally.
 - Allows researchers to expand an understanding from one method to another in order to converge or confirm findings.
 - Research is based on the breadth of generalization offered by quantitative research with the depth of detailed understanding offered by qualitative research.
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Required Researcher Skills*

- Knowledge of various research methods used.
- Understanding of assumptions underlying each research method.
- Working knowledge of analytic procedures and tools related to both quantitative and qualitative research.
- Ability to understand and interpret results from the different methods.
- Willingness to accept and forego methodological prejudices from prior training in a given discipline.
- Understanding of different disciplines, audiences and appropriate studies where mixed methods are acceptable.

* Adapted from Bazely (2004).

The Type of Mixed-Method Approach Depends Upon Four Factors

- Interaction
 - ❑ A strand is basic part of a design encompassing either the qualitative or quantitative component.
 - ❑ Interactive – the process or results of one strand may influence the process or results of the second strand (e.g., the results of the quantitative strand may affect the manner by which the qualitative strand is conducted). Interaction may occur at any point during the study.
 - ❑ Independent – the two strands are distinct (i.e., separate research questions, data collection, etc.). The strands only interact at the end of the study during interpretation.

 - Priority
 - ❑ Quantitative – greater emphasis is placed on the quantitative strand.
 - ❑ Qualitative- greater emphasis is placed on the qualitative strand.
 - ❑ Equal – the quantitative and qualitative strands contribute equally.

 - Timing (i.e., the sequence of our strands)
 - ❑ Quantitative first.
 - ❑ Qualitative first.
 - ❑ Concurrent.

 - Mixing – the point where the data are integrated to answer research questions.
 - ❑ During data collection.
 - ❑ During interpretation.
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Three Common Type of Mixed Methods Designs *

- Sequential Explanatory
 - Quantitative Strand One
 - Positivist
 - Investigates cause and effect.
 - Qualitative Strand Two
 - Constructivist
 - Investigates meaning based on observation or personal experience, ultimately combined into a broad pattern or understanding.

- Sequential Exploratory
 - Qualitative Strand One
 - Quantitative Strand Two

- Convergent
 - Strands One and Two are concurrent and independent.
 - Pragmatism as an over-arching philosophy.

* Adapted from Creswell & Plano Clark (2012).

Sequential Explanatory Strategy



Sequential Explanatory Strategy

- The collection and analysis of quantitative data followed by the collection and analysis of qualitative data.
 - Primary focus is to explain quantitative results by using qualitative data to explore certain results in more detail or help explain unexpected results (e.g., using follow-up interviews to better understand the results of a quantitative study).
 - Interaction
 - Interactive – the results of the quantitative strand can influence actions or decisions in the qualitative strand.
 - Priority
 - Greater emphasis is placed on the quantitative strand.
 - Timing
 - Sequential - quantitative first.
 - Mixing
 - Integration occurs during data collection.
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Sequential Exploratory Strategy

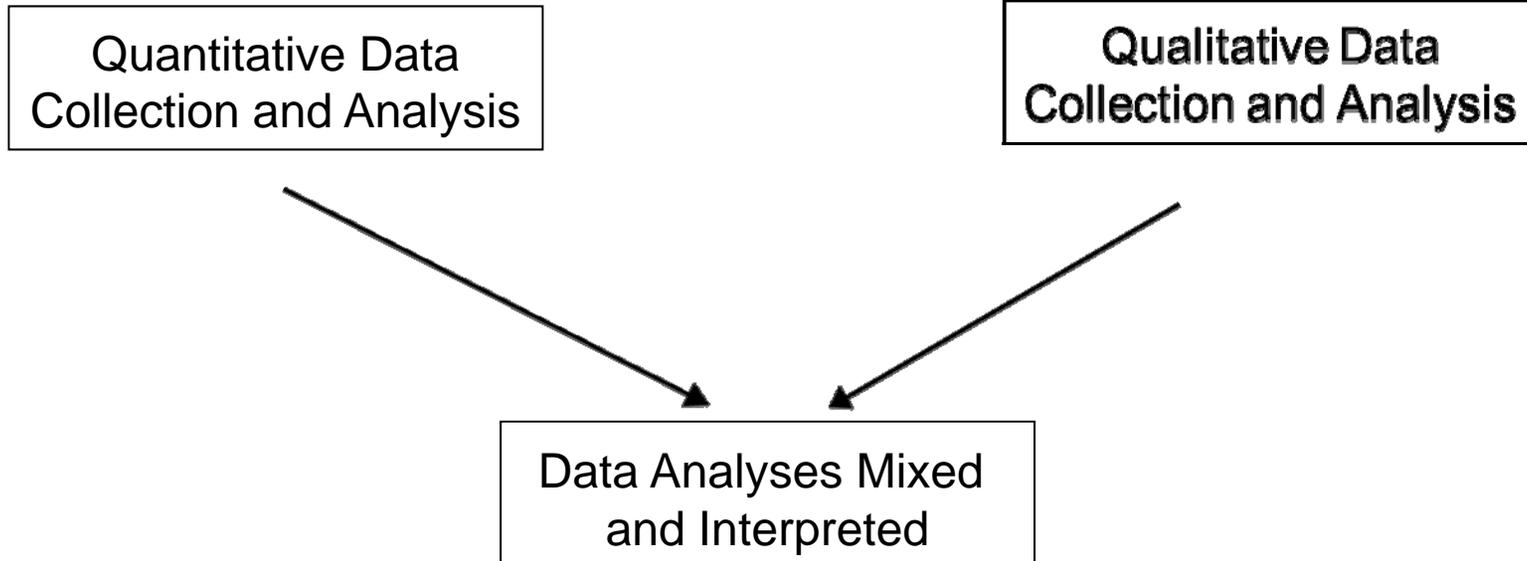


Sequential Exploratory Strategy

- The collection and analysis of qualitative data followed by the collection and analysis of quantitative data.
- Used primarily to explore a phenomenon by:
 - Testing elements of a theory.
 - Generalizing qualitative findings to different samples.
 - Development of instrumentation (e.g., using a small group to create instrumentation and then collecting quantitative data based on the instrumentation).
- Interaction
 - Interactive – the results of the qualitative strand can influence actions or decisions in the quantitative strand.
- Priority
 - Greater emphasis is placed on the qualitative strand.
- Timing
 - Sequential – qualitative first.
- Mixing

 - Integration occurs during data collection.

Convergent Strategy



Convergent Strategy

- Qualitative and quantitative data are collected and analyzed concurrently and independently.
 - This strategy can be used with different, but complementary data, to develop a better answer to your research questions.
 - Interaction
 - Independent – the two strands are implemented so they are independent of one another.
 - Priority
 - Equal emphasis is placed on both strands.
 - Timing
 - Concurrent – the strands are implemented simultaneously, in one phase of the study.
 - Mixing
 - Integration occurs during data interpretation. Researchers are able to make conclusions when synthesizing or comparing the results of the quantitative and qualitative strands.
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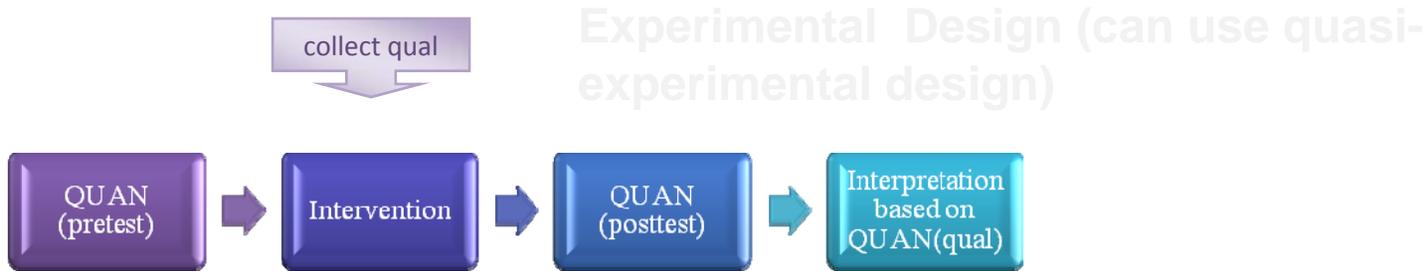


Embedded Approach

Mixed Methods Designs: Embedded Approach

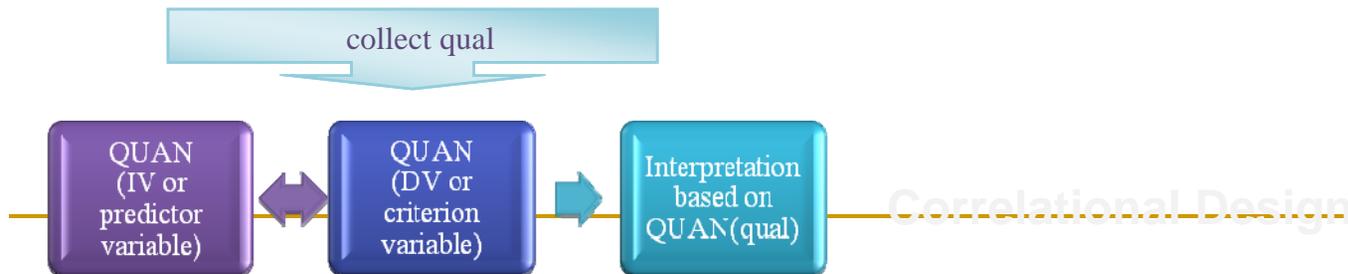
- The embedded approach is used when one type of data is most critical to the **researcher** (e.g., when the researcher is most interested in quantitative data, then qualitative data plays the supportive role).
 - This approach is used when different questions require different types of data (qualitative and quantitative).
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Embedded Approach



QUAN designs to be used within an Embedded Approach

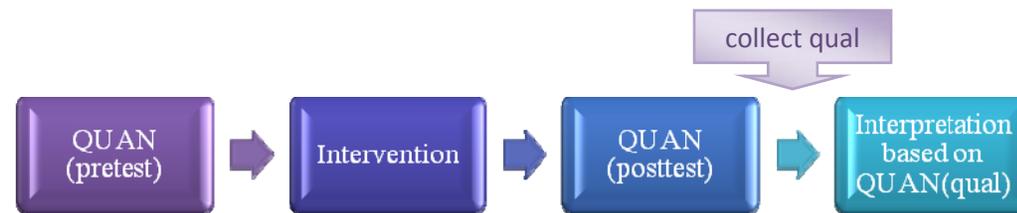
Correlational	Experimental
Explanatory design	Between-subjects -pre- and posttest design
Predictive design	Within-subjects -cross-over design -factorial design



Light, G. et al. (2009). Assessing the impact of a year-long faculty development program on faculty approaches to teaching. *International Journal of Teaching and Learning in Higher Education*, 20(2), 168-181.

- **Objective:** Determine if the Faculty Development Program (FDP) impacts teaching style of pre-tenure faculty.
 - **Research Questions**
 - **Quantitative** – What effect did the FDP have on teachers' approaches to teaching?
 - **Qualitative** – (*Central*) – How did the teachers' teaching strategies change in response to the FDP?
 - *Sub* - What steps did the teachers take to implement the change?
 - **Mixed Method** – How do the qualitative (qual) findings explain (expand on) the quantitative (QUAN) results?
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- Design.** The mixed method design employed was an embedded approach with an experimental design. The quantitative method was quasi-experimental between-subjects approach utilizing a pre- and posttest control group design. Qualitative data was collected at two time points post intervention.



Assignment	N = 81	Pretest	Treatment	Posttest	qual	qual (n = 25)
N	n = 52	ATI	FDP	ATI	Critical Reports	Interviews
N	n = 29	ATI	-	ATI	Critical Reports	

N = non-random

ATI = Approach to Teaching Inventory
 FDP = Faculty Development Program

Commonly Used Means of Quality Control

“Mixed methods are inherently neither more nor less valid than specific approaches to research. As with any research, validity stems more from the appropriateness, thoroughness and effectiveness with which those methods are applied and the care given to thoughtful weighing of the evidence than from the application of a particular set of rules or adherence to an established tradition.” (Bazely, 2004)

In short, there are established rules for controlling validity in standard quantitative and qualitative research. These same rules must be followed when the methods are combined.

Ethical Concerns

- Participants must participate voluntarily.
 - Participants must understand purpose and procedures of the study.
 - Participants must understand that they have the right to a copy of the results.
 - Participants must understand the potential benefits of the study and that their privacy will be respected.
 - Researchers must understand the impact of their presence at research sites and ensure that these sites are left undisturbed at the end of the study.
 - Care must be taken to identify and nullify any actual or perceived issues where power between the researcher and participant could be abused.
 - Anonymity must be maintained during data analysis and data kept for a reasonable period of time.
 - Ensure that writing is free of bias towards any group (e.g., age, ethnicity, sexual orientation, race, gender, etc.).
 - The details of the study must be carefully explained within the actual report so as to allow readers the opportunity to judge the ethical quality of the study for themselves.
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The Applications of Mixed-Methods Research are Far Ranging*

- [Nursing](#)
- [Psychology](#)
- [Education](#)
- [Sociology](#)
- [Library and Information Science](#)
- [Information Systems](#)
- [Political Science](#)

* Click on each discipline name to be linked to an example article.

Key Resources

- Bazely, P. (2004). Issues in mixing qualitative and quantitative approaches to research. In. R. Buber, J. Gadner, & L. Richards (Eds.) *Applying qualitative methods to marketing management research*. UK: Palgrave Macmillan, (pp. 141-156).
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- Tashakkori, A., & Teddlie, C. (2008). Introduction to mixed method and mixed model studies in the social and behavioral science. In V.L. Plano-Clark & J. W. Creswell (Eds.), *The mixed methods reader*, (pp. 7-26).
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Exemplary Studies

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Way, N., Stauber, H.&., Nakkula, M.J., & London, P. (1994). Depression and substance use of two divergent high school cultures: A quantitative and qualitative analysis. *Journal of Youth and Adolescence*, 23(3), 331-357.

Contact Information

Steven R. Terrell, Ph.D.

Professor

Fischler College of Education

Graduate School of Computer and Information Sciences

Nova Southeastern University

Ft. Lauderdale, Fl 33314

954-262-2084

800-986-2247 x2084

terrell@nova.edu
