13 Mixed Methods Research

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Chapter summary

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LEARNING OBJECTIVES

After studying this chapter you should be able to:

- Define mixed methods research, and describe its development
- State the fundamental principle of mixed methods research
- State the basic idea of pragmatism, and describe its implication for mixed methods research
- Discuss the main strengths and weaknesses of qualitative and quantitative research
- Describe the three dimensions involved in combining qualitative and quantitative approaches
- Describe briefly the four main mixed methods designs (triangulation, embedded, explanatory, exploratory)

In this book we have used the distinction between qualitative and quantitative research as a way of organizing and presenting the methodological foundation for empirical research. I believe it is important for the education researcher today to have an understanding of both, and especially of the common logic that drives the two approaches. As a way of stressing similarities in the underlying logic, we have dealt with qualitative and quantitative research under the same main headings of design, data collection and data analysis. I believe it is also important for the education researcher today to understand the growing popularity of combining the two approaches, whether in a single study or a series of studies. Therefore this chapter gives an overview of the development of mixed methods, and of the main designs for use in mixed methods research.

Mixed methods research is empirical research that involves the collection and analysis of both qualitative and quantitative data. In mixed methods research, qualitative and quantitative methods and data are mixed, or combined in some way. A single study that combines qualitative and quantitative data is mixed methods, but the term can also refer to several studies that combine both types of data.

This definition is straightforward, and it is useful in simplifying and clarifying terminology on this topic, which has sometimes been confusing in the research methodology literature. In the development of mixed methods research, the language used to describe this design has not always been precise and consistent. As Tashakkori and Teddlie (2003a: 212) and Creswell and
Plano Clark (2007: 5–6) note, such terms as ‘multimethod’, ‘integrated’, ‘blended’ and ‘combined’ have been used, along with ‘multitrait-multimethod research’, ‘methodological triangulation’, ‘multimethodological research’, and ‘mixed model research’. The publication of *The Handook of Mixed Methods in Social and Behavioral Research* (Tashakkori and Teddlie, 2003a) increased greatly the precision, visibility and recognition of the term ‘mixed methods’, urging the use of ‘mixed’ as an umbrella term to cover the multifaceted procedures of combining, integrating and linking the different types of methods and data. Going further, Creswell and Plano Clark (2007: 6) argue that the consistent and systematic use of the term ‘mixed methods’ to describe research that combines qualitative and quantitative approaches, methods and data will encourage the research community to see mixed methods research as distinct, and increasingly used by researchers.

### 13.1 HISTORY OF MIXED METHODS

As noted in earlier chapters, the historical dominance of quantitative methods in education research was followed in the 30 or so years after about 1970 by the emergence of qualitative methods into the mainstream, and by their increased acceptance. This did not happen smoothly in education research, producing the paradigm wars, which were characterized by a strongly ‘either–or’ approach to matters of method. During this period, very many researchers were either quantitative or qualitative, and the idea of combining or mixing the two types of methods and data was not popular. In the 1990s, however, researchers began to see past the either–or thinking of the paradigm wars, and began to develop the groundwork for mixed methods designs. Since the turn of the century, there has been a growth of interest in mixed methods research, including the advocacy of mixed methods research as a separate design in its own right. There are now numerous indicators of the current interest in mixed methods research. These include the formation of a Special Interest Group within the American Educational Research Association, the publication of an increasing number of journal articles reporting mixed methods research, the launching in 2005 of the *Journal of Mixed Methods Research*, and the promotion of international meetings devoted to mixed methods research (Creswell and Plano Clark, 2007: 16–18).

This methodological history is conveniently summarized by describing:

- The dominance of quantitative methods as wave 1
- The emergence of qualitative methods as wave 2
- The growth of mixed methods as wave 3.
13.2 RATIONALE FOR MIXED METHODS

The fundamental rationale behind mixed methods research is that we can learn more about our research topic if we can combine the strengths of qualitative research with the strengths of quantitative research while compensating at the same time for the weaknesses of each method. This has been called the fundamental principle of mixed methods research (Johnson and Onwuegbuzie, 2004: 18):

*Combine the methods in a way that achieves complementary strengths and non-overlapping weaknesses.*

Once it is recognized that both quantitative and qualitative methods have their strengths and their weaknesses, it becomes easy to see the logic of this principle. These different strengths and weaknesses have been indicated in numerous places throughout this book. Thus, for example, quantitative research brings the strengths of conceptualizing variables, profiling dimensions, tracing trends and relationships, formalizing comparisons and using large and perhaps representative samples. On the other hand, qualitative research brings the strengths of sensitivity to meaning and to context, local groundedness, the in-depth study of smaller samples, and great methodological flexibility which enhances the ability to study process and change. Considerations such as these imply that qualitative methods can be strong in those areas where quantitative methods are weak, and similarly that quantitative methods can be strong in those areas where qualitative methods are weak. Combining the two methods therefore offers the possibility of combining these two sets of strengths, and compensating for the weaknesses. The Miles and Huberman comparison between variables and cases, shown later in this chapter, illustrates the same principle.

There is a strong logic to this underlying rationale. However, for mixed methods to develop and grow in popularity in education research required the field of research methods to move past the either–or methodological thinking of the paradigm wars period. In addition to acknowledgement and appreciation of the respective strengths and weaknesses of the two approaches, this development and growth also required:

- moving away from a preoccupation with apparently irreconcilable paradigms, and a willingness to embrace multiple paradigms;
- the subsequent emergence of pragmatism as the underlying philosophical approach, with stress on the idea that the methods used in research should be determined by the questions asked;
- appreciation of important similarities in the underlying logic of the qualitative and quantitative approaches, as different but potentially complementary forms of empirical inquiry.
Pragmatism is not the only philosophy or paradigm associated with mixed methods research, but it is the main one (Tashakkori and Teddlie, 2003b: 20–4; 2003c: 677–80). Pragmatism is a philosophical position with a substantial history (see, for example, Maxcy, 2003), and American philosophers such as Peirce, James, Dewey and George Herbert Mead were important in its early development. As such, it has many important features (Maxcy, 2003). But for present purposes, the essential idea of pragmatism is to reject the either–or choices and the metaphysical concepts associated with the paradigm wars, and to focus instead on ‘what works’ in getting research questions answered (Tashakkori and Teddlie, 2003b: 20–1; 2003c: 713). Two implications of this stand out.

The first is that the research question(s) is more important than, and logically prior to, either the method used or the paradigm underlying the method. The second is that specific decisions regarding the use of either qualitative methods, quantitative methods or mixed methods depend on the research question(s) being asked. These two implications are, of course, key aspects of the point of view about the logic of empirical research stressed earlier in this book, especially in Chapters 4 and 5. This point of view is summarized by saying that substantive issues come before methodological and paradigmatic issues. Detailed discussions of pragmatism in the context of mixed methods research can be found in Tashakkori and Teddlie (2003b) and in some of the chapters written by other contributors to the Handbook of Mixed Methods in Social and Behavioral Research (Tashakkori and Teddlie, 2003a).

With respect to the last of the three points shown above – about the important similarities in the qualitative and quantitative approaches – the first four main chapters of this book (and Chapters 4 and 5 in particular) have laid out the logic of empirical research. These chapters have shown how this logic applies to both qualitative and quantitative research, and in so doing they have pointed to numerous similarities in the two approaches. Thus, the same basic model underlies both approaches, and the same main headings of design, data collection and data analysis apply to both. The similar way both approaches move across differing levels of abstraction has also been noted in Chapters 9 and 12. And there are still other similarities and overlaps to those already noted. For example, quantitative research is sometimes thought to be more concerned with the deductive testing of hypotheses and theories, whereas qualitative research is more concerned with exploring a topic, and with inductively generating hypotheses and theories. However, while this is often true, those stereotypes can be overdone. There is, overall, a correlation between the research approach (quantitative or qualitative) and the research purpose (for example, theory testing or theory generating), but that correlation is neither perfect nor necessary. While quantitative research may be mostly used for testing theory, it can also be used for exploring an area and for generating
hypotheses and theory. Similarly, qualitative research can certainly be used for testing hypotheses and theories, even though it is the most favoured approach for theory generation. As Miles and Huberman (1994: 42) say: 'Both types of data can be productive for descriptive, reconnoitring, exploratory, inductive, opening up purposes. And both can be productive for explanatory, confirmatory, hypothesis-testing purposes'. We do not need to be restricted to stereotypes in our thinking about the purposes of the two approaches. Each approach can be used for various purposes.

Taking this point further, stereotyped distinctions between the two approaches can also be overdone. Hammersley (1992), in particular, argued some years ago that seven dichotomies typically used to differentiate qualitative and quantitative approaches are overdrawn. Five of the dichotomies he discusses bring together many of the points we have covered in previous chapters, and reflect some of the emphases of this book. They are:

• qualitative versus quantitative data
• the investigation of natural versus artificial settings
• a focus on meanings rather than behaviour
• an inductive versus a deductive approach
• the identification of cultural patterns as against seeking scientific laws.

For each of these, Hammersley argues that it is more a matter of a range of positions than a simple contrast, that a position on one does not necessarily imply a position on another, and that selection among these positions should depend more on the purposes and circumstances of the research than on philosophical considerations.

Each of these points (the similarity of logic, the overlap of purposes and the weakening of traditional dichotomies) blurs the sharpness of the qualitative–quantitative distinction, making the contrast between the two approaches less stark, and pointing to the possibility of combining them. That possibility is confirmed when we see variables as central in quantitative research and cases as central in qualitative research.

13.3 BASIC CHARACTERISTICS OF THE TWO APPROACHES: VARIABLES AND CASES

A good way to overview the central characteristics of the qualitative and quantitative approaches is to compare, as Huberman and Miles (1994: 435–36) do, variables and cases. It is also a good way to see the importance of the logic behind mixed methods.
### 13.3.1 A CRUCIAL DISTINCTION: VARIABLES AND CASES

Consider a typical study, one trying to predict the decision to attend college, with a sample of 300 adolescents and the following set of predictors: gender, socioeconomic status, parental expectations, school performance, peer support, and decision to attend college.

In a variable-oriented analysis, the predictor variables are intercorrelated and the key dependent variable, ‘decision to attend college’, is regressed on the six others. This might show us that deciding to attend college is mainly influenced by school performance, with additional influences from parents’ expectations and SES. We see how the variables as concepts are related, but we do not know the profile of any one individual.

In a case-oriented analysis, we would look more closely into a particular case, say, Case 005, who is female, middle-class, has parents with high expectations, and so on. These are, however, ‘thin’ measures. To do a genuine case analysis, we need to look at a full history of Case 005: Nynke van der Molen, whose mother trained as a social worker but is bitter over the fact that she never worked outside the home, and whose father wants Nynke to work in the family florist shop. Chronology is also important: two years ago, Nynke’s closest friend decided to go to college, just before Nynke began work in a stable and just before Nynke’s mother showed her her scrapbook from social work school. Nynke then decided to enrol in veterinary studies.

These and other data can be displayed in matrix form (see Miles and Huberman, 1994), where the flow and configuration of events and reactions leading to Nynke’s decision would come clear. It would also help to ‘incarnate’ what the five predictors look like singly and how they interact collectively. That, in turn, would surface recurrent patterns, ‘families’ or ‘clusters’ or cases with characteristic configurations.

As Ragin (1987) notes, such a case-oriented approach looks at each entity, then teases out configurations within each case and subjects them to comparative analysis. In these comparisons (of a smaller number of cases), underlying similarities and systematic associations are sought out with regard to the main outcome variable. From there, a more explanatory model can be explicated, at least for the cases under study. Variable-oriented analysis in quantitative research is good for finding probabilistic relationships among variables in a large population, but has difficulties with causal complexities, or dealing with subsamples. Case-oriented analysis in qualitative research is good at finding specific, concrete, historically grounded patterns common to small sets of cases, but its findings remain particularistic, although several case writers speciously claim greater generality.

The quantitative approach conceptualizes reality in terms of variables, and studies relationships between them. It rests on measurement, and therefore prestructures data, and usually research questions, conceptual frameworks and design as well. Samples are typically larger than in qualitative studies, and
generalization through sampling is usually important. It does not see context as central, typically stripping data from their context, and it has well-developed and codified methods for data analysis. Its methods in general are more unidimensional and less variable than qualitative methods. It is therefore more easily replicable.

On the other hand, the qualitative approach deals more with cases. It is sensitive to context and process, to lived experience and to local groundedness, and the researcher tries to get closer to what is being studied. It aims for in-depth and holistic understanding, in order to do justice to the complexity of social life. Samples are usually small, and its sampling is guided by theoretical rather than probabilistic considerations. Prestructuring of design and data is less common, and its methods are less formalized than those in the quantitative approach. They are also more multidimensional, more diverse and less replicable. It therefore has greater flexibility.

There are different strengths in each approach. Quantitative data enable standardized, objective comparisons to be made, and the measurements of quantitative research permit overall descriptions of situations or phenomena in a systematic and comparable way. This means we can sketch the contours or dimensions of these situations or phenomena. That is often what we want to do, either independently of deeper-level qualitative inquiry, or in conjunction with it. Procedures for the analysis of quantitative data, being well-developed and codified, bring objectivity to the research, in the sense that they increase the chances that the results of the analysis do not depend on the researcher doing the analysis. The quantitative approach means that certain types of important questions can be systematically answered, opening the way to the development of useful knowledge.

At the same time, there are important strengths in the qualitative approach. Qualitative methods are flexible, more so than quantitative methods. Therefore they can be used in a wider range of situations and for a wider range of purposes and research questions. They can also be more easily modified as a study progresses. Because of their great flexibility, they are well suited for studying naturally occurring real-life situations. Moreover, they accommodate the local groundedness of the things they study – specific cases embedded in their context. Qualitative methods are the best way we have of getting the insider’s perspective, the ‘actor’s definition of the situation’, the meanings people attach to things and events. This means they can be used to study the lived experience of people, including people’s meanings and purposes. Qualitative data have a holism and richness, and are well able to deal with the complexity of social phenomena. This is what is meant when qualitative researchers talk about data providing thick descriptions. Qualitative research, especially grounded theory, is well suited to investigating process.

A clear implication of this sort of comparison and analysis of strengths and weaknesses is that we cannot find out everything we might want to know using
only one approach, and that we can very often increase the scope, depth and power of our research by combining the two approaches – that is, by mixing the methods.

At this point, however, some complications arise. The key question now is: What does it mean to combine the two approaches, and how will it be done? Creswell and Plano Clark (2007: 79–84) identify three main dimensions in analysing this question:

The timing dimension – what will the timing of qualitative and quantitative methods be? In which order will the researcher collect and use the data? Will it be concurrent (both sets of data are collected at the same time) or sequential (one set is collected before the other)?

The weighting dimension – what will be the relative importance, weight or priority given to qualitative and quantitative methods and data in answering the study’s questions? The general possibilities are equal weighting to both approaches, or unequal weighting, with one approach carrying more weight.

The mixing dimension – how will qualitative and quantitative methods be mixed, and especially how will the two data sets be mixed? The possibilities here are that the two data sets can be merged, one can be embedded within the other, or they can be connected in some other way.

The different combinations of answers which are possible to these three questions (timing, weighting, mixing) lead naturally to the topic of mixed methods designs.

13.4 MIXED METHODS DESIGNS

Tashakorri and Teddlie (2003a) show the complexity of this topic by identifying nearly 40 different types of mixed methods designs in the literature, with terminology that varies between different writers adding a further layer of complication. In a major simplification and contribution, Creswell and Plano Clark (2007: 58–88) have devised a four-way classification of the main mixed methods designs. They point out that each main type has variants, and they also analyse the strengths and challenges in using each type of design. Drawing heavily on their work, what follows now is a brief description of the essential nature of each of the four main designs, and examples of each. In four appendices to their book, Creswell and Plano Clark reproduce four articles from research journals, with each article illustrating one of the main mixed methods designs. These articles are briefly summarized here. In addition, a hypothetical example from education research, on the topic of the job satisfaction of teachers, shows how each of the main mixed methods designs might be used.
13.4.1 TRIANGULATION DESIGN

The purpose of the triangulation design is to obtain complementary quantitative and qualitative data on the same topic, bringing together the different strengths of the two methods. It is a one-phase design, where the two types of data are collected in the same time frame, and are given equal weight. Typically, it involves the concurrent but separate collection and analysis of the two types of data, which are then merged, perhaps through data transformation, or perhaps at the interpretation-of-results stage (Creswell and Plano Clark, 2007: 62–4).

The published example of this design (Jenkins, 2001; Creswell and Plano Clark, 2007: 194–203) concerns rural high school students’ perceptions of drug resistance difficulties. Jenkins analysed qualitative data collected from focus groups, and quantitative data collected using a semi-structured questionnaire, and merged the two data sets into one overall interpretation.

13.4.2 EMBEDDED DESIGN

In the embedded design, one data set plays a supportive secondary role in a study based primarily on the other data type. This design is based on the ideas that a single data set is not sufficient, that different questions need to be answered, and that different types of questions require different types of data to answer them (Creswell and Plano Clark, 2007: 67–71). The word ‘embedded’ is used because one type of data is embedded within a design framed by the other type. The two sets of data may be collected at the same time, or sequentially – that is, this design may be one-phase or two-phase.

In an example of the embedded design, Rogers et al. (2003; see Creswell and Plano Clark, 2007: 204–15) used qualitative interviews with a group of patients involved in a quantitative experimental study to compare the effectiveness of different interventions in managing anti-psychotic medication.

13.4.3 EXPLANATORY DESIGN

This is a two-phase mixed methods design, where the researcher uses qualitative data to help explain, or to build upon, initial quantitative results. The first phase is quantitative, the second phase is qualitative. This design might be used where qualitative data are needed to explain significant (or non-significant) results, outlier results or surprising results (Creswell and Plano Clark, 2007: 71–2). It might also be used where first-phase quantitative results guide the selection of subsamples for follow-up in-depth qualitative investigation in the second phase. This last type of design in particular is important, with wide potential applicability in education research.

As a published example, Aldridge, Fraser and Huang (1999; see Creswell and Plano Clark, 2007: 216–38) used a questionnaire assessing perceptions of the classroom learning environment to demonstrate differences between
Taiwanese and Australian classroom environments. This provided the starting point for the use of qualitative methods (observations, interviews and narratives) to gain a more in-depth understanding of classroom environments in each country.

13.4.4 EXPLORATORY DESIGN

In this two-phase mixed methods design, qualitative data are collected in the first phase, and quantitative data in the second. (With this timing, it is the reverse of the explanatory design.) Its general logic is that quantitative investigation is inappropriate until exploratory qualitative methods have built a better foundation of understanding. Examples would be where the researcher needs to develop a measuring instrument, but needs a deeper understanding of the phenomenon in question; or where it is important to explore some phenomenon in depth before measuring its distribution and prevalence (Creswell and Plano Clark, 2007: 75).

In the published example of this type of design, Myers and Oetzel (2003; see Creswell and Plano Clark, 2007: 239–55) used in-depth qualitative methods with a small sample of newly appointed employees to identify six different dimensions of organizational assimilation. Based on these dimensions, they developed an instrument for use in a quantitative survey of a much larger sample of newcomers.

In addition to these examples, Creswell and Plano Clark (2007: 171–2) give other examples of different types of mixed methods designs reported in articles in research journals across different social science areas. Focusing again on education research, and as a further example, consider the planning of a piece of mixed methods research on the general topic of the job satisfaction of teachers:

A triangulation design might plan to conduct a survey using a semi-structured questionnaire with one sample of teachers. At the same time, focus groups and individual interviews might be used with another sample of teachers. Both methods would focus on the different aspects of job satisfaction for teachers. The two types of data would then be brought together during the analysis.

An embedded design might collect qualitative data (for example, through interviews and narratives) as part of a quantitative correlational study, which aims to trace out relationships between independent variables (gender, qualifications, years of teaching experience, subject teaching area, size of school, etc.) and job satisfaction as the dependent variable. In this case, the qualitative data help to reveal processes or mechanisms by which the independent–dependent variable relationships come about.

An explanatory design might first conduct a large-scale quantitative survey focusing on both levels of satisfaction and factors affecting those levels. A second-stage qualitative study might deliberately select subsamples of teachers of differing satisfaction levels for in-depth interviewing, in order to gain a fuller understanding of both the nature of job satisfaction and the way different factors influence it.
An exploratory design might aim to develop (or perhaps to refine, extend or improve) an instrument to measure the job satisfaction of teachers. Its first phase would be qualitative – perhaps using both focus groups and individual interviews – to probe fully the nature and dimensions of satisfaction. Its second phase would then be quantitative – developing an instrument based on this work, for use in large-scale quantitative surveys.

Creswell and Plano Clark’s four-way classification of the main mixed methods designs gives a very useful framework for thinking about the general possibilities for mixing qualitative and quantitative data. It is based on the three dimensions implicit in the question of how to combine the two approaches – timing, weighting, mixing. At the same time, as the authors stress, each main design has variations.

As in all research, the choice of a design in a mixed methods study should be governed by the inherent logic of the research project, by the way the research problem is framed and set up for research, and especially by the way its research questions are asked and phrased. In mixed methods research, as elsewhere, question–method fit is crucial, and here, as elsewhere, the best way to obtain this fit is to give question development the logical priority, while acknowledging the reciprocal influence of method on question formulation. This means that, in the hypothetical job satisfaction research example shown above, each of the four designs briefly described would need to be preceded by, and closely connected to, carefully developed and appropriate research questions.

Clearly, mixed methods research is a growing field, and this growth can be expected to continue. There are now substantial bodies both of mixed methods methodological literature, and of literature reporting mixed methods studies in the research journals. And special mention should be made again of the Journal of Mixed Methods Research, whose policy is to publish both types of literature. Some extracts from this journal’s information page are shown in Box 13.1. These bodies of literature should continue to grow with the increasing popularity of mixed methods research. It follows that education researchers today should no longer feel uneasy about planning and proposing mixed methods studies.

Mixed methods research is defined as research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or programme of inquiry. The Journal of Mixed Methods Research (JMMR) is an innovative, quarterly, international publication that focuses on empirical, methodological, and theoretical articles about mixed methods research across the social, behavioural, health and human sciences.
Each issue explores:

- Original mixed methods research that fits the definition of mixed methods research; explicitly integrates the quantitative and qualitative aspects of the study; adds to the literature on mixed methods research; and makes a contribution to a substantive area in the scholar’s field of inquiry; and
- Methodological/theoretical topics that advance knowledge about mixed methods research, such as:
  - Type of research/evaluation questions
  - Types of designs
  - Sampling and/or measurement procedures
  - Approaches to data analysis
  - Validity
  - Software applications
  - Paradigm stance
  - Writing structures
  - The value and use of mixed methods research

Not only does JMMR offer ‘the best and brightest’ in original mixed methods research and methodological/theoretical discussions, it also includes insightful reflections by the distinguished editor on important issues in mixed methods research and extensive book and software reviews with practical applications.

The *Journal of Mixed Methods Research*’s scope includes:

- Developing and defining a global terminology and nomenclature for mixed methods research
- Delineating where mixed methods research may be used most effectively
- Creating the paradigmatic and philosophical foundations for mixed methods research
- Illuminating design and procedure issues
- Determining the logistics of conducting mixed methods research

The *Journal of Mixed Methods Research* is a premiere outlet for groundbreaking and seminal work in the field of mixed methods research, as well as a primary forum for the growing community of international and multidisciplinary scholars of mixed methods research.

This is not to say that researchers should feel compelled to use mixed methods, however, and it is to be hoped that another unfortunate research methodology fad does not develop around mixed methods. The key, as always, is the logic of the research proposed, and ensuring that methods chosen are appropriate to the questions asked. In developing a mixed methods proposal, this logic begins with how the research topic and problem are introduced, and
flows on to how the research questions are phrased. If these things are done successfully, the logic of the proposal leads naturally to mixed methods. In other words, the mixed methods logic runs all the way through the proposal. In this respect, mixed methods research is no different from any other type of empirical research.

Mixed methods research requires specific skills, and it is obviously necessary for the mixed methods researcher to have some background and experience in both quantitative and qualitative research. In addition, the mixed methods researcher needs to have the time and resources to conduct the project successfully. Mixed methods projects are typically more complex in planning and in arranging both data collection and data analysis, although this depends on the specific mixed methods design chosen. And while mixed methods proposals and theses can be more complex to write, they are made easier with a clear and continuous logic, as stressed above.

As an example of this last point, the advice of Creswell and Plano Clark (2007: 86) to write a short paragraph in the research proposal describing a mixed methods study’s strategy and design is reproduced here, and is strongly endorsed:

Because many researchers and reviewers are currently unfamiliar with the different types of mixed methods designs, it is important to include an overview paragraph that introduces the design when writing about a study in proposals or research reports. This overview paragraph generally is placed at the start of the methods discussion and should address four topics. First, identify the type of mixed methods design and variant model, if appropriate. Next, give the defining characteristics of this design, including its timing weighting and mixing decisions. Third, state the overall purpose or rationale for using this design for the study. Finally, include references to the mixed methods literature on this design.

They then provide this actual research example (Ivankova et al., 2006: 5; Creswell and Plano Clark, 2007: 87) to illustrate the points made in the above quotation:

The mixed methods sequential explanatory design consists of two distinct phases: quantitative followed by qualitative (Creswell, Plano Clark et al., 2003). In this design, a researcher first collects and analyses the quantitative (numeric) data. The qualitative (text) data are collected and analysed second in the sequence and help explain, or elaborate on, the quantitative results obtained in the first phase. The second, qualitative, phase builds on the first, quantitative, phase, and the two phases are connected in the intermediate stage in the study. The rationale for this approach is that the quantitative data and their subsequent analysis provide a general understanding of the research problem. The qualitative data and their analysis refine and explain those statistical results by exploring participants’ views in more depth. (Rossman and Wilson, 1985; Tashakkori and Teddlie, 1998; Creswell, 2004)
This is a very good example of the sort of writing that can make a mixed methods research proposal convincing. It is also very good general advice. It is an excellent idea for all proposals – quantitative, qualitative or mixed methods – to include a brief, clear and concise overview paragraph such as this, describing the methodological strategy behind the research, and the reasons for it. This is an example of the point stressed earlier in Chapter 7 (qualitative research design) and Chapter 10 (quantitative research design), that research design is driven by strategy.

It is not my purpose in this book to encourage any particular kind of research approach, whether quantitative, qualitative or mixed methods. Rather, I seek to encourage high quality empirical research in education, whatever the approach. But now that the heated ideological disputes of the paradigm wars, with their associated either–or thinking, have passed, we can see clearly how many topics require both quantitative and qualitative methods and data if we are to develop a full understanding of them. This point alone should ensure the continued growth of mixed methods. After all, we constantly – and unproblematically – combine quantitative and qualitative data in our personal and professional lives. There seems no reason why the research world should be any different.

**CHAPTER SUMMARY**

Mixed methods research: empirical research that collects, analyses and combines qualitative and quantitative data

Fundamental principle of mixed methods research: combine the methods in a way that achieves complementary strengths and non-overlapping weaknesses

Pragmatism: focus on what works; research questions logically prior to methods or paradigms; methods used depend on questions asked; substantive issues come before methodological and paradigmatic issues

Similarities between qualitative and quantitative research

Combining the approaches: timing – order in which methods used; weighting – relative importance of each; mixing – how methods and data are mixed

**FURTHER READING**


EXERCISES AND STUDY QUESTIONS

1. Define mixed methods research, and briefly explain why and how it has emerged as a ‘third wave’ in education research methodology.

2. What is the fundamental principle of mixed methods research and what is its logical basis?

3. List some of the main strengths and weaknesses of (a) qualitative research and (b) quantitative research.

4. What is the essential idea of pragmatism, and what are its implications for research questions and methods?

5. In combining qualitative and quantitative approaches, what three dimensions need to be considered?

6. Briefly describe each of the four main mixed methods designs – triangulation, embedded, explanatory, exploratory.

7. Sketch the research questions and design for an explanatory design with the topic of student alienation from school. (Design Stage 1 as a quantitative survey with a large sample, and Stage 2 as follow-up in-depth interviews with a deliberately selected subsample from Stage 1.)
8 Study the two strategy-design statements reproduced from the book by Creswell and Plano Clark at the end of section 13.4 p. 300. Construct such a statement for the study you sketched in question 7.

NOTE

1 A summary of the strengths and weaknesses of the two approaches is given by Bryman (1988: 94). A summary of the criticisms and weaknesses of the quantitative approach (which they call the ‘received view’) is given in Guba and Lincoln (1994: 106–7). They see five main internal criticisms: context stripping, exclusion of meaning and purpose, grand theories not fitting local contexts, inapplicability of general data to individual cases, and excluding discovery. To these we could add simplification and reductionism. They also see four main external criticisms: the theory-ladenness of facts, the under-determination of theory, the value-ladenness of facts, and the interaction between the researcher and researched.