



Routledge Research in Higher Education

DATA FOR CONTINUOUS PROGRAMMATIC IMPROVEMENT

**STEPS COLLEGES OF EDUCATION MUST TAKE TO
BECOME A DATA CULTURE**

Edited by
Ellen B. Mandinach and Edith S. Gummer



Data for Continuous Programmatic Improvement

This book addresses the issue of data use in educator preparation programs toward continuous programmatic improvement. With an aim to increase the rigor in both research and practice in educational administration and teacher education, this volume will analyze the longstanding quality concerns about teacher and leadership preparation and standards for programs and educators, as well as controversies concerning national accreditation and federal efforts to mandate program reporting data. By exploring the policies and practices that influence departments of education, this volume examines the increasing pressures to improve institutional functioning within a complex system of university, state, and national structures and organizations.

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**Edited by Ellen B. Mandinach and
Edith S. Gummer**

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This book is dedicated to all of the educators who understand that data come in multiple forms, who believe that evidence is important to decision making, and who realize that improvement is continuous work. Your striving to prepare your students, whether pre-K–12 or teacher candidates, is what will ultimately result in better educators.

Ellen dedicates this book to Eli and Houdi, who make every day a lesson in humor. You provide a better understanding of collecting all sorts of data to inform continuous improvement outside the realm of education. You have made the geographical transition much easier by pulling me away from the computer periodically or lying across it (Houdi) so I take time away from writing.

Edith dedicates this book to the next generation of the family, Kayla, Wren, and Jackson. Pictures and video chats are my inspiration in continuing this work.



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Acknowledgments

Many people and institutions have influenced our decision to write this book and to collaborate with leaders in the field of policy, practice, and research. Educator preparation programs (EPPs) are being forced by accountability requirements to improve. More important, through institution introspection, the institutions are coming to the realization that they must implement improvement processes for their own edification. Both of us have traveled the country, learning from colleagues and observing what is happening in a number of institutions. These interactions have helped us to understand the landscape in which EPPs must function and recognize the complexities of the systemic nature of the process. We have learned from every interaction and conversation. These activities led us to the conclusion that the collective knowledge of the authors represented in this volume have important messages to the field at large. EPPs are trying to figure out how to proceed in the continuous improvement process. Some are ahead of the learning curve; others are struggling. All institutions meet significant challenges because of the complexity of the enterprise.

We want to thank all institutions and administrators with whom we have come in contact. They have helped us to clarify our thinking. Reading seminal reports from scholars like Charles A. Peck, Michael Allen, and Charles Coble has helped us to understand the policy landscape. Attending meetings like those convened by the Data Quality Campaign have introduced us to how others are thinking deeply about these issues. Interacting with some of the Deans for Impact Institutions such as the Relay Graduate School of Education, Western Oregon University, the University of Texas Rio Grande Valley, and the University of Southern California have brought to the fore issues and challenges that even forward-thinking institutions are facing.

A significant opportunity presented itself when Edith Gummer moved to the Mary Lou Fulton Teacher College at Arizona State University in the role of executive director of the Office of Data Strategy. Edith is living this change process on a daily basis to implement a data culture in the EPP. She is no longer a researcher looking objectively at the field; she is a fundamental change agent. Edith thanks her ASU colleagues for the reality check.

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Part I

Introductory Chapters



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1 Introduction and Overview

Ellen B. Mandinach and Edith S. Gummer

Purpose of the Book

The purpose of this volume is to contribute to the knowledge base that colleges of education—in particular, educator preparation programs—can use to support their efforts to incorporate the use of data to inform their practice, stimulating the development of data cultures where evidence is used for programmatic continuous improvement, a topic that many institutions already acknowledge as a growing emphasis in the field. This book will help administrators and faculty understand the importance of data for continuous programmatic improvement and the need for and the complexities of creating data cultures in their institutions. Because of the growing pressure toward improvement, it is no longer possible to eschew the use of data. Data use has become a necessity, but it should be viewed as a constructive tool toward institutional improvement. The book acknowledges the challenges. But it explores the opportunities afforded by data use for programmatic improvement. The volume provides examples from leading programs that are effectively establishing data cultures for continuous programmatic improvement. The book provides both a reality check but also a call to action for effective data use. Education must now become more responsive to stakeholders and address the public and policy pressures for improved performance. The use of data is a crucial support of that responsibility.

Emerging Need for Data Use in Educator Preparation Programs

The book addresses the issue of how educator preparation programs (EPPs) must and should use data to inform their practice and for the purpose of programmatic continuous improvement. The trend in education has become very clear of late. The push has been for education to become evidence-based, like other professions. This has been the case for K–12 teachers, schools, and districts. It is also now true for the institutions that prepare educators for their professional careers. Education, as a profession, must become data-driven and evidence-based, just like medicine, business, and

even professional sports. In part, this is why the Institute for Education Sciences in the United States Department of Education was created, to increase the rigor in both research and practice in education.

Education can use models of data use in other professions to develop processes and structures. In medicine, not only must professionals be armed with data to inform their decision making, but the institutions now are using data to improve their performance. Doctors use data to make diagnoses and form a course of treatment much like what teachers do in their instructional practice. Hospitals routinely use data to determine how well integrated and effective services are coordinated. A visit to an emergency room generates an automatic survey about the performance of the staff and the institution. In business, sales figures serve as data to inform future inventory control and purchases. Restaurants, car dealers, and service providers routinely send a customer satisfaction survey upon completion of a meal, purchase, or service. Sports are increasingly becoming data-driven. Even before the book and movie *Moneyball* (Lewis, 2004) made data analytics prominent, professional sports began using statistics for decision making. Coaches and managers decide what players to play and when, what plays to run, make hiring decisions, and design game strategies all based on data. These data run along a chronological continuum from capturing moment-to-moment actions to examining long-term trends, just as in education. For example, a tennis player's decision of whether to hit to the opponent's forehand or backhand is based on data trends of stroke strengths and weaknesses but also on how the opponent is hitting at that very moment, a short-term set of data. A hiring decision for a new pitcher may be based on long-term data trends.

Bringing the metaphor full circle, colleges of education are also service providers. They serve their students by providing them with the knowledge, tools, and dispositions they need to be educators. They serve the schools and districts into which their teacher candidates and graduates are placed. It is critical for the educator preparation programs to ensure that their teacher candidates and graduates are sufficiently initially prepared to meet the needs of the districts by creating an essential and tight feedback loop that provides actionable data that inform a continuous improvement cycle in the EPP. These data may vary along a continuum of rapid feedback, providing information about excellence in or lack of preparation in particular areas (e.g., a content discipline, classroom management, etc.) of graduates that align with hiring needs.

Educator preparation has been the target of policy makers and advocacy groups for many years. The National Council on Teacher Quality (NCTQ, 2014) has been an outspoken critic about the lack of quality among American teachers and the preparation programs that feed into the U.S. schools. For better or worse, NCTQ has done ratings of educator preparation programs that have been met with disdain by colleges and universities and created significant pushback and dialogue in the field. Before former Secretary of Education Arne Duncan left office, he established regulations that would

attempt to improve teacher preparation by providing guidelines by which the programs should function (U.S. Department of Education, 2014).

As society changes, what people need to know and be able to do changes as well. The schools of today are not working for many students, even those who have been successful in the past. As schools change, EPPs also need to change the way that they are preparing teachers. EPPs must reflect societal changes and be able to adjust to emerging needs and trends. For example, as educational technology emerged in the 1980s, it was important that EPPs began to integrate technology into the curricula. A current trend is the growing importance of educators knowing how to use data effectively and responsibly (Data Quality Campaign, 2014; Mandinach & Gummer, 2013, 2016). Although EPPs recognize this need, many have not yet addressed this need (Mandinach, Friedman, & Gummer, 2015; Mandinach & Nunnaley, 2017). Other topics that have emerged that EPPs must address include personalized learning, formative assessment, school climate, bullying, student diversity, student mobility, and homelessness. EPPs must be malleable and responsive to enable them to develop educators who themselves can adapt to emerging needs.

The field of education and the general public recognize that improvements can and should be implemented, but there are legitimate challenges. Institutions of higher education are highly complex organizations with deeply embedded systems and structures that control their functioning. Even if there is the desire to make changes for improvement in preparation programs, the structures of the universities in which the programs are situated have the potential to present hurdles organizationally. Colleges of education are only one component in larger institutions, and desired changes in policies and practices in that one component may not resonate university-wide. For example, if a school of education wants to initiate practices that impact tenure and promotion among faculty, policy changes may need to be brought in front of the university's entire faculty senate to align policies across colleges and departments. Further, the colleges of education must interact with other departments where their students may be receiving content-based courses, thereby necessitating the creation of feedback loops across departments. Many colleges of education receive students who have come from the community college system, where the students receive initial exposure to course content. Feedback loops also must exist between the programs and these feeder institutions to determine if the students have been adequately prepared for future coursework. Colleges of education serve to provide public and private schools with qualified teachers and administrators. There must be established relationships and another set of feedback loops to understand the impact of teacher preparation on practicing educators. Because colleges of education are closely responsive to other complex systems with components that are often beyond their control, sharing clear, explicit information about educator preparation in one system and its influence on practice in another system is essential. These are very real challenges.

Take, for example, a preparation program that finds its elementary teacher candidates are deficient in content knowledge, say in mathematics, once they are out in a school district as in-service teachers or as graduates. The school district may come back to the program and provide such critical feedback. If teacher candidates in the program receive their math content in the program itself, there may be some internal mechanism to provide a foundation for future improvement. However, if teacher candidates receive their content courses in an external department such as in mathematics, science, or history, then there is less immediate control for raising the problem and creating actionable steps toward improvement. The responsibility for improvement resides in multiple departments, and the extent to which a mathematics department may be receptive to that responsibility is a concern. As in K–12 education, where high school teachers blame middle school teachers who blame elementary teachers about what students know and are able to do, college faculty argue that prior preparation limits what they can achieve with students in their own programs. Further, is it actually the students' poor knowledge of math, or is it their pedagogical content knowledge—that is, their knowledge of how the math can be transformed into instructional actions? How can the college of education work productively with the content departments to effect change?

Another challenge in effecting change among EPPs is the diversity of the institutions that prepare teachers. There are huge programs that produce hundreds of educators each year. These are typically the large, land-grant institutions. These institutions balance the need to excel in research and the production of educators. Faculty are highly specialized and are rewarded more for their research than for their teaching. There are the traditional state colleges that also produce many teacher candidates for local education agencies. The focus here may be more on developing educators who can serve the local districts. Then there are the many small, independent colleges in which a department of education is situated with only a handful of faculty members. Such departments may graduate a small number of students and have faculty who must teach a range of courses. Each type of institution presents different visions, opportunities, and challenges in the quest to use data for continuous improvement. In brief, there is no one-size-fits-all education program. There may be some foundational data that are common across all programs, but there may also be unique sources of data. Similarly, there may be common challenges across these programs but also challenges specific to the institution.

Other forms of programmatic diversity also must enter the discussion. There are virtual programs, with students and graduates dispersed across the country and even internationally. There are for-profit programs where emphases may be very different. And now an emerging trend is the proliferation of residency programs that have somewhat different models of delivery and focus, as well as different staffing models. In fact, some residency programs have developed incredibly strong institutional research foci to use

data as part of a feedback loop to improve their performance (Michael & Susan Dell Foundation, 2016a, 2016b, 2016c). It is possible that more traditional programs can learn from practices being implemented in the residency programs (Michael & Susan Dell Foundation, 2016d).

Despite the many challenges, there is no question of the need for data use for programmatic improvement. EPPs need actionable data on which to make decisions about how to improve. The data may come from the program itself, or it may come from a variety of sources, including feeder institutions, content departments, and school districts where teacher candidates and graduates are placed. Having the right data to answer the pressing questions is only one step in the improvement process. Other components are also needed to create embedded data cultures in the programs where data use is expected and the appropriate infrastructure and supports are provided. We now turn to the data literature in the K–12 sector from which parallels can be extended to data use in EPPs.

In parallel, the literature on improving schools at the K–12 level can also be informative to the focus of the book. Bryk, Gomez, Grunow, and LeMahieu (2017) outline the concept of networked improvement communities. Many of the principles generalize the EPPs. The systemic nature of the improvement process for EPPs can be considered a networked improvement community. This perspective recognizes the complexity of the system in which EPPs must function, that EPPs cannot and do not function in isolation, the centrality of measurement and appropriate metrics, the importance of data collection targeted at the change process, that there are key drivers that relate to the intended objectives, and that there are no easy solutions to complex issues. Improvement science will be discussed in more detail in Chapter 2.

Building a Data Culture in Educator Preparation: Parallels to Schools and Districts

Research in the area of educational data-driven decision making has long focused on the need to establish data cultures in which the use of data is deeply embedded in routine practice. Almost a decade ago, an extensive literature review was conducted by a panel of expert researchers and a practitioner to discern pervasive patterns and trends in the data literature from which recommendations could be made (Hamilton et al., 2009). The focus of this review was how data were being used at the classroom, school, and district levels to identify best practices. The review produced five recommendations for data practice in K–12 education to facilitate effective data use. Essentially, the recommendation laid out a roadmap for the establishment of data cultures. These recommendations can be examined to ascertain the extent to which they generalize to educator preparation programs, as they appear fundamental to good data use in education. The components underlie much of the content of the chapters in this book.

We transform the five recommendations into parallel principles in educator preparation.

1. “Make data part of an ongoing cycle of instructional and programmatic improvement.”
2. “Provide multiple opportunities for teacher candidates to examine their own data and set learning goals.”
3. “Establish a clear vision for college-wide data use.”
4. “Provide supports that foster a data-driven culture within the college or university.”
5. “Develop and maintain a cross-programmatic data system.”

(adapted from Hamilton et al., p. 9)

Fundamental to data use is the concept of an iterative cycle of inquiry or a process of feedback that leads to continuous improvement. In Senge’s (1990) organizational change work, feedback loops fed by data provide the necessary foundation to understand the mechanisms of the change process. EPPs share many commonalities with other organizations. They are learning systems, and staff should be supported to understand that they are part of an organization that must continually improve through self-examination. The typical inquiry cycle includes: (a) the identification of a problem of practice; (b) the collect of relevant and actionable data; (c) the analysis of the data that leads to an interpretation and hypotheses about the root causes of the issue; and (d) the modification of practice, based on the hypothesis that a particular intervention will address the problem of practice. But the continuous improvement efforts are not complete at that point. It is not a simple linear process with a solution at the end. It is iterative. Once Step (d) has occurred, more data will be needed to determine if the intervention has had the desired impact or if other modifications need to be taken. Educator preparation programs always need to be testing the extent to what they are doing are aligned with the evolving systems in schools and districts, so the cyclical process of improvement truly is one of continuous improvement.

The second component promotes the notion that teacher candidates should become their own data-driven decision makers. They should be part of the data collection process. The recommendation includes specific steps such as communicating clear expectations and assessment criteria, providing concrete feedback, providing tools to learn from the feedback, and using the data to guide next action steps. These concepts are readily transferable to educator preparation. The use of their own data can be modeled for teacher candidates so that they develop practices they will use to help their own students do the same once they are in the classroom. Teacher candidate data often are at the heart of the metrics and indicators of success that are used for program evaluation, including observations of teaching and the production of artifacts through assignments and assessments. So helping teacher candidates to self-assess can become a critical part of the

improvement process. Chapter 7 discusses how the Relay Graduate School of Education uses this very premise as a key concept in their improvement process.

The third component of effective data use is the establishment of a vision for why data are to be used. This vision comes from leadership and must be explicit. Whether a principal, a superintendent, or a dean, having a clear message about the importance of and expectations for data use is essential. As Earl and Katz (2006) note about K–12 practice, data use begins and ends in the principal’s office. This concept is readily generalizable to higher education. A dean who is a proponent of data use will be much more likely to inspire and require that faculty and staff be so inclined. Creating the vision includes some concrete steps. One is that the dean should lead with data. Leadership is essential, but the dean will need help. Therefore, a distributed model of leadership is recommended, one where there is a shared level of responsibilities. A second component is to establish a data team within the organization that models and promotes the use of data. These would be lead faculty and staff that are part of the educator preparation program. A third premise is that critical teaching and learning concepts must be defined. For example, the InTASC standards create a skills load comprised of performance, essential knowledge, and critical dispositions across 10 standards that is unlikely to be measurable (CCSSO, 2013). The issue is not having teaching and learning concepts but rather about prioritizing them and identifying the developmental constraints of initial preparation. Metrics and indicators of success are fundamental concepts that resonate across the chapters in this book. People need to understand how they are being measured. Finally, there needs to be an articulation of roles and responsibilities. If faculty and staff are being expected to collect, examine, and act on data, they need to understand and agree to what they are being asked to do with sufficient support and authority to make changes. Managing the change environment needs to be a crucial aspect of moving to more effective use of data to inform, improve, and innovate teacher education programs.

Resources are needed to deeply enculturate the use of data in an organization. Although data use must become a routinized practice, there is no question that, for some, it will be an additional, new activity, and even an added burden, one with which some may feel uncomfortable or unfamiliar. Having a data leader or a data coach can ease some of the tensions. These are individuals who know how to use data within the context of the organization. They are not just statisticians or data nerds. The more distributed this leadership, the better. A second resource is for there to be dedicated and structured time for faculty and staff to collaborate around data use. As we see in Chapter 9, Texas Tech uses what they call Data Days. Peck and Davis in Chapter 4 refer to Data Summits. Educator preparation programs have begun to dedicate time and days to the examination of data. Such meetings provide time for the collaborations and in-depth conversations that are needed to examine, interpret, and act on the data. A third

component is ongoing professional development. This is certainly necessary in the K–12 setting. It is not clear that faculty and staff in higher education are really well versed in data use; that is, they may not be the most data-literate individuals. Some people may be the typical data gurus. Most, however, could benefit from learning how to use data in an effective manner and co-constructing ways to do so in their own programs. They also may need to receive instruction on how to protect the privacy and confidentiality of student data, a growing concern in both the K–12 and higher education arenas. A final consideration is the extent to which there is a need to provide incentives to faculty and staff for their data work. If additional work is involved, leadership needs to consider the impact there might be to contracts, tenure, promotion, and workload.

The final recommendation needed for an effective data culture is the provision for a data system that supports the kinds of data to be collected and the vision for data use. The metrics and indicators will help determine how the data are collected and accessed. In educator preparation programs, given the nature of the collaborations necessary to obtain the relevant data, this may mean that the systems have to collect data from disparate sources, including participating districts and collaborating departments within the university. Memoranda of understanding (MOUs) are therefore essential. A number of chapters in this book address the need for appropriate data systems, particularly Chapter 8, with a focus on Arizona State University.

Overview of the Book

This volume addresses the complex issue of how educator preparation programs are or are not using data to inform their efforts to continually improve. It explores the policies and practices that influence colleges and departments of education. It examines the increasing pressures and emphases to improve institutional functioning to produce quality graduates ready to enter the teaching profession, recognizing that programs function amid complex systems with structures and organizations such as accreditation agencies and standard-setting bodies on one end of a continuum of drives for improvement and schools and districts as the recipients of their graduates at the other end. The authors of the chapters employ different methods to support data use and are addressing different aspects and problems of their teacher preparation programs. They have focused on their lessons learned and provide good recommendations for readers.

The book is separated into four sections: an introduction; chapters from researchers; chapters from the field of practice; and a concluding chapter.

In Chapter 2, Gummer and Mandinach provide a landscape view of the continuous improvement process, especially as it pertains to educator preparation programs. This chapter lays the groundwork for why an orientation for continuous improvement is needed in colleges of education and educator preparation programs, more specifically. It discusses the policies