

Introduction to Mixed Methods Research

Mixed methods research integrates both qualitative and quantitative approaches to provide a more comprehensive understanding of research questions.

Purpose: This approach allows researchers to capture the strengths of both methods and explore complex problems that cannot be fully understood through one method alone.

Characteristics of Mixed Methods Research

Integration: Combines data from quantitative and qualitative sources at various stages (design, analysis, or interpretation).

- Flexibility: Can adapt to diverse research questions.
- Complementary Insights: Provides deeper understanding by addressing weaknesses in either method when used alone.

The four common mixed methods research designs and their uses.

1. Convergent Design

In this design, quantitative and qualitative data are collected and analyzed simultaneously but independently. The results are then merged to provide a comprehensive understanding of the research problem.

Use: This design is useful when the researcher wants to compare and contrast quantitative statistical trends with qualitative insights. It works well for studies aiming to corroborate findings across methods.

An Example of the Convergent Parallel Design. In a convergent parallel mixed methods study, Hoffman and Nottis (2008) collected quantitative and qualitative data at the same time to understand eighth-grade students' perceptions of preparing for a high-stakes test that they were required to complete at one school. To study these perceptions, they used quantitative surveys with 215 students to gather demographic information and data about how influential students perceived different school-initiated strategies to be in helping them perform on the test. In

addition to completing the survey, students were also asked to write a letter to their principal in which they described what they felt helped them perform successfully on the test.

After statistically analyzing the quantitative survey responses and thematically analyzing the qualitative letter documents, the researchers compared the results from the two sources of data. From the comparisons, they found areas of agreement (e.g., strategies that scored highest in the quantitative analysis were supported by positive comments in the qualitative letters) and disagreement (e.g., the letters noted that parents were important influences, but the role of parents had not been included in the survey).

Hoffman and Nottis (2008) combined the two sets of results to develop a more complete picture of students' perceptions and they concluded, "These [combined] findings suggest that there are multiple ways for administrators to encourage optimal test performance results" (p. 220).

2. Explanatory Sequential Design

This design begins with the collection and analysis of quantitative data, followed by qualitative data collection to explain or elaborate on the quantitative results.

Use: Ideal when the researcher seeks to explain relationships or trends observed in quantitative data through qualitative insights. It is often applied in studies where quantitative results need contextualization.

An Example of the Sequential Explanatory Design. A two-phase project by Ivankova and Stick (2007) is a good example of a sequential explanatory design. Their research examined the persistence of students enrolled in an educational leadership doctoral program that was delivered using online technology. They described their purpose:

[T]o identify factors contributing to students' persistence in the [program] by obtaining quantitative results from a survey of 278 current and former students and then following up with four purposefully selected individuals to explore those results in more depth through a qualitative case analysis. (p. 95)

The authors began their study with a quantitative phase. They collected and analyzed survey data to determine the factors (e.g., self-motivation and faculty) that predicted students' persistence in the program. Once these results were obtained, they used the quantitative data to select one

typical individual (in terms of the quantitative data) from each of four groups studied (students beginning, matriculated, graduated, or withdrawn from the program). The authors felt that these individuals could best provide detailed information about different perspectives of each group in a second, qualitative phase. Ivankova and Stick then collected qualitative information about each individual, including interview data, program records, and documents such as coursework.

3. Exploratory Sequential Design

This approach starts with qualitative data collection and analysis, which informs the subsequent quantitative phase. The aim is to develop measurement tools or test hypotheses generated in the qualitative phase.

Use: Commonly used when the research problem is not well understood, and the qualitative phase is necessary to identify variables or constructs for further quantitative investigation.

An Example of the Sequential Exploratory Design. In a sequential exploratory mixed methods study, Cinamon and Dan (2010) wanted to understand parents' perceptions of career development programs in the context of preschool education.

Little previous work had examined this topic, so they needed to begin their study by exploring the topic in a first phase before they could attempt to measure it in a second phase. The authors wrote:

The objective of the qualitative step is to explore and understand the authentic perceptions and attitudes of parents toward a developmental approach to careers and their attitudes toward the implementation of career education in preschools..... Along with the rich descriptions of the parents with regard to their perceptions, these interviews also helped develop two parental attitude questionnaires that were applied in the second step of the study—the quantitative step. (p. 523)

The qualitative first phase of the study consisted of interviews with 15 parents representing both high and low socioeconomic status in the central region of Israel.

From this data, the researchers identified that parents had complex attitudes about this topic that grouped into four broad categories (e.g., "relevance of the world of work to children's development" and "parents' activities with children relating to work and career"). From the qualitative findings, the researchers developed questionnaires to measure the different parent attitudes. In the second phase of the study, they then gathered survey data from 140 parents who had a child in preschool. They analyzed the survey data statistically and determined that in general parents' positive attitudes about career education in preschool were significantly higher than their negative attitudes, but that there were significant differences in attitudes depending on whether parents were of high or low socioeconomic status. They concluded by discussing what they learned from the connected results and offering suggestions of how preschool programs interested in including career development activities might work to gain parent support based on the results.

4. Embedded Design

In this design, one data type (qualitative or quantitative) plays a supporting role, embedded within a larger design that prioritizes the other method.

Use: Useful for addressing sub-questions within a study that would benefit from a different method, such as incorporating qualitative insights within a predominantly quantitative study or vice versa.

These designs allow researchers to leverage the strengths of both qualitative and quantitative methods to address complex research questions effectively.

An Example of the Embedded Design.

Plano Clark et al.'s (2013) report of a study about a psychoeducational intervention aimed at helping cancer patients better manage their pain illustrates the embedded mixed methods design. The primary intent of the study was to compare the impact of two doses of the intervention in terms of various patient outcomes (e.g., level of pain and self-efficacy). To address this purpose, the researchers used a randomized

clinical trial (a type of true experiment) where participants were randomly assigned to one of the two treatment conditions (i.e., high dose or low dose). To better understand how the nurses implemented the treatment and participants experienced the treatment, they were also interested in describing the process of the intervention. Therefore, the team included a qualitative component as part of the larger experiment by having the nurses make audio recordings of their interactions with participants as they delivered the intervention. This form of qualitative data collection did not interfere with the conduct of the experiment, but provided supplemental data to address secondary questions about participants' experiences, such as how they interacted with their assigned intervention nurse. This study is a good example of an embedded design with a major quantitative experimental design that included a secondary, supportive qualitative component.

Strengths of Mixed Methods Research

- Provides comprehensive insights by integrating numerical data with human experiences.
- Enhances validity through triangulation.
- Addresses complex research questions effectively.
- Bridges the gap between quantitative generalizations and qualitative depth.

Challenges of Mixed Methods Research

- Requires expertise in both qualitative and quantitative methods.
- Time and resource demands: Can be more expensive and time-intensive.
- Complexity in integration: Merging datasets into a coherent interpretation requires careful planning.

Steps for Conducting Mixed Methods Research

- 1. Determine the Research Question:** Clearly define why both methods are needed.
- 2. Select the Appropriate Design:** Choose between convergent, explanatory, or exploratory designs based on the research goals.
- 3. Collect Data:** Ensure data collection methods are rigorous and complementary.
- 4. Analyze Data:** Perform independent analyses before integration.
- 5. Interpret Results:** Merge findings to draw meaningful conclusions.

How to evaluate a mixed methods research study.

1. Assess the Research Purpose and Questions

- What to Look For:
- Is there a clear purpose for using both qualitative and quantitative methods?
- Are the research questions explicitly stated for both methods?
- Why It's Important:
- Mixed methods are most effective when both types of data contribute meaningfully to answering the research problem.

2. Examine the Design Choice

- What to Look For:
- Is the mixed-method design clearly identified (e.g., Convergent, Explanatory Sequential, Exploratory Sequential, or Embedded)?
- Does the design fit the research questions and purpose?
- Why It's Important:
- The design ensures that both qualitative and quantitative components work together effectively.

3. Evaluate Data Collection Methods

- What to Look For:
- Are both qualitative (e.g., interviews, focus groups) and quantitative (e.g., surveys, experiments) data collection methods well-described?
- Are the sampling strategies appropriate for both types of data?
- Why It's Important:
- A balanced and rigorous approach to data collection strengthens the study's credibility.

4. Check the Integration of Methods

- What to Look For:
- Are the qualitative and quantitative data integrated effectively? (e.g., merged, connected, or embedded at specific stages).
- Does the integration address the research questions in a meaningful way?
- Why It's Important:
- The core strength of mixed-method research is the synergy between the two types of data.

5. Review Data Analysis and Interpretation

- What to Look For:
- Are the qualitative and quantitative data analyzed separately before integration?
- Is the combined interpretation logical and aligned with the study's goals?
- Why It's Important:
- A thorough and systematic analysis ensures accurate conclusions.

6. Consider the Study's Validity

- What to Look For:
- Are strategies used to enhance the validity of both qualitative (e.g., triangulation, member checking) and quantitative (e.g., reliability, statistical tests) methods?
- Are the limitations of the study acknowledged?
- Why It's Important:

- Ensuring validity improves the trustworthiness of the findings.

7. Evaluate the Presentation of Results

- What to Look For:
 - Are the results from both methods presented clearly and side by side (if convergent)? Or sequentially (if explanatory or exploratory)?
 - Do the results answer the research questions comprehensively?
- Why It's Important:
 - A well-presented study allows the audience to see how the methods complement each other.

8. Reflect on the Contribution to the Field

- What to Look For:
 - Does the study provide unique insights that couldn't be achieved by using only one method?
 - Does it advance knowledge or address practical issues?
- Why It's Important:
 - The ultimate goal of mixed-method research is to provide a richer and more complete understanding.

Conclusion

Mixed methods research is a powerful approach that integrates both qualitative and quantitative data to provide a more comprehensive understanding of research problems. It combines the numerical precision of quantitative methods with the depth and contextual richness of qualitative methods. The key designs—convergent, explanatory, and exploratory—offer flexibility to address diverse research needs. While it comes with challenges like time intensity and complexity, its strengths, such as triangulation and the ability to address multifaceted questions, make it invaluable in fields like healthcare, education, and marketing. Ultimately, mixed methods research helps bridge the gap between numbers and narratives, offering researchers a holistic approach to answering complex questions.