INTRODUCTION

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THE PACKAGE CONTAINING DATA FROM LAST SPRING'S mandatory state exam landed with a thud on principal Roger Bolton's desk. The local newspaper had already published an article listing Franklin High (for the second year) as a school "in need of improvement" for failing to increase the percentage of tenth graders scoring well enough on the English language arts and mathematics exams to receive high school diplomas. Now this package from the state offered the gory details. Roger had five years of packages like this one, sharing shelf space with binders and boxes filled with results from the other assessments required by the district and state. The sheer mass of paper was overwhelming.

Frustrated as a teacher by how little Franklin expected of its students academically, Roger had vowed that when he became principal he would make it his mission to "get the learning up." But now, this heavy package reminded him that he would be judged primarily by whether he could "get the test scores up." He wanted to believe that there was something his faculty could learn from all these numbers that would help them increase student learning and get the scores up. But he didn't know where to start.

Many school leaders across the nation share Roger's frustration—a lack of knowledge about how to transform mountains of data on student achievement into an action plan that will improve instruction and increase student learning. Others have made some progress in responding to this challenge, but have become stymied along the way. Some have learned to identify patterns in student assessment results, but have not figured out

what to do next. Some have not been able to convince their colleagues of the value of this work. Some have developed action plans, but have not been able to implement them. Some have implemented plans for improving instruction, but do not know how to evaluate their effectiveness. The goal of this book is to help educators in all of these positions to learn how to analyze data in a manner that contributes to improved instruction and increased student learning.

When we use the term "data," we mean not only scores on high-stakes tests, but also the broad array of other information on student skills and knowledge typically available in schools. For example, a growing number of districts administer "benchmark assessments" to gauge students' readiness for high-stakes exams. Some districts also administer end-of-course exams. Some schools assess student achievement with science fairs or exhibitions at which student projects are graded using agreed-upon rubrics. Then, of course, there are the classroom tests, projects, and homework that individual teachers assign to students as they work their way through the curriculum. These are just some of the kinds of data that educators can fruitfully examine in targeting areas for instructional improvement.

When we use the term "school leaders," we mean not only principals, but also the teacher leaders, directors of instruction, department heads, and coaches who are committed to engaging their colleagues in improving instruction at their school. A central premise underlying this book is that a good school is not a collection of good teachers working independently, but a team of skilled educators working together to implement a coherent instructional plan, to identify the learning needs of every student, and to meet those needs. We believe that the process of learning from data contributes to building an effective school and to helping the school continue to improve its performance.

A NEW CHALLENGE

The long-term evidence from the National Assessment of Educational Progress (NAEP) shows that average reading and math scores of today's 9-, 13-, and 17-year-olds are a little higher than they were in the 1970s. This is consistent with the view of most educators that they are working as hard as they can and are accomplishing at least as much as their colleagues did 30 years ago. So why the enormous external pressure to improve schools, as embodied in state accountability systems and the annual yearly progress (AYP) requirements of the federal No Child Left Behind (NCLB) legislation?

To a large extent, the answer lies in changes in the economy that have dramatically reduced earnings opportunities for Americans who leave school without strong reading, writing, and math skills and the knowledge of how to use these skills to acquire new

knowledge and solve new problems. These striking long-term changes in the American economy provide much of the motivation for the standards movement and for the pressure American schools face to improve student learning.

A complementary source of pressure is the persistent and sizable gap between the average academic skills of white students and those of students of color. Unless this gap is closed, workers of color will increasingly be denied access to the growing number of jobs that require problem-solving and communication skills and that pay enough to support a family. This achievement gap helps to explain why pressure to improve education is particularly great in urban schools that serve high percentages of students of color.

Although the economic changes that provided the impetus for the standards movement were not created by the nation's educators, educators are under great pressure to respond to them by dramatically improving the quality of instruction children receive in school. We believe that the ideas in this book will help educators improve instruction and increase student learning. Moreover, we see this as a worthy goal not only because it will help the next generation of Americans earn enough to support their children, but also because it will give them the skills to contribute to civic life in a democracy beset by a host of problems.

What effective schools look like is not a mystery. They have a coherent instructional program well-aligned with strong standards. They have a community of adults committed to working together to develop the skills and knowledge of all children. They have figured out how to find the time to do this work and are acquiring the skills to do it well. This book is written for those educators who are committed to this work. We maintain that analyzing a variety of student assessment results can contribute to fulfilling their goals, if careful attention is paid to the limitations of tests and the technical challenges in interpreting student responses.

When students receive consistent high-quality instruction, scores on high-stakes tests rise. However, the converse need not be true. Faced with pressure to improve test scores, some educators analyze student assessment results to identify students who need just a few more points to pass a graduation exam, with the intent of improving these students' test-taking skills. Preparing students to pass the exams required for high school graduation is clearly important. However, it is more important that the time be spent helping students develop the skills they will need after graduation.

Some educators examine tests to identify frequently used questions and item formats so they can devote instructional time to helping students do well on particular tests. Familiarizing students with the format of high-stakes tests makes sense. So does explaining strategies to improve scores, such as answering every open-ended response

question. However, the line between ensuring that students are test savvy and focusing scarce instructional time on preparing for a particular high-stakes test is a thin one. While "drill and kill" may lead to improved scores, it will not prepare students to thrive in our increasingly complex society.

STRUCTURING IMPROVEMENT: A ROAD MAP

For school leaders like principal Roger Bolton, the barriers to constructive, regular use of student assessment data to improve instruction can seem insurmountable. There is just so much data. Where do you start? How do you make time for the work? How do you build your faculty's skill in interpreting data sensibly? How do you build a culture that focuses on improvement, not blame? How do you maintain momentum in the face of all the other demands at your school? This book addresses all of these questions, providing strategies and tools for identifying possible explanations for strong and weak student performance, for examining the importance of alternative explanations, and for planning and executing instructional strategies to improve teaching and learning.

We have found that organizing the work of instructional improvement around a process that has specific, manageable steps helps educators build confidence and skill in using data. This process includes eight distinct activities school leaders can do to use their student assessment data effectively. Each activity is the focus of one chapter. We see the eight activities as falling into three categories: Prepare, Inquire, and Act.

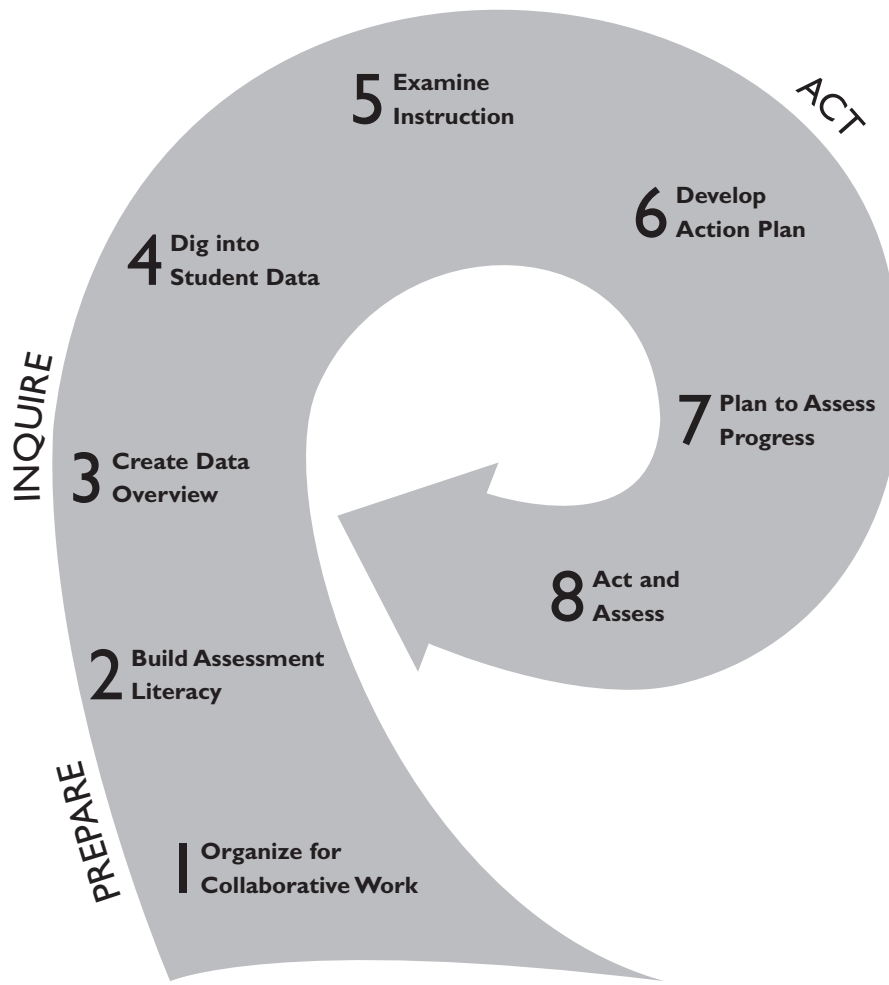
We use the Data Wise Improvement Process graphic shown on the next page to illustrate the cyclical nature of the work. Initially, schools engage in a set of activities (i.e., prepare) to establish a foundation for learning from student assessment results. They then inquire, and subsequently act on what they learned. They then cycle back to further inquiry.

Prepare is about putting in place the structure for data analysis and looking at existing data from standardized tests. Chapter 1 describes tasks involved in organizing for collaborative work, including setting up a data team and taking stock of existing data. Chapter 2 explains key elements of assessment literacy that are critical to interpreting test results correctly.

Inquire is about acquiring the knowledge necessary to decide how to increase student learning. Chapter 3 describes the tasks involved in creating a data overview, especially how to construct graphic displays that will allow school faculty to readily identify patterns in the results of standardized assessments. Chapter 4 explains how to dig into student work, first in a single data source and then in other data sources, with the goal of identifying and understanding a student learning problem. Chapter 5 shows how to examine instruction in order to understand what current practice looks like and how it relates to effective practice for the student learning problem.

Act is about what to do to improve instruction and to assess whether the changes put in place have made a difference. Chapter 6 describes the tasks involved in designing an effective action plan. Chapter 7 addresses planning a process to assess whether students are learning more. A key message is that the assessment strategy and the action plan should be developed at the same time. Chapter 8 describes the key tasks involved in making an action plan come alive in classrooms, and in assessing implementation and effectiveness along the way. Chapter 9 describes steps school district central offices can take to support school-based educators' efforts to make constructive use of student assessment results. It is designed to be a resource for school superintendents and other district leaders committed to helping schools become "data wise."

The Data Wise Improvement Process



WHY START WITH HIGH-STAKES TESTS?

Although this book shows schools examining many types of evidence on student achievement, chapters 2 and 3 focus on lessons for examining student performance on externally imposed tests, such as state-mandated standardized tests or district-required tests of basic competencies. One reason to start here is that under NCLB and state and district accountability systems, schools are responsible for improving students' scores on these assessments. By looking carefully at what students are doing well and not so well on these tests (keeping in mind that there are often many possible explanations for poor performance on any given question), educators can begin to see connections between what they are doing in the classroom and how students are performing on external assessments.

Another reason for starting with results of externally imposed exams is that all faculty members recognize them as important to their school, whether they like them or not. In places like Franklin High, school leaders are often searching for ways to get teachers to really communicate with colleagues from other departments and grade levels.

A final reason for beginning with results on externally imposed tests is that by their very nature, these exams offer a measure of student achievement that is independent of the judgments of the teachers within the building. Although we do not dispute the argument that teachers are in the best position to understand their students' performance, having an external checkpoint against which to measure students' skills can catalyze fruitful discussions about standards.

Of course, how much educators can learn from the results of externally imposed standardized tests depends on the quality of the tests and on what information about results is made available. More can be learned from results on tests that are tightly aligned with state learning standards than from off-the-shelf tests used across the country. More can be learned when educators can see individual questions and responses or subscores indicating the degree of mastery of particular skills than when they only have an aggregate score for each student.

A central premise of this book, therefore, is that it is important to examine a wide range of data, not just results on standardized tests. Indeed, we will show that an analysis of standardized test results raises more questions than it answers. Examining other types of evidence on students' skills and knowledge is needed to answer these questions.

HOW TO USE THIS BOOK

Every chapter focuses on particular tasks school leaders face, tools to accomplish these tasks, and lessons from schools that have done this work. The book ends with references that readers can consult for more specialized knowledge on particular topics, and a few protocols to use to structure conversations.

To bring alive the descriptions of these tasks, we have woven vignettes from two case study schools throughout the book: Franklin High School, with students in grades 9-12, and Clark K-8 School, with students in kindergarten through grade 8. Both of our case study schools are working to improve student learning, not simply to improve test scores. Clark faces the challenge of how to build a sense of urgency for continuous improvement, rather than to accept as satisfactory the moderately strong performance most of its students show on standardized tests. Franklin High School faces a different, very difficult challenge: how to respond constructively to the enormous pressure to reduce dropout rates and failure rates on the state graduation exam. Each chapter describes the choices and challenges these schools face at each step of their respective journeys and illustrates the "messiness" of applying the improvement process in practice. When we need to provide a broader range of responses than these two cases can offer, we supplement our examples with brief descriptions of approaches taken by other schools we have worked with.

For leaders relatively new to the process of using data, we recommend skimming the whole book first and then working through the chapters sequentially with a group of committed faculty. In a sense, each chapter can be read as a "to-do" list of the tasks that will help move the work forward. By following the progress of the two case study schools as they work their way around the improvement cycle, your group will see how other schools handle these tasks. By using the protocols, exercises, and templates offered in the chapters, you should find it relatively straightforward to plan effective faculty meetings on each topic.

For school leaders with considerable experience in using data, it may not be necessary to follow the chapter sequence. Each chapter is designed to stand alone, allowing practitioners to focus on learning strategies that deal with the parts of the process that they find most challenging. Alternatively, school leaders can pick up this book at the point in the cycle where they find themselves, knowing they eventually will work their way around the entire circle.

District-level or independent professional developers and graduate school faculty may find this book useful in planning a year-long course that addresses one chapter per month. In our experience, schools learn a lot by working through the material in a particular chapter on their own and then coming together with people from other schools

to share their work, discuss their concerns, and receive technical and moral support from instructors. School leaders are often energized by opportunities to show their school's work to colleagues from other schools and relish the chance to borrow good ideas.

For central office personnel and others who want to learn more about how to support school-level improvement, we recommend reading through the first eight chapters to develop an understanding of the challenges school-based educators face in attempting to learn from student assessment results. Then focus on chapter 9, which recommends actions district central offices can take to support school faculties' efforts to make constructive use of student assessment results.

Database designers can use the book to help think through the processes that their software needs to support. Test developers can use it as a window into what school-level people need from assessments—especially formative ones—and what they can do with results once they get them. Finally, policymakers at all levels can use this book to help understand how hard the work of using assessment data to improve schools is, how long it takes, and how worthwhile it can be.