Clarifying mixed-methods research designs: A theoretical framework for transitioning from qualitative or quantitative approaches

Satish Prakash Chand

Assistant Professor in Education
College of Humanities, Education & Law
Fiji National University, Fiji

Abstract

Mixed-methods research has grown rapidly across the social sciences; however, persistent conceptual ambiguity continues to undermine its theoretical coherence and practical application. In particular, confusion between methods and designs, inconsistent use of design labels, and limited attention to epistemological assumptions have weakened the rigor of many mixed-method studies. This conceptual-theoretical paper addresses these challenges by offering a novel clarification of six core mixed-methods research designs and re-examining them through the critical lens of researcher epistemic transitions rather than procedural sequencing alone. Drawing on pragmatism, dialectical pluralism, and theories of methodological integration, this paper reconceptualises mixed-methods designs as structured pathways through which researchers move from qualitative or quantitative traditions toward methodological integration. A transition pathway framework is proposed to explain how different entry points shape design logic, priorities, and integration strategies. By foregrounding epistemic orientation rather than procedural form, this paper offers guidance for researchers, supervisors, and reviewers and contributes to improved methodological literacy in mixed-methods research.

Keywords: mixed-methods research; research design; epistemology; methodological integration; transition pathways

1. Introduction

Over the past three decades, mixed-methods research has gained substantial prominence across the social sciences, education, health, and policy studies as a robust approach for addressing complex research problems that cannot be adequately understood through a single methodological lens (Creswell & Plano Clark, 2018; Tashakkori & Teddlie, 2010). By intentionally integrating qualitative and quantitative approaches within a single study, mixed-methods research offers the potential to combine statistical generalisability with contextual depth, thereby enhancing explanatory power, methodological rigor, and interpretive richness (Johnson & Onwuegbuzie, 2004). This expansion has been accompanied by the institutionalisation of mixed-methods training, the proliferation of design typologies, and the routine expectation, particularly in applied research, that studies demonstrate methodological integration.

Despite this growth, persistent conceptual and methodological challenges continue to characterise the application of mixed methods research in practice. A recurrent concern noted in the literature is the ongoing conceptual ambiguity surrounding mixed-methods research designs, particularly the distinction between research design, data collection methods, and analytic procedures (Bryman, 2006; Creswell, 2015). Consequently, many studies self-identify as mixed-methods without articulating the underlying design logic governing sequencing, priority, and integration, leading to weak methodological justification and limited transparency.

A related issue involves the misuse and superficial application of mixed-methods design labels, such as “convergent”, “sequential”, or “embedded”, often without a clear explanation of how qualitative and quantitative strands are integrated or why a particular design is epistemologically appropriate for the research questions posed (Plano Clark & Ivankova, 2016). In some cases, concurrent data collection is automatically equated with a convergent design, even when findings are analysed and reported in parallel with minimal interpretive synthesis. In other instances, surveys or questionnaires are described as constituting a “mixed-methods design”, reflecting a persistent conflation between methods of data collection and overall research design (Teddlie & Tashakkori, 2009). Such practices risk reducing mixed-methods research to a procedural label rather than a theoretically grounded methodological strategy.

Underlying these challenges is a deeper and often under-articulated source of confusion: the epistemological tension between qualitative and quantitative research traditions. Researchers typically enter mixed-methods enquiries from prior methodological

orientations grounded in either qualitative or quantitative paradigms, each carrying distinct assumptions about knowledge generation, validity, and the role of the researcher (Guba & Lincoln, 1994; Morgan, 2007). However, dominant mixed-methods typologies primarily classify designs according to timing and priority, offering limited guidance on how researchers transition from mono-method traditions to mixed-methods enquiry or how epistemic starting points shape design choices in practice.

In response to these limitations, this paper advances a conceptual-theoretical clarification of core mixed-methods research designs by reframing them as epistemic transition strategies rather than fixed procedural templates. Specifically, this paper aims to theoretically clarify six widely recognised mixed-methods designs by mapping them onto common pathways through which researchers move from qualitative or quantitative traditions toward methodological integration. By foregrounding researchers' epistemic entry points and transition logics, the paper offers a complementary framework that deepens existing typologies and provides clearer guidance for design justification, integration, and evaluation. In doing so, this paper contributes to ongoing debates on mixed-methods rigor while supporting more coherent methodological decision-making among researchers, supervisors, and reviewers.

2. Theoretical Foundations

Mixed-methods research is underpinned by a set of philosophical and epistemological assumptions that justify the intentional integration of qualitative and quantitative approaches. Without explicit engagement with these foundations, mixed-methods designs risk being reduced to technical combinations of methods rather than being theoretically informed research strategies. This section situates the present paper within key philosophical debates in mixed-methods research and establishes the epistemic basis for conceptualising mixed-methods designs as transition pathways, rather than procedural typologies.

2.1 Pragmatism as a foundational rationale for methodological integration

Pragmatism is widely recognised as the dominant philosophical foundation of mixed-methods research (Creswell & Plano Clark, 2018; Tashakkori & Teddlie, 2010). Rather than privileging a single epistemological stance, pragmatism emphasises the primacy of the research problem and supports the use of multiple methods, insofar as they contribute to a meaningful and actionable understanding. From a pragmatic perspective, methodological choices are guided by "what works" in addressing complex research questions, allowing

researchers to draw flexibly on qualitative and quantitative traditions without being constrained by rigid paradigm boundaries (Morgan, 2007).

Importantly, pragmatism does not advocate for methodological arbitrariness or theoretical relativism. Instead, it provides a philosophical justification for intentional integration, recognising that different forms of data illuminate different dimensions of social phenomena and serve distinct inferential purposes (Johnson & Onwuegbuzie, 2004). Within the context of this paper, pragmatism offers a legitimising backdrop for epistemic movement across methodological traditions while still requiring coherence, transparency, and justificatory rigor in design choice.

2.2 Dialectical pluralism and epistemic reflexivity

While pragmatism foregrounds compatibility and problem-centred enquiry, scholars have argued that mixed-methods research also benefits from a more explicitly dialectical orientation. Dialectical pluralism recognises that qualitative and quantitative paradigms are grounded in distinct epistemological and ontological assumptions that may not be fully reconcilable yet can be productively engaged through sustained dialogue and reflexivity (Greene, 2007).

Rather than resolving paradigm differences, dialectical pluralism treats epistemological tension as analytically generative, encouraging researchers to interrogate assumptions, surface contradictions, and refine interpretations (Greene et al., 1989). This perspective is particularly relevant for researchers transitioning to mixed methods, as it highlights that methodological integration often involves negotiation rather than seamless synthesis. In this sense, dialectical pluralism supports the paper's argument that mixed-methods designs reflect epistemic journeys shaped by prior methodological commitments.

2.3 Complementarity and triangulation as distinct integration logics

A further theoretical distinction central to mixed-methods research concerns the difference between triangulation and complementarity, two concepts frequently conflated in empirical studies. Triangulation traditionally refers to the use of multiple methods to corroborate findings, thereby enhancing the credibility and confidence in the results (Denzin, 2017). In mixed-methods research, triangulation is often invoked to justify concurrent data collection and validation claims.

In contrast, complementarity emphasises the use of different methods to explore related but distinct dimensions of a phenomenon, with the aim of extending interpretive depth rather than confirming equivalence (Greene et al., 1989). Complementary designs explicitly acknowledge that qualitative and quantitative findings may not converge and need not do so to be epistemically valuable. This distinction is critical for clarifying design logic, as sequential and embedded designs frequently operate on complementary rather than triangulating principles.

By distinguishing among these integration logics, this paper challenges routine, unexamined claims of triangulation and repositions integration as a theoretically situated analytic practice rather than a procedural outcome.

2.4 Epistemological tensions between qualitative and quantitative traditions

At the core of mixed-methods research are enduring epistemological tensions between qualitative and quantitative traditions. Quantitative research is commonly associated with positivist or post-positivist assumptions emphasising objectivity, measurement, generalisability, and causal explanation. In contrast, qualitative research is typically grounded in constructivist or interpretivist paradigms that privilege meaning, context, and subjectivity (Guba & Lincoln, 1994).

These divergent assumptions shape how researchers conceptualise research problems, formulate questions, and evaluate evidence. Consequently, researchers do not enter mixed-methods enquiry as epistemically neutral actors, but as methodologically situated knowers whose prior training influences design preferences and integration strategies (Morgan, 2014). When these epistemological orientations remain implicit, mixed-methods designs may reproduce hidden hierarchies, with one method dominating analytically while the other is marginalised.

Recognising epistemological tension as a defining feature rather than a methodological flaw provides a conceptual foundation for viewing mixed-methods designs as transitional strategies. This recognition underpins the framework advanced in this paper, which conceptualises mixed-methods research as an epistemic movement from mono-method traditions toward varying forms of methodological integration.

Table 1

Theoretical Positions Underpinning Mixed-Methods Research

Theoretical stance	Key assumptions	Implications for mixed methods
Pragmatism	What works to answer the question	Justifies method combination
Dialectical pluralism	Tension between paradigms is productive	Encourages design reflexivity
Complementarity	Different methods reveal different facets	Supports sequential designs
Triangulation	Convergence strengthens validity	Often misapplied

3. The Six Core Mixed-Methods Research Designs

Although mixed-methods research is now well established, persistent confusion remains regarding the logic, scope, and appropriate application of core designs. Existing typologies largely classify mixed-methods designs according to timing (sequential or concurrent), priority (qualitative or quantitative), and integration points (Creswell & Plano Clark, 2018; Teddlie & Tashakkori, 2009). While useful, such classifications often remain procedurally descriptive and insufficiently attentive to the epistemological assumptions and researcher entry points that shape design choices in practice.

Building on canonical frameworks, this section revisits six widely recognised mixed-methods designs and clarifies each using a common analytic structure. Rather than treating designs as neutral templates, each design is examined as an epistemically motivated response to specific research problems and researcher orientations. For each design, attention is given to the design logic, epistemological assumptions, typical entry points, common misapplications, and best-fit research questions.

3.1 Convergent parallel design

Design logic.

The convergent parallel design is based on the assumption that qualitative and quantitative approaches can generate complementary yet equally legitimate forms of evidence about the same phenomenon when conducted during the same phase of a study. Its primary purpose is to enable systematic comparison, corroboration, or synthesis of findings to strengthen the interpretation (Creswell & Plano Clark, 2018).

Epistemological assumptions.

This design is typically underpinned by pragmatism or pluralism, assuming partial

epistemological compatibility between the qualitative and quantitative traditions. Knowledge is viewed as multifaceted, and methodological diversity is treated as epistemically enriching rather than contradictory (Morgan, 2007).

Typical entry point.

Convergent designs are most commonly adopted by researchers with prior exposure to both methodological traditions or by interdisciplinary teams. They are less frequently chosen by researchers transitioning directly from strongly mono-methodological backgrounds.

Common misapplications.

A pervasive error involves equating concurrent data collection with convergence, even when qualitative and quantitative findings are analysed independently and reported without interpretive integration. In such cases, methodological equivalence is asserted rhetorically rather than enacted analytically (Bryman, 2006).

Best-fit research questions.

- To what extent do qualitative insights and quantitative trends converge or diverge?
- How do different forms of evidence jointly illuminate shared phenomena?

3.2 Explanatory sequential design

Design logic.

The explanatory sequential design was developed to address situations in which quantitative findings require further interpretation or contextualisation. Quantitative data are collected and analysed first, followed by a qualitative phase designed explicitly to explain or elaborate on the initial results (Creswell, 2015).

Epistemological assumptions.

This design typically reflects a post-positivist orientation, in which quantitative findings are accorded epistemic priority. Qualitative enquiry serves an explanatory function, enhancing the understanding of statistical patterns rather than challenging them.

Typical entry point.

The explanatory sequential design is most frequently adopted by researchers transitioning from a quantitative to a mixed orientation. It provides a conceptually accessible pathway for

quantitatively trained researchers to incorporate qualitative reasoning, without abandoning established inferential norms.

Common misapplications.

Misapplication occurs when the qualitative phase is weakly connected to the quantitative results or when the interview questions are not explicitly derived from prior findings. In such cases, sequencing exists procedurally but not epistemically (Plano Clark & Ivankova, 2016).

Best-fit research questions.

- Why did specific quantitative patterns emerge?
- How do participants explain unexpected or statistically significant results?

3.3 Exploratory sequential design

Design logic.

The exploratory sequential design is appropriate for research contexts in which key constructs, variables, or theoretical dimensions are poorly understood. Qualitative exploration precedes quantitative measurement, allowing meaning and theory to inform instrument development and hypothesis testing (Creswell & Plano Clark, 2018).

Epistemological assumptions.

This design is typically grounded in interpretivist or constructivist assumptions at the initial stage, with pragmatism enabling subsequent quantitative generalisations. Meaning-making is considered a necessary precursor to measurement.

Typical entry point.

Exploratory sequential designs are most commonly adopted by researchers transitioning from qualitative to mixed orientations. They allow qualitative researchers to extend their epistemic reach while retaining interpretive authority.

Common misapplications.

A frequent error involves conducting qualitative exploration while relying on pre-existing quantitative instruments, thereby weakening the epistemic linkage between phases.

Best-fit research questions.

- How do participants conceptualise a poorly defined phenomenon?
- Which dimensions of a construct should be operationalised quantitatively?

3.4 Embedded (nested) design

Design logic.

Embedded designs are intended to support a dominant methodological approach by incorporating a secondary method that addresses a complementary or subsidiary purpose (Teddlie & Tashakkori, 2009). The secondary method is nested within a larger design, such as an experiment or a survey.

Epistemological assumptions.

This design reflects methodological pragmatism with an explicit epistemic hierarchy, in which one paradigm dominates analytic decision-making.

Typical entry point.

Embedded designs are commonly adopted by researchers transitioning from quantitative to mixed-method orientations, particularly in evaluation or intervention studies.

Common misapplications.

A major concern is the instrumentalisation of the secondary method, especially when qualitative data are reduced to illustrative quotations without analytical depth.

Best-fit research questions.

- How do participants experience the intervention?
- What are the contextual factors that shape quantitative outcomes?

3.5 Transformative mixed-methods design

Design logic.

Transformative designs are driven by explicit theoretical or ideological frameworks, such as critical theory, feminist theory, or indigenous epistemologies. The purpose extends beyond explanation to include emancipation, advocacy, and social change (Mertens, 2018).

Epistemological assumptions.

These designs are grounded in critical and participatory epistemologies and explicitly reject

the notion of methodological neutrality. Methodological choices are evaluated in terms of their alignment with the transformative aims.

Typical entry point.
Transformative designs are most often adopted by researchers transitioning from a qualitative to a mixed-methods orientation, particularly those engaged in critical or community-based research.

Common misapplications.
Misuse occurs when the transformative label is applied without explicitly articulating the guiding theoretical framework or providing evidence that methodological integration serves emancipatory goals.

Best-fit research questions.

- How do power relations shape lived experiences and their outcomes?
- How can research inform equity-oriented policies or practices?

3.6 Multiphase mixed-methods design

Design logic.
Multiphase designs involve multiple, interconnected mixed-methods studies conducted over time, often combining sequential and convergent elements to address complex or systemic research problems (Creswell & Plano Clark, 2018).

Epistemological assumptions.
Multiphase designs are strongly pragmatic and iterative, allowing epistemological priorities to shift across phases as understanding evolves.

Typical entry point.
These designs are typically employed by experienced mixed-methods researchers or research teams rather than by those making initial epistemic transitions.

Common misapplications.
A key risk is the lack of conceptual coherence across phases, leading to fragmented studies rather than a cumulative research program.

Best-fit research questions.

- How does the understanding of a phenomenon evolve across the stages of enquiry?
- How can evidence be progressively built to inform policy or system-level changes?

Table 2

Core Mixed-Methods Designs and Their Logics

Design	Design logic	Typical entry point	Priority	Integration point
Convergent	Methodological equivalence	Qual or Quant	Equal	Analysis and interpretation
Exploratory Sequential	Theory/construct building	Qual to Quant	Qual dominant	Instrument development and interpretation
Explanatory Sequential	Explanation of effects	Quant to Qual	Quant dominant	Connecting phases and interpretation
Embedded	Supplementation	Qual or Quant	Unequal	During design and analysis
Multiphase	Programmatic inquiry	Qual or Quant	Variable	Across and between phases
Transformative	Change-oriented inquiry	Qual or Quant	Theory-driven	Throughout the research process

4. Transition pathways: From mono-method to mixed-methods research

While established mixed-methods typologies categorise designs according to timing, priority, and integration procedures, they offer limited insight into how researchers actually move into mixed-methods inquiry. In practice, researchers rarely adopt mixed methods as epistemologically neutral actors. Instead, they enter from mono-method traditions shaped by prior training, disciplinary norms, and methodological socialisation (Morgan, 2007; Plano Clark & Ivankova, 2016). These epistemic starting points strongly influence how research problems are framed, how evidence is valued, and how integration is enacted.

This paper advances the argument that mixed-methods designs can be more coherently understood as epistemic transition pathways rather than as static procedural templates. From this perspective, design choice reflects not only the nature of the research

question but also the researcher's movement from qualitative or quantitative traditions toward methodological integration. By foregrounding epistemic entry points, this framework explains why certain designs are intuitively adopted by particular researchers and why integration challenges recur across studies.

Four principal transition pathways are proposed below. Each pathway represents a distinct epistemic-movement logic and aligns with specific mixed-methods designs, as clarified in Section 3.

4.1 Pathway A: Qualitative expansion (exploratory sequential design)

The qualitative expansion pathway characterises researchers who begin inquiry from an interpretivist or constructivist orientation and subsequently extend their work into the quantitative domain. This pathway aligns most closely with the exploratory sequential design, in which qualitative findings systematically inform the development of quantitative instruments, variables, or hypotheses (Creswell & Plano Clark, 2018).

The epistemic logic of this pathway privileges meaning-making as a necessary precursor to measurement. Researchers prioritise participants' perspectives, contextual interpretation, and emergent theory before seeking generalisation. Quantitative methods are introduced to extend epistemic reach rather than to redefine the phenomenon under study.

This pathway represents a relatively low-risk transition for qualitative researchers, as interpretive authority remains dominant throughout the research process. However, challenges arise when qualitative insights are inadequately operationalised or when the quantitative phase reproduces existing measures without theoretical grounding in the initial qualitative findings.

4.2 Pathway B: Quantitative elaboration (explanatory sequential design)

The quantitative elaboration pathway reflects transitions from quantitatively driven inquiry toward mixed-methods research through the incorporation of qualitative explanation. This pathway corresponds to the explanatory sequential design, in which quantitative data are collected and analysed first, followed by a qualitative phase to interpret or contextualise the initial results (Creswell, 2015).

Epistemologically, this pathway is grounded in post-positivist assumptions, with quantitative findings accorded primary epistemic status. Qualitative inquiry functions as an

explanatory mechanism, clarifying statistical relationships, unexpected findings, or subgroup differences.

This pathway offers a structured and conceptually accessible route into mixed methods for quantitatively trained researchers, yet it also carries epistemic risks. Qualitative inquiry may be narrowly constrained by prior quantitative assumptions, limiting its capacity to challenge dominant interpretations. When qualitative data are treated solely as explanatory supplements, integration remains asymmetrical rather than dialogic.

4.3 Pathway C: Methodological equivalence (convergent parallel design)

The methodological equivalence pathway represents a transition in which qualitative and quantitative approaches are treated as epistemically equal and analytically complementary. This pathway aligns with the convergent parallel design, where both strands are collected during the same phase and integrated through comparison, synthesis, or triangulation (Creswell & Plano Clark, 2018).

Researchers adopting this pathway typically exhibit a pragmatic or pluralist epistemological stance, recognising that different forms of evidence illuminate distinct but related dimensions of a phenomenon. Rather than privileging one tradition, this pathway seeks dialogic integration across paradigms.

Despite its conceptual appeal, methodological equivalence is difficult to realise in practice. Equal weighting does not result from concurrent data collection alone; it requires explicit analytic integration strategies and reflexive engagement with epistemological differences (Bryman, 2006). Without such reflexivity, convergent designs risk devolving into parallel mono-method studies reported side by side.

4.4 Pathway D: Methodological subordination (embedded design)

The methodological subordination pathway describes transitions in which one methodological tradition remains clearly dominant, while the other is incorporated in a supporting or subsidiary role. This pathway is most closely associated with embedded designs, in which qualitative or quantitative components are nested within a primary design, such as an experiment, intervention, or large-scale survey (Teddlie & Tashakkori, 2009).

This pathway reflects pragmatic adaptation rather than epistemic equivalence. It is frequently adopted by researchers entering from quantitatively oriented traditions,

particularly in evaluation or policy research, where qualitative data are embedded to capture participant experiences, implementation processes, or contextual influences.

While methodologically legitimate, this pathway raises important epistemological concerns. Secondary methods risk being instrumentalised, with qualitative data reduced to illustrative anecdotes or process descriptions. Recognising methodological subordination as an explicit transition pathway allows researchers to be transparent about epistemic priorities and integration boundaries rather than implicitly masking hierarchy.

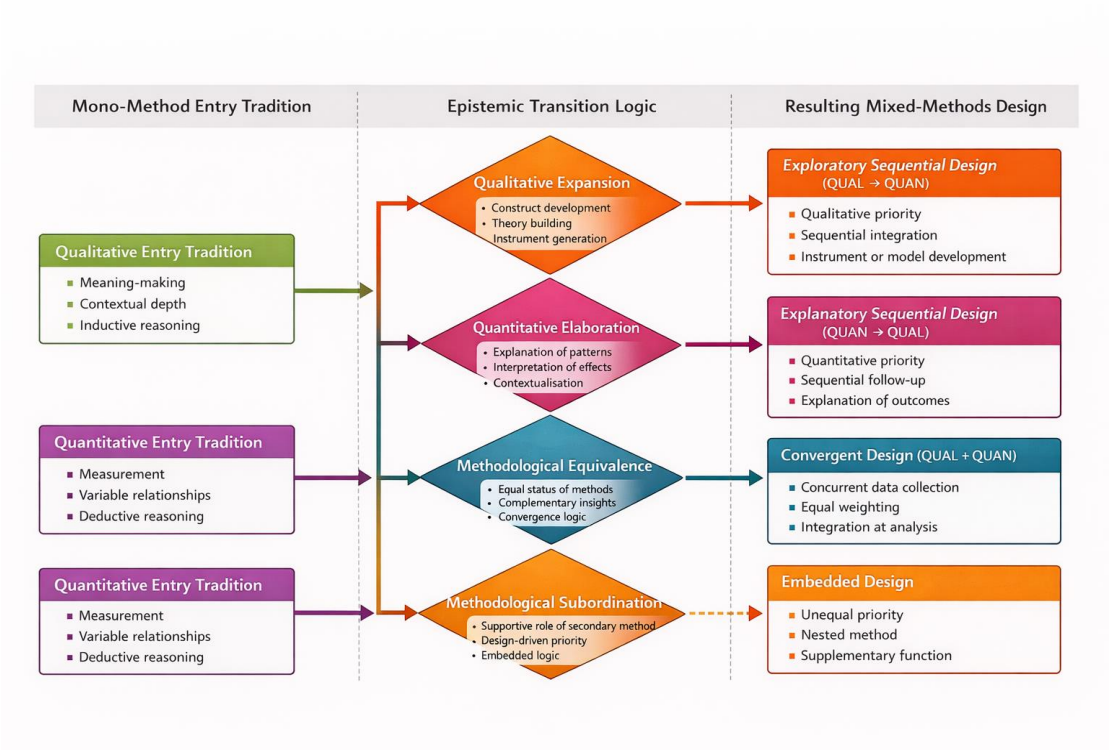
4.5 Theoretical significance of the transition pathways framework

Conceptualising mixed-methods designs as transition pathways offers several theoretical and practical advantages. First, it foregrounds the researcher's epistemic orientation as a central determinant of design choice, addressing a gap in existing typologies that focus primarily on procedural features. Second, it explains recurring patterns of design preference and misapplication by situating them within researchers' methodological socialisation. Third, it reframes integration challenges as predictable epistemic tensions rather than methodological failures.

By reconceptualising mixed-methods designs as epistemic movement rather than methodological mixture, this framework complements existing classifications while offering a more dynamic and reflexive understanding of mixed-methods research practice. This reconceptualisation provides the conceptual bridge between design clarification (Section 3) and the critique of common conceptual errors (Section 5).

Figure 1

Epistemic Transition Pathways from Mono-Method Traditions to Mixed-Methods Research



Note. The figure illustrates how researchers' epistemic entry traditions (qualitative or quantitative) shape their transition into mixed-methods research through distinct epistemic logics. Each pathway reflects differing assumptions about methodological priority, integration, and purpose, resulting in exploratory sequential, explanatory sequential, convergent, or embedded mixed-methods designs. The framework emphasises epistemic orientation rather than procedural sequencing as the basis for design selection.

5. Common conceptual errors in mixed-methods research

Despite the maturation of mixed-methods research as a recognised methodological field, conceptual errors continue to appear with striking regularity across doctoral theses, journal manuscripts, and funded research projects. These errors are not merely technical oversights; rather, they reflect unresolved epistemological tensions, inadequate methodological training, and a superficial engagement with the logic of mixed-methods design (Bryman, 2006; Plano Clark & Ivankova, 2016). By identifying these recurring misconceptions, this section clarifies why many mixed-methods studies fail to achieve genuine integration despite nominally adopting mixed designs.

Importantly, many of these errors stem from misaligned epistemic transition pathways, in which researchers adopt design labels that do not align with their methodological orientation or analytic practices. The most prevalent conceptual errors are discussed below.

5.1 Treating data collection methods as research designs

One of the most pervasive errors in mixed-methods research is the conflation of data collection techniques with research design, most notably treating surveys as a mixed-methods design. Statements such as "a mixed-methods survey design was employed" are frequently used without clarification of sequencing, priority, or integration.

Surveys are instruments, not designs. While surveys may include closed- and open-ended items, the mere presence of qualitative and quantitative data does not constitute a mixed-methods design (Creswell & Plano Clark, 2018). Without explicit integration strategies, such studies represent multi-method data collection rather than mixed-methods research.

This error is especially common among researchers transitioning via Pathway D (Methodological Subordination), where qualitative components are embedded without conceptual justification. Explicit recognition of the underlying transition pathway would encourage clearer articulation of design logic and epistemic intent.

5.2 Claiming triangulation without analytic integration

Another frequent misconception involves invoking triangulation as a methodological justification without demonstrating how integration occurs analytically. Many studies claim that qualitative and quantitative data were triangulated, yet present findings in parallel sections with no synthesis, comparison, or meta-inference.

Triangulation is not achieved through concurrent data collection alone; it requires deliberate analytic integration (Fetters et al., 2013). Integration may occur through joint displays, narrative weaving, comparative analysis, or theoretical synthesis, but it must be made explicit.

This error is particularly evident in studies claiming convergent designs under Pathway C (Methodological Equivalence). When epistemic equivalence is asserted but not enacted analytically, convergent designs collapse into parallel mono-method studies, undermining their theoretical justification.

5.3 Labelling concurrent data collection as "convergent" without epistemic reflexivity

A related error involves equating concurrent timing with convergent design, regardless of epistemological stance or analytic intent. Researchers often assume that collecting qualitative and quantitative data simultaneously automatically constitutes a convergent parallel design.

However, convergent designs require more than simultaneity; they demand epistemic commitment to methodological dialogue and equivalence (Greene, 2007). Without reflexive engagement with how differing forms of evidence are valued and reconciled, concurrent designs risk reinforcing implicit hierarchies.

This error reflects unresolved epistemological tensions, particularly when researchers trained in one tradition adopt convergence rhetorically while maintaining mono-method analytic dominance in practice.

5.4 Ignoring methodological priority and epistemological assumptions

Perhaps the most consequential conceptual error is the failure to articulate methodological priority and epistemological orientation. Many mixed-methods studies omit discussion of which strand is dominant, how paradigmatic assumptions are negotiated, or why particular integration strategies were selected.

Ignoring priority obscures the epistemic logic of the design, making it difficult for readers and reviewers to assess coherence or rigor (Teddlie & Tashakkori, 2009). This omission is especially problematic in embedded and sequential designs, where hierarchy is inherent but often left implicit.

The transition pathways framework introduced in Section 4 addresses this issue directly by positioning priority as a function of epistemic entry point rather than as a purely technical decision. Making epistemological assumptions explicit enhances transparency and methodological accountability.

5.5 Consequences of conceptual misapplication

These conceptual errors have cumulative consequences for the field of mixed-methods research. They dilute methodological rigor, obscure theoretical contribution, and contribute to inconsistent peer review standards. More critically, they reinforce the perception of mixed methods as a flexible but theoretically underdeveloped approach.

By reframing these errors as mismatches between epistemic orientation and design logic, this paper moves beyond critique toward constructive clarification. Recognising mixed-methods designs as epistemic transition pathways enables researchers to select, justify, and implement designs more coherently.

6. Implications for researchers, supervisors, and reviewers

The conceptual clarifications advanced in this paper have important implications for how mixed-methods research is designed, taught, supervised, and evaluated. By reconceptualising mixed-methods designs as epistemic transition pathways rather than procedural templates, the framework extends beyond methodological classification to inform research practice and scholarly judgement.

6.1 Implications for researchers and doctoral students

For researchers, particularly doctoral candidates and early-career scholars, the transition from mono-method traditions to mixed-methods inquiry is often marked by uncertainty and conceptual fragmentation. Conventional typologies emphasise design labels and sequencing but provide limited guidance on how researchers' epistemic orientations shape methodological decisions.

The transition pathways framework offers a reflexive tool for design justification, enabling researchers to explicitly articulate:

- their epistemic entry point (qualitative or quantitative),
- the rationale for methodological expansion or integration,
- the intended role and priority of each method, and
- the form of integration to be achieved.

This clarity supports stronger alignment between research questions, design logic, and analytic strategies, reducing the risk of superficial or incoherent mixed-methods applications. For doctoral students, explicitly identifying a transition pathway can also facilitate more transparent discussions with supervisors and examiners regarding methodological choices.

6.2 Implications for methodology teaching and supervision

In many research methods courses, mixed methods are introduced as a set of design types to be memorised rather than as epistemologically grounded research strategies. This procedural

emphasis contributes to the conceptual errors identified in Section 5 and limits students' capacity for methodological reflexivity.

Integrating the transition pathways framework into methodology teaching enables a shift from classificatory instruction to epistemic reasoning. Students can be encouraged to:

- reflect on their disciplinary training and methodological preferences,
- map their research questions onto appropriate transition pathways,
- anticipate integration challenges associated with specific epistemic moves.

For supervisors, the framework provides a shared language to diagnose design misalignment early in the research process, reducing the need for post hoc methodological rationalisation. This is particularly valuable in interdisciplinary research environments where supervisory teams may hold divergent methodological assumptions.

6.3 Implications for peer review and editorial evaluation

Peer review remains one of the primary mechanisms through which methodological standards are enforced in mixed-methods research. However, reviewers often apply inconsistent or implicit criteria when evaluating mixed-methods manuscripts, contributing to unpredictable review outcomes.

The framework proposed in this paper offers reviewers a principled basis for evaluation, shifting attention from rigid adherence to design labels toward assessment of epistemic coherence. Reviewers may ask:

- Is the stated mixed-methods design consistent with the author's epistemic orientation?
- Are priority and integration strategies clearly justified?
- Does the analysis reflect genuine methodological dialogue or merely parallel reporting?

By foregrounding epistemic alignment, reviewers can distinguish between legitimate design variation and conceptual misapplication, supporting more constructive and transparent feedback.

6.4 Broader methodological implications

Collectively, these implications position mixed-methods research as a theoretically disciplined yet flexible methodological approach. Rather than encouraging design conformity, the transition pathways framework legitimises diversity in methodological movement while demanding epistemic clarity and transparency in integration.

Adoption of this framework has the potential to elevate methodological literacy across disciplines, particularly in applied fields such as education, health, and social policy, where mixed-methods research is increasingly prevalent but unevenly implemented.

7. Conclusion and future directions

This paper has argued that persistent ambiguity in mixed-methods research stems less from the absence of design typologies and more from insufficient attention to researchers' epistemic entry points and transition processes. By theoretically clarifying six core mixed-methods designs and reconceptualising them as epistemic transition pathways, the paper moves beyond procedural classifications toward a more reflexive and coherent understanding of mixed-methods research practice.

The proposed framework reframes mixed-methods design as a dynamic process of methodological movement rather than a static combination of techniques. In doing so, it explains recurring design misapplications, highlights the centrality of epistemological alignment, and provides a principled basis for integration decisions.

Future research should empirically examine how researchers navigate these transition pathways in practice, including how epistemic orientations influence design choice, integration quality, and methodological justification in published studies and doctoral research. Comparative analyses across disciplines may further test the framework's explanatory power.

Ultimately, strengthening methodological literacy in mixed-methods research requires shifting attention from design labels to epistemic reasoning. This paper calls for greater reflexivity, transparency, and theoretical engagement in mixed-methods scholarship to ensure that methodological pluralism is accompanied by conceptual rigor.

Use of AI-assisted tools

Artificial intelligence-assisted tools, such as Paperpal and Grammarly, were utilised to enhance academic writing quality, clarity, and language refinement. All substantive intellectual decisions, interpretations, and conclusions remain the responsibility of the author.

Funding information

The author declares that no funding was received for this study.

Conflict of interest statement

The author declares no conflicts of interest.

Informed consent

Not applicable. *This study did not involve human participants or the collection of primary data.*

Ethical approval

Not applicable. *Ethical approval was not required as this study is a review of previously published literature and did not involve human or animal subjects.*

Data availability

No new data were generated or analysed in this study. *All sources reviewed are publicly available and cited within the article.*

References

Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research*, *6*(1), 97–113. https://doi.org/10.1177/1468794106058877

Creswell, J. W. (2015). *A concise introduction to mixed methods research*. Sage.

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage Publications.

Denzin, N. K. (2017). *The research act: A theoretical introduction to sociological methods*. Routledge.

Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs: Principles and practices. *Health Services Research*, *48*(6), 2134–2156. https://doi.org/10.1111/1475-6773.12117

Greene, J. C. (2007). *Mixed methods in social inquiry*. Jossey-Bass.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, *11*(3), 255–274. https://doi.org/10.3102/01623737011003255

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105–117). Sage.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, *33*(7), 14–26. https://doi.org/10.3102/0013189X033007014

Mertens, D. M. (2018). *Mixed methods design in evaluation*. Sage.

Morgan, D. L. (2007). Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research*, *1*(1), 48–76. https://doi.org/10.1177/2345678906292462

Morgan, D. L. (2014). Pragmatism as a paradigm for social research. *Qualitative Inquiry*, *20*(8), 1045–1053. https://doi.org/10.1177/1077800413513733

Plano Clark, V., & Ivankova, N. V. (2016). *Mixed methods research: A guide to the field*. Sage.

Tashakkori, A., & Teddlie, C. (2010). *The SAGE handbook of mixed methods in social & behavioral research* (2nd ed.). Sage Publications.

Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research*. SAGE Publications.