

# Chapter 1

## The Promise and Pitfalls of Data-Driven Decision Making

Data are ubiquitous in our lives. Using the latest technologies, we can now quickly calculate how many steps we took in a day, how many calories we consumed, and how much money we spent and on what. Knowing this information will ideally help us make better decisions that will improve the quality of our lives. Businesses, health and education organizations, and governments can now quickly crunch big data to help them understand phenomena in ways never before possible.<sup>1</sup> The power of data use is simple: armed with data, people will make better choices and organizations will function more effectively. This is the thinking behind a hot topic in educational reform: data-driven decision making.

A decade ago, data-driven decision making wasn't on the radar of most educators or policymakers. Now it is difficult to imagine an educational reform agenda that does not include data use as a key pillar. The use of data has the potential to change teaching and learning. Teachers now have wider access to information about students' learning and can address learning gaps before students fall behind. Data use can also build collective responsibility for all students. As student achievement results and teaching strategies are shared among teachers within and across grades, school cultures and routines are changing as well. Transparency is increasing and the culture of individualism that used to characterize classroom teaching is decreasing.

But how do we find the time to incorporate data use into the already incredibly busy professional lives of leaders and teachers?

What gets pushed aside if teachers focus on data? How much training and support do educators need to use data effectively? How does

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*Are we in danger of chasing the numbers and forgetting the central purpose of data use, which is to improve teaching and learning?*

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data use fit with other reform agendas? Are we in danger of chasing the numbers and forgetting the central purpose of data use, which is to improve teaching and learning?

Are we in danger of chasing the numbers and forgetting the central purpose of data use, which is to improve teaching and learning? Data-driven decision mak-

ing is very popular in schools and districts across the United States, and there is also increasing emphasis on data use in other countries, including the Netherlands, Canada, Belgium, South Africa, Australia, and New Zealand.<sup>2</sup> Although each place may take a different approach, the common idea is that when leaders and teachers become knowledgeable about how to use data in their work—when they collect and analyze data to guide educational decisions—they will become more effective in reviewing their existing capacities, identifying weaknesses, and charting plans for improvement. In the classroom, data can inform how teachers plan lessons, identify concepts for reteaching, and differentiate instruction.<sup>3</sup>

The push for educators to systematically gather and use data has brought with it a need to develop new competencies, skills, and cultures. But using data is not as straightforward as it seems. Leadership is essential in this endeavor. We can't simply use data and expect good things to happen. Educational leaders play a critical role in shaping how and why data are used, what counts as data, and what people are aiming for when they push the use of data in schools. Although we titled this book *Data-Driven Leadership*, we strongly believe that data do not drive decisions by themselves. Individuals use data to engage in inquiry around current practices and inform courses of action. *Data-informed leadership* is thus a more appropriate term for what we're asking leaders to do.<sup>4</sup> And although the term *data-driven decision making* is commonly used in

the field, from here onward we will refer to the practice as *data-informed decision making* to signal this important shift in thinking about data use. Leaders, we argue, should use data carefully to inform thoughtful decision making as part of an ongoing process of continuous improvement. Data use should not be seen as a passing fad or fancy. Leaders must take the initiative to assess what types of data are useful and for what purposes. Data-informed leadership aims to contribute to improving student achievement and teacher professionalism rather than threatening them.<sup>5</sup>

This book is written primarily for educational leaders at the school and district levels. It is geared toward leaders who are interested in becoming more data informed, as well as those who are well on the way and already feeling confident in their approach. Our aim is to provide a guide that will help build the reflective skills of leaders rather than offer a set of prescriptions about putting data use into practice. In order to help leaders get smarter about data use, we share research-based lessons learned from educators about how they have approached data use in their school systems. We examine how district and school leaders can create structures and cultures that support thoughtful engagement with data for continuous improvement. We also expose some of the potential land mines on the road to productive use of data for continuous learning and equity. Our intention is to help leaders avoid those problems and use data effectively and strategically in their decision making.

## **Perils and Perverse Incentives**

All schools are already data informed in one sense or another. In the United States, the existing accountability system and its evaluation of schools based on student performance data expects and ensures it. Behind government accountability policies is the notion that educators need to know how to analyze, interpret, and use data so that they can make informed decisions about

how to improve student achievement on state or national assessments. Within this, there is a strong policy emphasis on reducing the achievement gap, especially for historically underserved, low-income students of color.

Data can be very powerful, but they also have hazards.<sup>6</sup> There are some perverse incentives inherent in using accountability data within a high-stakes, limited-resource environment, which have led to some perilous practices and pitfalls, including these:

- Cheating on state tests
- Implementing quick fixes
- Targeting resources to students just below accountability thresholds
- Narrowing the curriculum
- Data overload

### **Cheating on State Tests**

Accountability policies “invest faith in ever-increasing and voluminous amounts of numerical data collection. They can create an evidence base for an Orwellian system that can see everything, know everyone, and judge just when and where to intervene with any student, school or classroom, at any time.”<sup>7</sup> Continual surveillance and high-stakes tests have resulted in a great deal of fear among many educators struggling to help their students show progress on state tests. In some cases, teachers and administrators have resorted to outright cheating by giving students the answers or changing students’ answers after they have completed the tests, before they are sent for scoring.<sup>8</sup>

### **Implementing Quick Fixes**

Critics argue that the term *data-driven decision making* implies an overly technical model of professional action in which educators diagnose weaknesses and implement solutions in a linear fashion,

ignoring the complexity of the teaching and learning process.<sup>9</sup> As Andy Hargreaves and Dennis Shirley claim, this kind of focus on data use through numerical test score data can impair and impede the improvement of learning for all students:

*With AYP [Adequate Yearly Progress] deadlines looming and time running out, teachers have little chance to consider how best to respond to figures in front of them. They find themselves instead scrambling to apply instant solutions to all the students in the problematic cells—extra test-prep, new prescribed programs, or after-school and Saturday school sessions. There are few considered, professional developments here, just simplistic solutions driven by the scores and the political pressures behind them.<sup>10</sup>*

This approach can lead to a focus on easy solutions rather than continuous development and substantive improvements.

### **Targeting Students Just below Accountability Thresholds**

Accountability policies are meant to ensure that educators have high expectations for all students. They are intended to raise achievement across the board, regardless of students' current ability levels. In what has been graphically termed "educational triage,"<sup>11</sup> some schools separate students they see as "nonurgent" from those who are "suitable for treatment" and those who are seen as hopeless cases.<sup>12</sup> This is done in order to target resources and attention more economically and address the increasing emphasis on accountability. Educators frequently report focusing their efforts on students who are hovering near the cutoff point for proficiency.<sup>13</sup> Teachers target for remediation and additional tutoring those on the cusp—or "bubble"—of scoring in the proficient range while the students below this level are sometimes considered lost causes.<sup>14</sup> Similarly, observations of teachers' data reflection meetings in four schools revealed that discussions overwhelmingly centered on helping students who were below

proficiency levels, with few discussions on raising students from proficient to advanced.<sup>15</sup> Other research has also indicated that school-level administrators frequently feel pressure from their districts to use data reports to target “bubble kids.”<sup>16</sup> The resulting focus on specific groups of students at the expense of others has important implications for equity, especially with regard to equal opportunity to learn.

### **Narrowing of the Curriculum**

A commonly documented concern arising from accountability policies is the narrowing of the curriculum. High-stakes testing has been found to sway schools to focus on math and language arts at the expense of other subjects, such as science or social studies.<sup>17</sup> This occurs even when principals provide support for teacher professionalism and autonomy in instructional decision making.<sup>18</sup> Some subjects get squeezed out altogether, and within targeted subjects, such as math and language arts, educators may spend their time teaching how to take tests—by emphasizing the styles and formats of state assessments, for example—rather than on what will be tested.<sup>19</sup> Such strategies may produce short-term gains on test scores, but students ultimately learn less because testing mastery is emphasized over learning.

### **Data Overload**

The data collected and the expectations for using the data can far outweigh the supports necessary to make data use meaningful for instructional improvement and school change. Many schools are still at the basic stage of data use, relying on limited forms of data and simple processes of analysis.<sup>20</sup> Yet school leaders are saturated with accountability data from state and federal systems and district benchmark assessments, schoolwide data on student and teacher performance, and data on school culture, pacing, curriculum, and resource allocation, not to mention data from research and program evaluations. When school administrators and teachers

are drowning in a sea of data and lack the capacity to use them, they are more likely to discount data altogether or fall into a default mode of quick-fix decision making without incorporating new evidence.<sup>21</sup>

When educators are overloaded or focus on the use of data to avoid sanctions, they may inadvertently subvert the intended goals of data use and accountability policies. With these perils and perverse incentives in mind, let's turn our attention to the promise of data use—the positives it can bring.

## **The Promise of Data Use for Equity and Excellence**

There are many pitfalls of data use associated with mandated accountability policies but also a great deal of promise. Given the high-stakes context, it is easy to conflate and confuse data use with testing and testing data, but the two are not the same. The push for data use for educational improvement precedes the high-stakes accountability movement; it can be found much earlier in reforms such as Total Quality Management, continuous improvement, and the effective schools movement, among others. The type of data use that is connected to accountability is narrowly construed in terms of what and how data are used, but other and better possibilities also exist. Thus, we should not confuse data use with accountability or assume that the two must be linked. We believe there is value in using data as part of a broader school improvement process and to help create more equitable schools. In fact, a school improvement process in which various forms of evidence about student learning do not play a prominent role would be misguided.

The time is right for this. Across the globe, there are examples of efforts to engage students in deeper learning, more critical thinking, and the development of other twenty-first-century skills. The implementation of the Common Core State Standards in most US states has dramatic implications for how students will

learn and how we will measure their progress. In the near future, we might reasonably expect to see more students taking increased responsibility for setting goals for their learning, see more teachers functioning as facilitators, and find more activities within schools that promote discovery of knowledge. To teach in these ways, educators will need to develop learning outcomes that are based in what students should know and be able to do. But broader learning goals do not necessarily lend themselves to easy measurement or analysis. What counts as “data” has to go beyond achievement scores, and we must move beyond narrow assessments of student achievement.

Why should leaders be data informed? What is the promise of data use, according to researchers? Studies on data use in education suggest that it can have a positive effect on school improvement.<sup>22</sup> The use of data by teachers in particular can be beneficial to instruction and student learning in the following ways:

- Data can help teachers set and refine concrete goals.<sup>23</sup>
- Data can help teachers decide how to pace their instruction, align their lessons to standards, identify lessons for reteaching, guide flexible grouping of students, and target students for intervention.<sup>24</sup>
- Data can enable teachers to pinpoint instructional strengths and weaknesses and encourage them to share best practices.<sup>25</sup>
- Data can be used to shed light on discrepancies between grades and assessments, which can indicate when there is a need to reexamine grading practices.
- Data use can foster a culture of inquiry and reinforce school priorities because the information aids communication among teachers, students, parents, and the rest of the school community.<sup>26</sup>

From an equity standpoint, when educators are confronted with evidence that challenges their views about students' abilities, data can act as a potential catalyst for changing perceptions.<sup>27</sup> Thus, the use of data may help contest negative tacit beliefs and assumptions about low-income students and students of color. In one study, when teachers in lower-achieving schools were able to make comparisons between their own data and data from high-performing schools with similar student demographics, they stopped blaming students' backgrounds for low academic results.<sup>28</sup> In another study, the emphasis on disaggregating student data by subgroups in the state's accountability system helped to displace (but not totally eliminate) deficit views of students.<sup>29</sup> And when educators at a high school reviewed the relationship between student assessment data and student absence data, it challenged their beliefs that student absence led to poor academic performance: "When data revealed false assumptions or hunches about specific groups of students, it became easier to get school staff to recognize the importance of basing decisions on data."<sup>30</sup> In short, when confronted with data, teachers are given empirical information to engage in conversations on improving both student engagement and the quality of instruction.

When the focus is on organizational learning and student achievement, data use practices may positively influence continuous improvement efforts. This type of use is not characterized by sporadic examination of test results, but rather by systematic and sustained reflection on a multiple array of indicators. If data use is central in the school planning and improvement process, it becomes infused into the structure and culture of the organization. Mutually supportive structures, policies, and technical capacities embedded within this culture of collaborative inquiry are necessary if data are to become a relevant and useful for improving teaching and student learning.

## What Counts as Data?

Data use can take many different forms depending on what data are used, for what purposes, and by whom. In some districts, data use is synonymous with the examination of annual state test score data. In others, data use involves examination and action planning around score reports from benchmark assessment tests administered several times a year. Principals and teachers review these reports to help them identify which students are performing above, at, or below grade level relative to state standards. Teachers may analyze data individually or with other teachers in grade-level or subject-area teams in order to target instructional support toward the students who score below grade level. Although at first glance this may appear to be a fairly narrow use of data to inform instructional decision making, in reality it is likely far less technical and linear than it seems. Teachers may develop their own common assessments and gather together in professional learning communities to assess student progress and plan next steps. They may also bring examples of student work (e.g., homework, writing samples) to the table, as well as their own professional knowledge, as they plan for instruction.

But data-informed decision making need not rely only on student outcome data. Educators may also examine student demographic data, data on implementation or progress toward goals, survey data from students or parents, and classroom observation data. In some schools, student behavior and discipline data are also considered to be important elements in improving learning and instruction. In schools, data are typically categorized into four main types:

1. *Demographic data*, including attendance and discipline records
2. *Student achievement data*, which encompass not only standardized test data but also formative assessments, teacher-developed assessments, writing portfolios, and running records

3. *Instructional data*, which include teachers' use of time, patterns of course enrollment, and the quality of the curriculum
4. *Perception data*, which provide insights regarding values, beliefs, and views of individuals or groups (e.g., surveys, focus groups)<sup>31</sup>

These varied forms of data are useful for a range of purposes. In this book, we refer to data that inform teachers about their teaching and the learning of their students and, to a lesser extent, to data that inform school and system leaders about improvement more generally.

Data from assessments may show patterns of student achievement, but they do not tell teachers what to do differently in the classroom.<sup>32</sup> And large-scale assessment data may be useful for school and system planning, but they are less useful at the teacher or student level.<sup>33</sup> So while the heavy emphasis on accountability may have saturated schools with a wide array of data, educators are still figuring out how to develop the skills to use those data in both basic and more sophisticated ways.

When districts and schools begin to define what *data* or *evidence* means in their local settings, a more complex definition of student learning goals emerges. Even prior to any mention of the new Common Core Standards in the United States, we found that districts relied on a broad range of evidence to inform decision making, including standardized assessments, placement data, benchmarks, observational data, and other sources at the system and school levels. Some forerunner districts are gathering and analyzing data on the extent of student engagement in order to improve student involvement in their own learning.<sup>34</sup> These findings are particularly pertinent to the work of district and school leaders who will be thinking about new ways to measure and track student learning.

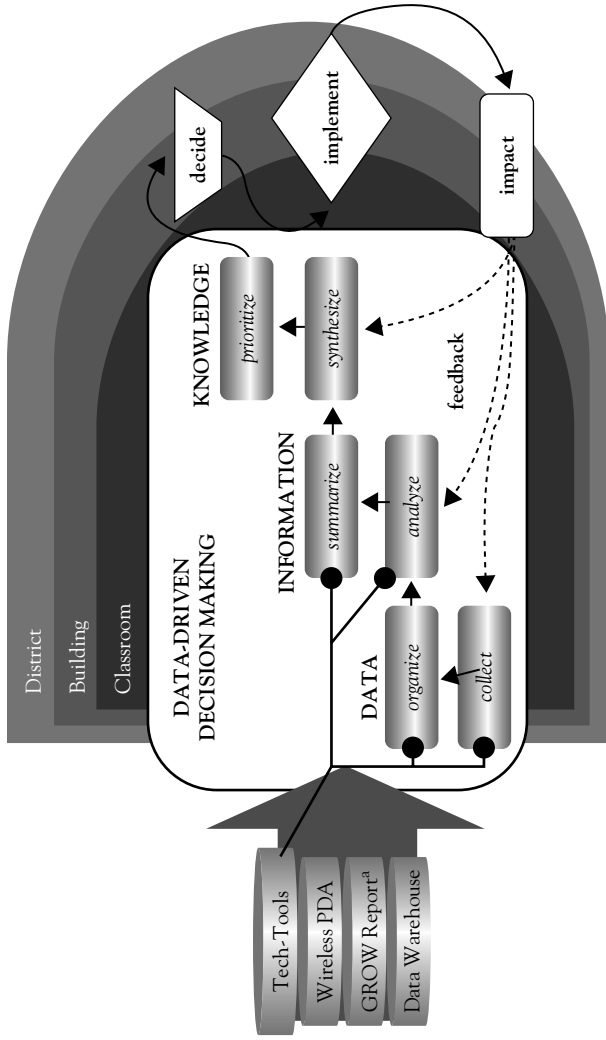
## What Is Data-Informed Decision Making?

The term *data-informed* (or *data-driven*) *decision making* is sufficiently vague to be a catchphrase for all things having to do with

data. With the presence of accountability systems that are so closely tied to test scores, schools and districts are likely to consider themselves data informed whether or not they desire to be so. Reports of high-performing schools and districts engaging in data-informed decision making persuade some leaders to embrace data use, even though the strategy itself may not be completely defined.<sup>35</sup> Getting clearer on what data-informed decision making is—and is not—is essential.

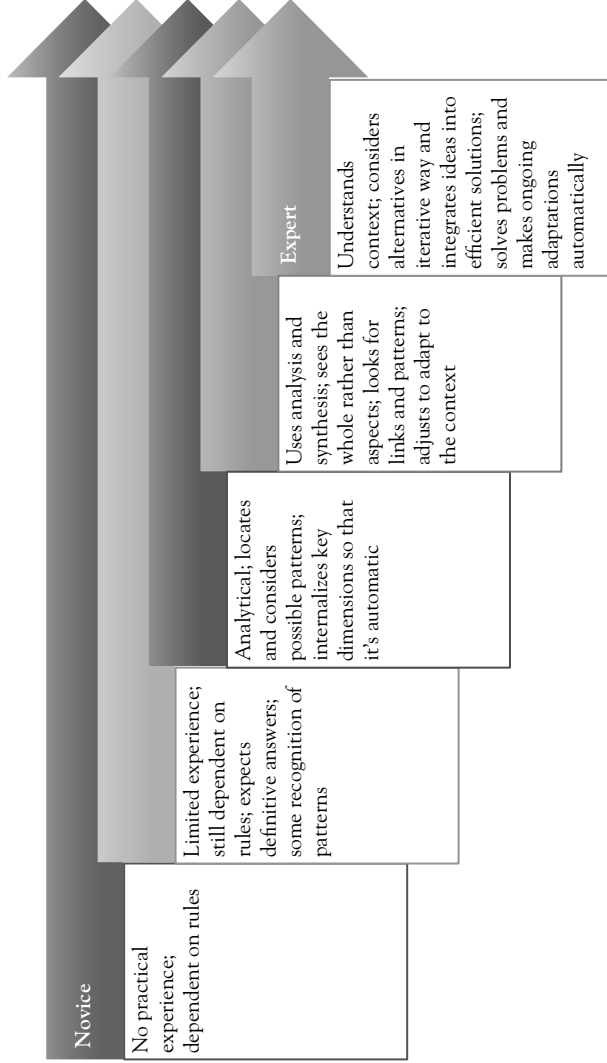
Some who seek to define *data use* focus on information processing of data. According to Mandinach and Honey's model, individuals collect and organize data—as raw pieces of facts.<sup>36</sup> The raw facts become information when individuals analyze and summarize them. In other words, information is data with meaning, and it becomes knowledge when the information is synthesized and prioritized. Thus, knowledge is essentially information that has been deemed useful to guide action. Figure 1.1 depicts this model of data use. This information model is helpful because it lays out the stages of data use and highlights that it is not a simple process of having and then using data. This is a critical piece of the puzzle in conceptualizing data use. Instead, data must be interpreted and knowledge must be actively constructed in order for the data to affect decisions. The model also highlights the fact that data use at the classroom level is embedded in the larger context of the school and the district. But there are some aspects of data-informed decision making that this model doesn't capture because, of course, no one model can capture everything. Different levels of capacity may shape educators' abilities to engage in the process of transforming data into knowledge. In addition, educators' beliefs and assumptions likely shape their interpretations of data, and their ability to use data may be enabled or constrained by these factors. For these reasons, data use is not likely to be an entirely sequential process, since it varies a great deal with the context.

Another data use model concentrates on educators' abilities and capacities to use data. This learning model, described by Earl and Katz, recognizes that schools and individuals may have



**Figure 1.1. Sequential Model of Data Use**

<sup>a</sup>Reprinted by permission of Publisher. From Ellen B. Mandinach and Margaret Honey, eds., *Data-Driven School Improvement: Linking Data and Learning*, New York: Teachers College Press. Copyright © 2008 by Teachers College, Columbia University. All rights reserved.<sup>37</sup>



**Figure 1.2. Stages in Growth from Novice to Expert in Data Use**

Source: Adapted from L. Earl and S. Katz, *Leading Schools in a Data-Rich World: Harnessing Data for School Improvement* (Thousand Oaks, CA: Corwin Press, 2006), 102.

different levels of expertise when it comes to thoughtfully using data. Because of the developmental process, educators require opportunities to learn and apply their skills. This conceptualization underlines how data use is not just a sequential process of finding and using information, but one of skill and learning. Figure 1.2 lists the stages of the model, which together highlight the developmental nature of using data.

This model helps us understand the continuum of skills in learning to use data, which is also part of the puzzle. However, it does not address how the development of skills is supported or hindered by conditions in local educational settings, an issue we take up explicitly in this book.

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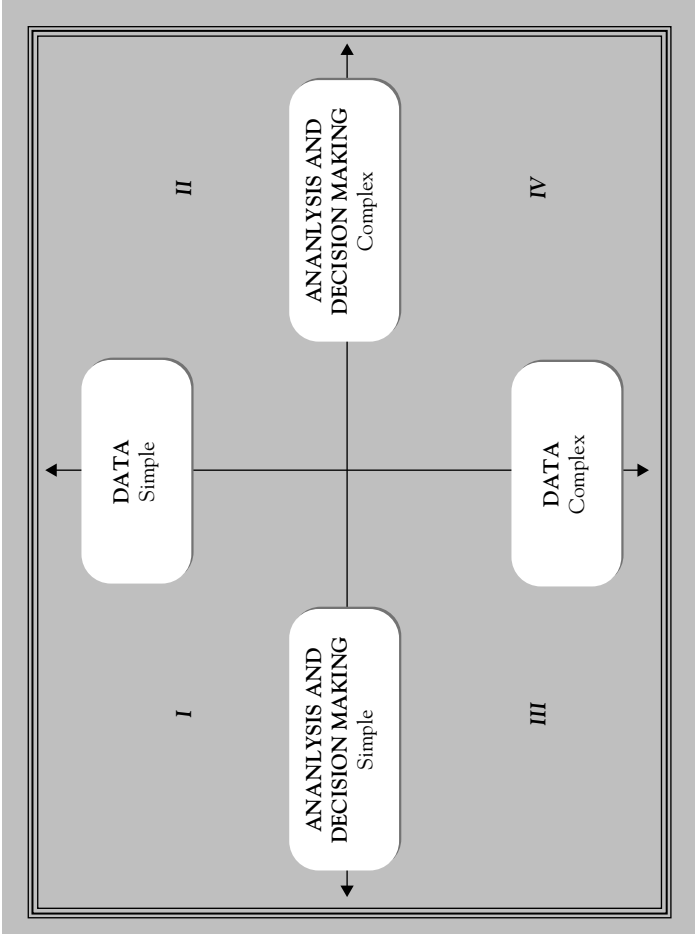
*This model helps us understand the continuum of skills in learning to use data, which is also part of the puzzle.*

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A third model, presented by Gina Ikemoto and Julie Marsh, blends aspects of these first two models, focusing on the capacity of schools to engage in data use and the range of related processes that educators may undertake. This model presents two overlapping continuums having to do with the relative complexity of data types and of data analysis and decision making. Data complexity has to do with a range of factors, including the time frame of the data, the type of data, the data source, and the level of detail of the data. The relative complexity of data analysis and decision making relates to how the data are interpreted. In other words:

- Are analyses based on assumptions or empirical evidence?
- Are they rooted in basic or expert knowledge?
- Are analysis techniques straightforward or sophisticated?
- Are decisions made individually or collectively?
- Are they rooted in single or iterative processing?<sup>38</sup>

Depending on the balance of the complexity of the data and the complexity of data analysis and decision making, a school



**Figure 1.3. Framework for Simple versus Complex Data-Driven Decision Making**

Source: G. S. Ikemoto and J. A. Marsh, "Cutting through the 'Data Driven' Mantra: Different Conceptions of Data-Driven Decision Making," *Yearbook of the National Society for the Study of Education*, 106 (2007): 105–131. Reprinted with permission from Gina Ikemoto and Julie Marsh.

may be considered basic, analysis focused, data focused, or inquiry focused. Figure 1.3 depicts this model.

Schools that fell in the basic category tended to use simple data and engage in simple analysis. For instance, a principal in one school noticed students didn't perform well on the state test in mathematics and scheduled professional development. In other words, only one person at just one point in time used only one source of data. Analysis-focused schools also focused on the collection of simple data, but they undertook complex analysis and decision making collectively. Data-focused schools collected complex data but engaged in simple analysis. For example, one school brought a group together to look at a range of data on student learning, but they didn't draw on empirical or expert knowledge to analyze the data. Inquiry-focused schools collected complex data and employed complex analysis and decision making. These schools drew on multiple sources of data and examined evidence collectively over a period of time in order to address a particular problem of practice. They also integrated the knowledge of experts. Although the majority of schools that took part in the study that informed this model described their practices as falling in the basic category, in reality they covered the full range, from basic to inquiry-focused models of data use.

It is useful to consider this entire range of data use models because it underscores the importance of examining how different contextual factors may influence how schools use data. Ultimately the model makes clear that data use is not a straightforward process and no single model is the ideal type; rather, different models may be useful for different purposes and in different places.

Our own research and the work of other scholars suggest that all three of these models have relevance. In other words, we need a clear understanding of how data are conceptualized and used in specific contexts because individual schools are at different stages of implementation and have different models of data collection

and use. There is no singular theory or model of data use for decision making. An emphasis on evidence-based practice and the capacity to engage in data use need to be considered within specific organizations and in light of the larger policy environment because both of these factors structure how data are used and for what purposes. Our purpose is to consider the role of leadership in creating a supportive structure and culture that engages teachers in capacity-building efforts. The ways in which these elements work to reinforce or undermine the relevance of data use have important implications for the effectiveness of using data for educational improvement.

## The Critical Role of Data-Informed Leadership

Leaders play a key role in realizing the goals of an inquiry-informed data use process that is reliant on a wide range of data sources for the purpose of improving student learning. They also face numerous challenges, in part because they must establish cultures and structures that support data use and build teachers' capacity to use data in a way that will inform thoughtful instructional changes. Leadership is a crucial bridge that can support and direct these new learning efforts.<sup>39</sup>

As we mentioned earlier, we advocate for *data-informed* leadership, not *data-driven* leadership. This reflects our belief that data do not drive courses of action but rather provide the starting point for inquiry.<sup>40</sup> Data will not and should not tell us everything, and not all data should drive instructional changes. Data can inform school, district, and classroom planning, but some forms of data are better suited for planning at one level than another.<sup>41</sup> One of the most important jobs a leader undertakes with respect to data use is asking the right questions. By asking the right questions and framing the process of data use in a particular way, leaders shape the perceptions and outcomes of data use within their school systems.<sup>42</sup>

Data-informed leadership is a shared enterprise. In the past, individualized accounts of leaders tended to dominate research on educational leadership.<sup>43</sup> But tackling the complex dilemmas of school improvement today requires that we move away from a reliance on exceptional principals or individual expert teachers. Indeed, research on educational leadership has moved beyond an individualistic, role-embedded conceptualization of leadership and leadership practices to one that focuses more broadly on shared knowledge, expertise, and action.<sup>44</sup> Data-informed leadership is shared among school and district leaders in formal positions, as well as teacher leaders in informal positions. Individual leaders still matter, but what matters more is how they relate to and work with others. In schools and districts, leaders primarily exert their influence by setting directions for school improvement, cultivating shared goals and norms, developing human capacity, and modifying structures to create conditions that support student achievement.<sup>45</sup>

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With these new directions for educational leadership, notions of what it means to lead have also evolved. A new focus on cognitive frameworks based on constructivist learning theories recognizes that people actively construct knowledge and that learning is an interactive process situated in specific social contexts.<sup>46</sup> Therefore, any reform effort must take into account how teachers and administrators make sense of policy and actions.<sup>47</sup> In other words, leaders should actively construct interpretations of school improvement that foster student *and* educator learning and develop conditions that support such efforts. We delve into this in more detail in chapter 3.

As we focus on the cognitive dimensions of what it means to lead, the concept of distributed leadership offers a useful framework for our investigation of data use. It moves away from viewing leadership as an inherent property of someone in a formal role and toward an understanding that leadership operates within

a network of people with shared and complementary knowledge and expertise.<sup>48</sup> As a result, the distributed leadership perspective does not focus solely on the individual principal or teacher but rather on the actions of a group working together.<sup>49</sup> The focus is on the social interaction among people within a school or district rather than just the acts of one person. Thus, in data-informed leadership, we advocate for interdependency among educators, dispersed responsibilities, and reciprocity among individuals rather than relationships of control and compliance.<sup>50</sup> The distributed leadership perspective is essential for data-informed leadership, as this reform relies on the strengths and skills of a variety of people in a school and district.

Numerous studies have explored the distributed leadership perspective, but most have concentrated at the school level without analyzing how district leadership may shape school-level leadership styles, processes, and practices.<sup>51</sup> The emphasis on data use for educational improvement is an ideal reform context in which to examine these particular dynamics since both school- and district-level leadership are critical in data use efforts. School systems play an increasingly pivotal role in leadership and collaboration with school sites to make data use an engine of reform. Inclusiveness in using data to make decisions is often prevalent.

In districts that support data use for decision making, the superintendent and school board members often know how to lead and support data use. These districts may have staff members who work as liaisons with principals and individual schools.<sup>52</sup> Districts and schools may also be shifting the focus of their professional development practices from compliance to support in order to build the skills of their staff to participate in decision-making processes and create an organizational culture of inquiry. Not only are principals privy to repositories of assessment data, but just as important, so are teachers, and they are encouraged to take a close look at grade-level and classroom data and to share and

discuss the data with each other in order to make instructional choices.<sup>53</sup>

Overall, while the literature confirms the importance of effective leadership,<sup>54</sup> the emerging research on the implementation of data-informed decision making suggests that the relationships between districts and schools and between principals and teachers are changing.<sup>55</sup> Given the increasing interdependency between districts and schools as they lead data-informed decision-making practices, it is important to unpack how leadership practices are being changed and how they are changing reform efforts.

The concept of data-informed leadership centers on an activity system of people and their ways of working within a specific school or district context. In this book, we are guided by this theory of distributed leadership as we analyze the connections between district- and school-level data-informed decision making and leadership practices. We explain how leaders at the district level build a common interpretation of and orientation toward data use for decision making, which are then mediated at the school level by formal and informal leaders. From this framework, our book focuses on how data-informed leadership plays a role in the use of data in schools and districts. More specifically, we address the following questions:

- How do the people, policies, practices, and patterns in a school shape data-informed decision making?
- How can district and school leaders cultivate a culture of data-informed decision making?
- How can goals, tools, and routines enable data-informed decision making?
- How can leaders support teachers in engaging in data-informed decision making?
- What is the impact of data use on instructional practice?

## **The Knowledge Base for This Book**

This book draws primarily on a national, multisite case study on the implementation of data use in high-performing, diverse urban school systems. The districts and schools we studied were chosen on the basis of their status as leaders in using data for instructional decision making and for their record of improved student achievement over time. In the chapters that follow, we present many research-based examples from our case study to illustrate the critical elements of data-informed decision making, as well as the role of data-informed leadership in fostering them. In many ways, the experiences of these schools and districts illustrate the promise of data use, but they do not give us much information about the pitfalls that many educators have encountered in their verve to adopt this reform. To illustrate more varied outcomes, we begin the next four chapters with vignettes from other places where the implementation and process of data-informed decision making have not been as smooth. These examples were gathered through our professional work with educators, and they should be viewed as hypothetical situations rather than as rigorous research examples. Nevertheless, they provide important counterpoints to the research findings we discuss and offer important lessons for data-informed leaders.

## **Organization of the Book**

This book is organized around four major activities in data-informed leadership: knowing the context, reculturing, restructuring, and instructional change. In addressing these topics, we offer important lessons for educational leaders. At the end of each chapter, we conclude with reflective questions for leaders to consider on each topic. Our aim with this book is not to prescribe practices for leaders to follow but instead to help them think more critically about implementing data-informed decision making within their own specific schools and districts.

In chapter 2, we describe the importance of the educational setting—its people, policies, practices, and patterns of interaction—in reform more generally and in the process of data use in particular. We call on readers to use their knowledge of these “four Ps” in their own setting in order to plan successful change. We introduce the sites we studied, because understanding their contextual conditions is essential to learning from their successes. We describe each school system and its background in undertaking data-informed decision making as a key focus for improving student achievement and organizational learning.

In chapter 3, we draw on lessons from district and school leaders to explain how schools and systems can be “recultured” to enable effective data use. We explain how system and school leaders can work together to create explicit norms and expectations for continuous improvement, as well as engender a climate of trust so that teachers can openly discuss data. We discuss the explicit actions and activities by leaders at the school and district levels, collaboratively and individually, to accomplish the goal of reculturing through a new theory of action.

Chapter 4 focuses on the tools, routines, and resources that leaders engage to support data use. These include new ways of thinking about curriculum and assessments, new uses of time, new technologies, and the establishment of protocols for using data. As we describe these, we illuminate the trade-offs between centralization and decentralization and pressure and support.

Chapter 5 addresses the critical issue of supporting teachers to engage in inquiry around data for instructional decision making. Different educators can look at the same sets of data and draw rather different conclusions, and these differences can have important implications for equity and diversity. We describe the sources of data that the teachers at our research sites carefully reflected on in order to plan instructional changes, as well as the types of changes that they made. We reinforce the importance of building educators’ skills to look at data, as well as their

understanding of how their own levels of reflection shape what they see in the data and how they plan their actions accordingly.

In the final chapter, we conclude with concrete advice for data-informed leaders. We draw on the lessons from the book to provide seven specific calls to action with respect to data-informed leadership. We provide bold directions for leaders to reorient their leadership toward using data in ways that can strengthen teaching and learning for all students.

Our hope is that school and district leaders will find that the lessons in this book help them become more knowledgeable about data use. Data use is a critical component of educational improvement, and it should be an enduring feature, regardless of the reform being implemented. The success of data-informed decision making is a joint accomplishment of leaders who enable the practices of others across the system. Learning how to use data thoughtfully is not a one-time event or goal, but an evolving and dynamic process. This book will help leaders learn how to nurture a culture of data use and the structures that support it, from the district or principal's office to the classroom.