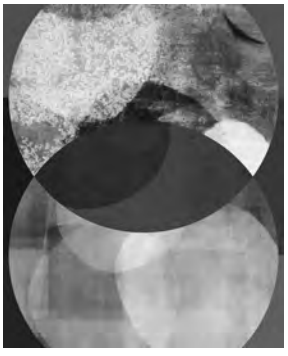
CHAPTER 2



Conceptualizing Mixed Methods Research

INTRODUCTION

Research that is impactful in both informing policy and guiding practice must be both rigorous and relevant. Accordingly, the design and execution of policy research and evaluation studies invariably benefit from the articulation of an overarching framework for the research, including the conceptual linking of research and/or policy questions and goals to the methodologies that will be applied to address them. Indeed, the legwork undertaken in carefully framing a study can go a long way toward ensuring that appropriate and useful methods are applied in ways that generate desired information and illuminate new relationships and findings. Methodological design decisions should be closely connected to the study purpose and intended uses of the information generated, which, in policy and program settings, may be diverse and evolving. That is, in policy contexts, we are more often going to need to allow for flexibility in our frameworks and dynamic approaches to executing research.

This chapter builds and extends a conceptual argument for planning and striving toward a fully integrated, mixed methods approach in applied policy research and evaluation, which we suggest is more likely to provide for adaptability and accommodation of diverse stakeholder interests in these capricious research settings. We begin by considering the rationale for mixed methods research and conditions that call for it, as well as some of the challenges in its application. We then discuss the multiple and sometimes overlapping categorization schemes that are offered in the academic literature to describe the design components of a mixed methods study, as well as the attributes that distinguish

different kinds of mixed method studies. While leveraging this work, we argue that evolving policy landscapes and technological advances, as described in Chapter 1, call for a fresh, orienting framework for approaching more fully integrated mixed methods work. We define the components of a fully integrated, mixed methods approach—in ideal circumstances, what it is, and what it isn't—and end with a case scenario that illustrates some of the conditions under which this approach to mixed methods research is warranted and compelling. In this context, we describe how fully mixed methods research can unfold as a process that demands ongoing engagement, assessment, and adjustment by stakeholders.

RATIONALE AND CONDITIONS FOR MIXED METHODS RESEARCH

It is easy to get the impression from academic discussions, which also spill into debates around evidence-based policy, that there is an established hierarchy of dominant research methods or a preferred method du jour at any given time. We argue that one should dispel of such preconceptions in approaching the decision of whether and how to undertake mixed methods research. There are no prevailing formulas for how best to conduct this type of work and, likewise, no one archetype for framing or organizing mixed methods research (a subject to which we return later). That said, there is considerable agreement in the existing literature on a number of compelling reasons for pursuing mixed methods research, which we think are worthwhile to synthesize here.

Rationale for Mixed Methods Research

Among the reasons most often cited for combining qualitative and quantitative methods is the opportunity to benefit from the complementary advantages of achieving greater precision and consistency in large-sample quantitative analysis and exploring phenomena in greater depth and detail, adding texture and contextualization, in qualitative research. For example, Johnson and Onwuegbuzie (2004), who have been widely cited as some of the first scholars in the social sciences to define and begin to theorize a mixed methods approach, identified the following strengths of mixed methods research:

- Words, pictures, and narratives can add meaning to numbers; numbers can be used to add precision to words, pictures, and narratives.

- Can answer a broader and more complete range of research questions because the researcher is not confined to a single method or approach.
- Can provide stronger evidence for a conclusion through convergence and corroboration of findings.
- Can be used to increase the generalizability of the results.
- Qualitative and quantitative research used together produce more complete knowledge necessary to inform theory and practice. (p. 21)

Rossman and Wilson (1985) similarly argue that mixed methods allow researchers to substantiate and strengthen research findings; elaborate (provide richness and detail); and initiate (offer new interpretations). Others refer to the importance of the phenomena under study, citing mixed methods as demanded by complex problems requiring multilevel analysis and complex perspectives (Baum, 1995; Clarke & Yaros, 1988; Driscoll, Appiah-Yeboah, Salib, & Rupert, 2007; Happ, 2009; Morgan, 1998; Steckler, McLeroy, Goodman, Bird, & McCormick, 1992). In their synthesis of empirical work across 57 mixed methods evaluations from 1980 to 1988, Greene, Caracelli, and Graham (1989) identified five purposes for mixed methods evaluations that underscore the consensus around these advantages: (1) "triangulation" that "seeks convergence, corroboration, and correspondence of results from the different methods"; (2) "complementarity" in elaborating, enhancing, illustrating, and clarifying results from different methods; (3) "development" in sampling, implementation, and measurement decisions; (4) "initiation" in the discovery of "paradox and contradiction," new perspectives or frameworks, or the reframing of research questions; and (5) "expansion" of the overall "breadth and range of inquiry" by employing different methods of inquiry (p. 259).

It is almost cliché now to hear mixed methods researchers describe their work as "opening the black box," that is, digging deeper in the research process to go beyond "cause and effect" and better understand the "why" and "how" of observed effects. In doing so, there are some very practical ways that the research process is aided by a mixed methods approach. For example, Collins, Onwuegbuzie, and Sutton (2006) draw on their work in special education to distill four practical or functional rationale for applying mixed methods, including (1) optimizing the sample for "participant enrichment," so that the most appropriate participants are included; (2) ensuring "instrument fidelity," or creating credible new instruments and assessing their appropriateness and validity; (3) assessing "treatment integrity" or fidelity of an intervention, that is, discrepancies between planned and realized implementation, and (4) enhancing significance by exploring different levels of the same phenomena, clarifying why

outcomes did or did not occur, and augmenting interpretation and usefulness of findings for multiple audiences.

Later in this chapter and throughout this book, we will provide vivid examples of these types of applications, illustrating how mixed methods research can aid in the research process and generate the types of benefits described in the previous paragraphs. At the same time, we are forthcoming about the time, resources, and effort that are required to successfully engage in mixed methods work that is rigorous, relevant, and responsive to policy and program needs. That is, there may be conditions under which mixed methods research is not warranted or for which the costs of undertaking it may exceed the expected benefits.

Conditions for Methods Approaches

It is the norm in applied policy and evaluation research that resources for conducting the research will be finite, if not wanting. Therefore, there should be a clear purpose for a research strategy that employs multiple methods to avoid a situation whereby data are redundant or unlikely to shed new light on the topic of investigation (Bryman, 2006). Furthermore, the concern here is not only about inefficient use of research resources but also about the potential costs to participants' time and the possibility of generating lower-quality data and research insights if both researcher and participant resources are spread too thinly.

More fundamentally, there are some who subscribe to the notion that the qualitative and quantitative paradigms inherently study different phenomena and that these methods, therefore, cannot be combined for validation or triangulation purposes. For example, Sale, Lohfeld, and Brazil (2002) argue that "mixing research methods across paradigms, as is currently practiced, often diminishes the value of both methods" (p. 50).

However, in the practice of research, particularly policy research and evaluation, the differences between qualitative and quantitative paradigms are surely less stark than they appear in theory. For example, both qualitative and quantitative researchers frequently make context-dependent generalizations, sometimes when asserting a causal linkage between phenomena. And although qualitative and quantitative researchers may attempt value-free inquiry, they may qualify their findings in recognizing their use of value-laden measures that they cannot avert (e.g., standardized test scores in education research). Thus, we concur with other mixed methods researchers (Plowright,

2011; Teddlie & Tashakkori, 2003) who, rather than emphasizing their incompatibility, suggest the blending of these paradigmatic extremes to advance a third methodological rail—mixed methods research. That is, mixed method studies do not or should not attempt to *resolve differences* across paradigms but rather *capture or leverage the dualism* of qualitative and quantitative studies, which, in policy research, is more apt to reflect the subject of our inquiry as well.

CATEGORIZING MIXED METHODS APPROACHES

The Problem of Unnecessary Complexity

In the existing mixed methods literature, readers are likely to encounter a plethora of decision points and design choices, some of which may only be minimally motivated or developed. The researcher may be alerted about a set of choices, where once having made a choice, he or she is brought (or constrained) to another embedded set of decision points. For example, after selecting a typology to guide his or her work, an investigator may be asked to consider, among other issues, (a) the level of interaction, or the degree to which the two strands (qualitative and quantitative) are kept independent of each other; (b) priority, or the degree to which one paradigm is given precedence over the other paradigm or is treated equally; (c) timing, whether the quantitative and qualitative research will be conducted concurrently, sequentially, or in multiple phases; and (d) juncture, the point(s) at which the mixing will occur (e.g., data collection, interpretation, data analysis, etc).

After making decisions about level, priority, timing, and juncture, the investigator is typically introduced to another long list of supplementary choices that lie beneath these major issues. For example, once priority is established, how will different data sets be used within methods to illuminate relationships, and to what extent will the theoretical framework(s) serve as binding glue in the integration of the data analysis between the two methodological types? One could go on and on here, but the impression this leaves is of a field that is heavily *theorized* about the "know-what" of mixed methods research execution and yet lacking in core knowledge about the "know-how"—that is, heavy on isolated description of specific strategies along a continuum of research designs but light on guidance gleaned from mixed methods applications or instructive examples of how different approaches can be employed to achieve research and policy objectives.

Design Typologies

As opportunities and demands for mixed methods work have mounted, typologies for the design of mixed method work have proliferated. According to Creswell and Plano Clark (2011), typologies aid the researcher in choosing from among a range of well-defined options and support the researcher's use of a sound approach for addressing a research problem and forestalling and resolving challenging issues that might arise in research. The typology-based approach emphasizes the classification of useful methods and the selection and adaptation of a particular design to the study's purpose and questions. At the same time, Creswell and Plano Clark also recognize that the use of mixed methods will not always be planned at the start of the research process and/or implemented according to plan and that, in some cases, their use may be "emergent," or in response to issues that arise during the conduct of research. In fact, policy and evaluation research frequently fits a third type of design process that they describe—a dynamic approach, where various components of mixed methods research come into play interactively and are emphasized or reconsidered throughout the research process.

Creswell and Plano Clark (2011) review alternative classification schemes applied in 15 different works from a variety of disciplines, and they subsequently distill these and related classification efforts into six major mixed methods designs (or typologies) based on their level of integration, prioritization of qualitative versus quantitative methods, and timing of their application. These designs include (1) convergent parallel design, (2) explanatory sequential design, (3) exploratory sequential design, and (4) embedded design, as well as two more that bring multiple design elements together: (5) transformative design and (6) multiphase design. They then describe in detail the distinguishing features and stages of these six major design types.

For policymakers, practitioners, or students who might find these methodological details and distinctions across typologies dizzying, if not daunting, it is probably helpful to point out the commonalities among these design types that are particularly relevant to policy and evaluation research. For example, five of these major designs are described as being interactive (vs. independent) in the application of qualitative and quantitative methods, and in four of the six, either no or equal priority is given to qualitative and quantitative methods. Furthermore, we expect that for many policy and evaluation studies, they will embody more than one (or even all) of the "design purposes" that Creswell and Plano Clark identify as distinctive across these major designs. For example, it is probably more common than not for policy and evaluation studies to be

interested in gaining a full understanding of a phenomenon, while also addressing program objectives and challenges and testing or explaining both qualitative and quantitative findings about a policy or program's outcomes or implementation.

In other words, those engaged in policy and evaluation work should not get stymied by these choices; indeed, Creswell and Plano Clark encourage the use of these design typologies as a guide for design choices rather than as a "cookbook recipe" for adopting a particular mixed methods approach. Competence in using mixed methods approaches is expected to build with experience, with one end goal being facility in applying a dynamic approach that allows for the mixing and matching of components across different frameworks to achieve research goals.

Design Drivers in Theory and Practice

Regardless of their disciplinary and methodological orientations, most investigators accept that knowing both the *why* and the *how* of mixed methods work is important. However, they differ in terms of how much they emphasize descriptive theoretical knowledge over practice process knowledge as drivers of design decisions and the conduct of mixed methods research. For example, education researchers Johnson and Onwuegbuzie (2004) conclude that "rather than be driven by the debate of qualitative versus quantitative, the pragmatic approach where the research question drives the choice of methods makes sense for educational research. The mixed methods approach provides the best opportunity for answering important, multi-faceted research questions with workable, practical solutions" (p. 15). They add that researchers adopting an orientation that emphasizes application and practice are more apt to see mixed methods work as "a collaborative communicative enterprise, necessitated by changing context that is becoming increasingly interdisciplinary, complex, and dynamic" (p. 15). Clearly, these are characteristics of a context in which policy and evaluation researchers are, more often than not, likely to undertake their research.

In contrast to those who view mixed methods research as an applied collaborative construct, some investigators conceptualize mixed methods research more as an epistemological tension, each embodying distinctly different ways of knowing (see, e.g., Onwuegbuzie & Leech, 2005). Investigators adopting this orientation emphasize the epistemological roots of mono-method research and the advances that come when researchers of different paradigms reach across the divide, so to speak. Scholars of this orientation acknowledge the

collaborative nature of the work, but not to the extent or depth of investigators emphasizing process practice knowledge. Design decisions are consequently more likely to draw on individual attitudes and beliefs that the investigator brings when contemplating or conducting mixed methods research. For example, Madey (1982) describes mixed methods as a process that creates a sum greater than the two parts (qualitative and quantitative), with complementary effects: "In terms of methods, one plus one equals three. And what's the three? The interplay between the two types of methods; the interaction, the synergistic coming together, which creates something that never existed before" (p. 235). Similarly, in their review of 57 empirical mixed method evaluations, Greene et al. (1989, p. 259) identify a core purpose of mixed methods work as the process through which researchers using different methods corroborate and correspond around results.

Toward a More Fully Integrated Mixed Methods Approach

Finding a balance between grasping theory, or the "what" of mixed methods research, and knowing its practical application, or the "how," is important for researchers in designing and conducting highly credible mixed methods research that is useful for policymakers and practitioners. As noted earlier, there is an abundance of information about the various core and supplementary decisions (e.g., what to mix, when to mix, and models for mixing) that go into mixed methods work, yet few practice-friendly guides that can help teams consider viable or best practices in mixed methods research, obtain guidance in adapting other models and practices to their own situation and study, and see examples of the benefits of mixed methods work from other research teams.

As researchers who simultaneously collaborate actively with policymakers, finding the right balance is crucial. We want to conduct research that will stand up to rigorous peer review and be published in scholarly journals, yet we also want to cultivate a process, method, and language of mixed methods work that will generate evidence that those working *in* policy can use to inform decisions and persuade others in the face of intense political engagement. The remainder of this chapter aims to provide an overview of the definition, goals, benefits, and process of integrated mixed methods as practiced. The primary context for this overview and subsequent chapters is our own and colleagues' experiences. We begin with an orienting definition of fully integrated mixed method research and then provide interpretive guidelines and recommendations for researchers in assessing rigor and relevance of research in process.

Definitions of Mixed Methods Research: What It Is and What It Isn't

Fully integrated mixed methods research might be thought of as a member of a family of mixed methods research approaches. Mixed methods research is depicted as a sprawling family, varying widely in terms of strategy and process.

> Fully integrated, mixed methods research is a research process by which researchers interact regularly and intensively—with each other and their research partners—to draw on and combine the strengths of qualitative and quantitative methods, from the starting point of defining research objectives to the ending point of achieving those goals. In the context of applied policy and evaluation studies, research goals are defined in terms of the organizations' or policymakers' improvement goals or desired ends, and the research design is directly linked to organizational, policy, or program goals and may evolve with the policy or program landscape. The full integration of qualitative and quantitative methods contributes to both the understanding of processes for achieving outcomes or goals and, through the application of best practices in research within methodologies, the achievement of those ends.

To unpack this definition, we next offer some general guidelines of what fully integrated mixed method research is and what it is not (also summarized in Table 2.1).

A. Fully integrated mixed method research *is not* when qualitative and quantitative methods are employed in a single study but remain independent throughout data collection and analysis. Integrated mixed method research *is not* when qualitative and quantitative results are combined and corroborated after a process in which much of the inquiry and analysis has occurred separately, for example, through data collection and analysis (Caracelli & Greene, 1997).

Instead, fully integrated mixed method research occurs when integration or mixing of methods follows through the entire cycle of the research process, from planning to inquiry, to data collection and analysis, to dissemination and redesign. Designs that mix only from data collection through interpretation of results fail to leverage benefits of integrated planning and interpretation, which we view as critical to achieving research and policy objectives.

B. Fully integrated mixed method research *is not* when qualitative and quantitative methods are integrated into different phases of the work—for example, a pilot case study using qualitative methods with a quantitative study to test generalizability of findings across a large number of data points—without linking

Table 2.1 What Fully Integrated Mixed Methods Research Is Not and Is

Is Not	*Is*
When qualitative and quantitative methods are employed in a single study but remain independent throughout data collection and analysis	When integration or mixing of methods follows the entire cycle of the research process, from planning to inquiry, to data collection and analysis, to dissemination and redesign
When qualitative and quantitative methods are integrated into different phases of the work and linkages between them are absent	When qualitative and quantitative methods are conducted from the start and simultaneously in ways that are "interactive and iterative"
When one type of evidence (e.g., estimated effects of an intervention based on statistical analysis) is privileged over another type of evidence (e.g., narratives or life stories or rich case study data)	When qualitative and quantitative methods are employed in ways that leverage the strengths of each to provide a wider and richer range of ways to understand complex phenomena for a variety of outcomes and problems
Research driven by political agendas or epistemological preferences or trends and whose processes are invisible to outsiders	Deliberately undertaken to best address research questions and problems where processes and outcome measures will be used by diverse stakeholders and where enhancing learning and communication is an important part of the research process; processes are transparent

across those phases of the research process. Or, alternately, it is *not* present when quantitative methods are used to identify the frequency of attributes across large data sets, with qualitative research following independently to understand the conditions supporting these attributes (Teddlie & Tashakkori, 2006).

Rather, fully integrated mixed methods research is when qualitative and quantitative methods are conducted from the start, simultaneously in ways that are "interactive and iterative," so that every step of the process proceeds from interaction of the two, with instrumentation and interpretation, for example, growing out of that interaction. The emphasis in this attribute is on strategies that support a process of constant "illumination" (to use Woolley's terminology), whereby "quantitative and qualitative components can be considered 'integrated' to the extent that these components are explicitly related to each

other within a single study and in such a way as to be mutually illuminating, thereby producing findings that are greater than the sum of the parts" (Woolley, 2009, p. 7).

C. Fully integrated mixed methods work *is not* when one type of evidence (e.g., estimated effects of an intervention based on statistical analysis) is privileged over another type of evidence (e.g., narratives or life stories or rich case study data).

Instead, fully integrated mixed methods work is when qualitative and quantitative methods are employed in ways that leverage the strengths of each to provide a wider and richer range of ways to understand complex phenomena for a variety of outcomes and problems (Fry, Chantavanich, & Chantavanich, 1981; Hesse-Biber & Johnson, 2013; Jang, McDougall, Pollon, Herbert, & Russell, 2008).

D. Fully integrated mixed method research *is not* research driven by political agendas or epistemological preferences or trends. This is particularly important as mixed methods work becomes increasingly popularized in the nomenclature of requests for proposals and funding priorities.

Integrated mixed method research is deliberately undertaken to best address research questions and problems where processes and outcome measures will be used by diverse stakeholders and where enhancing learning and communication is an important part of the research process.

How does fully integrated, mixed methods research fit into existing phases or models of research?

Fully integrated mixed methods research can fold into the regular cycle of research design as typically taught and applied in the social sciences. To facilitate learning and transfer, we have organized our discussion and guide to fully integrated, mixed methods research along these seven components, as shown in Table 2.2: (1) determining study objectives and foci, (2) establishing core research design elements, (3) creating supportive structures and mechanisms for mixing methods, (4) collecting data, (5) analyzing and interpreting data, (6) disseminating findings, and (7) reflecting and refining to set the agenda for future research. In addition, we have augmented the steps with design components aimed at supporting deeper engagement of research teams with other stakeholders, reducing redundancies and inefficient use of resources, and building continuous understanding of how research quality can be improved and ultimately used to achieve desired ends.

The two chapters that follow contain considerable detail on each of these components of a mixed methods research cycle and provide guidance and

Table 2.2 Components of Mixed Methods Research Cycle

Determination of study goals and foci	Agree on what to study and select research team members to support qualitative and quantitative investigation Identify corresponding conceptual/theoretical/logic models for research and/or evaluation Assess the connection or gap between research goals/questions and those of research partners (agency/program stakeholders)
Establishment of core research design elements	Select settings, sample frame, and study samples Design strategies for collecting data linked to research questions Pilot and finalize instrumentation for data collection Identify qualitative and quantitative methods for data analysis Develop processes for integrating mixed methods in each research design step and for documenting decisions and practices
Creation of supportive structures and mechanisms for mixing methods	Create mechanisms for sustaining research team member attention to full integration Cultivate understanding among research team leadership, members, and partners regarding the meaning and importance of mixed methods research Assess team members' strengths and knowledge within and across methods and delegate responsibilities accordingly; plan for professional development to build understanding and continuous improvement
Data collection	Implement integrated processes to undertake the following: Original data collection Administrative data and other secondary data extraction and documentation Coding and refinement of data and measures Cross-checking of qualitative and quantitative measures and their quality and meaning Identify and address process problems (e.g., timing/delays, inefficiencies, barriers to data collection) and identify strategies for improvement
Data analysis and interpretation of findings	Drawing on qualitative and quantitative methods: Conduct descriptive and exploratory analysis Analyze causal mechanisms and effects and moderating factors Analyze processes and implementation

	Develop feedback loops and cross-checks in the qualitative and quantitative analysis process Through the integrated research process, identify any unanticipated causal pathways or conditions that contribute to results (and to rigor and nuance) Refine analyses to explore relevant factors and relationships in greater depth (quantitatively and/or qualitatively)
Dissemination of findings	Identify target audiences for research and broad stakeholder groups. Develop recommendations adapted to needs of diverse audiences/ stakeholders Develop forums for communicating recommendations that accommodate the integrated nature of the research and diverse stakeholder interests and needs Monitor progress of dissemination and document demand for and use of research findings
Reflection and refinement	Assess gaps between what you planned to do in research and what actually took place (given time and resource constraints and new opportunities or explorations) Develop and implement changes to research plans based on assessments for subsequent stages of research and/or new projects

examples in their application to particular research projects. The importance of these components will also be further illustrated in the cases that follow in this book. Before moving on, however, we provide a brief overview of a research study in which we collaborated in pursuing a fully integrated, mixed methods approach. We will draw on and reference this work as we illustrate the various research cycle components and the importance of a planned process of mixed methods research throughout this book.

OVERVIEW OF A FULLY INTEGRATED, MIXED METHODS RESEARCH EFFORT

There are a number of reasons why we think it is valuable to highlight the mixed methods research project that we engaged in over a period of approximately 8 years. First, a central goal of this project was to evaluate the effectiveness of a publicly funded intervention that was mandated by a federal policy and affected all states and local educational agencies within

them. This implies both broad policy implications and a diverse range of stakeholders for the research. Second, the research design was longitudinal, and the research questions and methods evolved over time, as did policy implementation. More often than not, this is the type of situation that policy and evaluation researchers will face. And third, we can provide an insiders' view into both the challenges and advantages of a fully integrated, mixed methods research approach, with the benefit of experience (hindsight) and candid reflections to inform future endeavors and practice.

Study Goals and Foci

Our research was funded by the Institute of Education Sciences to improve student learning and achievement by identifying successful approaches (and the variables that will increase success) in the organization and management of Supplemental Educational Services (SES) and similar supplemental educational programs within school districts, as well as effective strategies for the design and delivery of supplemental instruction by approved providers. Under the No Child Left Behind (NCLB) Act, SES is a core intervention intended to help close the achievement gap in public education. Although many school districts are in states that have now received waivers from these NCLB provisions, public schools subject to this provision (that do not make adequate yearly progress for 3 consecutive years) are required to offer children in low-income families the opportunity to receive extra academic assistance (SES), consisting of tutoring offered outside regular school day hours (delivered primarily by private sector, for-profit or nonprofit, providers.)

The NCLB Act delegated the primary responsibility for implementing SES to state and local educational entities, and it also gave parents and students in these schools unrestricted choice to serve as a key lever for ensuring the quality of supplemental instruction. States establish the specifications for SES provider applications and approval, and school districts rely on an extensive and evolving market of private sector afterschool tutoring programs to offer eligible students a range of choices for SES. Our study addressed key questions about what constitutes a high-quality SES program, what mechanisms or policy tools are available to state and local educational agencies to ensure that the most effective services are made available to and used by their eligible student populations, and the effectiveness of these programs and specific providers in improving educational outcomes and opportunities for low-income and disadvantaged students.

Throughout the study, we expanded the nature and scope of our research and strengthened the integrated qualitative-quantitative approach in the effort to

increase our knowledge and understanding of these tutoring interventions *as implemented*; explore policy issues and program administration in greater depth and detail; respond to evolving policy priorities and program innovations as well as provider market changes; and support the use of our findings by federal, state, and local policymakers in improving program design, implementation, and results.

It was also an explicit goal of our project to create a forum for discussing and disseminating our study findings through what we called the Research-to-Practice Collaborative. The objective of our collaborative was to foster a professional community of practitioners and policymakers who would engage with our research teams and not only facilitate a more in-depth and meaningful investigation but also have an interest in working with our project over time to put study findings into practice and improve on the SES program components identified as contributing to student achievement. This involved the regular dissemination of our findings to local educational agencies (program administrators and other district staff), tutoring providers, parents and students making choices about SES, and the public and policymaking officials through the media, briefings, expert testimony, and other means. For example, school district officials have drawn on the results of our analyses to satisfy state reporting requirements on SES provider performance and to inform school principals, teachers, parents, and others in the district about the effectiveness of SES tutoring options available to students.

Core Research Design Elements

Our study embodied a longitudinal, mixed methods research design that integrates rigorous, nonexperimental analysis of SES program impacts on student achievement with an in-depth, comprehensive qualitative examination of the intervention—provider instructional practice in different program models and settings, the nature and quality of tutoring provided, and district-level program administration—in and across large, urban school districts. The primary settings for our research were Austin Independent School District (ISD), Chicago Public Schools, Dallas ISD, Los Angeles Unified School District, Milwaukee Public Schools, and Minneapolis Public Schools. Student demographics in these districts are generally representative of the larger, urban national population that is eligible for SES under NCLB, that is, high concentrations of economically disadvantaged students, including subgroups with higher levels of academic need/disadvantage (e.g., students with limited English proficiency and disabilities). Our study samples in each of these school districts have comprised the students eligible for SES, primarily defined as those in public schools not making adequate yearly progress for at least 3 years who were also eligible for free and

reduced-price lunch. Across these school districts, there are hundreds of providers of supplemental instruction, including some with multiple locations or settings/formats for tutoring and district providers.

In terms of the mix of research methods applied in this study, qualitative components included interviews, observations, focus groups, and curriculum analysis used in examining the program and treatment in depth. Data were collected in the fieldwork using an observation instrument that was developed and refined in this study to intensively probe staffing, curricular focus, length of session, grouping of students, physical settings of tutoring, format and content of curriculum, communication formats, and other variables. Quantitative tools of analysis were used in describing treatment (SES programs and providers) and estimating the effectiveness of SES and SES providers. These included value-added, fixed effects, propensity score matching, and generalized propensity score matching models that controlled for school and student characteristics under differing assumptions.

We conducted our integrated qualitative and quantitative research in tightly linked and interactive research phases. There was no step or stage in the execution of the research that was dominated by one methodological approach or the other (i.e., qualitative or quantitative), although some sequencing of particular research tasks across the methods was warranted by the research design needs. For example, the first qualitative phase of the study defined key elements of SES program models and practices to inform the construction of treatment variables for both qualitative and quantitative analysis. The early quantitative analysis of program take-up and effects subsequently shaped the continuing qualitative research by identifying relationships that required deeper investigation, informing sample selections, and bringing to light measurement and process issues to be further explored. The qualitative and quantitative components of the research interacted regularly and continuously, facilitated by weekly exchanges and monthly team meetings in which we reviewed analytical findings from the two study components, directed additional data collection and other research activities, refined analysis plans, and prepared research papers, briefing reports, policy briefs, webinars, and so on, for disseminating to stakeholders and the academic community.

Supportive Structures and Mechanisms for Mixing Methods

The research team was formed with the explicit intention of balancing the qualitative and quantitative research components and ensuring strong connections between them. The team included researchers who specialize in qualitative or quantitative methods and those with expertise in both major types of methods,

as well as one team member specifically tasked with facilitating integration of the work among team members. To support regular exchange of data and information from analyses across the qualitative and quantitative study components, a shared workspace was maintained that was segmented for the qualitative and quantitative study components and included folders for each study site. All research team members were able to post and share data, documents, and results from analyses, and access either set of folders (quantitative or qualitative) to foster unconstrained sharing of information and mixed methods analyses. As previously noted, qualitative and quantitative research team members communicated weekly, and more formally on a monthly basis, to coordinate the integrated research efforts, evaluate progress toward research goals, and refine approaches or refocus analysis and other research activities as needed.

In addition, both qualitative and quantitative research team members engaged with the study stakeholders—including school district staff who administer the programs and manage district database systems, SES provider staff, other state and local educational agency personnel (in the project sites and beyond), and community members—to keep an open line to understanding these stakeholders' questions and concerns about how the intervention was working in practice (in these urban settings) and how our study could generate the types of information they needed to inform policy and program improvements. The consistency of our own project staffing was essential to maintaining these relationships through many changes in district and provider leadership, organization, and staffing over time. Collaborative relationships such as these across our quantitative and qualitative team members *and* practitioner partners were particularly important for core research activities, such as data collection, which require substantial time investments each year by the research team and careful monitoring and oversight to ensure appropriate assembly, linking, and use of the study data.

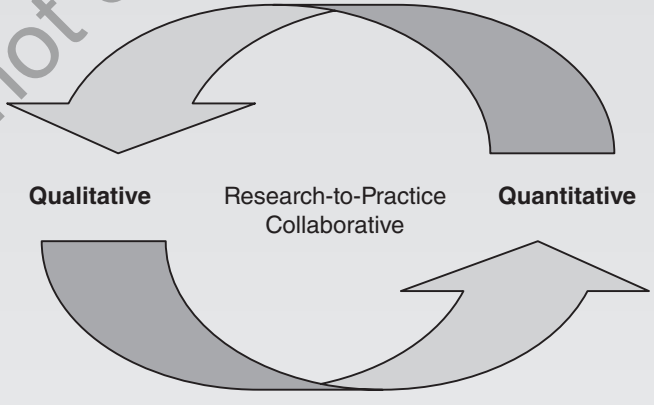
Research Dissemination and Reflections on the Process of Mixed Methods Research

Because our research was purposely designed to provide ongoing feedback and input of the results into policy and program implementation processes, dissemination and reflection were ongoing in our study. For example, the timing of our interactions with SES program stakeholders revolved around the school year calendar and the activities involved in implementing the programs. Prior to the start of the school year, research team members stayed in close contact with district staff administering the programs, and qualitative researchers connected with tutoring providers to make them aware of our research and

enlist their cooperation in the observational component of the study. In addition, our in-person research briefings and cross-district and public webinars were timed to support active use of the study findings (e.g., before the end of the school year or the start of the next school year) in policy and program planning. The research briefings emphasized the integrated nature of the qualitative and quantitative research (see Box 2.1), gave equal attention to the contributions of both methodological approaches in the discussion of findings, and revealed the richness of insights and deeper understanding that was realized from the full integration of mixed methods in this study. In fact, as we became more aware of these benefits as a team, we became ardent about ensuring that the qualitative and quantitative results would not be presented separately or in isolation of each other, lest the findings be misconstrued or a depth of understanding lost for the audience.

BOX 2.1 ILLUSTRATION OF THE FULLY INTEGRATED MIXED METHODS APPROACH

In the presentations used to brief our school district partners on the evaluation results, we always included a slide with the graphic shown below to convey the equal priority given to qualitative and quantitative methods in our investigation and the interactive, iterative approach applied in integrating them in the study. In addition, we centered the Research-to-Practice Collaborative in this graphic to depict its critical role in facilitating continuous interchange with our research stakeholders/partners throughout the research process.



For example, quantitative analyses found fewer and smaller effects of SES for students with special needs (e.g., English language learners and students with disabilities), which prompted our research team to look more closely at the nature of the intervention in practice (from awareness and registration to assessment and instruction) for these two subgroups of students in our samples. Both quantitative and qualitative analyses suggested pathways to increasing access to services for students with special needs. In addition, we uncovered unresolved issues in program implementation for these students over who was legally responsible for serving English language learners and students with disabilities. Tutoring providers depended on parents, teachers, and/or district staff to share student assessment data in order to understand student needs and have staff prepared to tailor services for them, but across our study districts, we encountered confusion and misunderstandings regarding how providers should be informed of students' English language learner or disability status. The cross-district webinars gave school district staff the opportunity to exchange ideas and strategies for improving practice in this area, and it provided researchers with a forum for interjecting evidence and documenting proposed program and policy modifications to monitor and evaluate in ongoing research.

In general, we believe that the tight integration of qualitative and quantitative methods across numerous elements of research design—from sample selection to instrumentation development to data collection and analysis—and their triangulation in interpreting and disseminating study results strengthens the credibility of our findings and their relevance for stakeholders of the research. Throughout the remaining chapters of this book, we will occasionally draw on this work (described above) to better illustrate the "know-how" of mixed methods research and offer pointers in their application.

DISCUSSION QUESTIONS

1. This chapter acknowledges a range of different typologies of mixed methods from which researchers can choose and decision points that the existing literature asks researchers to consider. How does the planning of a mixed methods study benefit from considering these different typologies and strategies for organizing the research?
2. The chapter also identifies a number of challenges to conducting fully integrated mixed methods research—what are they? How might the various stakeholders in a study (researchers, policymakers, program participants)

work together to address these challenges or determine which ones should be prioritized for resolving in the study?

3. The chapter states "mixed method studies do not or should not attempt to resolve differences across paradigms but rather capture or leverage the dualism of qualitative and quantitative studies, which, in policy research, is more apt to reflect the subject of our inquiry as well." What kinds of differences have typically been identified as unresolvable? Can you think of instances from your own research or others' work where similar tensions exist? What made them seem unresolvable?
4. The chapter stresses the importance of conducting research that will stand up to rigorous peer review and be published in scholarly journals, yet also generate evidence that those working *in* policy can use to inform decisions and persuade others in the face of intense political engagement. What in your experience, to date, have been challenges to finding this balance? And from where (structural, cultural factors) did these challenges originate?

APPLICATIONS TO YOUR OWN WORK

- For a research effort or project of your interest, describe the stakeholders you would involve and the potential benefits (and challenges) of working with them in defining research questions and a theory of action for your work.
- If you were to emulate the Research-to-Practice Collaborative in your own research project, what mechanisms would you use to engage the stakeholders in discussions at different phases of the research process, including dissemination of the study findings?
- Choose a mixed methods study on a topic of interest to you. Drawing on Table 2.1, describe to what extent (or in which ways) it "is" or "is not" better characterized as a fully integrated mixed methods approach.