

Equity, Excellence, Elephants, and Evidence

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Three key themes reverberate throughout this volume. An *equity and excellence* theme emphasizes that the creation of high-quality learning opportunities is a core value shared by all the authors of this volume. An *elephants* theme (as in the poem “The Blind Men and the Elephant” by John Godfrey Saxe)¹ reminds us that our educational system includes a multiplicity of subsystems that may or may not amount to a fully functioning and healthy elephant and needs to be understood holistically in order to make true progress. An *evidence* theme highlights our assumption that everyone wants to do what is best for students; that evidence of what works, and why, is necessary to be as effective as possible; and that the idea of using “evidence based practices” is more complex than it might appear at first glance and needs to be understood and explored from multiple points of view. We elaborate on each of these themes below.

EQUITY AND EXCELLENCE OF EDUCATIONAL OPPORTUNITIES

Each chapter in this volume focuses on the goal of creating equity and excellence of educational opportunities. As noted elsewhere by Bransford and colleagues, it is easy to forget how important this is for people’s lives.

Anyone who has been highly motivated to learn something new—especially something important for their lives—understands the advantages of

finding expert mentors who can help them. Gaining access to high-quality instructional expertise has been a challenge throughout much of human history. Many secrets of success (e.g., how to make glass vessels, axe heads, or scalpels; how to read, write, hunt or grow food) were provided through apprenticeships and mentorships that were often available to only a select few. . . . In today's world, vast inequities still frustrate people's opportunities to gain access to high quality instruction. Nevertheless, nations throughout the world are beginning to view increased access to learning opportunities as a moral and economic imperative that can make far-reaching differences in the quality of people's and nations' lives.²

Public education represents a major effort to provide all citizens with high-quality opportunities for learning. It is a relative newcomer in the history of humankind, and the sophistication of the learning goals it attempts to achieve has increased dramatically over time. For example, in America in 1860 there were many public elementary schools but only forty public high schools. Until the 1900s, most Americans' formal education ended with elementary school, which was organized around the agrarian calendar since students were needed to work in the fields. Between 1860 and 1900, the number of public high schools in America grew from forty to 6,000 thanks to a watershed ruling by the Supreme Court in the 1870s that had been preceded by a vigorous debate over who should pay for secondary school for what were called "the masses." Many argued that elementary school was sufficient for most people, and, in fact, further education could actually be harmful because it would only drive the poor to strive for unrealistic economic levels and alienate them from manual labor, which was vital to the economy of the country.

During the past century the United States and other nations have realized that a high school education is extremely important and that at least some college education—and even graduate education—is necessary in order to be successful in the twenty-first century. The overall quality of peoples' lives increasingly requires a rich national diversity of sophisticated skills, knowledge, attitudes, and technology proficiencies that allow individuals, communities, organizations, and government agencies to innovate continuously in order to adapt to our fast-changing global world.³

Shortcomings in Equity and Excellence

Despite the fact that the United States and other nations have done a remarkable job of creating schools, colleges, and universities for educating their citizens, the mere existence of schools does not guarantee effective educational outcomes. In the United States, for example, the number of high school drop-

outs is alarming.⁴ Other nations often refer to dropouts as “early school leavers,” and these nations have problems as well.⁵

Ms. Trish Diziko is an extraordinarily talented leader of the Technology Access Foundation in Seattle, a nonprofit organization that works with underserved youth to help them excel. In a recent email statement about the reasons and vision for her foundation, Ms. Diziko said,

Last week I was reading an article in the Washington CEO journal.⁶ In light of the fact that one of our learning labs was burglarized recently, here’s what stuck out for me: Studies show that people without a high-school diploma or a general education degree are more likely than others to land in prison or on welfare. The state budget for corrections more than doubled between 1991 and 2001, outpacing all other expenditures except for health care. The average cost per prisoner is \$27,170 per year. That same money could cover a year’s worth of education at the University of Washington for two medical students.

Articles like this make me wonder why our state, with all its resources, cannot manage to create the best education system in the nation. Would we rather build jails? Would we rather increase our welfare rolls? I would bet that we could reduce our state healthcare costs if people had a better education. What are we waiting for?⁷

UNDERSTANDING THE WHOLE ELEPHANT: THE NEED TO COORDINATE MULTIPLE POINTS OF VIEW

Problems like the one so elegantly described by Ms. Diziko focus on issues of equity and excellence and also introduce the problem of the “elephant.” She asks what we can do to solve current and future educational problems, and this raises the important question of who the “we” is. Answers include the federal government, state governments, national and state school leadership and teacher organizations, school districts and school boards, individual schools, individual parents and families, foundations, the private sector, the nonprofit sector, parent-based groups such as the PTA and those who support home schooling, the educational research community, and others. Lage-mann’s classic article on “Contested Terrain” provides a gripping history of conflicts about who owns the schools and who should have a major say in how they work.⁸

To sociologists, the groups noted above would qualify as “loosely coupled.”⁹ There is no central authority that has the power to determine all of the nation’s educational policies and practices. Although there *are* ways

that the U.S. government can yield considerable power (e.g., consider NCLB), it is only one of many players, unlike countries like Japan (see this volume) where most important education decisions are made by the central government. As this book illustrates, the decentralized nature of American education, while a strength in some respects, makes major reform efforts extremely difficult to achieve on a broad scale.

In the first chapter, Mosher and Smith remind us that the educational powers of the federal government are strongly affected by states' rights, which are further affected by traditions of local control within states. The latter includes district control, which requires accountability to the local communities that they serve (including their school boards) and, ideally, to the needs and talents of each of the students and families in the local community. We see here a major tension: How do we as a nation achieve coherence with respect to key academic policies and learning opportunities while also acknowledging that we may need to contextualize our actions in order to be maximally responsive to each individual and local situation? In short, how do we envision the whole elephant while also respecting the vital functions and authority of each of its parts? This requires helping education stakeholders develop a clearer picture of the educational needs, priorities, and opportunities that surface when one looks at educational issues from different perspectives—including the nation, the state, the district, the school, the research community, the individual family, and the overall "learning ecosystem" of the child.¹⁰

ISSUES OF EVIDENCE

Different groups of stakeholders (e.g., teachers, superintendents, researchers) assign different priorities to the most important questions to be tackled in order to improve teaching and learning, and they often use different criteria to signify "success." This brings us to issues of *evidence* and how it differs for different groups of stakeholders. Some of the differences involve the priority of the questions to be asked and answered. Others involve differences in what is meant by "evidence" and how evidence is used differently by different groups of stakeholders.

Disconnects in the Priority of Questions

Illustrations of some of the disconnects in key research questions to be answered were discussed in an address delivered by Grover Whitehurst, director of the National Institute of Education Sciences, at the 2003 meeting of

the American Educational Research Association (AERA).¹¹ Whitehurst voiced strong concerns about the mismatch between the educational research that is produced (supplied) and the kinds of research demanded by practitioners in the field.

To illustrate his point, Whitehurst discussed the 2003 AERA conference program, which listed hundreds of sessions and papers. He explained that the titles of some of the sessions and papers seemed straightforward, for example “Technology for Formative Assessment.” However, Whitehurst notes that many titles seemed arcane and idiosyncratic, such as “Episodes of Theory-Building as a Transformative & Decolonizing Process: A Microethnographic Inquiry into a Deeper Awareness of Embodied Knowing.” Though not a real title in the program, he claimed that it was close to some of the actual titles that appeared.

It is noteworthy that to many members of the research community, the topic mentioned by Whitehurst (embodied knowing) is extremely relevant for education. However, it makes sense only if one is already immersed in the “embodied knowing” literature and understands the potential importance of exploring this issue. We assume that Whitehurst’s point was that to outsiders looking for guidance about everyday educational problems, the title will not make attendees think, “I must attend this session or read this paper immediately.” Whitehurst reminded researchers that many of their talks and writings seem impenetrable to people who are not directly involved in their particular area of research.¹² In other words, the “supply side” of educational research (the parts supplied by many researchers) often fails to connect with the “demand side” of practitioners and policymakers.

Whitehurst further illustrated mismatches between the “supply side” and “demand side” for research by summarizing the results of a questionnaire that asked professionals—mainly superintendents and chief state school officers—to provide their assessments of the research literature and its value to them and their work. The responses suggested a lack of enthusiasm for most education research. For example, 77 percent of the respondents criticized research for its overly theoretical and academic orientation. They asked instead for research that is meaningful to teachers and that gives them strategies to help children learn.¹³ Examples of key topics they believed should be studied include effective instructional practices in reading, math, and science; standards and assessment; education finance; and guidance on how to close the achievement gap. Whitehurst noted that in the context of the requirements of No Child Left Behind (NCLB) and increased public scrutiny, education leaders feel that they can no longer afford to make decisions based

on intuition or opinion. Yet they do not believe they have access to the evidence they need to make well-informed decisions.

In fact, there is quite a lot of research on the key topics mentioned above. But it is rarely conclusive and is often not shared in forms that education leaders and other practitioners either have access to or can make sense of. These are just a few of the “disconnects” between research and practice that are discussed in this volume, among the many other parts of the education elephant that are misaligned.

What Counts as Evidence?

In addition to recognizing the need for better alignment between what educational researchers study and what practitioners need, we need to explore differences in the nature of the evidence needed for decision making by different groups of stakeholders. Everyone contributing to this book agrees that attempts to use “evidence-based practices” represent extremely important goals for education, but it has also been clear to us as we worked together that there are important differences in what people mean by “evidence” and in how they believe it should guide decisions and actions to promote student learning.

As we met to begin writing this book, questions about the kinds of research needed to support evidence-based practice were receiving a great deal of attention from the U.S. Department of Education. Despite its very negative review of the current state of education research (as evidenced in Whitehurst’s comments), its strategic plan included a note of optimism about research: “We will change education to make it an evidence-based field.”¹⁴

References to “scientifically-based” and “evidence-based” practices occurred over 100 times in the NCLB legislation, and implications of this policy are pervasive. For example, Reading First, a major program authorized by that legislation, authorized federal funding only for states and districts using “research-based” reading programs. Considerable debate has ensued about how that phrase was interpreted by the Department of Education, but its very existence underscores the view that evidence should be valued.

The desire to promote evidence-based practice also motivated the creation of the What Works Clearinghouse, established by the Department of Education in 2002 to “provide educators, policymakers, researchers, and the public with a central and trusted source of scientific evidence of what works in education.”¹⁵ Its website includes reviews produced by a technical advisory group on the effectiveness of educational interventions (programs, products, practices, and policies) deemed to have sufficient research evidence to rec-

commend them. Not surprisingly, there are both supporters and critics of the criteria used to designate “success.” Most contentious has been the Department of Education’s emphasis on randomized trials.¹⁶ The Network, along with many other critics, worried about a number of dangers with this focus, among them the lack of attention to context, including efforts to understand where interventions worked, for whom, and why, and the many educational questions that are not amenable to this kind of research.

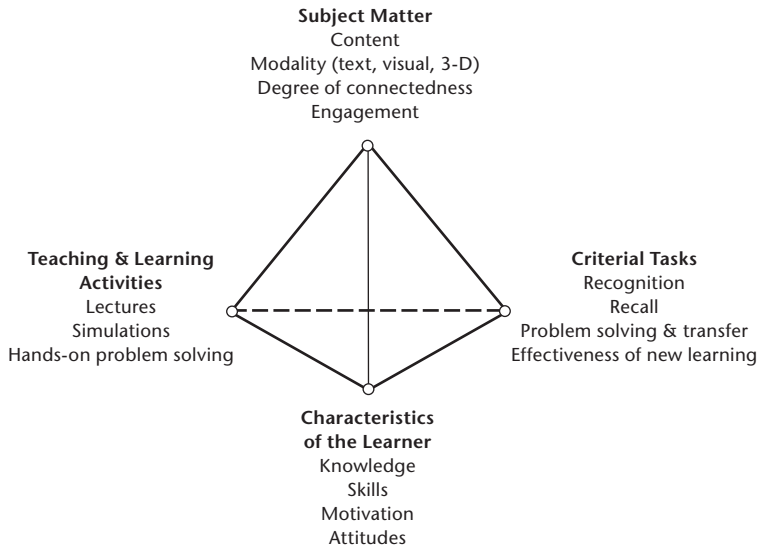
The issue of transferring lessons learned from one setting to others is particularly important and is directly relevant to our point about needing to attend to multiple levels of the education ecology in efforts to improve education. If we run a successful randomized trial of an educational intervention and transfer it to a new setting, can we be sure that it will be successful? The answer seems to be a clear “no,” unless we attend to a large set of contextual and social capital issues that have to be in place for new innovations to work.

A simple but elegant model (see Figure I.1) developed by James Jenkins is useful for thinking about sets of variables that simultaneously affect the success of particular educational actions.¹⁷ It can be used to help educators see that the impact of using particular types of teaching and learning activities depends on the subject matter to be learned in relation to the nature of the skills, knowledge, and attitudes that learners bring to the situation, and the goals of the learning situation and the assessments used to measure that learning relative to these goals (i.e., the criterial tasks). If we imagine a circle around the whole model, it can remind us of how the classroom, school, and community climate also plays a major role in learning.¹⁸

One of the important points of the Jenkins model is that a teaching strategy that works within one constellation of these variables may work poorly when that overall constellation is changed. All the variables in the Jenkins model must be taken into account when analyzing such claims as “data show that teaching strategy X is better than Y.”

Broader Applications of the Jenkins Framework

Needs for contextual sensitivity extend to policy research. For example, many authors throughout this book refer to the famous “class size” study in Tennessee,¹⁹ which involved a careful use of randomized trial methodologies and yielded evidence that smaller class sizes affected the academic achievement of students in the early grades, achievement gains that seemed to persist in later grades. Nevertheless, the effects did *not* transfer when it was tried in California, and researchers began to dig deeper to understand why. Answers are provided in a number of chapters in this book.

FIGURE I.1 The Jenkins Tetrahedral Framework (adapted from the original)

Source: James Jenkins, "Four Points to Remember: A Tetrahedral Model of Memory Experiments," in Laird S. Cermak and Fergus I. M. Craik, eds., *Levels of Processing and Human Memory* (Hillsdale, NJ: Erlbaum, 1978), 429–46.

Presumably, having smaller class sizes allowed the Tennessee teachers to teach differently than they would have under "typical class size" conditions. This relates to the component of the Jenkins framework, the nature of the teaching and learning activities in the classroom, which is greatly affected by classroom teachers and the schools and communities within which they work. If the teachers with smaller classes had exactly the same number and types of oral and written interactions with the students and parents as those in the larger class conditions, the findings showing advantages for small class sizes would be puzzling. This is where other methodologies, such as ethnography, become extremely important. Ethnographers know how to analyze the nature of interactions in ways that can reveal differences in the teaching and learning activities that were made possible by small class sizes.

A major contextual difference between the Tennessee and California studies was eventually discovered to be extremely important. It turns out that there was a plentiful supply of well-trained teachers in Tennessee who could help fill the extra slots needed to reduce classroom sizes in the school. This condition

was not met in many areas of California, however, which resulted in a number of the newly created small classes being taught by untrained teachers.

Increasing Sophistication of Randomized Studies

The Tennessee class size study was an early pioneering effort in educational randomized trials research. Much has been learned since that time, especially about the crucial roles of contextual variables such as teacher quality, the nature of the assessments, and opportunities for professional development.²⁰

Jeremy Roschelle and colleagues recently tested a technology-enhanced mathematics (SimCalc) innovation in a large-scale randomized trial in Texas. They found that SimCalc had very positive effects compared to a comparison group that received traditional mathematics instruction, but they learned a great deal more than simply “who won the horseshoe.” A major goal was to use their results to discover the kinds of teachers, settings, and classroom practices in SimCalc that were the most effective. Furthermore, they spent a great deal of time exploring assessments that were more sophisticated than the Texas achievement tests. It turns out that if they had restricted their assessment to items like those found on the existing Texas state tests, they would have found no differences, since those items have very low cognitive demand and students do relatively well on the tests before as well as after instruction. They saw gains on items with higher cognitive demand in ways that aligned with future algebra learning trajectories.²¹ In essence, Roschelle’s research team explored all parts of the Jenkins model noted earlier and went beyond the model by studying teacher characteristics and behavior that helped predict the effect of the innovation on learning. As Roschelle explained,

It’s the lessons about the variability of effects, and reasons for them, that have been most valuable to us as a research team. We are seeing that teacher attitudes, background, certification-level, expectations, beliefs, etc., as well as many student and classroom characteristics, have very weak effects on student learning compared to factors closer to the acts of teaching and learning. For example, our data shows that it matters relatively less whether teachers say they have high expectations for all students than whether they engage at least some students in extended mathematical reasoning during classroom discussions. Likewise, one of our graduate students found that the “cultural match” between a teacher and a student is not a predictor of how much students learn, but that teachers who encourage more diversity in student responses to open-ended math problems have students who learn more.²²

Roschelle and his team's comments about systematic variability of outcomes raise another issue about practitioners' need for personal judgment and expertise, even if the evidence is clear and consistent. The medical profession is often touted as a model for research-practice connections that education would do well to emulate. However, many key findings suggest that high-quality medical decisionmaking is a far cry from simply looking at randomized trials data in order to determine the best treatment.

Good doctors use both individual clinical expertise and the best available external evidence, and neither alone is enough. Without clinical expertise, practice risks becoming tyrannized by evidence, for even excellent external evidence may be inapplicable to or inappropriate for an individual patient. Without current best evidence, practice risks becoming rapidly out of date, to the detriment of patients.

Evidence-based medicine is not "cookbook" medicine. Because it requires a bottom-up approach that integrates the best external evidence with individual clinical expertise and patient-choice, it cannot result in slavish, cookbook approaches to individual patient care. External clinical evidence can inform, but can never replace, individual clinical expertise, and it is this expertise that decides whether the external evidence applies to the individual patient at all and, if so, how it should be integrated into a clinical decision.²³

Andy Hargreaves and Carrie Stone-Johnson provide in chapter 4 additional wisdom about evidence and clinical practice. They cite David Hargreaves (no relation), one of Britain's staunchest advocates for evidence-based educational change along medical lines, who acknowledges that while randomized trials and new technologies form part of the basis of professional judgment, physicians make their own decisions according to other criteria as well, based on "what is known from natural science (basic laws and causes), from medical sciences (e.g. the effects of drugs on organs), from tradition (inherited within the specialty), from what one was taught (early professional socialization) and from personal experience (what therapeutic action one has learnt works with what kind of patient in what situation)."²⁴ Hargreaves and Stone-Johnson make a strong case that effective medical judgment and practice is not merely informed by technical or even intellectual evidence but also by practical, emotional, situational, ethical, and political criteria that make up other forms of evidence and affect the conditions supporting or impeding their use.

Ongoing Assessments of Progress

It is also noteworthy that physicians often regard initial diagnoses and treatments as working hypotheses that need further evidence, which includes gathering information about the patient's progress and trying different combinations and doses of treatments. Good teachers and educational leaders follow similar procedures of monitoring progress after new interventions—keeping in mind that there initially may be “implementation dips” during early attempts to learn and use new innovations.²⁵ In both medicine and education, the faster and better the feedback from monitoring progress, the better the prognosis overall.²⁶

Varieties of Evidence

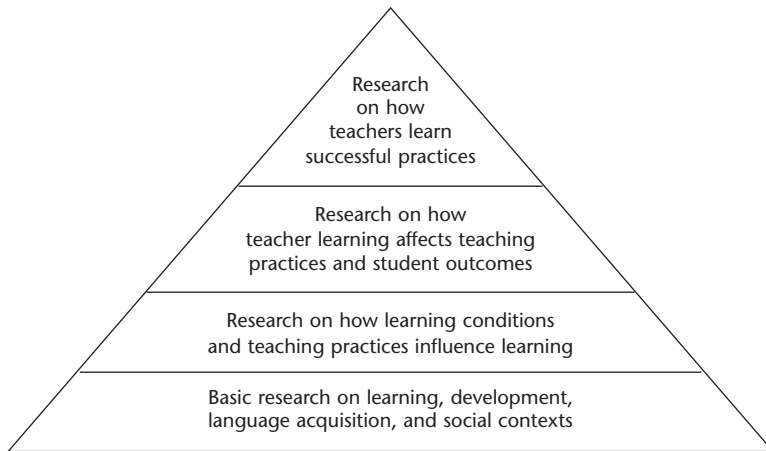
Preparing Teachers for a Changing World, a book written by a National Academy of Sciences committee, includes a discussion of the range of evidence used to guide their recommendations for preparing new teachers.

The recommendations for teacher education discussed in this volume represent the considered judgments of a large number of experienced practitioners and scholars in the field of education. Whenever possible we refer to research studies to support our conclusions. But just as was the case in the early days of forging new medical, law, engineering and bioengineering education programs (and is still true in all these fields today), our evidence for preparing new teachers also comes from consensus among experienced researchers and practitioners.²⁷

In addition to professional consensus, editors Darling-Hammond and Bransford discuss four kinds of research evidence to support their recommendations (see Figure I.2).²⁸

- The first is *basic research on how people learn*, both generally and in specific areas like language, reading, or mathematics.
- The second kind of research looks at *the influences of different conditions—including specific teaching strategies—on what and how people learn*.
- The third kind of research looks at *what kinds of teacher learning opportunities are associated with teaching practices that, in turn, influence student learning*.
- The fourth kind of research examines *how teachers learn to engage in practices that successfully support student development and learning*.

Darling-Hammond and Bransford note that although each of these kinds of research comprises distinctive lines of study, they build on each other con-

FIGURE I.2 Research Bases Supporting Teacher Education Recommendations

ceptually. Knowledge of how students learn ought to influence teaching practices, and knowledge of effective teaching practices, as well as teacher learning, should influence teacher education. The amount of these various types of evidence varies greatly. There is a smaller body of research on the relationship between teachers' learning opportunities and what they do in the classroom as well as what their students learn, and a small but growing body of research on how it is that teachers learn to engage in the kinds of practices that research suggests are most successful for students. The present volume touches on issues of evidence on teaching, to some degree (see especially those by Hargreaves and Stone-Johnson and by Schoenfeld). As a group, the chapters help provide much-needed examples of the many faces of *evidence* and how, when, why, and where it can be used.

With regard to evidence, all the authors in this volume agree that the field of education needs to (1) support a variety of approaches to research that leads to new innovations; (2) go well beyond the "horserace model" of randomized trials to also learn about variability of outcomes and necessary resources for implementation (e.g., financial, human capital, time for training, sensitivities of assessments used, etc.); and (3) realize that there is always a need for effective clinical judgment, including treating one's ideas as initial hypotheses about treatments and creating "fast feedback cycles" that monitor successes and failures (see especially Hargreaves and Stone-Johnson chapter). Discussions about the nature of evidence and how, when, why, and for whom different types are useful occur throughout this book.

Central to issues of evidence are the metrics used to assess students progress. Many authors note that existing standardized tests capture some of the skills needed for successful lives in the future; in particular, they capture the acquisition of schematized knowledge and skills. However, they typically fail to capture the degree to which people have been prepared for continuous lifelong learning, as well as abilities to solve novel problems or be inventive. This requires approaches to assessment that, instead of being sequestered, are nonsequestered and include access to tools, technology, social networks, and other kinds of resources that are available to people in and out of school settings.²⁹ As noted by many contributors to this volume, the best randomized trials in the world can be misleading if the assessments of learning are flawed. Issues of sequestered versus nonsequestered testing and problem-solving are likely to receive increased attention in the coming years.³⁰

The authors in this book also agree that efforts to improve education must simultaneously consider many parts of the education elephant. The chapters provide countless examples of how one sector's efforts or intervention at one level of education were undermined, and in some cases had negative effects, because other sectors and levels of education were not aligned. Along with more thoughtful strategies for developing and using evidence, the book strongly endorses a more multidimensional, integrated approach to education reform.

OVERVIEW OF THE BOOK

Chapter 1: The Role of Research in Education Reform from the Perspective of Federal Policymakers and Foundation Grantmakers

The authors of this chapter, Fritz Mosher and Marshall Smith, base their writing on forty-plus years of experiences as federal policymakers and private foundation grantmakers. They note that in many countries a central educational authority could plan and direct the changes assumed necessary to achieve new goals. Although in the United States the official power of education lay with each of the states, the federal government and many foundations that have a "national perspective" have searched for ways to leverage educational successes that meet the twin goals of equity and excellence.

Mosher and Smith's chapter explores three major themes that are relevant to this increased involvement: (1) opportunities for federal policymakers and foundation grant makers to guide large-scale education reform; (2) examples of landmark research that affected educational thinking generally, including policymakers and grant makers; (3) key lessons learned that can be applied to

further the goal of coherent and continuous educational progress in our rapidly changing world.

Chapter 2: Research-Based Evidence and State Policy

Authors Robert Schwartz and Susan Kardos write that fifty years ago schooling was principally the responsibility of local government. They note, however, that the past twenty-five years has seen a steadily expanding role of the states in setting education policy.

This chapter cites a major survey study in 1985 by David Cohen that describes how and where policymakers get information to inform their policymaking and how the current policy environment has changed since that survey.³¹ They note that policymaking is still susceptible to the inertia of politics and ideology, yet the policy environment seems to demand evidence-based policymaking and appears to have greater capacity to use it. They end by summarizing key lessons learned from their inquiry and present recommendations to increase the likelihood that research-based evidence will inform education policymaking, and vice versa.

Chapter 3: What's the Evidence on Districts' Use of Evidence?

The authors of this chapter, Cynthia Coburn, Meredith Honig, and Mary Kay Stein, focus on school districts and note that the federal No Child Left Behind Act has significantly raised the profile and the stakes of student-achievement data as well as the importance of research-based programs. Thus, the use of evidence in district central office decisionmaking is emerging as a critical arena of educational leadership and administrative practice. Reviewing research on evidence use in school district central offices, the authors argue that administrators do use evidence in their decisionmaking but in ways that are complex and at times messy, mediated by individual and collective interpretation, and shaped in fundamental ways by organizational and political conditions. They finish by offering key lessons for encouraging uses of evidence in ways that help districts understand the social process required to change behaviors in positive ways.

Chapter 4: Evidence-Informed Change and the Practice of Teaching

Focusing on teaching, Andy Hargreaves and Corrie Stone-Johnson note that people differ in what they mean by "evidence," the kind of evidence they demand, and the role evidence plays in the context of other sources of knowledge. They organize the chapter by reviewing the role of evidence in

teaching, differentiating among aspects of the practice. They argue that different aspects of teaching require different kinds of evidence.

The chapter culminates with a vision for research-informed teaching that is embedded in a set of professional learning communities. The role of professional learning communities is to stimulate and support teachers to review critically and apply judiciously the evidence of research and experience together in the service of continuous improvement of all students' learning. This chapter emphasizes the importance of promoting expertise and judgment in teachers, not just familiarity with research findings.

Chapter 5: Nonprofit Organizations and the Promotion of Evidence-Based Practice

In this chapter, Mark Smylie and Thomas Corcoran explore the roles of nonprofit organizations (often called “intermediary organizations”) in working with schools and school districts. They explain that intermediary organizations are typically involved in promoting improvements in services to low-achieving populations or in advocating the use of particular strategies or programs deemed consistent with their philosophies and missions, not those based on research evidence. Nonetheless, Smylie and Corcoran contend that these kinds of organizations are increasingly paying more attention to evidence regarding the effectiveness of the practices they promote, and they discuss important characteristics and capacities of organizations that are needed to do so. They point out, however, that increased demand for evidence of effectiveness, among other dynamics that shape their behavior, may make nonprofits more conservative and risk averse.

Chapter 6: K–12 Education: The Role of For-Profit Providers

Louis Gomez and Guilbert Hentschke explore the role of for-profit businesses in education, the relationship between the products and services that schools buy from business, and schools' abilities to transform themselves into twenty-first-century learning environments. They begin by discussing the kind of instruction and schooling that the greater society is requesting of its schools and go on to discuss the goods and services needed to accomplish these ambitious goals.

They then examine reasons why private intermediaries have not provided a host of products that assist schools in transforming themselves into twenty-first-century learning environments. The authors propose that ideas from research must impact educational policy before they can shape school and

district demand for goods and services; demand for goods and services is needed to convince for-profit businesses to develop tools to support desired improvement in practice.

Chapter 7: Instructional Research and the Improvement of Practice

Alan Schoenfeld notes that in spite of making great progress in terms of both theory and method over the past thirty years, educational research faces several serious cultural and institutional obstacles. He describes significant changes needed in the professional preparation of educational researchers and proposes new models of research-and-practice partnerships. Schoenfeld concludes with specific recommendations for improving educational research and practice.

Chapter 8: How Craft Knowledge of Teaching is Generated and Disseminated in Japan

Hidenori Fujita examines features of the organization of schooling and teaching in Japan and strategies for connecting research and practice that most likely contribute to the relatively high performance of Japanese students that is frequently found in international comparisons. He discusses three features of Japanese education that are relevant to the use of systematic evidence in the practice of education: (1) centralized decisionmaking for education policies and practices; (2) the greater prestige, pay, and training of teachers; and (3) the many institutional mechanisms for practitioner and researcher interaction. The chapter also describes differences in school management and organization and in mechanisms for the construction and dissemination of practical knowledge.

Chapter 9: Toward a Deeper Understanding of the Educational Elephant

In the final chapter, coauthors Louis Gomez, Janet Weiss, Deborah Stipek, and John Bransford revisit the three themes of the book—equity and excellence, the elephant, and evidence—noting that educational enterprise operates as well-developed silos and has failed to develop systematic and institutionalized processes that encourage communication, cooperation, and collaboration across its parts. They also point out that the book helps us see that much of the knowledge gained from research is not usable in practice, even if it reaches practitioners. They caution that improving education research will require a commitment by funding agencies and a willingness to change on the part of the institutions where research is currently conducted. They discuss strategies for building shared understanding across institutional

boundaries and the design of tools and routines that have the potential to encourage the development of better evidence. They urge practitioners to pay more attention to evidence—all toward the goal of helping parts of the education elephant fit together and function as a whole in ways that promote equity and excellence for students.

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