

CHAPTER 1

UNDERSTANDING MIXED METHODS RESEARCH

Work on this book began almost a decade ago when we started writing about mixed methods research at the time that qualitative research had achieved legitimacy and writers were advocating for its use in the social and human sciences. Since then, we have published more than a dozen articles and book chapters on mixed methods research. However, our own articles, as well as articles written by others, are difficult to find because they are scattered in many journals and books. This is why it is difficult to see the emerging threads of this new approach.

We say that mixed methods is a new approach, but we recognize that others may not see it as a recent approach. Researchers for many years have collected both quantitative and qualitative data in the same studies. However, to put both forms of data together as a distinct research design or methodology is new. Thus the idea of mixing the data, the specific types of research designs, the notation system, the terminology, the diagrams of procedures, and the challenges and issues in using different designs—all topics found in this book—are new features that have emerged within the last decade. Indeed, we have new mixed methods research designs that stand alongside experiments, surveys, ethnographies, case studies, and the many designs available to the researcher in the social and human sciences.

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This first chapter addresses

- A framework for viewing mixed methods research
- A definition of mixed methods research, and
- The importance of this approach, historically and today

● PURPOSE AND ORGANIZATION

Because mixed methods is a new design, researchers need an introduction to the approach, guidance as to how to conduct the design, and information about the specific procedures involved. The purpose of this book is to provide researchers with

- an introduction to mixed methods research
- the process involved in designing and conducting this form of inquiry, and
- within this process, a focus on four types of mixed methods designs

Two key elements form the central features of this book: the phases in the process of mixed methods research and four specific mixed methods designs. The process phases advanced in this book build on the preliminary steps that we provided several years ago (Creswell, 1999; Creswell, Goodchild, & Turner, 1996). We have now refined these steps, based on our experiences with mixed methods research through classes, workshops, and our own mixed methods studies. We recognize that reducing research to phases in the process of research runs the risk of oversimplifying the procedures, suggesting an unwavering, linear approach to research. However, we view the process not as a series of lock-step procedures but as a general framework that might be useful to beginning researchers as well as those already conducting and reviewing mixed methods research. One might proceed to use the phases in a different order than we present them—use them in a way that makes sense for a specific research problem.

The additional focus on four key mixed methods designs also builds on our earlier work (Creswell, 2003; Creswell, Plano Clark, Gutmann, & Hanson, 2003). As we have worked with these different approaches to mixed methods research, we have found that the choice of a type of design to use suggests the procedures for collecting and analyzing data and even for writing titles and purpose statements in research.

We present a visual model of the logic of our process approach in Figure 1.1. As shown in Figure 1.1, we divide the phases in the process into individual chapters in this book.

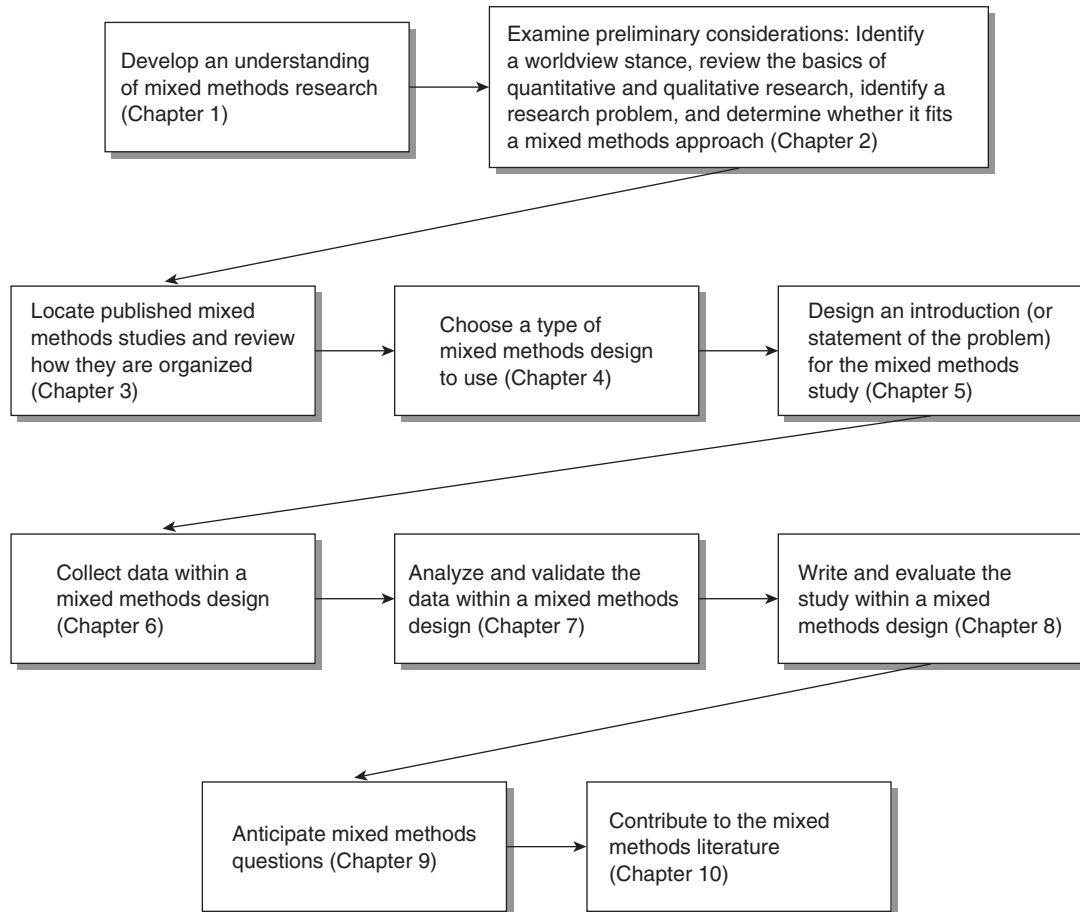
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Figure 1.1 Framework Used in This Book for Designing and Conducting Mixed Methods Research

Using Figure 1.1 as our guide, let's assume that a researcher is considering designing and conducting a mixed methods study. We would recommend that this individual first develop an understanding of mixed methods research to see if the project fits the type of problems and research questions related to mixed methods (Chapter 1). This might be followed by the researcher's considering a comfortable worldview stance for the research and knowing (or reviewing) the basics of both quantitative and qualitative research (Chapter 2). In addition, the inquirer needs to assess whether the research problem merits a mixed methods study (Chapter 2). Following this, the researcher might locate published mixed

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methods studies and review their organization (Chapter 3). With these preliminaries completed, the inquirer is ready to review the various types of mixed methods designs and select the one that fits the research problem (Chapter 4). This design becomes a framework for many aspects of the research design, and the investigator can begin to shape an introduction to the study (Chapter 5), the methods of data collection and analysis (Chapters 6 and 7), the procedures that will be used to validate the data (Chapter 7), and the structure of the writing and evaluation of the study (Chapter 8). Finally, researchers need to anticipate the types of questions that might be asked about the project (Chapter 9) and to specify how the study adds to the literature on mixed methods research as well as to the content area under examination (Chapter 10).

● CLARIFYING TERMS

In discussing the process of research, we have already used several terms that require definition. By “the overall process of research,” we mean the procedures used in research that involve introducing a problem; narrowing the research problem into purpose statements, research questions, and hypotheses; collecting and analyzing data to address these questions and hypotheses; and using a writing structure that best fits the problem and the methods. We feel that both qualitative and quantitative research follow distinct steps in the process of inquiry, but they involve executing each phase of the research differently. In Chapter 2, we provide definitions for qualitative and quantitative research and note their characteristics. To emphasize quantitative and qualitative research equally, we will alternate the order in which the two approaches are presented when they arise in each chapter of this book. Also, we will use the terms *investigator* (often associated with quantitative research) and *inquirer* (often associated with qualitative research) interchangeably.

It is also important before we proceed with a definition of mixed methods research to clarify the distinction between several terms that will be used throughout the book: *methodology*, *design*, and *methods*. A *methodology* refers to the philosophical framework and the fundamental assumptions of research (van Manen, 1990). Because the philosophical framework one uses influences the procedures of research, we define methodology as the framework that relates to the entire process of research. Research *design* refers to the plan of action that links the philosophical assumptions to specific methods (Creswell, 2003; Crotty, 1998). Experimental research, survey research, ethnography, and mixed methods are all research designs. *Methods*, on the other hand, are more specific. They are techniques of data collection and analysis, such as a quantitative standardized instrument or a qualitative theme analysis of text data (Creswell, 2003; van Manen, 1990).

WHAT IS MIXED METHODS RESEARCH? ●

Some mixed methods writers consider this form of research a methodology and focus on the philosophical assumptions (e.g., Tashakkori & Teddlie, 1998). To call it a methodology introduces a complexity (some would say a needed complexity) to the process of research. Unquestionably, all research approaches have underlying philosophical assumptions that guide the inquirer. Mixed methods research assumes a worldview or several worldviews, a position that we will advance in more detail in Chapter 2.

Other mixed methods writers emphasize the techniques or methods of collecting and analyzing data (e.g., Creswell, Plano Clark, et al., 2003; Greene, Caraceli, & Graham, 1989; Onwuegbuzie & Teddlie, 2003). To call mixed methods research a “method” is clean and concise and resonates with many researchers (Elliot, 2005). In this book, we will refer to it as a research design with philosophical assumptions as well as quantitative and qualitative methods. This middle ground seems to provide the broadest definition possible, but it is a definition with a clear focus. Undoubtedly, as a consensus grows as to the meaning of mixed methods research, the definition will evolve. For the purposes of this book, we will define it as follows:

Mixed methods research is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process. As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone.

Using this definition as our guide, we will now more closely inspect major elements of this definition.

The Name

Let’s start with the name of the approach. There has been much discussion about the name. During the last 50 years, writers have used different names, making it difficult to locate articles that might relate to mixed methods research. It has been called “multitrait/multimethod research” (Campbell & Fiske, 1959), which recognizes the collection of several quantitative

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methods in a single investigation; “integrated” or “combined,” in the sense that two forms of data are blended together (Steckler, McLeroy, Goodman, Bird, & McCormick, 1992); and “quantitative and qualitative methods” (Fielding & Fielding, 1986), which acknowledges that the approach is actually a combination of methods. It has been called “hybrids” (Ragin, Nagel, & White, 2004); “methodological triangulation” (Morse, 1991), which recognizes the convergence of quantitative and qualitative data; “combined research” (Creswell, 1994); and “mixed methodology,” which acknowledges that it is both a method and a philosophical worldview (Tashakkori & Teddlie, 1998). Today, the most frequently used name is “mixed methods research,” a name associated with the recent *Handbook of Mixed Methods in Social and Behavioral Research* (Tashakkori & Teddlie, 2003a). Although the term *mixed methods* may not be familiar to a large number of social, behavioral, and human science scholars, its frequent use will encourage researchers to see this approach as a distinct methodology and method, used by an increasingly larger scholarly community.

Quantitative and Qualitative Data

According to our definition, mixed methods research involves both collecting and analyzing quantitative and qualitative data. Quantitative data includes closed-ended information such as that found on attitude, behavior, or performance instruments. The collection of this kind of data might also involve using a closed-ended checklist, on which the researcher checks the behaviors seen. Sometimes quantitative information is found in documents such as census records or attendance records. The analysis consists of statistically analyzing scores collected on instruments, checklists, or public documents to answer research questions or to test hypotheses.

In contrast, qualitative data consists of open-ended information that the researcher gathers through interviews with participants. The general, open-ended questions asked during these interviews allow the participants to supply answers in their own words. Also, qualitative data may be collected by observing participants or sites of research, gathering documents from a private (e.g., diary) or public (e.g., minutes of meetings) source, or collecting audiovisual materials such as videotapes or artifacts. The analysis of the qualitative data (words or text or images) typically follows the path of aggregating the words or images into categories of information and presenting the diversity of ideas gathered during data collection.

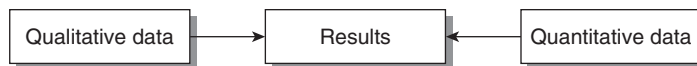
The open- versus closed-ended nature of the data differentiates between the two types better than the sources of the data. The sources of the data do not cleanly map onto qualitative and quantitative research, at least as much

as they used to. For example, surveys, a traditional quantitative source of data, are being used in ethnographic qualitative research (see LeCompte & Schensul, 1999), and narrative stories, associated with qualitative research, are being linked to quantitative event history modeling (Elliot, 2005). More will be said in Chapter 2 about the major characteristics of quantitative and qualitative research.

Mixing the Data

The mixing of data is a unique aspect of our definition. By mixing the datasets, the researcher provides a better understanding of the problem than if either dataset had been used alone. As we will discuss in Chapter 4, there are three ways in which mixing occurs: merging or converging the two datasets by actually bringing them together, connecting the two datasets by having one build on the other, or embedding one dataset within the other so that one type of data provides a supportive role for the other dataset. Figure 1.2 presents a diagram that visually depicts these differences. In short, it is not enough to simply collect and analyze quantitative and qualitative data; they need to be “mixed” in some way so that together they form a more complete picture of the problem than they do when standing alone.

Merge the data:



Connect the data:



Embed the data:

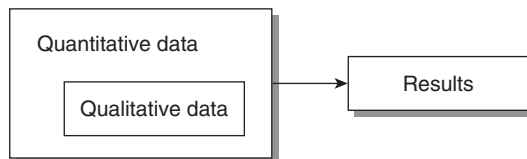
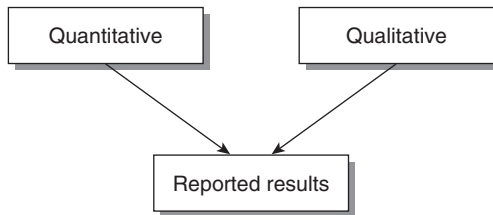


Figure 1.2 Three Ways of Mixing Quantitative and Qualitative Data

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Single Study:



Multiple Studies:



Figure 1.3 Examples of Single- or Multiple-Study Mixed Methods Research

Single or Multiple Studies

The definition also suggests that mixed methods studies may involve collecting and analyzing qualitative and quantitative data within a single study or within multiple studies in a program of inquiry. These differences are displayed in Figure 1.3. In large, funded projects, researchers may collect quantitative data in the first phase, followed by qualitative data in the second phase, followed by quantitative data in the third phase. Each project is reported separately as a distinct study, but, overall, the program of inquiry can be called mixed methods research. We have found this to be the case in many large-scale health science projects (e.g., Baskerville, Hogg, & Lemelin, 2001). On the other hand, graduate students typically collect both quantitative and qualitative data in a single study, rather than in multiple studies over time. Our focus in this book will be primarily on the single study rather than the multiple studies over time, but the ideas can certainly apply to both forms of inquiry.

The Central Premise of the Definition

The basic premise of the definition is that the combination of quantitative and qualitative approaches provides a better understanding of research

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problems than either approach alone. In what way is it better? Stated differently, what is the value that mixed methods research adds that qualitative or quantitative approaches, each by themselves, do not provide? The case can be made on several grounds.

- Mixed methods research provides strengths that offset the weaknesses of both quantitative and qualitative research. This has been the historical argument for mixed methods research for the last 25 years (Jick, 1979). The argument goes that quantitative research is weak in understanding the context or setting in which people talk. Also, the voices of participants are not directly heard in quantitative research. Further, quantitative researchers are in the background, and their own personal biases and interpretations are seldom discussed. Qualitative research makes up for these weaknesses. On the other hand, qualitative research is seen as deficient because of the personal interpretations made by the researcher, the ensuing bias created by this, and the difficulty in generalizing findings to a large group because of the limited number of participants studied. Quantitative research, it is argued, does not have these weaknesses. Chapter 2 explores in more detail the elements of both quantitative and qualitative research, but, clearly, the combination of both approaches can offset the weaknesses of either approach used by itself.

- Mixed methods research provides more comprehensive evidence for studying a research problem than either quantitative or qualitative research alone. Researchers are given permission to use all of the tools of data collection available rather than being restricted to the types of data collection typically associated with qualitative research or quantitative research.

- Mixed methods research helps answer questions that cannot be answered by qualitative or quantitative approaches alone. For example, “Do participant views from interviews and from standardized instruments converge or depart?” is a mixed methods question. Others would be, “What explains the quantitative results of a study?” (using qualitative data to explain the quantitative results) and “Will a treatment work with a particular sample in an experiment?” (exploring qualitatively before an experiment begins). To answer these questions, quantitative *or* qualitative approaches would not provide a satisfactory answer. The array of possibilities of mixed methods questions will be explored further in Chapter 5.

- Mixed methods encourages researchers to collaborate across the sometimes adversarial relationship between quantitative and qualitative researchers. We are social, behavioral, and human sciences researchers first,

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and dividing between quantitative and qualitative only serves to narrow the approaches and collaboration to inquiry.

- Mixed methods research encourages the use of multiple worldviews or paradigms rather than the typical association of certain paradigms for quantitative researchers and others for qualitative researchers. It also encourages us to think about a paradigm that might encompass all of quantitative and qualitative research, such as pragmatism, or using multiple paradigms in research, as discussed further in Chapter 3.

- Mixed methods research is “practical” in the sense that the researcher is free to use all methods possible to address a research problem. It is also “practical” because individuals tend to solve problems using both numbers and words, they combine inductive and deductive thinking, and they (e.g., therapists) employ skills in observing people as well as recording behavior. It is natural, then, for individuals to employ mixed methods research as the preferred mode of understanding the world. When people talk about the Katrina devastation in the southern United States, both words and numbers come to mind. This type of talk is not only more natural, it is also more persuasive than either words or numbers by themselves in presenting a complete picture of the devastation.

Despite its value, conducting mixed methods research is not easy. It takes time and resources to collect and analyze both quantitative and qualitative data. It complicates the procedures of research and requires clear presentation if the reader is going to be able to sort out the different procedures. Further, investigators are often trained in only one form of inquiry (quantitative or qualitative), and mixed methods requires that they know both forms of data. These issues are important, and we return to them in Chapter 9, but they are not insurmountable, and strategies can be used to address them. The value of mixed methods research seems to outweigh the potential difficulty of this approach.

Studies That Fit Our Definition

Having analyzed our definition, we now turn to examples of studies that closely fit our definition (we examine the types of designs in Chapter 4). In each scenario that follows, the researchers collected and analyzed both quantitative and qualitative data, mixed the data, and reported the studies as a single mixed methods study.

- A researcher collects data on quantitative instruments and in qualitative focus groups to see if the two types of data show similar results but from

different perspectives (see Black & Ricardo's 1994 study of African-American adolescent boys or Flanagan, McGrath, Meyer, & Garcia Coll's 1995 study of teenage mothers' transitions to motherhood).

- A researcher conducts an experiment in which quantitative measures assess the impact of a treatment on outcomes. Before the experiment, the researcher collects qualitative data to help design the treatment or, alternatively, to better recruit participants for the trial (see the study of physical activity and diet for families in one community by Brett, Heimendinger, Boender, Morin, & Marshall, 2002, or the study of recruitment of patients with prostate cancer for a trial by Donovan et al., 2002).

- A researcher collects data using a quantitative survey instrument and follows up with interviews with a few individuals who participated in the survey to learn more detail about their survey responses (see the study of depression and substance use of students in high schools by Way, Stauber, Nakkula, & London, 1994, or the attitudes of adoptive fathers toward birth-fathers by Baumann, 1999).

- A researcher explores how individuals describe a topic by starting with interviews and then uses an analysis of the information to develop a survey instrument that is administered later to a sample from a population (see the study of lifestyle behaviors of Japanese college women by Tashiro, 2002, and the study of women's social constructions of gender identity at work by Ely, 1995).

- A researcher mixes quantitative and qualitative approaches to research throughout a study. Both qualitative and quantitative questions are posed, both forms of data collected and analyzed, and a quantitative and qualitative interpretation is made. In reading the sections of the study, the reader finds a mixing of both approaches threaded throughout the study (see Gogolin & Swartz's 1992 study of nonscience college students' attitudes toward science).

Studies in the Gray Areas

Those types of mixed methods studies that might conform to part of our definition, but not all of it, we call the "gray areas." We have collected some examples that fall into this category.

- *A study employing minimum qualitative research.* Consider a survey study that includes a few open-ended questions as part of the survey. The researcher analyzes the qualitative responses to validate the quantitative findings. Is this a mixed methods study? The qualitative data may consist of short sentences and brief comments, hardly the type of qualitative data that involves rich context and detailed information from participants (Morse & Richards, 2002). Although it may not include a rich collection of qualitative

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data, it does meet the minimum criteria spelled out in our definition. Therefore, we consider it an example of mixed methods research.

- *A content analysis study.* Consider a study in which only one type of data is collected but both types of data analysis are used. For example, a researcher would collect only qualitative data but would analyze the data both qualitatively (developing themes) and quantitatively (counting words or rating responses on predetermined scales). A more typical content analysis study would be one in which the researcher collects only qualitative data and transforms it into quantitative data by counting the number of codes or themes. Are either of these examples mixed methods research? Certainly they use “mixed methods data analyses” (Onwuegbuzie & Teddlie, 2003) consisting of both qualitative and quantitative data analysis, but the data collection procedure involves collecting only qualitative data (and not quantitative data). Under a “methods” definition in our definition, the study would not be mixed methods because both qualitative and quantitative data are not being collected. Under a “methodological” definition—combining at any stage in the process of research—the study would be considered mixed methods because both qualitative and quantitative data analysis is going on. The more open methodological stance would consider it mixed methods.

- *Multimethod research* (Morse, 2003). Consider a study in which the researcher collects, analyzes, and mixes multiple forms of either qualitative or quantitative data. For example, a researcher could collect multiple forms of qualitative data, such as community documents for a participatory action research study and interviews during grounded theory research. A researcher could collect, analyze, and mix different types of quantitative data (e.g., quantitative surveys with structured observations). Are these examples of mixed methods research? This type of research is generally referred to as multimethod research instead of mixed methods research, because it is based on multiple qualitative *or* quantitative methods and data sets.

- *Mixed worldviews.* Assume that a researcher uses both a worldview associated with qualitative research, such as social constructivism (see Chapter 2), in which the meaning of lived experiences is explored for the participants, and a worldview associated with quantitative research, such as postpositivism. Also assume that the methods of data collection consist of standardized instruments. Here, multiple worldviews are employed that are typically associated with both quantitative and qualitative research, but the actual data collection consists of quantitative data. Is this a mixed methods study? From a methodological perspective, it is mixed methods because worldviews associated with both quantitative and qualitative research are used, even though both forms of data are not collected.

THE IMPORTANCE OF MIXED METHODS RESEARCH

A number of factors have contributed to the evolution of mixed methods research. The complexity of our research problems calls for answers beyond simple numbers in a quantitative sense or words in a qualitative sense. A combination of both forms of data can provide the most complete analysis of problems. Researchers can situate numbers in the contexts and words of participants, and they can frame the words of participants with numbers, trends, and statistical results. Both forms of data are necessary today. In addition, qualitative research has evolved to a point where writers consider it a legitimate form of inquiry in the social and human sciences (see Denzin & Lincoln, 2005). Quantitative researchers, we believe, recognize that qualitative data can play an important role in quantitative research. Qualitative researchers, in turn, realize that reporting only qualitative participant views of a few individuals may not permit generalizing the findings to many individuals. Audiences such as policy makers, practitioners, and others in applied areas need multiple forms of evidence to document and inform the research problems. A call for increased sophistication of evidence leads to a collection of both quantitative and qualitative data.

In recent years, many authors have begun to advocate for mixed methods research as a separate methodology or design. Tashakkori and Teddlie (2003a) called mixed methods research the “third methodological movement” (p. ix). This means that in the evolution of research methodologies, mixed methods now follows quantitative approaches and then qualitative approaches as the third movement. Unquestionably, many scholars are interested in mixed methods research as it has evolved during the last few decades.

A Brief History

Our approach to mixed methods research has grown out of the work of others as well as the historical and philosophical discussions of the last several decades. We turn now to a brief history. For those designing and conducting mixed methods studies, a historical overview helps in defending this design to faculty and editors, highlights lingering debates and issues, and provides a philosophical foundation for using this design. A sketch of the history of mixed methods research can be found in Tashakkori and Teddlie (1998). Here we will review this history and organize it into four, often overlapping time periods (see Table 1.1).

Formative Period. The formative period began in the 1950s and continued up until the 1980s. This period saw the initial interest in using more than one

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Table 1.1 Selected Writers Important in the Development of Mixed Methods Research and Their Contributions

<i>Stage of Development</i>	<i>Authors (Year)</i>	<i>Contribution to Mixed Methods Research</i>
Formative period	Campbell and Fiske (1959)	Introduced the use of multiple quantitative methods
	Sieber (1973)	Combined surveys and interviews
	Jick (1979)	Discussed triangulating qualitative and quantitative data
	Cook and Reichardt (1979)	Presented 10 ways to combine quantitative and qualitative data
Paradigm debate period	Rossmann and Wilson (1985)	Discussed stances toward combining methods—purists, situationalists, and pragmatists
	Bryman (1988)	Reviewed the debate and established connections within the two traditions
	Reichardt and Rallis (1994)	Discussed the paradigm debate and reconciled two traditions
	Greene and Caracelli (1997)	Suggested that we move past the paradigm debate
Procedural development period	Greene, Caracelli, and Graham (1989)	Identified a classification system of types of mixed methods designs
	Brewer and Hunter (1989)	Focused on the multimethod approach as used in the process of research
	Morse (1991)	Developed a notation system
	Creswell (1994)	Identified three types of mixed methods designs
	Morgan (1998)	Developed a typology for determining design to use
	Newman and Benz (1998)	Provided an overview of procedures
	Tashakkori and Teddlie (1998)	Presented topical overview of mixed methods research
	Bamberger (2000)	Provided an international policy focus to mixed methods research
Advocacy as separate design period	Tashakkori and Teddlie (2003a)	Provided a comprehensive treatment of many aspects of mixed methods research
	Creswell (2003)	Compared quantitative, qualitative, and mixed methods approaches in the process of research
	Johnson and Onwuegbuzie (2004)	Positioned mixed methods research as a natural complement to traditional qualitative and quantitative research

method in a study. It found momentum in the 1950s when Campbell and Fiske (1959) advocated for the collection of multiple forms of quantitative data to study the validation of psychological traits. They developed the multitrait, multimethod matrix, which was designed to attribute individual variation in personality scale scores to the trait itself rather than to the method used to measure it. Others combined both quantitative and qualitative data in this period (Sieber, 1973; Jick, 1979), and the question became whether it was possible to combine both forms of data when they arose from different perspectives (see Cook & Reichardt, 1979).

Paradigm Debate Period. During the 1970s and 1980s, qualitative researchers were adamant that different assumptions provided the foundations for quantitative and qualitative research (see Guba & Lincoln, 1988; Smith, 1983). Basically, the paradigm debate was whether or not qualitative and quantitative data could be combined. Some argued that mixed methods research was untenable (or incommensurable or incompatible) because mixed methods asked for paradigms to be combined (Smith, 1983). In 1988, Bryman challenged the argument and began suggesting that a clear connection existed between the two traditions. By 1994, Reichardt and Rallis noted how this debate played out with vocal advocates on both sides at the American Evaluation Association annual meeting. Today, there are still qualitative researchers who eschew mixed methods research because of the incompatibility of “mixing” paradigms. Rossman and Wilson (1985) called these individuals *purists*, who could not mix paradigms; others, they called *situationalists*, who adapt their methods to the situation, and *pragmatists*, who believe that multiple paradigms can be used to address research problems. Although the issue of reconciling paradigms is still apparent (see Chapter 10), calls have been made to embrace pragmatism as the best philosophical foundation for mixed methods research (see Tashakkori & Teddlie, 2003a, and Chapter 3) and to use different paradigms in mixed methods research but to honor each and be explicit about when each is used (Greene & Caracelli, 1997).

Procedural Developments. Although the debate about which paradigms provide a foundation for mixed methods research has not disappeared, attention during the 1980s began to shift toward the methods or procedures for designing a mixed methods study. In 1989, three individuals in the field of evaluation—Greene, Caracelli, and Graham—authored a classic article that laid the groundwork for mixed methods research design. In their article, they analyzed 57 evaluation studies, developed a classification system of six types, and talked about the design decisions that go into each of the types. Following in the footsteps of this article, many authors have identified classification systems (see Chapter 4 for a review of many classifications). At

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roughly the same time, two sociologists, Brewer and Hunter (1989), contributed to the discussion by linking multimethod research to the steps in the process of research (e.g., formulating problems, sampling, and collecting data). By 1991, Morse, a nursing researcher, designed a notation system to convey how the quantitative and qualitative components of a study are implemented (see Chapter 4 for our use of these notations to diagram the procedures in published studies).

Building on these classifications and notations, writers began discussing specific types of mixed methods designs. For example, Creswell (1994) created a parsimonious set of three types of designs and found studies that illustrated each type. Morgan (1998) provided a decision matrix for determining the type of design to use, and books such as those of Newman and Benz (1998) and Tashakkori and Teddlie (1998) began to map the contours of mixed methods procedures, paying special attention to such issues as validity and inferences.

Recent Indicators of Interest. The turn of the millenium has seen a growth in the interest in mixed methods research as well as authors advocating for mixed methods research as a separate design in its own right (Tashakkori & Teddlie, 2003a; Creswell, 2003). The 768-page *Handbook of Mixed Methods in Social and Behavioral Research* (Tashakkori & Teddlie, 2003a) emerged with 26 chapters devoted to controversies, methodological issues, applications in different discipline fields, and future directions. In addition, Creswell (2003) aligned mixed methods as a third approach alongside quantitative and qualitative approaches. Most recently, Johnson and Onwuegbuzie (2004) advocated for considering mixed methods as a legitimate design in educational research.

Additional developments highlight the increased interest in mixed methods research today:

- In 1999, the National Institutes of Health's (NIH) Office of Behavioral and Social Sciences Research published guidelines for qualitative and mixed methods research and included models for combined qualitative and quantitative approaches.
- In 2003, the National Science Foundation (NSF) held a workshop on the scientific foundations of qualitative research, with five papers devoted to combining qualitative and quantitative methods (Ragin, Nagel, & White, 2004).
- In the summer of 2004, NIH held a workshop titled *Design and Conduct of Qualitative and Mixed-Method Research in Social Work and Other Health Professions*, sponsored by seven NIH Institutes and

two research offices. Among the topics discussed was the use of mixed methods research in intervention research.

- The National Research Council (2002) discussed scientific research in education and concluded that three questions need to guide inquiries: “Description—What is happening? Cause—Is there a systematic effect? And the process or mechanism—Why or how is it happening?” (p. 99). These questions, in combination, suggest both a quantitative and a qualitative approach to scientific inquiry.
- Private foundations have recently held workshops for their scholars on mixed methods research, such as the Robert Wood Johnson Foundation and the W. T. Grant Foundation.
- The number of mixed methods studies reported in journal articles continues to increase. We found more than 60 articles in the social and human sciences that employed mixed methods research between 1995 and 2005 (Plano Clark, 2005).
- A Special Interest Group on Mixed Methods Research has formed in the American Educational Research Association. Its initial meeting was held in April 2005 in Montréal, Canada.
- Mixed methods research is being applied in more and more disciplines and fields of study. For example, the *Annals of Family Medicine* published a special issue on mixed methods research (e.g., see Creswell, Fetters, & Ivankova, 2004). The *Journal of Counseling Psychology* also published a special issue on qualitative and mixed methods research (e.g., see Hanson, Creswell, Plano Clark, Petska, & Creswell, 2005). Calls for increased use of qualitative data in traditional experimental trials in the health sciences have been reported in prestigious journals such as the *Journal of the American Medical Association* (Flory & Emanuel, 2004) and *Lancet* (Malterud, 2001).
- Cross-disciplinary reviews of mixed methods research are available in Greene et al. (1989), Creswell et al. (1996), and Plano Clark (2005).
- In the fall of 2005, Sage Publications started a new journal called the *Journal of Mixed Methods Research*. This journal, exclusively devoted to publishing mixed methods studies and discussions about the methodology of mixed methods research, is edited by John W. Creswell and Abbas Tashakkori, with Vicki L. Plano Clark as the managing editor. The first issue will be available in January 2007. The journal’s call for papers states that “the definition of mixed methods research is research in which the investigator collects, analyzes, mixes, and draws inferences from both quantitative and qualitative data in a single study or a program of inquiry” (*Journal of Mixed Methods Research*, 2006).

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- Mixed methods research is of interest to international audiences as well. The first international conference specifically devoted to mixed methods research was held in July, 2005, at Cambridge University. Sponsored by the Homerton School of Health Studies, it brought together more than 100 mixed methods investigators and methodologists. During August 2005, an invitational mixed methods conference was held in Basil, Switzerland.

Thus, today, we see cross-cultural international interest, interdisciplinary interest, publication possibilities, and public and private funding opportunities for mixed methods research.

Summary

In this book, we will examine the research phases in designing and conducting mixed methods research. Mixed methods research is a research design with a methodology and methods. As a methodology, it involves collecting, analyzing, and mixing qualitative and quantitative approaches at many phases in the research process, from the initial philosophical assumptions to the drawing of conclusions. As a method, it focuses on collecting, analyzing, and mixing quantitative and qualitative data in a single study or series of studies. It is premised on the idea that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone. This better understanding results because mixed methods offers strengths that offset the weaknesses of separately applied quantitative and qualitative research methods. It also encourages the collection of more comprehensive evidence for study problems, helps answers questions that quantitative or qualitative methods alone cannot answer, and reduces adversarial relationships among researchers and promotes collaboration. Mixed methods encourages the use of multiple worldviews and is a practical and natural approach to research. Mixed methods research is important today because of the complexity of problems that need to be addressed, the rise of interest in qualitative research, and the practical need to gather multiple forms of data for diverse audiences. It has evolved through four phases: a formative phase, the paradigm debate, the procedural period, and the emerging recent interest exemplified in public and federal funding, journals, disciplines, and special workshops.

Activities

1. In your own words, write a definition of mixed methods research and discuss the value of using this design as opposed to others in your research.
2. Consider the value of mixed methods research for different audiences, such as policy makers, graduate advisors, individuals in jobs or the workplace, and graduate students. Discuss the value for each audience.
3. Select a mixed methods study in your field of study. Using the definition in this chapter, discuss whether the article addresses the components of the definition.
4. Discuss the importance of each of the four phases in the historical development of mixed methods research and how each contributes to the value of this design today.

Additional Resources to Examine

For a definition of mixed methods research, consult:

Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.

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.

For a historical analysis of mixed methods research, see:

Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. Thousand Oaks, CA: Sage.

For steps in the process of conducting a mixed methods study, see:

Creswell, J. W. (1999). Mixed-method research: Introduction and application. In G. Cizek (Ed.), *Handbook of educational policy*. San Diego, CA: Academic Press.

Creswell, J. W., Goodchild, L., & Turner, P. (1996). Integrated qualitative and quantitative research: Epistemology, history, and designs. In J. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 11, pp. 90–136). New York: Agathon Press.