Intersecting Mixed Methods and Case Study Research: Design Possibilities and Challenges

Vicki L. Plano Clark\(^a\), Lori A. Foote\(^a\), and Janet B. Walton\(^b\)

\(^a\)School of Education, University of Cincinnati, OH, USA; \(^b\)Purdue University, IN, USA

**ABSTRACT**

Both mixed methods research and case study research offer unique methodological advantages for researchers wanting to address the complexity of many research problems of interest today. It is no surprise, therefore, that many researchers are combining these two approaches to conduct mixed methods case study research. Although the reported use of mixed methods case study is becoming more prevalent, there is little methodological literature available that provides guidance to researchers who want to effectively combine these two well-established research traditions while anticipating and addressing challenges associated with the combination. Building from the commonalities and differences between these two traditions, this methodological discussion advances a definition for mixed methods case study and examines important tensions as researchers intentionally and synergistically intersect these two research approaches. As such, it advances a set of considerations important for the successful conduct and evaluation of studies using a mixed methods case study approach and adds to the growing literature about the different ways that mixed methods can usefully intersect with other methodological approaches.

**KEYWORDS**

Intersecting approaches; methodological issues; mixed methods case study; research design

Researchers are working across disciplines to address major social problems such as poverty within urban neighborhoods, resource disparities within schools, healthcare access within rural communities, and achieving sustainability within ecological systems. Research that captures and provides insight into the complexity of these pressing social problems presents special challenges to researchers because the issues are multifaceted, dynamic, and contextually situated. Therefore, problems such as these demand that researchers use a wide range of research approaches in thoughtful and creative ways to develop the knowledge and practices required to address these complex social issues.

As one response to this demand, many researchers across disciplines have been turning to mixed methods approaches that integrate the assumptions, questions, data types, analytic strategies, and inferences associated with quantitative and qualitative research (Alise & Teddlie, 2010; Ivanova & Kawamura, 2010). The intentional and synergistic combination of these diverse approaches provides researchers with powerful options for gaining unique insight into complex phenomena and multifaceted research questions (Creswell & Plano Clark, 2011; Mertens, 2015; Teddlie & Tashakkori, 2009). In addition, many researchers have responded to the demand to address complex problems by applying case study approaches to describe and interpret the complexity of particular situations and bounded systems (Hyett, Kenny, & Dickson-Swift, 2014; Yazan, 2015). Such in-depth examinations are uniquely positioned to provide understanding of the complexity of a case or cases and offer important opportunities to learn from this complexity in real-world contexts (Creswell 2013; Stake, 1995; Yin, 2009).

Because both mixed methods research and case study research are well suited to address complex research questions, it is not surprising to find that researchers are combining aspects of these two approaches within
their studies with increasing frequency. These so-called mixed methods case study approaches have been reported in areas such as organizational leadership (Guetterman & Mitchell, 2016), research methodology application (Onwuegbuzie & Leech, 2010), and global health (Stollak, Valdez, Rivas, & Perry, 2016). In addition, a quick search indicates that numerous doctoral dissertations across a variety of content areas used a mixed methods case study approach (e.g., Bustamante, 2014; Effrig, 2014; Walton, 2014). Furthermore, methodological discussions specifically about mixed methods case study are starting to appear (e.g., Curry & Nunez-Smith, 2015; Plano Clark & Ivankova, 2016).

Despite evidence of the growing interest in the mixed methods case study approach, we could not find any methodological literature that provides practical guidance to researchers wanting to effectively combine these two well-established research traditions while anticipating and addressing challenges associated with the combination. There is, however, a growing body of literature within the field of mixed methods research that examines how mixed methods approaches can be intersected with other methodological approaches and frameworks (Plano Clark & Ivankova, 2016). For example, scholars have examined issues involved in mixed methods experiments (Plano Clark et al., 2013), mixed methods longitudinal designs (Plano Clark et al., 2015), mixed methods grounded theory (Johnson, McGowan, & Turner, 2010), mixed methods phenomenological research (Mayoh & Onwuegbuzie, 2015), mixed methods research synthesis (Heyvaert, Hannes, & Onghena, 2017), and mixed methods action research (Ivankova, 2015), to name only a few. Each of these methodological examinations has led to the conclusion that the intersection of mixed methods with another methodological approach offers specific advantages for researchers in addition to specific challenges that should be anticipated and addressed.

Building on these prior works, it is apparent that intersecting mixed methods research with case study research not only has potential to offer new insights into complex problems, but also has the potential to spur new challenges and pitfalls. In order for researchers to fully realize the potential value of a mixed methods case study, they need an understanding of the implications of intersecting these two approaches to help successfully navigate the design and implementation of this intersected approach. Therefore, the purpose of this methodological discussion is to examine and unpack considerations involved with intersecting mixed methods research and case study research. We begin with brief overviews of mixed methods research and case study research, which provide the foundation for this methodological discussion. We then discuss how the two approaches can be intersected in light of the commonalities and differences between the two methodologies, and define the mixed methods case study approach so that it potentially benefits from these commonalities and complementary differences. From there, we advance a set of considerations involved in the design, implementation, and interpretation of a mixed methods case study approach. We conclude with reflections on the value of intersecting these two approaches as well as recommendations for researchers looking to apply a mixed methods case study approach in practice.

**Brief Overview of Mixed Methods Research**

Mixed methods research can be described broadly as a methodology for the collection, analysis, and integration of both qualitative and quantitative data within a single study (Plano Clark & Ivankova, 2016). However, this characterization does little to describe the broad array of worldviews, personal contexts, research purposes, and disciplinary contexts of methodologists and practitioners engaged in mixed methods and the resulting diversity of definitions proposed by scholars in the mixed methods field (Hesse-Biber & Johnson, 2015; Johnson, Onwuegbuzie, & Turner, 2007; Tashakkori & Teddlie, 2010). In fact, for more than three decades, methodologists and researchers have grappled with issues surrounding the integration of both qualitative and quantitative research approaches within a single study.

As Maxwell and Loomis (2003) pointed out, the tradition of mixing methods within research practice can be traced back as far as the early 1900s in fields such as natural science and psychology. It was not until late in the 20th century, however, that the research community began to assign mixed methods a stature that warranted consideration as its own unique methodology (e.g., Greene, Caracelli, & Graham, 1989). As researchers grappled more openly with issues related to paradigmatic assumptions, purposes, and validity, methodologists began to advance understanding of the considerations inherent to viewing mixed methods research as a unique methodology (Tashakkori & Teddlie, 2010). The burgeoning use of mixed methods research in a variety of disciplines including health, social, and behavioral sciences, and the growth of methodological literature including journals dedicated to discussions of mixed methods research (e.g. *Journal of Mixed Methods Research* and *International Journal of Multiple Research Approaches*) provide a testament to the extent to which scholars and researchers have embraced mixed methods research as a viable and useful research approach.
Today, scholars emphasize that it is the intentional integration or mixing of the quantitative and qualitative methods at one or more stages of a study that is the central characteristic of mixed methods research that distinguishes it as a unique methodological approach (e.g., Creswell & Plano Clark, 2011; Johnson & Onwuegbuzie, 2004). Although the ways of mixing methods in particular studies are as varied as the studies themselves, scholars have advanced several dimensions that are useful for distinguishing the different ways mixed methods can be used to address study purposes (Creswell & Plano Clark, 2011; Greene, 2007; Morgan, 2014; Morse & Niehaus, 2009; Teddlie & Tashakkori, 2009). These design dimensions include the timing of the quantitative and qualitative methods (i.e., concurrent or sequential), their relative priority (i.e., equal or unequal), and the level of interaction between them (i.e., independent and separate or dependent and connected). Integration of the methods can be described in terms of the point of interface (where in the study integration occurs), intent (the purpose for integration), and the mixing strategies (how the integration is accomplished) (Creswell & Plano Clark, 2011). Although a variety of needs specific to individual studies and perspectives drive the particular combination of methods, the essence of mixed methods research lies in the researcher’s strategic use of techniques to effectively combine qualitative and quantitative methods in order to address the study’s purpose in a way that transcends the ability of either approach used in isolation.

The focus on the research question as a driving force in mixed methods research suggests the importance of articulating the underlying logic for mixing methods and how this logic serves the study’s overarching purpose. As Johnson et al. (2007) postulated, methods are mixed for explicit purposes such as expanding the breadth or depth of understanding of a phenomenon that are central to a study’s research questions. Quantitative methods are well suited for assessing magnitudes, describing trends, determining effects, and testing theory, and qualitative methods are well suited for describing meaning, identifying patterns, and generating theory. Thus, they can be effectively combined for many reasons to capitalize on the different types of knowledge generated by the approaches. Although the specific purposes for mixing methods are as diverse as the research questions under consideration, typologies of rationales for mixing methods have been advanced in the literature. Greene et al. (1989), for example, identified triangulation, complementarity, development, initiation, and expansion as reasons to mix methods, whereas Bryman (2006) advanced a more detailed typology of 16 rationales that adds reasons such as instrument development, sampling, and diversity of views.

Scholars have engaged in lively debates about the philosophical underpinnings of mixed methods research (Greene, 2007; Teddlie & Tashakkori, 2009). Because mixed methods research involves the use of different types of methods and both inductive and deductive logic within a single study, researchers’ approaches to these combinations reflect their underlying ontological and epistemological beliefs. These combinations can be supported by a wide range of philosophical approaches, including postpositivism, constructivism, pragmatism, critical realism, and transformative perspectives (Teddlie & Tashakkori, 2009). In addition to the use of a single mindset, scholars have also proposed alternative philosophical stances including a dialectic approach, in which philosophical frameworks work in dialogue with, rather than in opposition to, one another (Greene, 2007). The wide range of philosophical perspectives that researchers bring to their use of mixed methods research enhances the variety of ways that mixed methods is applied and highlights the practical flexibility inherent within mixed methods research (Plano Clark & Ivankova, 2016).

Given the complexities associated with mixed methods studies in which multiple data sets are collected, analyzed, and integrated, it is not surprising that the challenges and validity concerns facing the mixed methods researcher are substantial. These challenges include the need for researchers to be conversant in both quantitative and qualitative methods and techniques to integrate data and methods, as well as the substantial commitment of time and resources that might be required to apply mixed methods approaches (Creswell & Plano Clark, 2011). Furthermore, scholars have advanced several frameworks to gauge mixed methods quality that address the complexities of integration in mixed methods studies. Onwuegbuzie and Johnson’s (2006) legitimation typology, for example, incorporates numerous quality checks throughout the course of a study, creating an ongoing dialogue between a study’s purpose and its inferences. Dellinger and Leech (2007) offered an alternative validation framework incorporating construct validity considerations for each strand of a study and the way that data connect and are used to draw inferences. Teddlie and Tashakkori (2009) proposed that quality is inherently linked to design decisions and interpretive rigor, and suggested that appropriateness of research design and data analysis relative to research questions as well as the fidelity of inferences to findings are key measures to assess the quality of mixed methods studies. Although there are a variety of perspectives about quality mixed methods research, they all share a common focus on the importance of intentional and meaningful integration within a mixed methods study.
Brief Overview of Case Study Research

Case study is a research methodology that puts intense focus on the examination of a case (Sandelowski, 2011). The case is the real-life, situated expression of a phenomenon of interest, and serves to bound the study. By situated, we mean that the phenomenon or issue is embedded within a particular geographic, historical, political, economic, and temporal context (Stake, 1995, 2006). The phenomenon of interest, or issue, is the researcher’s identification of the focus within the case; it is the concern upon which data collection and analysis will focus (Stake, 1995). The phenomenon under study is fully contextualized and cannot be extracted from its ecological surroundings (Sandelowski, 2011). Thus, a case bounds the study, creating a border around a contextually integrated system that encompasses the phenomenon and helps to limit the scope of the study. Typically, this type of naturalistic study involves the collection of information without manipulation or intervention (Yin, 2009).

A strength of case study research is its flexibility of methods for gathering in-depth information about the case related to the phenomenon of interest. The researcher gathers and analyzes various forms of evidence to generate a rich case description that allows contextually significant insights into the issue (Creswell, 2013). Case study research has often been framed as strictly a type of qualitative research methodology (Boblin, Ireland, Kirkpatrick, & Robertson, 2013; Sandelowski, 2011; Schwandt & Gates, 2018); however, case study research may draw upon any form of spoken, written, visual, or numeric data that best provide a comprehensive understanding of the case (Luck, Jackson, & Usher, 2006). Due to the need for in-depth engagement with each case, researchers must necessarily limit the number of cases they use in the design, which is generally accomplished through purposeful case selection of one or more cases (Sandelowski, 2011).

A popular design choice in the 1920s, case study research languished in the 1950s until nearly disappearing entirely in the 1970s (Stoecker, 1991). Yet, case study research has gradually regained popularity again since the 1990s (Hyett et al., 2014; Yazan, 2015). Although interest in case study research has waxed and waned over the years, this research design might have survived because of its capacity to offer holistic understandings of complex social issues (Yin, 2009). Case study research permits intimate examination of phenomena that can be exploratory, descriptive, explanatory, or evaluative (Merriam, 1998). Additionally, case study research offers researchers contextualized knowledge generated from particularized settings, which produces unique value and insight for understanding complex problems.

Yin (2009) has described four variations of case study research design using context and number of cases as defining dimensions. Each design assumes that the context variability is central to understanding the phenomenon (Luck et al., 2006). In the first variation, researchers investigate a single context using one case. Single case studies provide in-depth information related to an issue in a unique, intrinsically interesting, or critical situation (Stake, 2006; Yin, 2009). A second variation occurs when researchers investigate a single context using multiple cases, employing literal replication logic. In this design, the researcher seeks to understand how a phenomenon of interest tends to behave within a given context. By purposefully choosing multiple cases that represent a given context, the researcher can describe common elements across the cases (Yin, 2009) or expand the breadth of the description or explanation gleaned collectively from the cases (Stake, 2006).

Yin’s (2009) case study variations also include designs incorporating multiple contexts. In the third variation, the researcher examines a phenomenon across a variety of contexts, using one case to represent each. Drawing upon theoretical replication logic, the researcher intentionally juxtaposes cases that embody theoretically different case contexts. Researchers using this approach predict outcomes associated with cases from each category, and then compare results to anticipated results (Yin, 2009). Finally, researchers examine a phenomenon across a variety of contexts, using more than one case to represent each, as a fourth variation. This complex design employs both literal replication (more than one case to represent each context) and theoretical replication (more than one context) logic (Yin, 2009). Due to the expanse of design variations, researchers planning a case study should carefully consider the goals of the research and reflect on how each case design might bolster evidence to support the study’s conclusions.

Quality concerns related to case study research derive from researchers’ philosophical assumptions. For example, postpositivist criticisms of case study research include lack of generalizability, low rigor due to researcher bias, and lengthy research reports (Maxwell, 2013; Stoecker, 1991; Yin, 2009). Alternatively, constructivist researchers express concerns related to accurate portrayals of participants’ experiences and sufficient textual data support for researcher findings (Merriam, 1998). Responses to such concerns reflect conflicting ontological and epistemological orientations to case study (Boblin et al., 2013; Luck et al., 2006; Schwandt & Gates, 2018). For example, objectivist researchers address validity via the use of replication logics, analytic processes, and protocol development (Yin, 2009). Alternatively, interpretivist researchers use practices such as member checks, lengthy
observation times, rich description, and identification of potential researcher bias to improve the rigor of qualitative case study research (Maxwell, 2013). Importantly, despite quality concerns, researchers from a variety of philosophical stances continue to employ case study research as a means to investigate complex problems.

**Mixed Methods Case Study: An Intersected Approach**

Although the overviews of mixed methods research and case study research presented in the previous sections of this article are necessarily brief, they provide an essential foundation from which to consider how and for what reasons researchers might combine these two methodologies within their studies. Importantly, these two methodologies share numerous commonalities. Both mixed methods and case study have long, and at times contentious, histories and are increasingly being applied to engage with modern complex social phenomena. Both methodologies are also noted for their flexibility and adaptability to different research methods and their utility for examining questions with a practical focus. Specifically, both have traditions of incorporating multiple forms of data within one study with the goal of creating a unified understanding of phenomena. Moreover, both are used by researchers working from different philosophical orientations and within different disciplinary fields and are frequently applied in the context of applied and evaluation research.

The underlying differences in the two methodologies are important to note as well. Case study research is often considered a qualitative research approach and, therefore, most often focuses on qualitative data sources and analytic approaches for generating knowledge claims. In contrast, mixed methods research involves the use of both quantitative and qualitative methods with a focus on generating integrated conclusions. Whereas case study research combines data across sources to create in-depth case descriptions that elucidate the phenomenon of interest, mixed methods research intentionally combines evidence from both qualitative and quantitative modes of inquiry to address study research questions. The defining dimensions of variations within the two methodologies also vary considerably. Whereas case study design focuses on key dimensions of number of contexts and cases and replication logic, mixed methods design emphasizes key dimensions of timing, priority, and integration of methods.

The rich and complex histories of, perspectives for, and approaches to mixed methods research and case study research suggest various possibilities for how the two approaches might be used together to build on their commonalities and complementary differences. Looking to the empirical and methodological literature, we find three basic ways that the approaches are combined, which we have conceptualized in Figure 1. The first possibility occurs when researchers use one of the methodologies and happen to incorporate a method or concept associated with the other methodology. As depicted in Figure 1a, we consider this type of informal combination as a *tangential approach* because the “added” method or concept is largely peripheral to the overall methodology. For example, a mixed methods researcher could note that her study examines a “case” because the study is conveniently taking place in a particular setting (such as a school). Therefore, the concept of case is present but the intent is not actually to study the case in any depth. Similarly, a case study researcher might note that her study includes multiple forms of “qualitative and quantitative” data. Therefore, mixed data forms are gathered as a method, but they are not actually rigorously analyzed and integrated to produce new insights. Such tangential combinations of mixed methods and case study are somewhat common in the literature, but they do not afford the researcher with much opportunity to capitalize on the combination of the two approaches.
(a) Two examples of a tangential combination

(b) Embedding a quantitative component within a qualitative case study methodology

(c) Intersecting two methodologies

Figure 1. Conceptualization of three possibilities for combining mixed methods and case study research.

Note: Solid circle = a methodology; line = a concept or data source; dashed circle = a secondary component; MM = mixed methods; CS = case study; quan = quantitative; qual = qualitative; MMCS = mixed methods case study.
A second possibility for combining the two approaches is found in the mixed methods concept of embedding, which describes the use of a secondary method (quantitative or qualitative) within a larger methodology associated with the primary method (qualitative or quantitative) (Greene, 2007). The concept of embedding is applied to the situation of case study research in Figure 1b. As the figure depicts, embedding involves a researcher conceptualizing case study as a qualitative methodology and adding a secondary quantitative method as a supplemental component within this approach (Creswell & Plano Clark, 2011). Embedding provides a useful framework for integrating methods within a case study approach, but it necessarily constrains the possibilities by forcing the researcher to classify the case study methodology as a solely qualitative approach and to implement the study with a qualitative priority. Although that classification may align well with some researchers’ perspectives, it limits the extent that one can consider combining the two methodologies as equal partners.

A third and more all-encompassing possibility is to view both approaches as methodologies and attempt to intentionally intersect the assumptions, intents, logics, and methods associated with each. Intersecting is the intentional joining of mixed methods with another methodological approach or framework to provide an expanded application of the two methodologies (Plano Clark & Ivankova, 2016). Our use of the intersecting conceptualization is inherently dialectical in that it involves recognizing and honoring both methodological traditions while engaging them in meaningful interactions with each other. The aim is to bring the methodological attributes associated with mixed methods integration to other research approaches and traditions to create new methodological opportunities. As such, the intersection creates a mixed methods version of the other methodology, such as a mixed methods case study (see Figure 1c). For the purposes of this discussion, therefore, we define mixed methods case study as a research approach that intentionally intersects the assumptions, intents, logics, and methods of mixed methods research and case study research in order to more completely describe and interpret the complexity and theoretical importance of a case or cases.

Building from the idea of intersecting shown in Figure 1c, Figure 2 provides a visual depiction of how we conceptualize the methodological intersection in the context of mixed methods case study. As highlighted in the center of the figure, distinguishing features of this approach include a focus on the complexity of a case or cases and the meaningful integration of quantitative and qualitative components to examine that complexity. As a research approach, mixed methods case study offers options associated with variations of both mixed methods research and case study research. For example, mixed methods case studies often use concurrent timing for the qualitative and quantitative methods (Curry & Nunez-Smith, 2015), but sequential timing is also a possibility (Creswell & Plano Clark, in press). Likewise, mixed methods case studies can be used in investigations involving a single case or those describing and comparing multiple cases (Creswell & Plano Clark, in press).

Figure 2 also highlights the potential benefits for using a mixed methods case study approach in the left-side box, which suggest reasons for its use. Collectively, these benefits arise from pairing the emphasis on integration of methods from mixed methods with the emphasis on rich description and interpretation from case study. For example, the integration of qualitative and quantitative data and results may provide greater insight into understanding each individual case. This greater insight may be achieved by using qualitative information for an in-depth description combined with quantitative information about larger macro contexts, to assess theoretically important constructs, to test emergent hypotheses and case-based themes, or to track trends about the case or over time. The integration of the two methods may also better support the generation and interpretations of theoretically interesting cases and facilitate meaningful comparisons among cases. Mixed methods research affords the researcher the opportunity to answer both quantitative and qualitative research questions by examining numeric or textual information related to the topic of study. By harnessing the similarities and complementary differences of mixed methods and case study, the researcher is able to address a wider set of research questions while also capturing detailed information related to particular cases. Furthermore, because both approaches are already used in a wide variety of disciplines and settings, the use of a mixed methods case study is likely to be accepted and understood by a wide range of scholars and practitioners.
**Benefits of MMCS**

- The integration of qualitative and quantitative data and results may:
  - provide greater insight into understanding each individual case
  - support the generation and interpretation of theoretically interesting cases
  - facilitate meaningful comparisons among cases
- By harnessing the similarities and complementary differences of the two approaches, the researcher is able to address a wider set of research questions while also capturing detailed information related to particular cases
- Since both approaches are already used in a wide variety of disciplines and settings, a MMCS is likely to be accepted and understood by a wide range of scholars and practitioners

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**MM**

Dimensions for researchers to consider in the design:
- timing of quantitative and qualitative components,
- priority of quantitative and qualitative components
- When the quantitative and qualitative components will interact and how best to integrate both to answer the research questions

**MMCS**

- Address complex phenomenon
- Multiple forms of data collected
- Useful for applied research
- Multiple paradigms
- Answer “how” & “why” questions

**CS**

Dimensions for researcher to consider in the design:
- Single or multiple case design
- Defining the case and the phenomenon of interest
- Boundaries of the cases
- Data sources to best inform a holistic case description
- Potential use of quantitative and qualitative data sources

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**Tensions/Conundrums to Consider when Using MMCS**

- Positioning the two methodologies within the overall design
- Considering implications of philosophical assumptions on the study’s design
- Being explicit about ways that cases are defined
- Navigating methods integration
- Using mixed methods to enhance the description and interpretation of the case
- Addressing quality considerations
- Acquiring multiple skill sets to conduct studies

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**Figure 2.** Mixed methods case study as the intentional intersection of the commonalities and differences associated with mixed methods and case study research. Note: MM = mixed methods; CS = case study; MMCS = mixed methods case study.
The different options for and benefits of a mixed methods case study approach are best illustrated with example studies. Mazzocato, Unbeck, Elg, Sköldenberg, and Thor (2015) used a mixed methods case study to investigate how a series of efforts improved time to surgery for hip-fracture patients at one hospital over five years. The single case tracked quantitative data related to time to surgery, plus any potential spillover effects on other orthopedic surgeries, alongside qualitative data from interviews, document review, and shadowing hospital staff and patients. From the integration of these databases, the authors generated a chronological case study description. Mazzocato et al. (2015) displayed performance data graphed over time with qualitative descriptions of the changes in improvement efforts documented directly onto the chart. By triangulating the databases in this fashion, Mazzocato et al. (2015) were able to track the efficacy of each new process change as it interacted with previous system modifications to determine overall improvement levels. These authors stated that, “the contribution of this study lies in how we were able to unpack, through a mixed methods approach, the complex intervention programme and reveal how each component influenced operational performance” (p. 9).

Mixed methods case study can also be used to study multiple cases. For example, Schadewaldt, McInnes, Hiller, and Gardner (2016) concurrently investigated five cases to identify nurse practitioner and medical practitioner perceptions of collaboration after a change in Australian medical policy. The five cases represented a variety of contexts considering population density, public or private ownership, and size of practice, allowing researchers to generate a more comprehensive understanding of the phenomenon of interest, namely collaboration care after policy change. The authors stated that, “a case study design was chosen because it is highly suitable for identifying the particularities and complexities of a phenomenon in everyday context” (p. 3). Schadewaldt et al. applied a mixed methods approach to broaden the types of sources used, as well as to corroborate evidence while also engaging with contradictions within the data. They collected quantitative (e.g., questionnaires) and qualitative (e.g., interviews, document review, observations) data and then integrated the databases. The authors explained that the “questionnaire results were woven together with themes at the point of data interpretation and [were] highlighted where they supported or contradicted qualitative findings” (p. 4), producing a more intricate and nuanced view of the collaborative process to inform future discussion and reform decisions.

The prior two examples highlighted how the quantitative and qualitative methods can be applied concurrently in a mixed methods case study, but it is possible for the methods also to occur sequentially. Working in the area of K-12 school effectiveness, Smith, Cannata, and Haynes (2016) applied a mixed methods case study that examined multiple cases to determine distinguishing characteristics and practices between relatively high- and low-achieving high schools in one urban district. The authors noted that a mixed methods approach was used to draw “out the complexity of phenomena to paint a more comprehensive picture of what makes high schools effective” (p. 6). They also argued that the case study component was vital to the overall design because “identifying the right distinguishing characteristics, as well as why they work in a particular context, is critical to designing innovations that have a chance of success in other sites” (p. 8). In the first phase, Smith et al. gathered and analyzed quantitative value-added data to determine the focal cases upon which to develop deep understanding: two school cases that were more effective and two that were less effective at improving student achievement. In the second phase, they concurrently collected qualitative (e.g., focus groups, interviews, student shadowing, artifact examination) and quantitative (e.g., class observation data, administrative data, surveys) data forms to generate rich case understandings of the four cases. Integration occurred as the researchers combined all data forms into coherent case descriptions and then again, when comparing cases, to achieve a deeper understanding of how the practices, programs, and policies differed across the cases.

Considerations for Designing a Mixed Methods Case Study

Although mixed methods case study offers several potential advantages, researchers need also to be aware of various tensions and conundrums that can arise from the intersection of these two methodological approaches. We highlighted several points of tension that demand consideration in Figure 2 and posed them as questions in the discussion that follows. Researchers choosing mixed methods case study approaches will benefit from actively engaging with these conundrums to make knowledgeable decisions that can be justified when reporting their research designs.

Which Methodology Provides the Driving Framework for the Study?

An immediate tension that arises when considering the conduct of a mixed methods case study is how the researcher positions the two methodologies within the study’s overall design. In considering this approach, we find that there is a tendency for researchers to think of mixing methods within a case study framework at some
times and to think of examining cases within a mixed methods framework at other times. These different mindsets appear to be useful in navigating many practical decisions, but also raise questions about how much of each methodology needs to be present to count as a mixed methods case study (as opposed to merely a tangential application). Both of these methodologies already demonstrate loose boundaries, where case study can be thought of as a method, methodology, context of study, or product of a study and mixed methods can be thought of as a method, methodology, or way of thinking. These variations create an array of options, but also demand that a researcher carefully consider how to address numerous questions associated with this combined approach. For example, what is being intersected within the study’s design? How much integration within a case study is “enough” to warrant the mixed methods label? Likewise, how much focus on the case is “enough” to warrant the case study label? These are not questions with correct or incorrect answers, but questions that challenge researchers using a mixed methods case study approach to hold true to the defining characteristics of the two methodologies in order to truly capitalize on the synergistic and intentional intersection of the different assumptions, intents, and logics associated with the two approaches.

How Is Mixed Methods Case Study Adapted to Different Philosophical Assumptions?

As highlighted previously, both mixed methods research and case study research have long traditions of being applied by researchers working from different philosophical stances. Looking across the two methodologies, the list of possibilities is diverse and continues to grow. Options include postpositivism, constructivism, critical realism, pragmatism, transformative/ideological stances, dialectalism, pluralism, and so forth. Each of these perspectives brings its own ontological, epistemological, and axiological assumptions that can profoundly influence the intent of and methods used within a mixed methods case study. Because many different philosophical stances can provide the foundation for a mixed methods case study, researchers applying this approach will benefit from examining their assumptions so that case selection and integration logics align with these assumptions. Some worldviews, such as pragmatism, critical realism, and dialecticalism, already conceptualize quantitative and qualitative mixing as a compatible enterprise. These worldviews focus on the practical implications of research, recognize the necessarily fallible understanding of the real world, or appreciate the possible divergence and elaboration of ideas from many viewpoints, respectively (Shannon-Baker, 2016). Other stances, such as postpositivism and constructivism, have had a more contentious relationship with certain methods. Nonetheless, each is possible as a basis for conducting a mixed methods case study design. No matter the paradigm foundation used, all researchers should consider the implications of the associated assumptions upon the design of the mixed methods case study. For example, Yin’s (2009) case study approach has been described as more postpositivist in orientation due to the emphasis placed on the role of variables and the methods described for addressing validity concerns (Boblin et al., 2013). Conversely, Merriam’s (1998) and Stake’s (1995) approaches are often viewed as constructivist in orientation, due to the emphasis on holistic description of the case and the subjective role of the researcher regarding design decisions. Many different worldviews are productive stances for conducting a mixed methods case study, but the researcher is cautioned to fully examine the implications of her or his own worldview on a coherently designed study.

When and How Are Cases Defined within the Study?

In a mixed methods case study, the researcher necessarily identifies the case(s) for investigation and therefore the decision-making process behind defining the case(s) is an essential issue to be addressed. Researchers may choose a case or cases before beginning the study or as a part of the design itself, depending on the timing and the purpose for the different strands of the research. As noted earlier, mixed methods case studies can have concurrent and sequential timing. Researchers may choose to gather both quantitative and qualitative data simultaneously and then combine both forms of data to construct a thorough understanding of the case(s). In such a design, the cases are typically selected prior to beginning the study, based upon a search of the literature and/or theory, although it is possible for focal cases to emerge from the combined results. In contrast, some researchers may use a sequential design that employs an initial phase as a means to isolate cases able to provide information central to answering the research questions. Typically, this initial phase is quantitatively driven and the results are used to determine cases for further, in-depth investigation in the second phase. Thus, in a sequential design, the cases are selected as a part of the study, between the first and second phases of research. Such sequential approaches support a high-quality case selection process, but might introduce a serious threat to the overall integration quality. Because researchers planning for integration within sequential designs emphasize the connection between phases, they often minimize the integration of the quantitative and qualitative
information after the second phase. Such a minimization limits their ability to generate more comprehensive study results and conclusions. Yet, when the initial quantitative analysis is driven by theory, the cases are used to represent theoretically distinct contexts and the researchers should return to those initial results to situate the case-based findings in the quantitatively identified contexts.

How Can Integration Occur within a Mixed Methods Case Study?

As alluded to in the previous section, achieving meaningful integration within a mixed methods case study can be a challenge. Mixed methods case studies can incorporate any of the integration techniques developed for mixed methods, including mixing methods at the level of theory, data collection, data analysis, and interpretation through merging or connecting strategies. The key is for the integration approach to align with the researcher’s rationale for using multiple methods to enhance understanding of a case or cases. The points of interface and strategies for integration in a mixed methods case study will vary according to the design dimensions for mixed methods research and the design dimensions for case study research, creating a broad spectrum of possibilities for integrating qualitative and quantitative methods.

Points of interface between methods in mixed methods case studies may be driven by the timing of the study and the number of cases incorporated into the study design as well as by the study’s purpose. If, for example, methods are implemented concurrently in a multiple/comparative case study, qualitative and quantitative data may be mixed in the analysis and discussion stages to create a comprehensive understanding of each case and to allow for more thoughtful comparisons across cases, resulting in richer cross-case interpretations. In sequential approaches, where case selection may be driven by quantitative methods while the examination of the cases may be driven by qualitative methods, meaningful integration may be achieved by maintaining a strong sense of the theoretical basis for case selection throughout the study. By connecting the theory to both the quantitatively driven case selection and the qualitatively driven case description, integration at the theoretical level ensures that significant mixing can occur in a sequential design. In this type of mixed methods case study, it is imperative that the researcher returns to the theory that drove both phases of the study during the interpretation and discussion and offer revisions to the theory that result from the study’s inferences.

Given the broad possibilities for integration within mixed methods case studies, researchers should make intentional decisions about why, where, and how methods are mixed. Producing a procedural diagram of the flow of activities in the research process (Creswell & Plano Clark, 2011) that illustrates how the mixed methods and case study approaches intersect as well as the points of interface between methods can be a productive way for the researcher to convey the intricacies of a complex study and highlight the logic underlying the integration. Researchers can also pose mixed methods research questions that call for the methods to be integrated (Creswell & Plano Clark, 2011; Onwuegbuzie & Leech, 2006). In particular, they might find it useful to state a mixed methods procedural/mixing/integrative research question that explicitly directs the integration and is tied to the mixed methods design (Plano Clark & Badee, 2010). In the context of a mixed methods case study, we advise that at least one mixed methods research question be written that focuses on what is to be learned from integrating the methods at the level of the case in order to ensure that full advantage of the mixed methods case study is realized. For example, researchers could ask: How do the combined qualitative and quantitative findings provide enhanced case descriptions and interpretations?

How Can the Description and Interpretation of a Case Be Enhanced by Mixed Methods Research?

A key advantage of mixed methods case studies is enhanced understandings of the cases; but how is this achieved? To start, the researcher should consider the different kinds of knowledge that can be generated by the different methods and choose the types of information that are needed in light of the study purpose and research questions. On the one hand, quantitative methods can be appropriate for generating certain types of knowledge, such as describing larger macro contexts that bound the case(s), categorizing trends in perspectives or experiences for those who make up the case, relating multiple variables and categories, testing planned or emergent hypotheses about the case(s), or assessing the magnitude of key constructs manifested by the case. On the other hand, qualitative methods can be appropriate for generating other types of knowledge, such as describing individual experiences, identifying typologies that explain differences and commonalities, generating hypotheses about the case(s), or interpreting the meaning and complexity of the cases.

Through the integration of different types of data, results, and knowledge, the mixed methods case study researcher may develop case descriptions and interpretations that produce deeper understandings and better capture the complexity of the phenomenon being studied. For example, by combining complementary results
of methods that examine different facets of the case(s), the researcher may produce case descriptions and interpretations that are more comprehensive. By triangulating qualitative and quantitative data and results about single topics within a case, the researcher may produce case descriptions and interpretations that are well corroborated, but also more nuanced if divergent results are further examined and resolved. Other options include using data-driven case selection procedures and generating and testing case-based hypotheses. Using these strategies, the researcher may produce case descriptions and interpretations that are particularly theoretically relevant and are responsive to the uncovered complexity of the case.

**What Quality Considerations are Called for by a Mixed Methods Case Study?**

Quality concerns for different methodologies have been controversial at times (Plano Clark & Ivankova, 2016). Different standards have been advanced for both mixed methods research and case study research. Furthermore, the standards for each methodology differ depending on the philosophical assumptions and disciplinary conventions held by the researcher. Taken together, the question of how best to assess quality in a mixed methods case study is an ongoing conundrum that will not be resolved any time soon, but one that any researcher using this approach must anticipate and address.

One approach to quality in a mixed methods case study is derived from an approach found in the mixed methods literature where the researcher considers quality in terms of separate criteria for each component (Plano Clark & Ivankova, 2016). Using this approach, the case study portion of a mixed methods case study design would be assessed on case study standards for rigor, such as careful definition and bounding of the case and rich case description (Stake, 1995; Yin, 2009). Next, the mixed methods portion of a mixed methods case study design would be assessed on mixed methods standards for rigor, such as having a clear rationale, explicit integration, and alignment among the rationale, integration, and inferences (Dellinger & Leech, 2007; Onwuegbuzie & Johnson, 2006; Teddlie & Tashakkori, 2009).

Although the separate-criteria approach is a good start, it does not begin to identify criteria specific to the mixed methods case study. Currently, no set standards of quality exist for a mixed methods case study despite its growing popularity. Researchers can begin by considering to what extent the study design and implementation achieves a meaningful intersection of the two methodologies within the mixed methods case study approach. Returning to the central section in Figure 2, quality criteria might consider the following: (a) Did the mixed methods case study adequately address a complex phenomenon? (b) Were multiple forms of data rigorously collected within the mixed methods case study to capture the phenomenon’s complexity? (c) Was the mixed methods case study useful for understanding the phenomenon in a real-life applied context? (d) Were the researcher’s philosophical assumptions clear and did the approach to the mixed methods case study align with those assumptions? and (e) Did the mixed methods case study meaningfully answer “how” and “why” questions about the case(s)? Ultimately questions of quality speak to the extent to which the conclusions drawn from the mixed methods case study provide believable, particularized, transferable, useful, and theoretically relevant answers to the study’s research questions.

**What Logistical Concerns Does a Researcher Face in a Mixed Methods Case Study?**

A lone researcher approaching a mixed methods case study faces a daunting task. With quality frameworks originating in the mixed methods field (e.g., Dellinger & Leech, 2007) and various approaches to validity in the case study field (e.g., Merriam, 1998; Yin, 2009), the researcher is challenged to be conversant in qualitative and quantitative data collection and interpretation, the type of narrative writing specific to case study reporting, and mixed methods research practices and integration techniques. Although mixed methods is increasingly being addressed as a distinct research paradigm in researcher training programs, the wide variety of competencies necessary to conduct a mixed methods case study is antithetical to the paradigmatic dualism that long typified the social sciences research community and the graduate schools training researchers (Plano Clark & Ivankova, 2016; Teddlie & Tashakkori, 2009). Collaborative research teams are likely to provide a wider diversity of experiences and expertise than an individual researcher can bring to a study, however, as Plano Clark and Ivankova (2016) pointed out, the dynamics of research teams create an additional context for a study and may present additional challenges stemming from interpersonal relationships and diverse professional and cultural identities.

The challenges associated with conducting a mixed methods case study may continue even after the study is complete and the narrative produced. The length of reports required to capture rich, multifaceted phenomena may create significant barriers to publishing case study reports. Hyett et al. (2014) contended that qualitative
case study methods should be, but often are not, described in published reports in sufficient depth to demonstrate their rigor. This admonition can be extended to mixed methods case study, where sufficient description of methods and integration can address quality concerns and add to the credibility of the intersection of mixed methods research and case study research. The researcher is therefore challenged to find a balance in writing for publication, weighing the need to reflect depth in the case report and to adequately articulate methods against journal-imposed word count limitations.

Conclusion

The notion of intersecting as a way to combine mixed methods and case study research offers researchers and methodologists a useful framework in which to discuss, plan, and conduct mixed methods case studies. By intentionally leveraging the commonalities and complementary differences of these two approaches, researchers across disciplines can design powerful, methodologically rigorous approaches that capture the complexity of current issues for a variety of purposes. Although there are many possible ways to combine the methodologies, language, and research designs associated with these two approaches, intersection provides a structure for combining mixed methods and case study into a coherent whole that reflects the strengths and distinct features of each approach. This thoughtful combination of methodological approaches informs our definition of mixed methods case study as a research approach that intentionally intersects the assumptions, intents, logics, and methods of case study research in order to more completely describe and interpret the complexity and theoretical importance of a case or cases.

The intersecting framework presented here provides a useful starting point for researchers; however, the choice to embark upon a mixed methods case study should be undertaken with a clear understanding of both the advantages of intersecting the two approaches and the tensions that will arise. Benefits to intersecting mixed methods and case study, including the flexibility to address complex problems in innovative ways, opportunities to meaningfully integrate methods to answer multiple research questions, and the usefulness of existing validity frameworks for ensuring methodological rigor, must be balanced against the challenges inherent to undertaking a study encompassing two intensive approaches. Researchers might find themselves grappling with important issues such as the influence of their paradigmatic stance on study design, the intricacies of defining cases, the resources and multiple skill sets required to undertake these studies, and the complications associated with articulating dual methodologies within study reports.

In recognition of the considerable tensions that might arise in attempts to intersect mixed methods and case study methodologies, we offer a series of recommendations to the would-be mixed methods case study researcher. As noted earlier, the large number of studies that mention elements of mixed methods and of case study compared with the smaller number of examples of intersected mixed methods case studies identified suggests the need for careful consideration of issues ranging from methodological literacy to clarity in philosophical approaches. The recommendations offered here are intended to provide flexible guidance and provoke careful thought on the part of a researcher approaching a mixed methods case study.

First and foremost, we advise that researchers attend to key aspects of both mixed methods and case study methodologies. These aspects include thoughtfully identifying and describing the case or cases and their relationship to the phenomenon of interest. Likewise, the researcher should provide rationales for both the use of case study and mixed methods and should carefully describe the way the two approaches interact as well as taking care to describe the methods within the study in order to create a coherent study design. At the same time, however, the researcher should be careful not to allow methods details to overpower the study’s primary focus on understanding a complex phenomenon within real-life contexts. Maintaining focus on the study’s purpose and ensuring that the choice to use both case study and mixed methods approaches is driven by that purpose and is reflected in the research questions are key factors in producing a study that is at once methodologically rigorous and meaningful in its conclusions.

Additionally, the researcher should recognize that undertaking an intersected mixed methods case study requires venturing into a space occupied by multiple philosophical assumptions. Researchers should thoughtfully reflect on and articulate their own philosophical stances while recognizing that other researchers and scholars may approach mixed methods case studies from different philosophical positions. By inviting the possibility for tensions arising from the use of seemingly conflicting philosophical approaches, the researcher creates a forum for dialogue that can advance understanding of the phenomenon in question.

Finally, the researcher should recognize that using a mixed methods case study demands simultaneous use of two inherently intensive methodologies, each with its own conceptualization of methodological rigor. Although developing a dual set of methodological skills and tools can be a formidable task, the researcher who is prepared
with these two sets of knowledge is more likely to intersect methods effectively, resulting in more meaningful study outcomes. At the same time, the researcher should balance the availability of time and other resources with the goals of the study when selecting methods, and make strategic decisions in describing methodologies and providing holistic case narratives when writing for publication.

These recommendations have implications not only for researchers but also for methodologists interested in the relationship between mixed methods and case study and between mixed methods and other methodological approaches. The idea of intersecting approaches may be held in counterpoint to other interactions between methodologies across disciplinary fields and research approaches. Furthermore, the characteristics of intersected mixed methods case studies advanced here can be used to identify exemplars of intersection and innovative ways of integrating methods within cases. As the methodological literature on mixed methods case study grows, methodologists may use the features of intersection as a springboard for further understanding of mixed methods case studies and its utility in various settings.

Undoubtedly, more work is needed to fully understand methods for and the implications of intersecting these two methodological approaches. Our hope is that the ideas presented here will spur further conversation and applied research that result in refinement of the understanding of methods, benefits, challenges, and implications of the mixed methods case study approach. As researchers undertake the intentional intersection of mixed methods and case study methodologies, exemplars of features such as ways to incorporate joint data displays within mixed methods case studies, ways to connect methods throughout sequential mixed methods case studies, and innovative ways to approach the conundrums associated with intersecting are likely to emerge. Researchers’ reports of negotiating tensions between their own and others’ philosophical stances in mixed methods case studies and examples of applications of validity frameworks will also add to the understanding of the possibilities for mixed methods case studies, as will additional examples of studies that exhibit methodological rigor in both mixed methods and case study methods.

Harnessing the methodological advantages of the mixed methods case study approach provides unique opportunities to address complex issues in today’s landscape of complex social issues. Researchers and methodologists alike will benefit from the continued exploration of mixed methods case study using the definition and considerations advanced here. With continued applications of these ideas, researchers can bring to life the benefits of combining mixed methods and case study to create new ways to navigate a variety of multi-faceted issues across disciplines.

References


