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Mixed Methods in Evaluation: History and Progress

A range of analytic methods is needed, and often several methods—including quantitative and qualitative approaches—should be used simultaneously. (American Evaluation Association, 2013, p. 6)

Sometimes a single method is not sufficient to accurately measure an activity or outcome because the thing being measured is complex and/or the data method/source does not yield data reliable or accurate enough. Employing multiple methods (sometimes called “triangulation”) helps increase the accuracy of the measurement and the certainty of your conclusions when the various methods yield similar results. (U.S. Department of Health and Human Services Centers for Disease Control and Prevention, 2011, p. 63)

In This Chapter

- The scholarship behind methodological choices
- Definitions of mixed methods in evaluation

- Increased interest in and demand for mixed methods evaluations
 - Overview of mixed methods frameworks and philosophical assumptions
 - Criteria for judging quality of mixed methods studies
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● HISTORY OF EVALUATION AND MIXED METHODS

The beginning of evaluation as a practice, not as a profession, is as old as the first human who decided what was safe to eat and what was not. In the United States, the roots of professional evaluation can be traced back to the 1800s when the government required inspectors to evaluate publicly funded programs such as prisons, hospitals, schools, and orphanages (Stufflebeam, Madaus, & Kellaghan, 2000). However, a formal recognition of the profession of evaluation in the United States is generally acknowledged to have occurred in the 1960s with the mandate for evaluation of programs funded under the Great Society initiatives and the War on Poverty (e.g., the Manpower Development and Training Act, Head Start for Early Childhood Services, and the Elementary and Secondary Education Act) (Shadish & Luellen, 2005). Evaluation in Europe formally emerged in the 1970s and was reinforced by the establishment of the European Structural Fund in 2004. In the rest of North America, South America, Africa, Asia, Australia, and island nations, evaluation has become more prominent over the past decades because of demands by domestic and international agencies, governments, foundations, and businesses. Throughout this long history, the evaluation world has been characterized by the use of many different methods. In my lifetime, I witnessed the early years of evaluation when quantitative methods dominated, followed by a period in which qualitative methods were contested and then came into acceptance, and, at first in unofficial ways and then more formally, the emergence of mixed methods.

The history of the use of mixed methods can also be traced back to the 1800s. Hesse-Biber (2010) reported that mixed methods, that is, the use of both quantitative and qualitative techniques, were used in the 1850s in studies of poverty in families in Europe (Le Play, 1855). W. E. B. DuBois (1899) argued for the use of both statistical and observational data; he applied this approach in his landmark study *The Philadelphia Negro*. Campbell and Fiske (1959) contributed to mixed methods with their multitrait, multimethod matrix that recommended the use of several methods (some quantitative, some qualitative) to measure each of several traits in order to strengthen the

validity of research conclusions. “Many evaluators intuitively came to the conclusion that evaluations on complex social programs could be enhanced by the use of multiple methods; hence the combination of both quantitative and qualitative data in the same study is nothing new” (Mertens & Hesse-Biber, 2013, p. 1). Despite evidence of the use of both quantitative and qualitative methods in the past, it was only in the late 1980s and early 1990s that mixed methods research was recognized as a “distinct and self-conscious strategy” with attention being given to how to effectively combine these approaches (Maxwell, 2015, p. 1).

SCOPE OF THIS BOOK ●

Formal recognition of mixed methods as an important area for discussion in the evaluation community was influenced by Greene and Caracelli’s (1997) publication in a volume of *New Directions for Evaluation* on that topic that discussed the role mixed methods approaches can play in evaluation. This volume began an important discussion that is expanded on in this book, the purpose of which is to elucidate mixed methods as a distinct and self-conscious strategy in evaluation to bring greater understanding to what it means to mix methods in order to strengthen the credibility of evaluation findings. Rather than covering all aspects of mixed methods in evaluation, this book focuses on the variations of mixed methods designs and their implications for data collection and use. Evaluators are asked to evaluate many things, for example, programs, projects, policies, needs, contexts, public relations campaigns, services, organizations, and systems; evaluators use the term **evaluand** to refer to the object of the evaluation. This book explores the applicability of the use of mixed methods for this full range of evaluands.

DIFFERENTIATING MIXED METHODS RESEARCH AND MIXED METHODS EVALUATION ●

Given the youthful status of discussions about the meaning of mixed methods, it should come as no surprise that there are differences of opinion on the definition of mixed methods. For the moment, a generic definition of mixed methods research presented by Creswell and Plano Clark (2007) can be used as a starting point for discussions about the meaning of mixed methods: “MM research is a

research design with philosophical assumptions as well as methods of inquiry. . . . 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” (p. 5). Johnson, Onwuegbuzie, and Turner (2007) offer the following definition of mixed methods:

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 understandings and corroboration. (p. 123)

The key characteristics present in most definitions of mixed methods research are the inclusion of both quantitative and qualitative strategies at different levels of the study and the integration of thinking resulting from the use of both types of strategies.

Whereas research and evaluation share much of the same territory in terms of methods of inquiry, the purpose of the inquiry and the political context of evaluation stand out as important differentiating characteristics between research and evaluation (Mathison, 2014). Evaluations are generally conducted for the purpose of informing decision making about the value, merit, or worth of an evaluand. Evaluations are conducted in contexts of limited resources and so involve competing value systems that are political in nature; hence, evaluators must be attentive to the different perspectives and values in their relevant constituencies.

Stakeholders are people who have a stake in the evaluation; they can be influenced positively or negatively by the evaluation process and findings.

Given the overlap between research and evaluation, it is no surprise that definitions of mixed methods evaluation borrow many of the concepts from the mixed methods research community and extend the definitions to include the purpose of evaluations and the political context in which evaluation resides (Mertens & Tarsilla, 2015).

Mixed methods evaluation includes the use of

both quantitative and qualitative data collection and data analysis techniques to answer a particular question or set of questions in evaluations. It is important to understand that mixed

methods is not just about (mixing and combining) methods. The use of any given method or set of methods in an evaluation is also tightly linked to specific epistemologies, methodologies (theoretical perspectives), and axiological assumptions, as well as being connected to particular stakeholder perspectives (Giddings, 2006; Greene, 2007; Hesse-Biber, 2010). (cited in Mertens & Hesse-Biber, 2013, pp. 5–6)

This definition of mixed methods in evaluation acknowledges the grounding of evaluation questions in specific philosophical assumptions to guide thinking about ethical practice, the nature of knowledge, and the nature of reality. Evaluators function in a world with multiple paradigms associated with different philosophical assumptions. These assumptions lead to different stances in terms of methodologies, for example,

those methodologies that hold up the importance of studying the “lived experience” of individuals (interpretive methodologies); those methodologies that privilege the importance of hypothesis testing and causality as the most important goal of social inquiry (positivist and post-positivist methodologies); those methodologies that stress issues of power and control and social justice (transformative, feminist, and critical methodologies). (Mertens & Hesse-Biber, 2013, p. 6)

Mixed methods can be used within any of these methodological frameworks. The way they are used will be influenced by the assumptions that characterize the evaluator’s methodological stance. Further discussion of the different paradigms functioning in the evaluation world and the implications for the use of mixed methods are discussed in a subsequent section of this chapter.

INCREASED INTEREST IN AND DEMAND FOR MIXED METHODS EVALUATIONS

Given the use of mixed methods over such a prolonged time, what rationale can there be for the growth of professional interest in and literature on this topic in evaluation? As noted previously, it is only recently that mixed methods has become a “distinct and self-conscious strategy” (Maxwell, 2015, p. 1). The increased interest in and demand for mixed methods in evaluations can be illustrated by the rapid growth in professional

developments on the topic, as well as by growing awareness in the evaluation community of the need to address issues of complexity.

Professional Developments: Publications and Organizations

Important strides were made in the publication of books and journals on the topic of mixed methods over the last decades. In the same year that Greene and Caracelli (1997) published their *New Directions for Evaluation* on mixed methods, the National Science Foundation published the *User-Friendly Handbook for Mixed Methods Evaluation* (Frechtling & Sharp, 1997). A first edition of the *Handbook of Mixed Methods in Social and Behavioral Research* was published in 2003, with a second edition in 2010 (Tashakkori & Teddlie). A second *New Directions for Evaluation* was published in 2013 on increasing the credibility of evidence in evaluation through the use of mixed methods (Mertens & Hesse-Biber, 2013). The peer-reviewed journal *Journal of Mixed Methods Research* was launched in 2007. Oxford University Press also published a handbook on mixed methods edited by Hesse-Biber and Johnson (2015).

Developments also occurred in organizations related to mixed methods. For example, both the American Educational Research Association and the American Evaluation Association established special/topical interest groups on mixed methods in 2009 and 2010, respectively. The American Evaluation Association (2013) prepared *An Evaluation Roadmap for a More Effective Government* that included the sentence that opened this chapter. The purpose of the roadmap was to provide guidance for the federal government on how to improve effectiveness and efficiency of services by outlining steps to strengthen the practice of evaluation throughout the life cycle of programs. The roadmap emphasizes the importance of using more than one method. In 2013, an international organization, the Mixed Methods International Research Association (MMIRA), was formally established. Annual conferences have been held since 2005 in the United Kingdom and the United States (with regional conference being held on other continents) that focus on mixed methods and provide the network of interested researchers and evaluators that created the MMIRA.

- **COMPLEXITY IN EVALUATION CONTEXTS AND THE ROLE OF MIXED METHODS**

As noted earlier, evaluators have intuitively used mixed methods, possibly because they sensed that the programs, policies, products,

systems, and organizations they were asked to evaluate were complex and that use of a single approach or type of data collection would not capture that complexity. The concept of “wicked problems” was introduced by urban planners Rittel and Webber in 1973, a concept that has relevance for evaluators because of the complex contexts in which they work. This description of wicked problems provides a rationale for why evaluators are interested in this concept and why this interest is associated with increased use of mixed methods:

Wicked problems [are] those that involve multiple interacting systems, are replete with social and institutional uncertainties, and for which only imperfect knowledge about their nature and solutions exist. Hence, they [Rittel and Webber] argue that there are no completely right solutions to this type of problem; only better and worse solutions that are in part determined by how the problem is understood. Levin, Cashore, Bernstein, and Auld (2012) added the concept of super wicked problems distinguished by these additional characteristics: problems for which time is running out, there is no central authority, the persons trying to solve the problem are also causing it, and policies to address them discount the future. Methodologically, Camillus (2008) claims that wicked problems cannot be resolved by traditional processes of analyzing vast amounts of data or more sophisticated statistical analyses. Examples of wicked problems include climate change, terrorism and conflict, social inequities, health care, educational access, and poverty. (Mertens, 2015a, p. 3)

Mixed methods are particularly appropriate for addressing these wicked problems and other problems that are couched in complex contexts because they allow evaluators to have a common language to discuss methodology with colleagues, to address the needs of diverse stakeholders who can be accommodated by using a variety of methods, and to provide information for policymakers about the nature of problems and solutions in a more nuanced way (Gomez, 2014). Thinking from a mixed methods mind-set opens the door to asking more complex evaluation questions, such as these:

- How can we understand the context and experiences of diverse communities in culturally appropriate ways, especially for those who are displaced or from low-income households?

- How can strategies be developed and implemented that address the human and environmental implications of this wicked problem?
- How can mixed methods be used to capture the complexities inherent in moving forward to a more resilient and healthy path of growth and development?" (Mertens, 2015a, p. 4)

Recent advances in integrating complexity theory in evaluation have provided the scholarship necessary to examine how evaluators can systematically address issues of complexity (Bamberger, Vaessen, & Raimondo, 2016; Institute of Medicine of the National Academies, 2014; Patton, 2011). However, I want to start with a caveat: Not all evaluations take place in complex contexts, and not all evaluations require the use of mixed methods. Patton (2011) distinguished between three types of evaluation situations: simple, complicated, and complex (see Table 1.1). This distinction should not be read as a guide to decisions about whether to use mixed methods. Mixed methods can be useful in many contexts, but I would argue that the more complex the context, the greater likelihood that mixed methods will be a wise choice for the evaluator.

Patton (2011) argues that the distinctions presented in Table 1.1 are important because evaluators are often called on to conduct evaluations

Table 1.1 Levels of Complexity

Level of Complexity	Characteristics		Example
	Certainty of solution	Agreement on solution	
Simple	Yes	Yes	Seatbelts reduce traffic fatalities.
Complicated	Either a high degree of uncertainty OR a high degree of disagreement		Prevention of teenage pregnancy; solutions are certain (abstinence, birth control, sterilization), but disagreements are high about implications of solutions.
Complex	No	No	Climate change, prevention of violence

Note: Table constructed by Mertens for this text based on Patton (2011).

that support cause-and-effect claims. These claims are easier to support in simple contexts, less so in complicated contexts, and incredibly difficult in complex contexts. Thus, the degree of complexity does have implications for the type of evaluations conducted.

In simple contexts, evaluators can ask questions such as Did the intervention work? or What is the evidence that the intervention caused the outcomes? It might be possible to use a single method to obtain answers to these questions. However, as intimated in the example of a simple context in Table 1.1, using a single method might not obtain insights into human factors such as resistance to participation in a recommended (or even legally required) practice. In complicated contexts, the use of mixed methods might be more often recognized as being important. Extending the example of preventing teenage pregnancy included in Table 1.1, the technical solutions are listed. It could be possible to quantify the increased use of birth control and correlate it with a decrease in teenage pregnancy. However, qualitative data might also be necessary to identify the different value systems that are relevant when addressing this problem, the perspectives about teenage pregnancy, and the need for a more comprehensive program approach to engage young women (and men) in alternative activities (other than having unprotected sex). In the example of prevention of violence, mixed methods are needed to understand the context in which the violence occurs, the cultural and political factors supporting the violence, the options viewed as acceptable to communities to prevent violence, and the willingness of community members to engage in the identified activities. With problems that are complex, like preventing violence, there are no clear solutions, hence, methodologies need to be used that allow for ongoing data gathering and use to enhance the probability of success.

Raimondo, Bamberger, and Vaessen (2016) add to the implications of complexity theory for the use of mixed methods in evaluation by their identification of five sources of complexity that evaluators encounter:

1. *Context*. Evaluations are conducted in real-life contexts with “historical economic, political, sociocultural, administrative, ecological, and legal contextual factors that influence the course of an intervention” (p. xxxvii). The systems are interconnected and can change at different rates.
2. *Evaluand*. What is the intervention, and what is it trying to achieve? Interventions can vary in terms of their origins, size, scope, design, and levels they are expected to influence.

3. *Human factor.* Many actors are involved in most interventions; the actors may come with differences in values and assumptions about the nature of the problem and the options for solutions. Mixed methods use allows for the documentation of the influence of human factors and for the basis for addressing values and assumptions with data-based evidence.
4. *Making causal claims.* Evaluators are often expected to answer a question: Did it work? As indicated in the previous section, cause and effect is not necessarily a linear process because of the contextual and human factors just specified. It is possible that the original conceptualization of the problem and solutions will change radically as a response to improved understanding made possible by mixed methods evaluations.
5. *Constraints and opportunities.* Evaluators always work with constraints and opportunities in many forms, such as time and resources, access to stakeholders, and acceptance of evaluation as a part of organizational learning. Mixed methods can improve responsiveness to information needs by various stakeholder groups in ways that they consider to be appropriate.

The importance of understanding how to use mixed methods in evaluation in the context of complexity is clearly stated by Raimondo et al. (2016):

No single evaluation method is able to fully address all dimensions of complexity. Consequently, it is almost always necessary to use a mixed methods design that combines the strengths of a number of so-called quantitative and qualitative methods. Moreover, while no established evaluation approach is fully equipped on its own to deal with complexity, existing established approaches can be the building blocks for evaluation designs tackling complexity. In many cases, these designs may need to be enhanced with more novel approaches for data collection and analysis. (p. xxxix)

Complexity Theory

What does complexity theory tell us that is useful in this discussion of mixed methods? Patton (2011) identified six concepts derived from complexity theory with relevance for evaluators and the use of mixed

methods. Although he discusses these concepts in the context of development evaluation, they have broader applicability in our discussion of mixed methods in evaluation.

- The first concept is nonlinearity, that is, change is not necessarily a linear process; unanticipated, critical events can be the trigger for observed changes. The use of mixed methods can provide insights from quantitative indicators that create a qualitative shift in an organization, program, or system.
- The second concept is emergence, that is, individuals may act alone or in small groups, but interaction among individuals and groups results in the emergence of new conditions that can go beyond what was intended. Mixed methods can document the formation and dissolution of groups and the emergence of understandings related to problems, processes, and outcomes.
- The third concept is adaptive, that is, through interactions, individuals and organizations adapt to exposure of new knowledge, practices, relationships, resources, or other elements they encounter. Mixed methods can be used to identify the new elements as well as to document the adaptive (or maladaptive) response to these elements.
- The fourth concept is uncertainty, that is, particularly with complex contexts, uncertainty exists with regard to the nature of the problem(s), potential solutions, and responsiveness of stakeholders to these conditions. Mixed methods allow for the collection of data in ways that make visible areas of uncertainty and differences in values and perceptions that can lead to increased insights needed for progress.
- The fifth concept is dynamical, that is, systems are dynamic in the sense that the various parts change in interaction with each other; these changes can be rapid in nature. Mixed methods allow for inclusion of approaches that can provide rapid feedback when necessary and that can track changes and their implications.
- The sixth concept is coevolutionary, that is, active agents (organization and evaluator) evolve together; the evaluation is not seen as separate and apart from the innovation, rather, the evaluation evolves as the innovation evolves. Mixed methods

can provide the qualitative and quantitative data to track the evolutionary process, as well as the use of the evaluation in this process.

Based on the advances in understandings of wicked problems and complexity theory, agencies that fund evaluations are increasing their support for mixed methods evaluations. For example, the Office of Behavioral and Social Science Research of the National Institutes of Health supports the use of mixed methods and recognizes that researchers and evaluators need specific guidance in the preparation of proposals that use mixed methods. Their interest in this topic was operationalized by the preparation of a guide to best practices in the use of mixed methods in the social sciences (Creswell, Klassen, Plano Clark, & Smith, 2011).

Funding agencies' interest in mixed methods also emanates from a sense of frustration that interventions, in many cases, do not have the desired effects; positive and negative unintended consequences are missed; or the data available are not sufficient to support claims of effectiveness (Bamberger, Tarsilla, & Hesse-Biber, 2016). With an increasingly competitive funding climate, evaluators are motivated to propose studies that are methodologically innovative, making mixed methods an apt choice. However, simply including both quantitative and qualitative data collection strategies does not a mixed methods study make. Hence, the need to explore developments in the understanding of how to design mixed methods in complex contexts for evaluators.

● **CONCEPTUAL FRAMEWORK: PARADIGMS AND BRANCHES OF EVALUATION**

You might think that an evaluation begins when an evaluand is identified, but multiple factors influence the conceptualization of the object of the evaluation. Two critical factors are the political context in which evaluators operate and evaluators' philosophical assumptions that guide their thinking. It has long been acknowledged that evaluation exists in a political context by virtue of the need to appropriately identify problems and solutions in a context of resource scarcity. The politics of evaluation are complicated by the presence of diverse stakeholders. Recall that having multiple stakeholders with different information needs, power positions, and backgrounds is often why evaluators choose to use mixed methods. The second factor, which

is now discussed at some length, is the philosophical framework (or paradigm) that constitutes an evaluator's worldview.

PHILOSOPHICAL FRAMES FOR MIXED METHODS EVALUATION ●

As mentioned previously, the evaluation community enjoys (or suffers from, depending on who you ask) a plethora of **paradigms**, that is, a set of philosophical assumptions commensurate with each other that guide thinking and decision making in evaluation work. Thomas Kuhn (1962) published an influential book, *The Structure of Scientific Revolution*,¹ in which he used the concept of paradigm shifts to describe how changing assumptions lead to decisions about the appropriateness of specific research methods. Guba and Lincoln (1989, 2005) adapted the concept of paradigms and extended their meaning to include four sets of philosophical assumptions that characterize a person's worldview. The four sets of assumptions:

- Axiology—the nature of ethics and values
- Ontology—the nature of reality
- Epistemology—the nature of knowledge and the relationship between the evaluator and stakeholders
- Methodology—the nature of systematic inquiry

Three of the paradigms Guba and Lincoln identified are present in the evaluation world: positivism/postpositivism, constructivism, and pragmatism. Mertens (2015b) added a fourth paradigm, that is, transformative, to provide a framework for evaluations that explicitly address issues of social justice and human rights.² The assumptions of these paradigms are briefly displayed in Table 1.2. Dialectical pluralism was put forth by Greene and Hall (2010) and Johnson and Stefurak (2013) as a metaparadigmatic stance that allows for dialogue across paradigms in mixed methods studies. These four paradigms and dialectical pluralism provide the framing for the content of each

¹Personal confession: I read Kuhn's book when I was an undergraduate; it was my gateway into the philosophy of science.

²Some Indigenous authors have proposed a fifth paradigm: Indigenous paradigm (Chilisa, 2012; Cram, in press a; Cram & Phillips, 2012; S. Wilson, 2008). I include examples of mixed methods designs situated in the Indigenous paradigm in Chapter 6.

chapter in this book. The chapters are organized by type of evaluations typically conducted. Within each chapter, guidelines and examples illustrate the meaning and use of mixed methods for evaluators who identify primarily with one of the paradigms or with dialectical pluralism as a philosophical stance.

I base my argument for the usefulness of paradigms as a conceptual framing for understanding mixed methods and the different ways they are used in the evaluation field on an observation made by Shadish (1998). He noted that many of the fundamental arguments about appropriateness of methods are not really about methods. Rather, most debates in evaluation are “about epistemology and ontology, about what assumptions we make when we construct knowledge, about the nature of many fundamental concepts that we use in our work like causation, generalization and truth” (p. 3). Mathison (2014) adds: “The inquirers’ role in both evaluation and research is dependent on epistemological assumptions and the particular skills most central to a particular paradigm” (p. 44).

- **CONNECTING PARADIGMS WITH THE FIELD OF EVALUATION**

Alkin’s (2013) work on theoretical lenses in evaluation is a significant contribution toward understanding the different positions from which evaluators conduct their work. In this text, I extend their initial work in this area to make an explicit connection between philosophical paradigms and evaluation theories. They organized evaluation theories into three branches of a metaphorical tree, labeled Methods, Use, and Values. Mertens and Wilson (2012) added a fourth branch: Social Justice. Theoretical approaches and evaluators appeared on the branches of the Christie and Alkin (2013) tree in alignment with their emphasis of different values and approaches.

The Methods branch represents the positivist and postpositivist paradigm and contains those evaluators who emphasize the use of research methods in the form of techniques used to conduct the evaluations. Christie and Alkin (2013) note that “applied research depends on well-designed experimental studies and other controls” (p. 18). The Methods branch is not limited to evaluators who advocate for the use of randomized controlled trials (RCTs); however, it is on this branch that evaluators are found who place priority on the use of RCTs as the most desirable method with sufficient rigor to achieve credible results (Mertens & Tarsilla, 2015; White, 2013b).

Table 1.2 Philosophical Assumptions Associated With Major Paradigms

Basic Beliefs	Postpositivism	Constructivism	Transformative	Pragmatic
Axiology (nature of ethical behavior)	Respect privacy; informed consent; minimize harm (beneficence); justice/equal opportunity	Balanced representation of views; raise participants' awareness; community rapport	Respect for cultural norms; beneficence is defined in terms of the promotion of human rights and increase in social justice; reciprocity	Gain knowledge in pursuit of desired ends as influenced by the researcher's values and politics
Ontology (nature of reality)	One reality, knowable within a specified level of probability	Multiple, socially constructed realities	Rejects cultural relativism; recognizes that various versions of reality are based on social positioning; conscious recognition of consequences of privileging versions of reality	Asserts that there is a single reality and that all individuals have their own unique interpretation of reality
Epistemology (nature of knowledge; relation between knower and would-be known)	Objectivity is important; the researcher manipulates and observes in a dispassionate, objective manner	Interactive link between researcher and participants; values are made explicit; created findings	Interactive link between researcher and participants; knowledge is socially and historically situated; need to address issues of power and trust	Relationships in research are determined by what the researcher deems as appropriate to that particular study
Methodology (approach to systematic inquiry)	Quantitative (primarily); interventionist; decontextualized	Qualitative (primarily); hermeneutical; dialectical; contextual factors are described	Qualitative (dialogic), but quantitative and mixed methods can be used; contextual and historical factors are described, especially as they relate to oppression	Match methods to specific questions and purposes of research; mixed methods can be used as researcher works back and forth between various approaches

Source: Mertens (2015b, p. 11). Adapted from Guba and Lincoln (1989, 2005) and Morgan (2007).

The Use branch theorists noted that even with most rigorous methods, evaluations would not be worth doing if no one used them. They prioritize the need to “assist key program stakeholders in program decision making” (Christie & Alkin, 2013, p. 40) and share “an explicit concern for the ways in which evaluation information will be used and focus specifically on those who will use the information” (p. 13). Mertens and Tarsilla (2015) extend the logic of assisting key stakeholders to include evaluators who see the “importance of identifying the intended users and designing studies that would be viewed as credible by that constituency” (p. 431).

According to Christie and Alkin (2013),

the Values branch theorists maintain that placing value on the subject of the evaluation, that is, the evaluand, is essential to the evaluation process. They identify two types of theorists on this branch: those who prioritize values and subjective meaning (more closely aligned with the constructivist paradigm) and theorists who prioritize values with a secondary concern for methods (more closely aligned with postpositivists). The Values branch theorists emphasize the importance of context and multiple stakeholders’ construction of reality as the pathway to creating knowledge that is credible. (Mertens & Tarsilla, 2015, p. 431)

Evaluation theorists on the Social Justice branch represent the voices of marginalized groups in society and their advocates, the need to explicitly address issues of power, and the design of evaluations to support social transformation in the interest of supporting human rights (Mertens & Wilson, 2012). The four paradigms discussed previously align with these branches of evaluation in the following way:

Paradigms	Branches
Positivism/Postpositivism	Methods
Constructivist	Values
Pragmatism	Use
Transformative	Social Justice
Metaparadigm	Dialectical Pluralism

Source: Mertens & Tarsilla, 2015, p. 433; adapted from Mertens & Wilson, 2012.

Postpositivism and the Methods Branch

Positivism and postpositivism are based in empiricism, a way of knowing that depends on reception of information through our five senses (Howell, 2013). Positivists, who emerged in the 17th century, held the ontological assumption that an external reality exists and that we can measure it. (See Table 1.2 for the assumptions associated with this paradigm.) Postpositivists challenged this concept of reality, holding that an external reality does exist, but we can only know it probabilistically because of limitations of human consciousness. Because much of the work evaluators do involves delving into human consciousness to discern the complexities in social situations, I focus Methods branch discussions and examples of evaluations on the post-positivist paradigm. To accumulate knowledge about reality, evaluators who align themselves with the postpositivist paradigm test hypotheses through the conduct of experiments that include the quantitative measurement of variables, as well as through the use of other dominant quantitative designs. The goal of controlled experiments is to eliminate as many competing explanations as possible to support an attributional claim of cause and effect, that is, the claim that an intervention caused the outcomes measured. Given the evaluation question *Did it work?*, White (2013b) states that “a randomized control trial (RCT) is very likely to be the best available method for addressing this attribution question if it is feasible” (p. 61).

Given the philosophical assumptions associated with postpositivism and the advocacy for RCT evaluation designs, you might wonder, how does mixed methods fit into this space? White (2013a) discusses one limitation of using only an RCT as being able to answer a single question: *What difference did the intervention make?* However, he advocates for the use of mixed methods when he continues his description of evaluation designs:

A high quality impact evaluation will answer a broader range of evaluation questions of a more process nature, both to inform design and implementation of the program being evaluated and for external validity. Mixed methods combine the counterfactual analysis from an RCT with factual analysis with the use of quantitative and qualitative data to analyze the causal chain, drawing on approaches from a range of disciplines. The factual analysis will address such issues as the quality of implementation, targeting, barriers to participation, or adoption by intended beneficiaries. (pp. 61–62)

Thus, the door is opened to mixed methods when the evaluation seeks to answer multiple questions, including those about the impact of the program. The use of mixed methods allows the evaluator to answer questions about the context, recruitment, causes of the problems, quality of implementation, barriers to adoption or participation, and reasons for success or failure. The use of mixed methods under the Methods branch can take several forms; the examples provided in subsequent chapters illustrate these different applications of mixed methods in the Methods branch.

Constructivist Paradigm and the Values Branch

When the constructivist paradigm entered the world of evaluation in the 1980s, it was not greeted with open arms by the entire professional community (Mertens & Tarsilla, 2015). This was because of differences at the philosophical level between postpositivists (who represented the dominant paradigm at the time) and constructivists. The differences of greatest import were their ontological, epistemological, and methodological assumptions. Constructivists did not hold that there was one reality out in the world waiting to be measured within a certain range of probable accuracy. Rather, they viewed reality as being socially constructed and thought multiple social realities could be constructed by different stakeholders. Their epistemological assumption commensurate with their ontological assumption is that the evaluator needs to be interactive with the stakeholders, building relationships that allow for the construction of reality to develop, rather than being distant from the stakeholders to avoid bias, as postpositivists held. The constructivists' ontological and epistemological assumptions led to the methodological assumption that qualitative approaches were needed to support respectful relationships between evaluators and stakeholders and to reflect the multiple realities that emerged in the process of conducting an evaluation.

Despite the constructivists' emphasis on the use of qualitative methods, historically, the door has been and continues to be open to the use of mixed methods within the Values branch of evaluation. Guba and Lincoln opened the door to the use of mixed methods back in 1989 when they wrote that quantitative data could be included in a primarily qualitative study. Denzin (2012) also supports the use of mixed methods rooted in the constructivist paradigm, Values branch of evaluation because it gives evaluators an "opportunity to assess the

interpretive, contextual level of experience where meaning is created and provides a roadmap to address social justice" (cited in Mertens & Tarsilla, 2015, p. 435). Constructivists would agree with Denzin on the ability to gain insight into the interpretive, contextual level of experience, however, not all constructivists would agree that their paradigm is the framework for conducting social justice work (Merriam & Tisdell, 2016). Many constructivists hold the assumption that their work should be interpretive and descriptive but not necessarily activist. Hence, it is possible to use a constructivist framework to do social justice-focused evaluations, but evaluations conducted within this paradigmatic framework need not focus on social justice.

As evaluators are often called on to collect data that can support causal claims (i.e., the intervention caused the change in specified outcomes), discussions in the evaluation community about the concept of causality and which paradigm allows causal claims to be made was particularly heated. This argument is ongoing in the evaluation community; the postpositivists' claim that RCTs are the best way to establish a cause-and-effect link are addressed further in Chapter 2. Constructivist evaluators also present arguments that qualitative methods are well-suited to support causal claims. Hesse-Biber (2013) suggests that situating an RCT within a constructivist framework can provide evidence that strongly supports causal claims. Maxwell (2012) argues that "causal explanations in the social sciences depend on the in-depth understanding of meanings, contexts, and processes that qualitative research can provide" (p. 655). He also adds that the use of mixed methods in primarily qualitative studies can provide insights into causal relationships that would be even stronger than those permitted by the use of one methodology alone. The use of mixed methods under the Values branch can take several forms; the variety of approaches to mixed methods in the Values branch is illustrated by examples in subsequent chapters.

Pragmatism and the Use Branch

In response to criticisms from philosophers of science that quantitative and qualitative research rest on different epistemological foundations and thus are incompatible and cannot be integrated (see discussion in Johnson, Onwuegbuzie, & Turner 2007; Tashakkori & Teddlie, 2003, 2012), mixed methods proponents have adopted the philosophy (and research practice) of pragmatism. Pragmatism "is a philosophy rooted in common sense and dedicated to the transformation

of culture, to the resolution of the conflicts that divide us" (Sleeper, 1986, in Maxcy, 2003, p. 4), thus approving of the use of the formulation or combination of evaluation methods that best meet the needs of the evaluation questions and, by extension, of society.

Teddle and Tashakkori (2009) argue that the understanding of reality is provisional and ever changing and equal value should be given to both objective and subjective knowledge. Different methods, techniques, and procedures, which ought to be flexibly tailored to the purposes of each epistemological query, can lead to a more balanced and complete view of social phenomena by drawing on the strengths of both approaches and increasing the internal and external validity of findings (Dures, Morris, Gleeson, & Rumsey, 2010).

Pragmatism, as used in the mixed methods community, has not been free of controversy that emanates from its definition as espoused by Dewey (1920, 1938) and the definitions that underlie its use to support a "what-works" or expediency approach (Denscombe, 2008; Denzin, 2012; Hall, 2013). A "what works" definition of pragmatism is reflected when evaluators hold that the evaluation questions or funding requirements drive the methods choices, without critical reflection on the philosophical assumptions that guide thinking. Hall (2013) offers an explanation of Dewey's pragmatism in a way that enhances our understanding of the conduct of mixed methods studies. Dewey's pragmatism does not support a dualism between objectivity and subjectivity, thus opening the door for a mixed methods approach to problem solving. Dewey recognized the importance of contextual sensitivity and the need to understand the nature of problems not as initially presented but rather through the use of systematic inquiry to understand the conditions, causes, and characteristics of a problem from multiple perspectives. "Pragmatically, mixed methods are used with the understanding that they are being utilized intelligently to attend to a specific problem, and to provide information that will help to make evaluative judgements" (Hall, 2013, p. 19). "Pragmatism expands the role of credibility beyond the examinations of methodological rigor to include continuous reflections on evaluation practices and the consequences they have in the lives of people" (Hall, 2013, p. 21).

Transformative Paradigm and the Social Justice Branch

The transformative paradigm emerged because of concerns raised by members of marginalized communities and their advocates

that evaluation was not accurately representing their experiences, nor was it adequately contributing to the improvement of their living conditions (Mertens, 2015b; Mertens & Tarsilla, 2015; Mertens & Wilson, 2012). The impetus came from marginalized communities who saw a great deal of evaluation being done “on” them, yet they noted that “little has changed in the quality of the lives of people who are poor and/or discriminated against based on race/ethnicity, disability, deafness, gender, Indigeneity and other relevant dimensions of diversity” (Cram & Mertens, 2015, p. 94). Whereas issues of human rights and social justice can be addressed in other evaluation branches, evaluators who situate themselves in the Social Justice branch hold the assumption that social justice and human rights are the quintessential values that must be supported in their work. The transformative paradigm guides thinking about the design of evaluations that address “issues of power inequities, the impact of privilege and the consequences of these for achieving social justice” (Mertens & Wilson, 2012, p. 163).

The use of mixed methods designs in evaluation rooted in the Social Justice branch allows for the capture of different realities in their complexity from the view of stakeholders’ lived experiences. Mixed methods also supports the use of culturally responsive strategies that are needed to respectfully engage with a diverse set of stakeholders. In addition, mixed methods can facilitate responsiveness to different information needs of stakeholders who hold varying levels of power within the context, thus increasing the possible use of findings for transformative purposes. The combination of quantitative and qualitative strategies and data provides multiple opportunities for use of data by different stakeholders throughout the course of the evaluation. The transformative lens in evaluation can also be used in combination with various critical theories such as feminist theory, critical theory, disability rights theory, deafness rights theory, and critical race theory, a practice that leads to asking different kinds of questions about cultural and structural supports for systemic discrimination. The understandings that result from this approach provide support for structural and systemic changes that can reduce discrimination and oppression and increase social justice.

Dialectical Pluralism and Mixed Methods Evaluation

Johnson and Schoonenboom (2015) describe dialectical pluralism (DP) as a metaparadigm and process philosophy:

DP views reality as plural and uses dialectical, dialogical, and hermeneutical approaches to knowledge construction. Using DP and its “both/and” logic, and its attempt to produce new creative syntheses, researchers on heterogeneous teams can better dialogue with qualitative and mixed methods approaches, concepts, paradigms, methodologies, and methods to improve their intervention research studies. The concept of reflexivity is utilized but is expanded when it is a component of DP. (p. 16)

An evaluator who works from a stance of DP is more likely to work with a team of evaluators with a mixture of philosophical paradigms. The mixed methods (MM) DP evaluator’s role is to provide a respectful forum where multiple voices can be brought into decisions about the evaluation questions and study design as well as in the data collection, analysis, interpretation, and use phases of the study. The both/and logic means that adherents of different evaluation branches need to be included in order to get an accurate picture of complex phenomenon (Johnson & Schoonenboom, 2015). Different forms of evidence from different sources and methods need to be brought into dialogue with each other and compared and combined so that the sum is greater than the parts.

Johnson (2012) further described the processes associated with a DP approach as follows:

- Dialectically and dialogically listen, carefully and thoughtfully, to different paradigms, disciplines, theories, and stakeholder and participant perspectives.
- Combine important ideas from competing paradigms and values into a new workable whole for each research study or program evaluation.
- State and “pack” the approach with stakeholders’ and researchers’ epistemological and social/political values to set the socially constructed standards and guide the research. This includes the valued ends one hopes for and the valued means for getting there.
- Try to reach at least some agreement among different researchers/practitioners on valued ends and means.
- Facilitate understanding, dissemination, and use of research findings (locally and more broadly).

- Continually, formatively evaluate and improve the outcomes of the research and use process to have local and larger societal impacts.

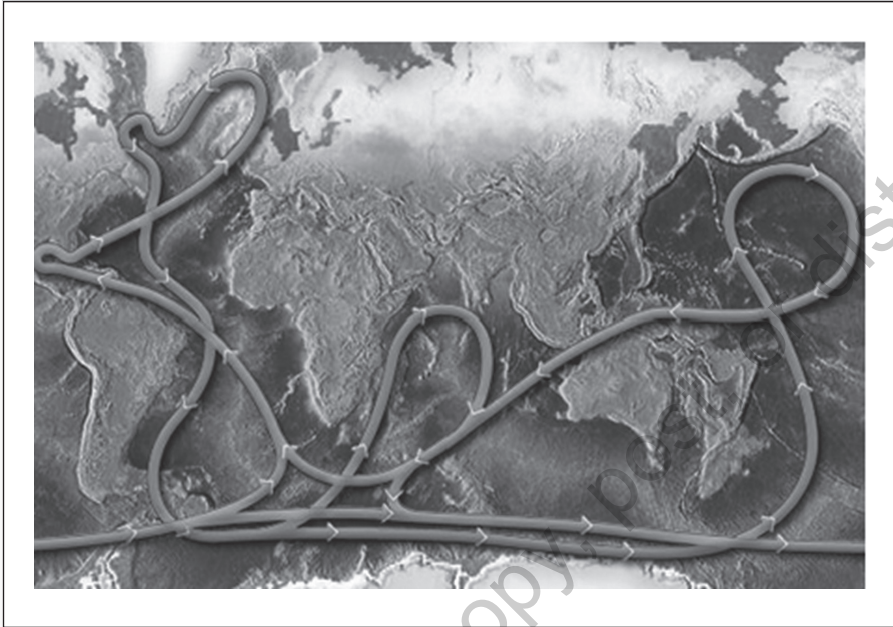
Although DP evaluations adhere to the assumptions of the Methods branch for RCTs, the Values branch for qualitative data collection, and the Use and Social Justice branches when appropriate, there is an important distinction to be made regarding their ontological and epistemological assumptions. The DP ontological assumption holds that reality is plural (in keeping with the Values branch) and uses a dialectical/dialogical/hermeneutical epistemology, in other words, a great deal of discussion and critical reflection. This is needed in order to conduct high-quality mixed methods evaluations.

Important Caveats and an Alternate Metaphor

Any of the paradigms aligned with their evaluation branches can be used for evaluations that use mixed methods. However, the approach to the use of mixed methods will vary depending on the philosophical framework and evaluation branch that is dominant in an evaluation context. This is not meant to suggest that evaluators in the Methods branch, for example, cannot address social justice issues through the use of mixed methods. They certainly can and do. However, members of marginalized communities have expressed dissatisfaction with evaluations that have been conducted in their communities because of a lack of responsiveness to issues of culture and power. Hence, the transformative paradigm emerged as a response to these voices.

Evaluators did live through a period known as the “paradigm wars,” during which postpositivists and constructivists argued with each other about which methods were best. The characterization of the evaluation field as being organized by paradigms and branches is not meant to fan the flames of the paradigm wars again. Nor is it meant to suggest that the boundaries between paradigms and between branches are rigid. The boundaries for both are permeable. This is in keeping with Christie and Alkin’s (2013) characterization of the branches of the theory tree. They state, “The three tree branches are not meant to be viewed as independent from one another but rather have been drawn to reflect a relational quality between them” (p. 13). The branches and paradigms indicate differences in assumptions that reveal differences in emphasis and practice. Yet there is overlap among the branches and paradigms in terms of the methods used and the intent of the evaluations. I hope that

Figure 1.1 The Global Conveyor Belt
<http://oceanservice.noaa.gov/education/kits/currents/06conveyor2.html>



Source: NOAA (2015)

the emergence of mixed methods as an approach to be taken seriously will bring about a scholarly détente and allow for conversations across paradigms and branches. To this end, I offer a different metaphor for the field of evaluation, that is, the global conveyor belt.

According to the National Oceanic and Atmospheric Administration (NOAA, 2015), winds drive ocean currents in the upper 100 meters of the surface. There are 17 major surface currents, some of which may be familiar to you, such as the Gulf Stream, the Canary Current, Humboldt Current, and the Equatorial Current. There are also ocean currents that flow thousands of meters below the surface; this body of currents is called the Global Conveyor Belt. The deep ocean currents are created when very cold sea water gets saltier and sinks; surface water that is warmer and less salty rushes in to replace the sinking water. This process of moving and mixing means that water from all the surface currents eventually becomes part of the Global Conveyor Belt. If we envision the branches of evaluation as the surface currents and the

Global Conveyor Belt as the exchange and integration of ideas from the branches, then we can see that this metaphor allows for opportunities to enrich understandings of how to do better evaluations. This metaphor was first introduced in *Program Evaluation Theory and Practice* (Mertens & Wilson, 2012); it will be used to link together the work of the mixed methods community across paradigms and branches of evaluation herein. As you read the examples of mixed methods studies for each paradigm/branch presented in the chapters of this book, you might occasionally scratch your head and say, Why is this an example of this branch and not another branch? It will be at moments like this that the evaluation global conveyor belt is in evidence.

OVERVIEW OF MIXED METHODS APPROACHES AND PURPOSES ●

The U.S. Department of Health and Human Services Centers for Disease Control and Prevention (2011) provides this overview of mixed methods designs:

Mixed data collection refers to gathering both quantitative and qualitative data. Mixed methods can be used sequentially, when one method is used to prepare for the use of another, or concurrently. An example of sequential use of mixed methods is when focus groups (qualitative) are used to develop a survey instrument (quantitative), and then personal interviews (qualitative and quantitative) are conducted to investigate issues that arose during coding or interpretation of survey data. An example of concurrent use of mixed methods would be using focus groups or open-ended personal interviews to help affirm the response validity of a quantitative survey. (p. 63)

The simplest way to think about mixed methods design is as depicted in the previous quotation, that is, using both quantitative and qualitative methods, either sequentially or concurrently. However, more sophisticated mixed methods designs have been developed by evaluators seeking to address the issues of complexity and context.

Examples of these types of designs are presented in each chapter to illustrate how an evaluator can depict a mixed methods approach. A list of the main sample studies is included in Table 1.4.

Table 1.3 Mixed Methods Designs

Design	Process
Concurrent QUAN + QUAL	The quantitative and qualitative parts of the study occur simultaneously.
Sequential QUAN -> QUAL QUAL -> QUAN	The quantitative portion occurs first and is followed by the qualitative portion, or the opposite strategy is used.
Embedded QUAN(qual) QUAL(quant)	The evaluation is primarily quantitative with a less dominant qualitative part, or the opposite strategy is used.
Multistage, phase, or cyclical	The evaluation occurs in multiple phases, with each phase including QUAN, QUAL, concurrent, sequential, or embedded designs.
Multiple methods	Separate studies are conducted that use quantitative or qualitative approaches and then they are integrated.

Note: Morse (1999) suggested the use of QUAN, QUAL, arrows, and plus signs to describe mixed methods designs. This table uses an adaptation of that system.

Table 1.4 Sample Mixed Methods Studies

Study	Design	Evaluand
2.1 Peterson et al. (2013)	Multiphase sequential MM RCT	Program to increase exercise and medicine adherence
2.2 Catallo, Jack, Ciliska, & MacMillan (2013)	Two-phase sequential explanatory mixed methods	Disclosure of intimate partner violence in Canada
2.3 Midgley, Ansaldo, & Target (2014)	RCT with qualitative interviews	Effect of treating depression in adolescents in the United Kingdom
2.4 Jones et al. (2014)	Transformative multistage MM design with RCT	Treatment for women who use drugs in the Republic of Georgia
2.5 Hall & Howard (2008)	Dialectical pluralism (DP) intervention	Health screening for women in Australia
3.1 Clarke et al. (2011)	Concurrent MM design postpositivist	Instrument development for mental health in the United Kingdom

Study	Design	Evaluand
3.2 Crede & Borrego (2013)	Instrument development constructivist	Graduate engineering student retention
3.3 Daigneault & Jacob (2014)	Multistage MM instrument development pragmatic	Measuring stakeholder participation in evaluations
3.4 Ungar & Liebenberg (2011)	Instrument development transformative	Youth resilience in 11 countries
3.5 de-la-Cueva-Ariza et al. (2014)	DP instrument development	Patient satisfaction with nursing care in Spain
4.1 Iregbu (2008)	Methods concurrent MM time series policy	Policy to remove lead paint from homes in Baltimore
4.2 Beletsky et al. (2015)	Methods embedded quantitative qualitative policy	Policy change to decriminalize drug use in Mexico
4.3 Hunt, Moloney, & Fazio (2011)	Values policy Large-scale qualitative studies	Drug use by youth in San Francisco, Rotterdam, and Hong Kong
4.4 Veitch et al. (2012)	Use policy	Australia disability services
4.5 Todrys, Amon, Malembeka, & Clayton (2011)	Transformative policy	Zambia prison HIV and TB prevention and treatment
4.6 Hoddinott, Britten, & Pill (2010)	DP policy	Breastfeeding in Scotland
5.1 Thomas et al. (2004)	Methods systematic review	Increasing healthy eating in children in the United Kingdom
5.2 Archibald, Radil, Zhang, & Hanson (2015)	Value qualitatively dominant systematic review	Mixed methods articles published in qualitative journals
5.3 Edwards, Noyes, Lowes, Spencer, & Gregory (2014)	Use MM systematic review	Children with diabetes in school
5.4 Everson-Hock et al. (2013)	Transformative MM systematic review	Diet and exercise to prevent diabetes in the United Kingdom

(Continued)

Table 1.4 (Continued)

Study	Design	Evaluand
5.5 Petrosino, Turpin-Petrosino, Hollis-Peel, & Lavenberg (2013)	DP systematic review	Scared Straight in the United States: preventing juvenile delinquency
6.1 Ackerly (2012)	Gender analysis	Funding program for women in Asia and the Pacific
6.2 Cram et al. (2015)	Indigenous evaluation	Secondary school for Maori boys in New Zealand
6.3 Improve Group (2013)	Universal design evaluation	Support services for people with disabilities, mental illness, and chronic health conditions in Minnesota
6.4 Hargreaves et al. (2013)	Developmental evaluation	Obesity reduction in the United States
6.5 Jacklin and Kinoshameg (2008)	Needs assessment	Health needs in Aboriginal community, Lake Huron, Ontario
6.6 Knigge & Cope (2006)	Visual spatial analysis and ethnography	Community gardens as economic and political empowerment in New York
6.7 Shannon-Baker (2015a)	Arts-based evaluation	Study-abroad program; US students in South America
6.8 Maphosa (2013)	Conflict zones evaluation	Peacebuilding initiative in Burundi

● CRITERIA TO JUDGE QUALITY IN MIXED METHODS EVALUATION DESIGN

Criteria to judge quality in mixed methods evaluation designs are discussed here in generic terms; because of the diversity of contexts and types of evaluations, no one set of criteria are going to fit all mixed methods evaluation designs. The general criteria for mixed methods designs in evaluation are useful to provide guidance for you to assess strengths and weaknesses of the studies used as examples in this book.

Consider the following criteria:

- Be explicit about the mixed methods design being used.
- Determine that the study does use both quantitative and qualitative data (and other forms of data as appropriate).
- Follow criteria available for judging quantitative studies and qualitative studies (Mertens, 2015b). For example, different criteria would be used to assess the quality of a randomized controlled trial than for a survey or an ethnographic case study.
- Examine the points at which qualitative and quantitative methods are integrated in the study. Note how this is done and how the integration results in a stronger study than would be possible for one approach alone.
- Situate the work within existing literature about mixed methods approaches and indicate how this approach expands understandings methodologically.
- Examine the philosophical framing claimed for the study and determine the extent to which the study reflects the assumptions of the chosen framework.

The National Institutes of Health developed a checklist that identifies these elements and others for mixed methods proposals submitted for funding. (See https://obssr-archive.od.nih.gov/scientific_areas/methodology/mixed_methods_research/pdf/Best_Practices_for_Mixed_Methods_Research.pdf) (Creswell et al., 2011). This checklist is useful but does not address the quality of specific approaches used in a mixed methods design.

SUMMARY AND MOVING FORWARD: OVERVIEW OF THIS BOOK

This introductory chapter has acquainted you with developments in mixed methods in the evaluation community. Chapters 2 through 5 are organized by evaluation types:

- Evaluation of an intervention
- Instrument development
- Policy evaluation
- Systematic reviews

I chose these four because they encompass the major types of evaluations that are commonly conducted. Within each chapter, you will find examples of mixed methods evaluations that have been conducted using the frameworks of the Methods branch, Use branch, Values branch, Social Justice branch, and dialectical pluralism. For each of these examples, I provide a summary of their methods and highlight the benefits that the use of mixed methods provide. I also provide guidance for the design of a mixed methods evaluation rooted in each of these branches.

In Chapter 6, I provide examples of mixed methods studies that address specific contexts of evaluation that are providing innovative mixed methods designs. These include mixed methods designs that use gender analysis; Indigenous frameworks; universal design for people with disabilities, mental illness, or chronic health conditions; needs assessment; visual spatial analysis; arts-based evaluations; evaluations in conflict zones; and evaluations that use a developmental approach. The final chapter provides a synthesis of issues related to mixed methods in evaluation and explores pathways to the future.