CHAPTER 1

Introduction: Evidence and Decision Making

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Much of the methodological literature currently influential in the education policy community has focused on research studies and assessments intended to support generalizable conclusions about “what works” or what students “know and can do.” Until recently, far less attention has been paid to how educators actually interpret and use this information in making routine decisions in their local contexts of work; to what kinds of evidence may be needed to support those decisions; to the social structures, organizational routines, and patterns of interaction that shape the ways in which information is interpreted and used; or to how these practices might be improved to better support learning. As Phillips (this volume) notes, “the complex relation between evidence and generalizations, and particularly between evidence and courses of action, tends to be oversimplified” (p. 377).

The standards-based reform movement, with its emphasis on performance-based accountability, has further focused attention on a particular source of evidence—standardized tests of student achievement—and a “theory of action” for how this information would function within the system. As framed by Elmore and Rothman (1999), following the 1994 reauthorization of Title I of the Elementary and Secondary Education Act (ESEA):

Generally, the idea of standards-based reform states that, if states set high standards for student performance, develop assessments that measure student performance against the standards, give schools the flexibility they need to change curriculum, instruction, and school organization to enable their students to meet the standards, and hold schools strictly accountable for meeting performance standards, then student achievement will rise. (p. 15)
The next reauthorization of Title I of the ESEA, the No Child Left Behind (NCLB) Act, signed into law in 2002, further focused and polarized the debate surrounding performance-based accountability, with different parties staking out different positions on this particular theory of action, and the test-based evidence and decisions (e.g., about sanctions for schools failing to make adequate yearly progress) it entails. Since that time, many volumes and reports have been published, with studies of the implementation and effects of these practices and recommendations on how to revise the theory of action to address the problems that have been observed with standards- and test-based approaches to accountability and reform (e.g., Carnoy, Elmore, & Sisken, 2003; Commission on No Child Left Behind, 2007; Forum on Educational Accountability, 2007; Fuhrman & Elmore, 2004; Herman & Haertel, 2005; Peterson & West, 2003; Skrla & Scheurich, 2004). And yet, these practices represent only a particular subset of the practices in which educators can and do engage in while constructing, interpreting, and using evidence to support students’ learning.

This volume and the small but growing literature base on which it draws decenter, complement, and challenge studies of the impact of standards-based accountability to consider questions about how education professionals (might) actually interpret and use tests and other sources of evidence to make routine decisions in their daily work; about how these practices shape and are shaped by organizational structures, routines, and cultures; and about the sorts of learning and professional agency that are fostered. The volume also highlights technical infrastructures that have emerged concomitant with the standards-based reform movement to enable the collection, distribution, consolidation, and reuse of evidence as has not been possible before, along with the social practices through which they are implemented.

Thus, Evidence and Decision Making illuminates the crucial roles that teachers, administrators, and other education professionals play in constructing, interpreting, and using evidence to make decisions that support learning. As the chapters illustrate, professionals working in different contexts have different decisions to make, different sources of evidence, different resources for interpreting the available evidence, and different constraints on their practice. Chapter authors analyze different practices of constructing and using evidence in classrooms, teacher communities, schools, and school districts, with particular attention to promising examples; consider the roles that district, state, and federal education agencies can play in supporting sound practice; and provide historical background on how educators have used evidence to improve
practice, theoretical resources for studying the interpretation and use of evidence in educational organizations, and epistemological resources for warranting the different kinds of decisions that are made.

As Gamson (this volume) notes, while “leaders at all levels of the system have a long tradition of collecting and using (or sometimes abusing) evidence” (p. 16), “evidence-based decision making” is a relatively recent construct in education and the boundaries of the “field” are still very much under construction. Contributors to this volume draw on multiple professional discourses, focused on different aspects of educational practice, to explore the relationships among evidence, decision making, professional inquiry and learning, and organizational culture. These professional discourses include educational policy studies, educational administration, teaching and teacher education, systems engineering, and organizational studies; educational measurement, historiography, ethnography, sociolinguistics, and epistemology; and sociocultural, situated, and cognitive studies of learning or the “learning sciences.” Indeed, the conversations about evidence and decision making productively cross boundaries that exist in the educational system as well as disciplinary delineations in research communities.

The remainder of the introduction highlights the conceptualization of the relationship between evidence and decision making that can be inferred from the chapters in this volume, provides an overview of the structure of the volume and focus of each of its chapters, and points to issues raised that suggest next steps for research and practice.

**Conceptualizing the Relationship Between Evidence and Decision Making**

At the heart of this volume is the conception that if we want to understand how information can be used to improve educational practice, we need to understand the complex processes through which information is attended to, interpreted, and used to frame problems and to inform and evaluate decisions and actions (Spillane & Miele, this volume). Chapter authors draw attention to key elements of this process and suggest key leverage points through which these practices might be enhanced to better support learning.

As all the chapters illustrate, information is used for a *variety of purposes* in different contexts at different levels of the educational system. The types of decisions made range from moment-to-moment decisions classroom teachers face about “what to do next” and how to plan and enact lessons, revise curricular routines, solve particular
pedagogical problems, or inform parents and guardians about students’ learning; to decisions school and district leaders face about allocating resources, planning professional development, selecting and refining curricula, developing local policies, and evaluating the impact of these choices; to decisions state and federal education professionals face about the design of indicator systems and other social structures to support district and local education agencies, research and development priorities, or the design and impact of particular fiscal policies.

Contributors also note that uses of information involve far more than decision making. Information helps with prompting questions, framing and diagnosing problems, justifying chosen courses of action, complying with external requests for information, and managing meaning, culture, and motivation (Knapp, Copland, & Swinnerton, this volume). It is also used to enlighten or challenge thinking, to mobilize support or persuade, to trigger bureaucratic action, and to provide external legitimation of performance (Firestone & González, this volume). Most importantly, information is also routinely used to support professional and organizational learning about how to improve practice. The focus in this volume is on the use of information to inform decision making and to support professional and system-level learning.

Different decisions (and different learning goals or opportunities) require different kinds and configurations of information or data. Knapp et al. characterize the variety of data potentially relevant to guiding, directing, assessing, and supporting teaching and learning as information that

1. represents the content or conduct of instruction or its effects on student learning and the student experience, as well as the factors and conditions that most immediately affect these matters; and
2. is, or could be, used in leadership actions aimed directly at the improvement of instruction, learning, and the student experience, or the organizational conditions that support instructional improvement. (p. 80)

If the goal is to make decisions about how to improve teaching and learning or to make choices among alternative courses of action, evidence of student outcomes alone is insufficient. One must consider information about the conceptual and material resources, the processes and practices, and the organizational routines and cultures that shape or influence those outcomes. As Resnick, Besterfield-Sacre, Mehalik, Sherer, and Halverson describe it, we need “assessment focused on the timely measurement of the key processes—from the classroom to the policy room—that can be shown empirically to influence student learning” (p. 155).
An important dimension that arises explicitly in some of the volume's chapters (e.g., Erickson; Hickey & Anderson; Thorn, Meyer, & Gamoran), and implicitly in all of them, are the issues of grain size and time scale. Decisions relate to different time scales and the evidence needed to support them should be relevant to that time scale. For instance, Erickson argues, “For assessment to be ‘formative’ in terms of instruction it must produce data that can inform teaching practice during its ongoing course” (p. 189). Similarly, Thorn et al. suggest that annual metrics “do little to inform district- or building-level leaders about what is or is not working in classrooms” (p. 345). Hickey and Anderson offer a productive taxonomy of assessments that operate on different time scales and the different sorts of decisions they support.

While sources of evidence considered by chapter authors include standardized assessments of student learning—both those in current use under NCLB and promising alternatives that take into account cognitive and sociocultural understandings of learning—they also include a wide range of other sources of evidence—formal and informal, quantitative and qualitative—to which educators have access. These range from the information available in ongoing classroom interactions and samples of students’ work; teacher accounts of classroom practice, instructional artifacts, and discussions of standardized test results; data from videotapes, interviews, and surveys; various indicators of resources and social structures; and published research reports.

In conceptualizing the relationship between evidence and decision making, multiple contributors note that information does not become evidence until people “notice, frame, and interpret” (Spillane & Miele, p. 48) it as relevant to a problem or decision. “To put it in a nutshell,” argues Phillips (p. 390), “evidence is made, not found. And it is made by way of an argument that links data to the theory or policy that is under consideration.” Further, he notes, the same information might be used in different arguments, with different premises, that lead to different conclusions. Spillane and Miele explain “What is noticed in a school environment, whether this information is understood as evidence pertaining to some problem, and how it is eventually used in practice (perhaps to formulate a solution to the problem) depends on the cognition of the individuals operating within that school (e.g., teachers and administrators)” (p. 48). Similarly, Knapp et al. argue, “data by themselves are not evidence of anything, until users of the data bring concepts, criteria, theories of action, and interpretive frames of reference to the task of making sense of the data” (p. 80).
Further, as Spillane and Miele contend, interpretation “is not entirely . . . [a] solo affair. What we notice and what sense we make out of this information depends on our situation” (pp. 48–49), including the conceptual tools provided, which mediate how information is understood, and the organizational routines in which information is interpreted and used. Similarly, Gee highlights the ways in which meanings people give to information are shaped by “the cultures and social groups within which they act and interact” and by the “actual situations or contexts of use” (p. 362). Firestone and González highlight the role of organizational culture in shaping the ways information is noticed, interpreted, and used. And Phillips notes, “it is inevitable that normative and value elements such as goals, political and ethical ideals, conceptions of economic justice, and the like, will be involved” (p. 394). Seen throughout the volume are multiple examples of the ways in which information of various sorts—test scores, samples of student work and conversations with students about their work, narratives of classroom experience—is interpreted by teachers and administrators for different purposes, in different contexts, with different cultures, to make decisions and improve their practice.

Processes of explicit inquiry represented range from more to less complex. Decision-making practices observed by Ikemoto and Marsh (this volume), for instance, range from “basic” (e.g., decisions based directly on reported test scores, with minimal additional evidence or analyses), to somewhat more complex analyses of multiple types of evidence, to what they call “inquiry focused” analysis, which involves the development of questions and evidence to address them. For contributors who envision models of evidence-based decision making, the process involves cycles of inquiry. Knapp et al., for instance, describe the following stages: (1) focusing and (re)framing problems; (2) accessing or searching for data and evidence; (3) making sense of data and its action implications; (4) taking action and communicating it in different arenas of data use; and (5) learning from action through feedback and further inquiry. Phillips, characterizing the epistemological practices of science, also points to cycles of inquiry, and characterizes the roles information plays at various stages in the process—from illuminating a problem, to developing a hypothesis or theory or potential course of action, to confirming or rejecting the possible solution. He notes as well the importance of critique and debate in warranting an argument underlying the decision, action, policy, or solution.
Of course, not all decisions can or should be subjected to an explicit inquiry. As Erickson illustrates, for instance, much that might be called assessment is simply a routine part of social interaction in a learning environment. In such cases, we need to consider the meta-issue of how learning environments are resourced—with knowledgeable people, material and conceptual tools, norms and routines, and evolving information about learning—to support sound evidence-based decisions when explicit inquiry is not possible (Moss, Girard, & Haniford, 2006; Moss, Girard, & Greeno, forthcoming).

**Organization of the Volume**

The chapters are organized into three major central sections focusing on evidence and decision making at different levels of the educational system; opening and concluding sections set the major sections in historical context and provide theoretical and epistemological resources for developing and studying practices of evidence use and decision making and their effects. All authors point to existing research relevant to the particular focus of their chapters; some authors provide empirical accounts of past or current practice, with particular attention to instructive or promising examples; some envision new practices and provide prototype examples or describe steps taken to develop these practices. In this part of the introduction, a brief overview of the major sections and the focus of each chapter within them are provided.

Following the introduction, Gamson, in “Historical Perspectives on Democratic Decision Making in Education: Paradigms, Paradoxes, and Promises,” provides a “brief history of how educators have thought about and pursued connections between educational research, evidence and decision making” (p. 16). Focusing on a series of cases, he addresses questions of “how . . . educators [have] used evidence in the past to improve practice,” “what has constituted evidence,” “who educational leaders believed could legitimately conduct research, collect evidence, and take action on findings,” and “why certain types of evidence were privileged at various points in our history” (p. 16). Spillane and Miele, in “Evidence in Practice: A Framing of the Terrain,” provide an analytic framework for examining how information gets noticed, interpreted, constructed as evidence, and used in school practice. They consider both the individual and organizational factors that shape how information is used. While the focus of the examples they provide is on data use at the school level, the framework they provide has relevance to many educational contexts.
The first major section, School District Roles and Resources, focuses on practices of evidence and decision making at the district level and on the roles and responsibilities districts can and do take on to support teaching and learning in schools. As Firestone and González note, “school districts occupy a special place in the American educational system. They are the locus of accountability to both local and state government” (p. 132). In “Understanding the Promise and Dynamics of Data-Informed Leadership,” Knapp et al. begin with an overview of research “concerning the availability, quality, and use of data in the work of leaders at state and local levels related to the improvement of teaching and learning by leaders at state and local levels”; they provide a “conceptual” map articulating “the connections between leadership and learning” (p. 75), including student learning, learning by professionals, and system learning. Central to their vision is the building of a culture of inquiry and the enactment of cycles of inquiry to improve practice. They provide extended cases of leadership practice in a district and one of its schools. Ikemoto and Marsh, in “Cutting Through the ‘Data-Driven’ Mantra: Different Conceptions of Data-Driven Decision Making” (DDDM), consider how educators transform data into actionable knowledge and decide how to take action. They draw on case studies, interviews, and surveys to develop a framework for classifying different practices of DDDM, from simple to complex. They note that although most of the people they interviewed purported to be using DDDM, “educators meant very different things when they claimed to be using data or practicing DDDM” (p. 106). They illustrate the framework with examples from different districts and illuminate the factors that appear related to more complex, inquiry-oriented practices.

Firestone and González, in “Culture and Processes Affecting Data Use in School Districts,” draw on existing literature and their own experience working in and with districts to propose a “typology of uses of data.” They consider the ways in which a district’s culture shapes the context for data use, distinguishing between cultures that privilege accountability and those that privilege organizational learning, and they “identify some of the organizational processes through which both district leaders and testing offices support an organizational learning culture” (p. 133). Finally, Resnick et al. envision “A Framework for Effective Management of School System Performance” that focuses on measurements of key processes that influence student learning. Their framework “considers the major influences on student learning beginning at the classroom level, where learning takes place, through to the school and district levels, where policy decisions are made” (p. 156).
They illustrate the framework by developing a “theory of action” for instructional coaching.

The next major section focuses on Practice in Classrooms, Schools, and Teacher Communities. The chapters in this section provide a close-up look at the actions and interactions through which teachers and school leaders use information to make decisions that support students’ learning as well as improve their own practice. Erickson examines the interactions between teachers and students in early elementary classrooms. He introduces the concept of “proximal formative assessment,” which entails “the continual ‘taking stock’ that teachers engage in by paying firsthand observational attention to students during the ongoing course of instruction,” focusing on “specific aspects of a student’s developing understanding” (p. 187), to help in deciding what pedagogical move to make next. He illustrates the concept with cases of proximal formative assessment in action, including practice in a university laboratory school science classroom. While Erickson takes the reader inside the teacher’s work of using evidence and decision making in the classroom, Little focuses on “Teachers’ Accounts of Classroom Experience as a Resource for Professional Learning and Instructional Decision Making.” She summarizes the conflicting research perspectives on teachers’ “accounts of experience and experience-based claims to knowledge,” situating this in the broader literature on “accounts of experience as ordinary workplace practice” (p. 219), and provides an extended case from her own research of “how teachers treat representations of practice, including narrative accounts of experience, in the context of deliberate efforts to improve teaching and learning” (pp. 227–228).

The other two chapters in this section privilege assessments of learning. In “The Uses of Testing Data in Urban Elementary Schools: Some Lessons from Chicago,” Diamond and Cooper examine how testing data are used to inform school-level decision making in four urban schools, two of which were on probation because of their scores. They consider “the ways in which the data were interpreted and the educational strategies that resulted” (p. 242). They illustrate how organizational context (particularly schools’ accountability status) shapes evidence use and raises questions about equity. Hickey and Anderson, in “Situative Approaches to Student Assessment: Contextualizing Evidence to Transform Practice,” outline a “multilevel” approach to assessment that serves different formative functions at different levels of distance—from particular curricular routines tied to immediate assessment during classroom events to remote assessments intended to allow comparison of curricula and jurisdictions. Through a series of
design-based experiments in classrooms involving “innovative technology-supported science curricula,” the authors illustrate how assessments can be built to support local curricula and instruction and linked to more remote assessments, thus enhancing the coherence of the system without making remote assessment the direct target of instruction.

The third major section, Indicator Systems, focuses on educational indicator systems that operate at district, state, national, and international levels, and that serve policy purposes. As Thorn et al. describe it, “an indicator system is a set of measures used to monitor a complex social institution” (p. 341). The first two chapters in this section focus on particular aspects of the sorts of comprehensive indicator systems envisioned by Thorn et al. In “Establishing Multilevel Coherence in Assessment,” Gitomer and Duschl propose a framework for designing coherent assessment systems, using science education as an exemplar, that provides useful information to policymakers at the same time it supports learning and teaching in the classroom” (pp. 288–289). They highlight the importance of what they call “external coherence”—which refers to the relationship between the assessments and valued learning outcomes—and “internal coherence” which focuses on the relationship among the assessments within an educational system. In “Large-Scale Indicator Assessments: What Every Educational Policymaker Should Know,” Carr, Dogan, Tirre, and Walton discuss assessments of student achievement which serve “as a common yardstick by which the educational progress in states, jurisdictions, and other countries can be compared” (p. 321). Indicators, as they conceptualize them, inform educational policy and decision making, but are not intended to force particular actions. The authors focus, in particular, on the National Assessment of Educational Progress, making recommendations for how educators might interpret and use its information and how developers might support educators in making such interpretations. Finally, Thorn et al., in “Evidence and Decision Making in Education Systems,” illustrate the interplay between the technical and social issues involved in the development and implementation of more comprehensive indicator systems. They argue that “The selection of indicators should align with an organization’s theory of change and should inform the actions necessary to enable that change” (p. 341). They point to the problems and the possibilities entailed in building educational indicator systems in the current federal policy environment. To illustrate these issues, they draw on their own work at the Value-Added Research Center “which develops new educational indicators and data management applications to pro-
vide decision-making support to the Milwaukee Public School system” (p. 340).

In the concluding section, Cross-Cutting Themes, Gee and Phillips each raise issues that are relevant to evaluating evidence-based decision making across levels of the educational system. Gee draws on sociocultural and situative studies of human action and interaction to highlight the fundamental role that meaning plays in the practice of assessment. He illuminates how meanings are shaped by “the cultures and social groups within which [humans] act and interact” and are “customized to—situated within—actual situations or contexts of use” (p. 362). He points to problems of interpretation and equity that arise when different actors—persons assessed, assessors, and anyone who uses the assessment—bring different meanings to assessment. Phillips focuses on the epistemological issues that philosophy of science raises about the justifications that underlie decisions and actions of policymakers. He considers the role that data can play at various stages of the inquiry process, from provoking the recognition of a problem, to clarifying the problem, to putting a hypothesized solution to the test. He analyzes a variety of cases from the published literature, illuminating the complex and dialectical relationships among information, premises (like values and assumptions), and conclusions, and he suggests practices and principles to enhance the validity of such decisions.

Taken together, the chapters lay out a realistically complex vision of how evidence can be constructed and used to inform decisions by professionals working with differing responsibilities at different levels of the educational system. They envision promising directions for research and practice and raise productive questions about the effects of different choices.

Critical Issues for Reading, Research, and Practice

Each of the chapters, in its own way, illuminates the primary roles that human actors play in constructing and using evidence to make decisions and improve their practice. Each also highlights the fundamental way in which organizational conditions and resources shape (and are shaped by) local practice. The contributors highlight questions about what resources education professionals working at different levels of the system need, what organizational norms and routines will facilitate productive use of those resources, and “how policies and practices
at different levels interact to produce desired outcomes” (Resnick et al., p. 160). Further, they highlight questions about the collective capacities, commitments, and culture that nurture professional inquiry and learning.

In the opening chapter, Gamson raises a fundamental question about the balance between expert knowledge, administrative authority, and professional autonomy. This question illuminates instructive differences among the policies and practices described in the different chapters. It also helps frame the tension, noted by many authors, between the use of information for inquiry, decision making, and professional or organizational learning on the one hand, and its use for monitoring, control, and accountability on the other hand. These differences raise important questions about the nature of the relationship between district, state, and federal authorities and the teachers and school and district leaders to and for whom they are responsible, about potential roles for external organizations (like universities or commercial enterprises), and about the relation between technological infrastructures and local practice. What elements of local practice can be productively designed from afar, and what elements left to local agency? How do different answers to this question shape the collective capacities, commitments, and cultures of educators and the organizations in which they work? How do they enhance or impede equity in students’ opportunities to learn?

Thus, the contributors to this volume, through their diversity of perspectives, educational contexts, methodologies, and constructions of what to include in the study of evidence and decision making, raise fundamental questions for a research agenda into this important and rapidly evolving dimension of educational research. Educators and researchers working to develop and support systemic views of evidentiary practices may well find themselves looking across the perspectives, contexts, and methodologies represented here to appreciate the interplay of evidence, decision making, inquiry, and learning. If the shared goal, following Little, is the enactment of “a vision of teaching and learning that is at once intellectually and socially ‘ambitious’” (p. 219), then a fundamental research question is how to support the current and next generation of education professionals—at all levels of the system—in using evidence to learn and to make decisions that further ambitious teaching and learning goals. Readers are invited to engage these challenges as they consider the diverse practices these chapters represent.
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NOTE

1. “Theory of action” is a term associated with Argyris and Schon (1978); a number of contributors to this volume draw upon it.

REFERENCES


