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The Context of Data-Driven Decision Making

Why is data-driven decision making here to stay? Data-driven decision making has become an important topic linked to accountability, school improvement, and educational reforms. In fact, data have been pronounced to be "cool" by educational policy makers. Data use is no longer a passing fad, one to which educators can close their doors and assume it will go away until the next innovative idea appears. Data-driven decision making, in its latest incarnation, is innovative, but the use of data to inform educational practice is not new. Highly effective schools and classroom teachers have been using data for years and recognize the value to inform their work across all levels of the educational system. In the words of one educator, "data is no longer a four-letter word."

So why is there so much attention being devoted to data-driven decision making now? Why is data-driven decision making important? What is the historical context for data use?

What has changed and why is data-driven practice now expected? This chapter addresses these questions, contextualizing data-driven decision making in terms of historical and policy trends. In this chapter, we will describe how data-driven decision making is an essential process in education for classroom teachers, curriculum leaders, administrators, and policy makers. It provides a context for why we care about data-driven decision making and how our backgrounds enable us to write about the subject.

ANSWERING THE QUESTIONS

What Is the Historical Context for Data Use?

Data-driven decision making is not new nor is the quest for using evidence in education to make decisions. When IES was created in 2002 as the research branch of the U.S. Department of Education, a clear message was sent to the educational research community that it was time for the field to increase its rigor and become an evidence-based discipline. Legislation actually required the use of rigorous research methodologies and educational practice based on research findings. The WWC (see http://ies.ed.gov/ncee/wwc/) was created as a repository of studies in which educators could seek interventions or practices that were deemed methodologically rigorous. A by-product of this was, what many considered an unbending pursuit of rigor without sufficient consideration for realism, relevance, and the practicalities of education (Schneider, 2009). But as Easton[2] (2009) stated, rigor is important, but if we do not meet the needs of our stakeholders, we have not done our jobs.

The quest for rigor also impacted educational practice from SEAs to school districts and ultimately to classrooms in the name of accountability and compliance. The No Child Left Behind Act (NCLB, 2001) required increased attention to the provision of many kinds of data, much of which are measures of accountability. Districts have been required to collect a

significant amount of these data that get transmitted to their state departments of education who then in turn, send the data to the U.S. Department of Education. Districts often see these compliance data as having little to do with helping directly to improve teaching and learning. Thus by the admission of many educators, there has been created an abyss between data for compliance and data to inform teaching and learning. Margaret Spellings (2005), who was the secretary of Education in the Bush Administration until January 2009, summarized the need for data:

> Information is the key to holding schools accountable for improved performance every year among every student group. Data is our best management tool. I often say that what gets measured, gets done. Once we know the contours of the problem, and who is affected, we can put forward a solution. Teachers can adjust lesson plans. Administrators can evaluate curricula. Data can inform decision making. Thanks to No Child Left Behind, we're no longer flying blind.

The data to which Spellings refers are to be used for compliance and accountability purposes.

More recently, however, a fundamental philosophical shift has occurred from data for compliance to the principles of data for continuous improvement. This perspective shifts the focus away from schools and districts achieving adequate yearly progress (AYP) to helping all students to learn. According to Arne Duncan (2009b), the Obama Administration's secretary of Education, "I am a believer in the power of data to drive our decisions. Data gives us the roadmap to reform. It tells us where we are, where we need to go, and who is most at risk." Duncan continues, "Our best teachers today are using real time data in ways that would have been unimaginable just five years ago. They need to know how well their students are performing. They want to know exactly what they need to do to teach and how to teach it."

Stating the case for teachers to acquire data literacy, Duncan commented, "part of what we need to do is figure out how we challenge schools of education to make sure teachers come into the profession not just with classroom management skills intact, and not just understand some of the philosophy of education, but being able to use data from day one to really drive instruction." Duncan (2010b) further noted that, "teachers were not generally being taught to use data to differentiate and improve instruction." Duncan's philosophy is one of continuous improvement in which data can be used to guide instruction to help all students learn.

The philosophy extends well beyond just data use to an impact on education more generally. The United States was called upon to engage in a new educational philosophy, according to President Obama (2009):

> I'm calling on our nation's governors and state education chiefs to develop standards and assessments that don't simply measure whether students can fill in a bubble on a test, but whether they possess 21st century skills like problem-solving and critical thinking and entrepreneurship and creativity.

This philosophy focuses on complex skills and requires new standards, new assessments, and new methods of understanding how students are performing (U.S. Department of Education, 2010b). The philosophy is reflected in the two state consortia that are developing new assessments: The Partnership for Assessment of Readiness for College and Careers (PARCC; see http://www.parcconline.org/) and the SMARTER Balanced Assessment Consortium, with its focus on teaching and learning (see http://www.k12.wa .us/SMARTER/). Data-driven decision making will be an important component in this evolution.

The paradigm shift is readily apparent and has direct implications for practice and the take-away message for educators. Data play a fundamental role in education. Data are no

longer just to hold people and schools accountable. Instead, data are to be used to stimulate and inform continuous improvement. The new message is a positive one, and one that should resonate with educators, rather than the old message that caused some uneasiness among practitioners. The philosophical shift gives educators the license to use data to help all students by identifying the cognitive and affective strengths and weaknesses, thereby making individualized instruction possible.

Why Has Data-Driven Decision Making Emerged as an Important Topic?

As we have said, educators have been using data for many years, but only recently has there been a confluence of events that has made possible more effective ways to examine data. We highlight two particular phenomena that, in our opinion, we feel have facilitated data-driven decision making in educational settings. The first is the development of a variety of technology-based tools that can support data-driven decision making. The second is the increasing importance given to assessments other than summative measures. We now know that assessments for learning can inform instructional practice more directly than more standardized tests, which have only grown the pool of data from which we can draw information about learning and achievement.

As data have proliferated, so has the need to collect, analyze, and examine data in an efficient manner. Human capacity simply cannot handle the amount of data with which educators are being confronted. Thus, educators have turned to a variety of technology solutions to help them deal with this increasing data load. Technologies, for example, range from: (1) handheld devices on which teachers can assess students' literacy or mathematics skills and immediately provide results so that instructional steps can be prescribed; (2) school- and district-level data warehouses, either commercially available or home grown, that serve as a repository for

data, including demographics, behavioral, achievement/ performance, attendance, financial, among others; and (3) state longitudinal data systems (SLDS) that are being used to track data trends over time to examine performance, policy, programmatic, and compliance data. These state systems have been the target of an unprecedented amount of educational funding, with over $514 million expended through the SLDS Grant Program (National Center for Education Statistics, 2010b) and ARRA (2009). This investment is recognition of the importance of collecting and using educational data. There are of course many other types of technologies that are being developed and used to support data use. We will discuss these tools in Chapter 3, and we will contextualize research around the tools in the literature review in Chapter 2.

The second evolving phenomenon that impacts data-driven decision making is the growing recognition that standardized achievement test data provide only summative and limited information about student performance and learning, and that other more instructionally sensitive data are needed. Summative data do not readily translate into actionable instructional next steps. Thus, there has been an emerging impetus for educators to collect and use formative, benchmark, and interim assessments that are better aligned to instruction (Bailey & Heritage, 2006: Black & Wiliam, 1998a, 1998b; Goertz, Nabors Olah, & Riggan, 2009b; Heritage, 2007, 2010a, 2010b).

Validity is at the heart of the transformation; that is, test scores being used for what purposes—accountability for a school or district to attain AYP or continuous instructional improvement. This is the difference that the literature has distinguished as assessment *of* learning or assessment *for* learning (Nichols & Berliner, 2007; Petrides, 2006; Stiggins, 2005). The closer and the more aligned data are to instruction, the more likely they will be integrated into practice (Mandinach & Snow, 1999). This is instructional validity. While collecting valid and reliable data is important, it is essential to remember that all forms of data are sensitive to validity issues. It is part

of the data collection process. The ultimate goal here is to use data to improve student learning and build teacher capacity to enhance the teaching and learning process.

Why the Attention on Data-Driven Decision Making Now and Why Is It Important?

There are many uses for data in educational settings, ranging from compliance and accountability to data to inform instructional practice at the most diagnostic level. The push to use data has been emerging for several years as educators and policy makers recognize the need to rely on objective evidence, rather than on anecdotes. You often hear a teacher saying, "I know my kids; I know how each of them is doing." How do teachers know and on what do they base such knowledge? Certainly this occurs through the triangulation or the bringing together of many data sources, whether consciously or otherwise. This represents the important case knowledge teachers use to guide their practice. But how are these data sources analyzed and systematized? As one educator commented, "without data, you are just another opinion." Data do not lie. Data are hard evidence that can support or change practice.

At the same time, teachers and administrators are constantly being bombarded with increasing amounts of disparate data. Because of many forces, including pressure at the national level to increase rigor in the field of education, data use and data-driven decision making have risen to a level of national and international awareness. Policy makers and top educational officials are mandating the use of data. With increased demand comes the need for more resources. As we will discuss in this volume, certain parts of the infrastructure and support system are becoming readily available, such as technology tools, yet the human capacity has not caught up and must be addressed. There are few requirements for educators to acquire data literacy skills. Some states have certification and licensure requirements; many do not (Data Quality

Campaign, 2010a). Some courses are emerging in schools of education for pre-service teachers, but most courses are graduate-level ones for administrators. We may have a "build it and they will come" or "if they require it, they will do it" situation. Discussions have begun about integrating data practice into the accreditation process (Blue Ribbon Panel, 2010). The importance of demonstrating impact on student learning is fundamental to the National Board for Professional Teaching Standards (2002, 2007; Hakel, Koenig, & Elliott, 2008). The challenges and opportunities are abundant but uncoordinated. Monies are being devoted to technology to support data-driven decision making, while little has been spent on building the human capacity around data use, in part because data use falls between the cracks and funding tends to go to professional development around specific curricula and content areas. We see data-driven decision making as an essential tool that is embedded across content areas. It can be used in mathematics, language arts, and other high-stakes subjects, but also in low-stakes subjects such as art, music, and physical education. Data are pervasive. They are everywhere. And educators can no longer ignore them.

Mr. Rusty, a teacher at the Otis Elementary School in Montana, lamented that he wants to use data to inform his instructional practice, but his principal, Mr. Shiloh, does not believe in data and technology. Mr. Shiloh actually places impediments in Mr. Rusty's way to accomplishing his instructional goals. The school has no data system. All data are found on hard copies and housed in locked file cabinets. Mr. Rusty does an end-around by creating a data repository on his own computer to accumulate data from various sources on his students. He begins to share the data and the data structures so that other teachers will jump onto the bandwagon.

What is wrong with this picture?

Why would Mr. Shiloh actually impede the use of data rather than embrace the data's use?

What would you do if you were in Mr. Rusty's position?

Training on data-driven decision making is not just professional development; it is a lifelong commitment to a philosophical and holistic transformation toward continuous improvement. It is a systemic cultural shift. It requires a commitment across all levels of a school district—from the superintendent to the data entry clerk, from the district's vision for data to the assurance of data quality. It also moves beyond the boundaries of the school district to the state department of education, the U.S. Department of Education, to communities, parents, school boards, and other stakeholders. Data-driven decision making requires a systemic commitment to reform (Mandinach & Cline, 1994; Mandinach, Rivas, Light, & Heinze, 2006). Just as educators must be lifelong learners, acquiring new skills and knowledge such as data-driven decision making, schools and districts should be considered learning organizations (Senge, 1990) that also must acquire new knowledge and evolve over time through shared visions, collaboration, personal mastery, mental models, and systems thinking.

Educators do not work in isolation, and many influences create priorities and pressures, sometimes in competition with one another, that affect what they do and how they do it. A culture of data-driven decision making can help educators to work through the morass of information to find ways to create actionable knowledge from disparate data (Mandinach, Honey, Light, & Brunner, 2008). Easton (2009) sees data use as the vehicle for school improvement, through a four-step process toward continuous improvement and its ensuing feedback loop to: (1) use data to identify a problem, (2) identify possible solutions, (3) monitor continuous progress, and (4) use research to examine the impact (see Figure 1.1). The results of this process then get fed back to determine next steps. This inquiry cycle is what classroom teachers do with student data, and what building and central administrators do with a variety of data for administrative, programmatic, financial, and performance decisions.

Figure 1.1   Easton's Cycle of Inquiry
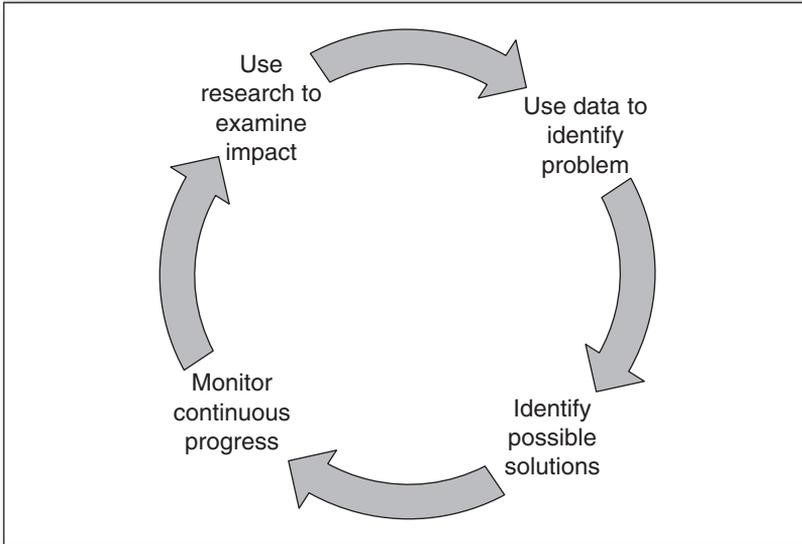
Based on Easton (2009).

Here Is an Example of the Inquiry Cycle

Wrigley School District in Arizona is losing students to neighboring charter schools. Each time the schools lose a student, the district loses substantial subsidies, thereby creating a financial issue. Wrigley decides to conduct a study to determine why students are leaving the district in favor of the charters. The study indicates that parents pull their children out after elementary school and place them in the charters to avoid attendance at large and often impersonal middle schools. The parents then re-enroll their children for high school because the charters do not have sufficiently broad course offerings. Because of the study's findings, the district decides to make changes to their middle schools by decreasing their size to make the schools more attractive to their stakeholders.

What the Wrigley School District did was apply Easton's (2009) inquiry cycle. It identified a problem, conducted research to understand the potential causes of the problem, and then instituted a course of action that could possibly remediate the problem. The next step would be for Wrigley to continue to monitor the inflow and outflow of students to determine if the changes indeed impacted the exodus of students to the charter schools.

So why are data important and why now? Educators need credible evidence to inform their practice. They need hard evidence to provide directions to help them solve pressing problems. Anecdotes no longer are sufficient. The time is ripe for sustained institutionalization and a transformation to data cultures. Public attention has turned toward education. Funding has become available in an unprecedented way. If not now, then when and why? The window of opportunity is here. We must seize this chance. *Carpe Diem!*

What is your current context for data-driven decision making?

Before you begin to apply data-driven decision making in your practice or improve upon current practices, we suggest that you stop and assess how you use the inquiry process.

Use data to identify a problem;

Identify possible solutions;

Monitor continuous progress; and

Use research to examine the impact.

Some Initial Questions

What is your current level of knowledge about data-driven decision making?

How do you use data?

Do you have technology to support your data use?

SOME HIGHLIGHTED REFERENCES

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GLOSSARY

Adequate Yearly Progress (AYP)—Part of No Child Left Behind, AYP is a determination of how well schools are performing academically based on standardized tests.

Data-driven decision making—The collection, examination, analysis, interpretation, and application of data to inform instructional, administrative, policy, and other decisions and practice.

What Works Clearinghouse (WWC)—A repository of vetted studies used to inform practitioners about the efficacy of interventions. The WWC uses a strict set of evaluative criteria by which to assess studies based on the rigor of their research methodology.