CHAPTER 1

THE NATURE OF MIXED METHODS RESEARCH

What is it about the nature of mixed methods that draws researchers to its use? Its popularity can be easily documented through journal articles, conference proceedings, books, and the formation of special interest groups (Creswell, in press-b; Plano Clark, 2010). It has been called the "third methodological movement" following the developments of first quantitative and then qualitative research (Tashakkori & Teddlie, 2003a, p. 5), the "third research paradigm" (Johnson & Onwuegbuzie, 2004, p. 15), and "a new star in the social science sky" (Mayring, 2007, p. 1). Why does it merit such superlatives? One answer is that it is an intuitive way of doing research that is constantly being displayed through our everyday lives.

Consider for a moment *An Inconvenient Truth*, the award-winning documentary on global warming featuring the former U.S. vice president and Nobel Prize winner Al Gore (http://www.climatecrisis.net/an-inconvenient-truth.php). In the documentary, Gore narrated both the statistical trends and the stories of his personal journey related to the changing climate and global warming. This documentary brings together both quantitative and qualitative data to tell the story. Also, listen closely to CNN's broadcast reports about hurricanes or about the votes cast in elections. The trends are again supported by the individual stories. Or listen to commentators at sporting events. There is often a play-by-play commentator who describes the somewhat linear unfolding of the game (a quantitative perspective) and then the additional commentary by the "color" announcer who tells us about the

individual stories and highlights of the personnel on the playing field. Again, both quantitative and qualitative data come together in these broadcasts.

In these instances, we see mixed methods thinking in ways that Greene (2007) called the "multiple ways of seeing and hearing" (p. 20). Multiple ways are visible in everyday life, and mixed methods becomes a natural outlet for research. But other factors also contribute to this interest in mixed methods. Researchers recognize it as an accessible approach to inquiry. They have research questions (or problems) that can best be answered using mixed methods, and they see the value of using it (as well as the challenges it poses).

Understanding the nature of mixed methods research is an important first step to using it in research. This chapter reviews several preliminary considerations necessary before a researcher designs a mixed methods study. This chapter addresses the following considerations:

- Understanding what mixed methods research means
- Viewing examples of mixed methods studies
- Recognizing what types of research problems merit a mixed methods study
- Knowing the advantages of using mixed methods
- Realizing the challenges of using mixed methods

● DEFINING MIXED METHODS RESEARCH

Several definitions for mixed methods have emerged over the years that incorporate various elements of methods, research processes, philosophy, and research design. These different stances are summarized in Table 1.1.

An early definition of mixed methods came from writers in the field of evaluation. Greene, Caracelli, and Graham (1989) emphasized the mixing of methods and the disentanglement of methods and philosophy (i.e., paradigms) when they said,

> In this study, we defined mixed-method designs as those that include at least one quantitative method (designed to collect numbers) and one qualitative method (designed to collect words), where neither type of method is inherently linked to any particular inquiry paradigm. (p. 256)

Ten years later, the definition shifted from mixing two methods to mixing in all phases of the research process—a methodological orientation (Tashakkori & Teddlie, 1998). Included within this orientation would be mixing philosophical (i.e., worldview) positions, inferences, and the interpretations of

Table 1.1 Authors and the Focus or Orientation of Their Definition of Mixed Methods

Author(s) and Year	Focus of the Definition
Greene, Caracelli, and Graham (1989)	Methods Philosophy
Tashakkori and Teddlie (1998)	Methodology
Johnson, Onwuegbuzie, and Turner (2007)	Qualitative and quantitative research Purpose
Journal of Mixed Methods Research (JMMR) (call for submissions)	Qualitative and quantitative research Methods
Greene (2007)	Multiple ways of seeing, hearing, and making sense of the social world
Creswell and Plano Clark (2007)	Methods Philosophy
Core characteristics (presented and used in this book)	Methods Philosophy Research design

results. Thus, Tashakkori and Teddlie (1998) defined mixed methods as the combination of "qualitative and quantitative approaches in the methodology of a study" (p. ix). These authors reinforced this methodological orientation in their preface to the *SAGE Handbook of Mixed Methods in Social & Behavioral Research* by writing "mixed methods research has evolved to the point where it is a separate methodological orientation with its own worldview, vocabulary, and techniques" (Tashakkori & Teddlie, 2003a, p. x).

In a highly cited *Journal of Mixed Methods Research* (JMMR) article, Johnson, Onwuegbuzie, and Turner (2007) sought a consensus about a definition by suggesting a composite understanding based on 19 different definitions provided by 21 highly published mixed methods researchers. The authors commented about the definitions, citing the variations in them, from what was being mixed (e.g., methods, methodologies, or types of research), the place in the research process in which mixing occurred (e.g., data collection, data analysis), the scope of the mixing (e.g., from data to worldviews), the purpose or rationale for mixing (e.g., breadth, corroboration), and the elements driving the research (e.g., bottom-up, top-down, a core

component). Incorporating these diverse perspectives, Johnson et al. (2007) ended with their composite definition:

> Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration. (p. 123)

In this definition, the authors did not view mixed methods simply as methods but more as a methodology that spanned viewpoints to inferences and that included the combination of qualitative and quantitative research. They incorporated diverse viewpoints but did not specifically mention paradigms (as in the Greene et al., 1989 definition). Their purposes for mixed methods—breadth and depth of understanding and corroboration—meant that they related the definition of mixed methods to a rationale for conducting it. Most importantly, perhaps, they suggested that there is a common definition that should be used.

When the call for paper submissions to the JMMR was issued for our first issue, we, as editors, felt that a general definition of mixed methods should be provided. Our approach incorporated both a general qualitative and quantitative research orientation as well as a methods orientation. Our intent was also to cast our definition within accepted approaches to mixed methods, to encourage submissions as broad as possible, and to "keep the discussion open about the definition of mixed methods" (Tashakkori & Creswell, 2007b, p. 3). Hence, the definition announced in the first issue of the journal was

> mixed methods research is defined as research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry. (Tashakkori & Creswell, 2007b, p. 4)

Then, Greene (2007) provided a definition of mixed methods that conceptualized this form of inquiry differently as a way of looking at the social world

> . . . that actively invites us to participate in dialogue about multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important and to be valued and cherished. (p. 20)

Defining mixed methods as "multiple ways of seeing" opens up broad applications beyond using it as only a research method. It can be used, for

example, as an approach to think about designing documentaries (Creswell & McCoy, in press) or as a means for "seeing" participatory approaches to HIV-infected populations in the Eastern Cape of South Africa (Olivier, de Lange, Creswell, & Wood, 2010).

Also in 2007, in the first edition of this book, we provided a definition that had both a methods and a philosophical orientation. We said,

> 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 and the mixture of qualitative and quantitative approaches in many phases of 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. (Creswell & Plano Clark, 2007, p. 5)

This definition was patterned on describing an approach using multiple meanings, such as found in Stake's (1995) definition of a case study in which he talked about case study research as stemming from several distinct ideas.

At present, we feel that a definition for mixed methods should incorporate many diverse viewpoints. In this spirit, we rely on a **definition of core characteristics of mixed methods research**. It is a definition that we suggest in our workshops and in our presentations on mixed methods research. It combines methods, a philosophy, and a research design orientation. It also highlights the key components that go into designing and conducting a mixed methods study; thus, it will be the one emphasized in this book. In mixed methods, the researcher

- collects and analyzes persuasively and rigorously both qualitative and quantitative data (based on research questions);
- mixes (or integrates or links) the two forms of data concurrently by combining them (or merging them), sequentially by having one build on the other, or embedding one within the other;
- gives priority to one or to both forms of data (in terms of what the research emphasizes);
- uses these procedures in a single study or in multiple phases of a program of study;
- frames these procedures within philosophical worldviews and theoretical lenses; and
- combines the procedures into specific research designs that direct the plan for conducting the study.

These core characteristics, we believe, adequately describe mixed methods research. They evolved from many years of reviewing mixed methods articles and determining how researchers use both quantitative and qualitative methods in their studies.

● EXAMPLES OF MIXED METHODS STUDIES

One way to better understand the nature of mixed methods research beyond a definition is to examine published studies in journal articles. Although philosophical assumptions often lie in the background of published mixed methods studies, the core characteristics of our definition can be seen in the following examples:

- A researcher collects data on quantitative instruments and on qualitative data reports based on focus groups to see if the two types of data show similar results but from different perspectives (see the study of developing a health promotion perspective for older driver safety in the occupational science area by Classen et al., 2007).

- A researcher collects data using quantitative experimental procedures and follows up with interviews with a few individuals who participated in the experiment to help explain their scores on the experimental outcomes (see the study of college students' copy-and-paste note taking by Igo, Kiewra, & Bruning, 2008).

- A researcher explores how individuals describe a topic by starting with interviews, analyzing the information, and using the findings to develop a survey instrument. This instrument, in turn, is then administered to a sample from a population to see if the qualitative findings can be generalized to a population (see the study of lifestyle behaviors of Japanese college women by Tashiro, 2002; also see the psychological study of the tendency to perceive the self as significant to others in young adults' romantic relationships by Mak & Marshall, 2004).

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

- A researcher seeks to bring about change in understanding the issues facing women. The researcher gathers data through instruments and focus groups to explore the meaning of the issues for women. The larger framework of change guides the researcher and informs all aspects of the study from the issues being studied, to the data collection, and to the call for

reform at the end of the study (see the study exploring student–athlete culture and understanding specific rape myths by McMahon, 2007).

- A researcher seeks to evaluate a program that has been implemented in the community. The first step is to collect qualitative data in a needs assessment to determine what questions need to be addressed. This is followed by the design of an instrument to measure the impact of the program. This instrument is then used to compare certain outcomes both before and after the program has been implemented. From this comparison, follow-up interviews are conducted to determine why the program did or did not work. This multiphase mixed methods study is often found in long-term evaluation projects (see the study of the long-term impacts of interpretive programs at a historical site by Farmer & Knapp, 2008).

These examples all illustrate the collection of both quantitative and qualitative data, their integration or mix, and an underlying assumption that mixed methods research could be a useful approach to research.

WHAT RESEARCH PROBLEMS FIT MIXED METHODS?

Authors of the example studies crafted their research as mixed methods projects based on their assumption that mixed methods could also best address their research problems. When preparing a research study employing mixed methods, the researcher needs to provide a justification for the use of this approach. Not all situations justify the use of mixed methods. There are times when qualitative research may be best, because the researcher aims to explore a problem, honor the voices of participants, map the complexity of the situation, and convey multiple perspectives of participants. At other times, quantitative research may be best, because the researcher seeks to understand the relationship among variables or determine if one group performs better on an outcome than another group. In our discussion of mixed methods, we do not want to minimize the importance of choosing either a quantitative or qualitative approach when it is merited by the situation. Further, we would not limit mixed methods to certain fields of study or topics. Mixed methods research seems applicable to a wide variety of disciplines in the social and health sciences. Certainly some disciplinary content specialists may select not to use mixed methods because of a lack of interest in qualitative research, but most content area problems can be addressed using mixed methods. Instead of thinking about fitting different methods to specific content topics, we suggest thinking about fitting methods to different types of research problems. For example, we find that a survey best fits a quantitative approach because of the

need to understand the views of participants in an entire population. An experiment best fits a quantitative approach because of the need to determine whether a treatment works better than a control condition. Likewise, ethnography best fits a qualitative approach because of the need to understand how culture-sharing groups work. What situations, then, warrant an approach that combines quantitative and qualitative research—a mixed methods inquiry? **Research problems suited for mixed methods** are those in which one data source may be insufficient, results need to be explained, exploratory findings need to be generalized, a second method is needed to enhance a primary method, a theoretical stance needs to be employed, and an overall research objective can be best addressed with multiple phases, or projects.

A Need Exists Because One Data Source May Be Insufficient

We know that qualitative data provide a detailed understanding of a problem while quantitative data provide a more general understanding of a problem. This qualitative understanding arises out of studying a few individuals and exploring their perspectives in great depth whereas the quantitative understanding arises from examining a large number of people and assessing responses to a few variables. Qualitative research and quantitative research provide different pictures, or perspectives, and each has its limitations. When researchers study a few individuals qualitatively, the ability to generalize the results to many is lost. When researchers quantitatively examine many individuals, the understanding of any one individual is diminished. Hence, the limitations of one method can be offset by the strengths of the other method, and the combination of quantitative and qualitative data provide a more complete understanding of the research problem than either approach by itself.

There are several ways in which one data source may be inadequate. One type of evidence may not tell the complete story, or the researcher may lack confidence in the ability of one type of evidence to address the problem. The results from the quantitative and qualitative data may be contradictory, which could not be known by collecting only one type of data. Further, the type of evidence gathered from one level in an organization might differ from evidence looked at from other levels. These are all situations in which using only one approach to address the research problem would be deficient. A mixed methods design best fits this problem. For example, when Knodel and Saengtienchai (2005) studied the role that older-aged parents play in the care and support of adult sons and daughters with HIV and AIDS and AIDS orphans in Thailand, they collected both quantitative survey data and open-ended interviews. Reflecting on the use of both forms of data to understand the problem because quantitative data alone would be inadequate, they said,

> The issues (in the interviews) covered were similar to the AIDS parents survey, but the conversational nature of the interview and the fact it allowed open-ended responses provided parents the opportunity to elaborate on the issues and the circumstances affecting them. (Knodel & Saengtienchai, 2005, p. 670)

A Need Exists to Explain Initial Results

Sometimes the results of a study may provide an incomplete understanding of a research problem and there is a need for further explanation. In this case, a mixed methods study is used with the second database helping to explain the first database. A typical situation is when quantitative results require an explanation as to what they mean. Quantitative results can net general explanations for the relationships among variables, but the more detailed understanding of what the statistical tests or effect sizes actually mean is lacking. Qualitative data and results can help build that understanding. For example, Weine et al. (2005) conducted a mixed methods study investigating family factors and processes involved in Bosnian refugees engaging in multiple-family support and education groups in Chicago. The first quantitative phase of the study addressed the factors that predicted engagement while the second qualitative phase consisted of interviews with family members to assess the family processes involved in engagement as multiple-family groups. The rationale for using mixed methods to study this situation was "quantitative analysis addressed the factors that predicted engagement. In order to better understand the processes by which families experience engagement, we conducted a qualitative content analysis to gain additional insight" (Weine et al., 2005, p. 560).

A Need Exists to Generalize Exploratory Findings

In some research projects, the investigators may not know the questions that need to be asked, the variables that need to be measured, and the theories that may guide the study. These unknowns may be due to the specific, remote population being studied (e.g., Native American in Alaska) or the newness of the research topic. In these situations, it is best to explore qualitatively to learn what questions, variables, theories, and so forth need to be studied and then follow up with a quantitative study to generalize and test what was learned from the exploration. A mixed methods project is ideal in these situations. The researcher begins with a qualitative phase to explore and then follows up with a quantitative phase to test whether the qualitative results generalize. For example, Kutner, Steiner, Corbett, Jahnigen, and Barton (1999) studied issues important to

terminally ill patients. Their study began with qualitative interviews, and these were then used to develop an instrument that was administered to a second sample of terminally ill patients to test whether the identified issues varied by demographic characteristics. Kutner et al. (1999) said, "The use of initial open-ended interviews to explore the important issues allowed us to formulate relevant questions and discover what were truly concerns to this population" (p. 1350).

A Need Exists to Enhance a Study With a Second Method

In some situations, a second research method can be added to the study to provide an enhanced understanding of some phase of the research. For example, researchers can enhance a quantitative design (e.g., experiment or correlational study) by adding qualitative data or by adding quantitative data to a qualitative design (e.g., grounded theory or case study). In both of these cases, a second method is embedded, or nested, within a primary research method. The embedding of qualitative data within a quantitative study is a typical approach. For example, Donovan et al. (2002) conducted an experimental trial comparing the outcomes for three groups of men with prostate cancer receiving different treatment procedures. They began their study, however, with a qualitative component in which they interviewed the men to determine how best to recruit them into the trial (e.g., how best to organize and present the information) because all the men had received abnormal results and sought the best treatment. Toward the end of their article, Donovan et al. (2002) reflected on the value of this preliminary, smaller, qualitative component used to design procedures for recruiting individuals to the trial:

> We showed that the integration of qualitative research methods allowed us to understand the recruitment process and elucidate the changes necessary to the content and delivery of information to maximize recruitment and ensure effective and efficient conduct of the trial. (p. 768)

A Need Exists to Best Employ a Theoretical Stance

A situation may exist in which a theoretical perspective provides a framework for the need to gather both quantitative and qualitative data in a mixed methods study. The data to be collected might be all gathered at the same time or in a sequence with one form of data building on the other. The theoretical perspective could seek to bring about change or simply provide a lens through which the entire study might be viewed. For example, Fries (2009) conducted a study using Bourdieu's reflexive sociology ("the interplay of objective social structure with subjective agency in social behavior," p. 327) as a theoretical lens

for gathering both quantitative and qualitative data in the use of complementary and alternative medicine. He gathered survey and interview data in the first strand, analyzed statistical population health data in the second strand, and analyzed interviews in the third strand. Fries (2009) concluded that "this study has presented a case study from the sociology of alternative medicine to show how reflexive sociology might provide a theoretical basis for mixed methods research oriented toward understanding the interplay of structure and agency in social behavior" (p. 345).

A Need Exists to Understand a Research Objective Through Multiple Research Phases

In projects that span several years and have many components, such as evaluation studies and multiyear health investigations, the researchers may need to connect several studies to reach an overall objective. These studies may involve projects that gather both quantitative and qualitative data simultaneously or gather the information sequentially. We can consider them multiphase or multiproject mixed methods studies. These projects often involve teams of researchers working together over many phases of the project. For example, Ames, Duke, Moore, and Cunradi (2009) conducted a multiphase study of the drinking patterns of young U.S. Navy-enlisted recruits during their first 3 years of military service. To understand the drinking patterns, they conducted a study over a 5-year period, gathered data to develop an instrument in one phase, to modify their model in another phase, and to analyze their data through a final phase. Ames et al. (2009) presented a figure of the phases of their research over 5 years and introduced the implementation sequence this way:

> The complexity of the resulting research design, consisting of both longitudinal survey data collection with a highly mobile population coupled with qualitative interviewing in diverse settings, required the formation of a methodologically diverse research team and a clear delineation of the temporal sequence by which qualitative and quantitative findings would be used to inform and enrich one another. (p. 130)

These scenarios serve to illustrate situations in which mixed methods research fits the problems under study. They also begin to lay the groundwork for understanding the designs of mixed methods that will be discussed later and the reasons authors cite for undertaking a mixed methods study. Although we cite a single reason for mixed methods in each illustration, many authors cite multiple reasons, and we recommend that aspiring (and experienced) researchers begin to take note of the rationales in published studies cited by authors for using mixed methods approaches.

● WHAT ARE THE ADVANTAGES OF USING MIXED METHODS?

Understanding the nature of mixed methods involves more than knowing its definition and when it should be used. In addition, at the outset of selecting a mixed methods approach, researchers need to know the advantages that accrue from using it so that they can convince others of the value of mixed methods. Next we enumerate some of the advantages.

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 more than 30 years (e.g., see Jick, 1979). One might argue 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. Thus, the combination of strengths of one approach makes up for the weaknesses of the other approach.

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

Mixed methods research helps answer questions that cannot be answered by quantitative or qualitative approaches alone. For example, "Do participant views from interviews and from standardized instruments converge or diverge?" is a mixed methods question. Others would be, "In what ways do qualitative interviews explain the quantitative results of a study?" (using qualitative data to explain the quantitative results) and "How can a treatment be adapted to 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 the discussion in Chapter 5.

Mixed methods provides a bridge across the sometimes adversarial divide between quantitative and qualitative researchers. We are social, behavioral, and human sciences researchers first, and divisions between quantitative and qualitative research only serve to narrow the approaches and the opportunities for collaboration.

Mixed methods research encourages the use of multiple worldviews, or paradigms (i.e., beliefs and values), rather than the typical association of certain paradigms with quantitative research and others for qualitative research. It also encourages us to think about a paradigm that might encompass all of quantitative and qualitative research, such as pragmatism. These paradigm stances will be discussed further in the next chapter.

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, combine inductive and deductive thinking, and employ skills in observing people as well as recording behavior. It is natural, then, for individuals to employ mixed methods research as a preferred mode for understanding the world.

WHAT ARE THE CHALLENGES IN USING MIXED METHODS? ●

We must admit that mixed methods is not the answer for every researcher or every research problem. Its use does not diminish the value of conducting a study that is exclusively either quantitative or qualitative. It does, however, require having certain skills, time, and resources for extensive data collection and analysis, and perhaps, most importantly, educating and convincing others of the need to employ a mixed methods design so that a researcher's mixed methods study will be accepted by the scholarly community.

The Question of Skills

We believe that mixed methods is a realistic approach if the researcher has the requisite skills. We strongly recommend that researchers first gain experience with both quantitative research and qualitative research separately before undertaking a mixed methods study. At a minimum, researchers should be acquainted with both quantitative and qualitative data collection and analysis techniques. This point was emphasized in our definition of mixed methods. Mixed methods researchers should be familiar with common methods of collecting quantitative data, such as using measurement instruments and closed-ended attitudinal scales. Researchers need an awareness of the logic of hypothesis testing and the ability to use and interpret statistical analyses, including common descriptive and inferential procedures available in statistical software packages. Finally, researchers need to understand essential issues of rigor in quantitative research, including reliability, validity, experimental control, and generalizability. In later chapters, we will delve into what constitutes a rigorous quantitative approach.

A similar set of qualitative research skills is necessary. Researchers should be able to identify the central phenomenon of their study; to pose qualitative, meaning-oriented research questions; and to consider participants as the experts. Researchers should be familiar with common methods of collecting qualitative data, such as semistructured interviews using open-ended questions and qualitative observations. Researchers need basic skills in analyzing qualitative text data, including coding text and developing themes and descriptions based on these codes, and should be acquainted with a qualitative data analysis software package. Finally, it is important that researchers understand essential issues of persuasiveness in qualitative research, including credibility, trustworthiness, and common validation strategies.

Finally, those undertaking this approach to research should have a solid grounding in mixed methods research. This requires reading the literature on mixed methods that has accumulated since the late 1980s and noting the best procedures and the latest techniques for conducting a good inquiry. It may also mean taking courses in mixed methods research that are beginning to appear both online and in residence on many campuses. It may mean apprenticing with someone familiar with mixed methods who can provide an understanding of the skills involved in conducting this form of research.

The Question of Time and Resources

Even when researchers have basic quantitative and qualitative research skills, they should ask themselves if a mixed methods approach is feasible, given time and resources. These are important issues to consider early in the planning stage. Mixed methods studies may require extensive time, resources, and effort on the part of the researchers. Researchers should consider the following questions:

- Is there sufficient time to collect and analyze two different types of data?
- Are there sufficient resources from which to collect and analyze both quantitative and qualitative data?
- Are the skills and personnel available to complete this study?

In answering these questions, researchers must consider how long it will take to gain approval for the study, to gain access to participants, and to complete the data collection and analysis. Researchers should keep in mind that qualitative data collection and analysis often require more time than that needed for quantitative data. The length of time required for a mixed methods study is also dependent on whether the study will be using a one-phase, two-phase, or multiphase design. Researchers need to think about the expenses that

will be part of the study. These expenses may include, for example, printing costs for quantitative instruments, recording and transcription costs for qualitative interviews, and the cost of quantitative and qualitative software programs.

Because of the increased demands associated with mixed methods designs, mixed methods researchers should consider working in teams. We realize that this is impractical for graduate students who are expected to work independently. If a team can be formed, however, it has the advantage of bringing together individuals with diverse methodological and content expertise and of involving more personnel in the mixed methods project. Working with a team can be a challenge. It can increase the costs associated with the research. In addition, individuals with the necessary skills need to be located, and team leaders need to create and maintain a successful collaboration among team members. However, the diversity of a team may be a strength because of enhanced communications among members representing different specialties and content areas.

The Question of Convincing Others

Mixed methods research is relatively new in terms of methodologies available to researchers. As such, others may not be convinced of or understand the value of mixed methods. Some may see it as a "new" approach. Others may feel that they do not have time to learn a new approach to research, and some may object to mixed methods on philosophical grounds regarding the mixing of different philosophical positions, as we will see in the next chapter. Still others might be so ensconced in their own methods and approaches to research that they might not be open to the possibility of mixed methods research.

One way to help convince others of the utility of mixed methods is to locate exemplary mixed methods studies in the literature on a topic or in a content area and share these studies to educate others. These studies can be selected from prestigious journals with a national and international reputation. How does a researcher find these mixed methods studies?

Mixed methods studies can be difficult to locate in the literature, because only recently have researchers begun to use the term *mixed methods* in their titles or in their methods' discussions. Also, some disciplines may use different terms for naming this research approach. Based on our extensive work with the literature, we have developed a short list of terms that we use to search for mixed methods studies within electronic databases and journal archives. These terms include

- mixed method* (where * is a wildcard that will allow hits for "mixed method," "mixed methods," and "mixed methodology"),

- quantitative AND qualitative,
- multimethod, and
- survey AND interview.

Note that the second search term uses the logic operator AND (i.e., quantitative AND qualitative). This requires that both words appear in the document so it will satisfy the search criteria. If too many articles are found, try limiting the search so that the terms must appear within the abstract or restricting it to recent years. If not enough articles result, try searching for combinations of common data collection techniques, such as "survey AND interview." By using these strategies, researchers may locate a few good examples of mixed methods research that illustrate the core characteristics introduced in this chapter. Sharing these examples with stakeholders can be helpful when convincing them of the utility and feasibility of a mixed methods approach.

SUMMARY

Before deciding on a mixed methods study, the researcher needs to consider several preliminary considerations about the nature of mixed methods research. First, the researcher needs some understanding as to what constitutes a mixed methods study to determine if this approach is the best to use for their particular study. Several core characteristics have been recommended: the collection and analysis of both quantitative and qualitative data; the mixing of the two types of data either by merging them, having one build on the other, or embedding one within the other; the emphasis or priority of one or both forms of data; the use of the two forms of data in a single study or a sustained line of research inquiry; the use of a philosophical or theoretical orientation that informs all aspects of the study; and the use of a specific type of mixed methods design for procedures. Most important in this list of characteristics would be the availability of two sets of data, one quantitative and one qualitative. Second, some assessment needs to occur as to whether the research problem best fits mixed methods. Many topics and problems are suitable for mixed methods (e.g., violence has escalated in our schools or children have poor nutrition in their families). Consider if the research problem can be best addressed using mixed methods procedures. Some problems are best studied by using two data sources and collecting only one may provide an incomplete understanding. Another study may need a second database to help explain the first database. Another type of problem may require that the researcher first explore qualitatively before undertaking a quantitative study, use a theoretical lens to study the problem, or conduct multiple phases of studies to build an overall understanding of the problem.

Not only are multiple data sources helpful in understanding research problems but there are other advantages of using mixed methods. The strength of one method may offset the weaknesses of the other. Using multiple sources of data simply provides more evidence for studying a problem than a single method of data. Oftentimes research questions are posed that require both an exploration as well as an explanation drawing from different data sources. Mixed methods also is well suited for interdisciplinary research that brings scholars together from different fields of study, and it enables researchers to employ multiple philosophical perspectives that guide their research. Finally, mixed methods is both practical and intuitive in that it helps offer multiple ways of viewing problems—something found in everyday living.

This does not mean that using mixed methods will be easy. It requires that the researchers have skills in several areas: quantitative research, qualitative research, and mixed methods research. Because of the extensive data collected, it takes time to gather data from both quantitative and qualitative sources, and it takes resources to fund these data collection (and data analysis) efforts. Perhaps most importantly, individuals planning a mixed methods study need to convince others of the value of mixed methods. It is a relatively new approach to inquiry, and it requires an openness to using multiple perspectives in research. A search through the literature will yield good examples of mixed methods studies today, and these can be shared with important stakeholders to help educate them about mixed methods studies.

ACTIVITIES

1. Locate a mixed methods study in your field or discipline. Engage in these steps:
   a) Suspend your interest in the content of the articles, and focus instead on the research methods used.
   b) Review the core characteristics of a mixed methods study, and identify how the study represents a good mixed methods study because it addresses the core characteristics.
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. Consider whether a mixed methods approach is feasible for your study. List out the skills, resources, and time that you have available for the project.

4. Consider designing a mixed methods project. State in your own words how you will define mixed methods research, mention why mixed methods is well suited to address your research problem, and cite both the advantages and challenges of using it as an approach to research.

ADDITIONAL RESOURCES TO EXAMINE

For definitions of mixed methods, consult the following resources:

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: Sage.

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

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

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, *1*(2), 112–133.

For the rationale or purpose for using mixed methods to address problems, see the following resources:

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

Mayring, P. (2007). Introduction: Arguments for mixed methodology. In P. Mayring, G. L. Huber, L. Gurtler, & M. Kiegelmann (Eds.), *Mixed methodology in psychological research* (pp. 1–4). Rotterdam/Taipei: Sense Publishers.

For the advantages of mixed methods research, see the following resources:

Creswell, J. W., & McCoy, B. R. (in press). The use of mixed methods thinking in documentary development. In S. N. Hesse-Biber (Ed.), *The handbook of emergent technologies in social research*. Oxford, UK: Oxford University Press.

Plano Clark, V. L. (2005). Cross-disciplinary analysis of the use of mixed methods in physics education research, counseling psychology, and primary care (Doctoral dissertation, University of Nebraska–Lincoln, 2005). *Dissertation Abstracts International*, *66*, 02A.

For the skills needed to conduct mixed methods research, see the following resource:

Creswell, J. W., Tashakkori, A., Jensen, K. D., & Shapley, K. L. (2003). Teaching mixed methods research: Practices, dilemmas, and challenges. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research* (pp. 619–637). Thousand Oaks, CA: Sage.