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Why Data Skills Matter In School Improvement

Without using data to inform their actions at every step of the way, teachers and administrators will probably not reach their goals for school improvement. Ms. Heritage and Ms. Chen describe a CRESST initiative that helps educators develop the skills to collect, analyze, and be guided by data.

BY MARGARET HERITAGE AND EVA CHEN

PICTURE these two scenarios. Toward the end of the school year at Jefferson Elementary, the principal is sharing with his faculty members reports from the district that show the school's aggregated scores on statewide assessments in reading and math. He also has print-outs of the school's results on the district's end-of-semester assessments. From these reports, the principal and faculty members can see that reading is a problem for the school's students. They conclude that they have to improve their students' reading skills and so commit to a school improvement goal of focusing on reading in the next school year. They leave for the summer believing that they will do their best next year and hoping that their efforts will result

in improved test scores.

At the same time, across the district at Adams Elementary, the principal begins a faculty meeting by reviewing the same state and district reports with the



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school's teachers. The school improvement goal for the past two years has been to increase the percentage of students reaching proficiency on the statewide math test from 55% to 75%, and the principal and the teachers are pleased to see from the students' scores

that their efforts have paid off.

Now it's time to turn their attention to reading, and the meeting becomes the first step in a new improvement effort. The principal and the teachers make a plan to investigate reading achievement, which includes collecting and analyzing data from multiple assessments, disaggregating scores by subscales and by subgroups, collecting data on a range of indicators and combining these with assessment data to explore factors that may be affecting achievement, and examining longitudinal and cross-sectional data on reading. The investigation will lead these practitioner researchers to establish goals for school improvement and to identify benchmarks to gauge their progress. This process mirrors the one the principal and teachers used to improve math achievement, and they leave for the summer knowing that they have much to do next school year but confident that their efforts will result in improved reading scores.

The two schools share the same starting point of examining assessment reports and the same ending point of establishing the goal of improving their students' reading scores. However, the stories of these schools represent two very different approaches to setting the goal and two very different chances of achieving success. What accounts for the differences? A conversation with the principal and teachers at Jefferson Elementary would reveal that they look at assessment data once a year, when the reports come from the state and district, but beyond that they are pretty confused about what to do with all the information available to them. If the principal and teachers at Adams Elementary were asked about data use, they would reply that "using data is a way of life around here — our investigations of data are continuous and inform the decisions we make about improving student learning."

Simply stated, the educators at Adams Elementary have the necessary skills to use data effectively for school improvement, and they are comfortable with the process, whereas those at Jefferson Elementary don't and aren't. This difference will be a significant factor in the success of their respective school improvement efforts.

Much research indicates that making good use of data is a common characteristic of effective schools and districts,¹ and the underlying assumption of various accountability mandates, including those in the No Child Left Behind Act, is that using data will lead to school improvement. Reaching this goal, however, depends on the ability of educators to collect and analyze data and set goals and targets based on their analysis. Yet the de-

velopment of these skills has not been a part of most administrator preparation programs and hardly ever has been a feature of preservice or inservice teacher training.² Without these skills, practitioners will be ill equipped to use data effectively for school improvement, and confusion about data and reluctance to use them will reign. If data do not guide improvement efforts, schools will continue to base decisions on a mixture of intuitions, beliefs, philosophy, and hypotheses.

FIVE STEPS TO EFFECTIVE DATA USE

As part of an initiative funded by the U.S. Department of Education, the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) developed the Quality School Portfolio (QSP), a Web-based tool intended to help educators across the U.S. collect, analyze, and make meaning of data. In conjunction with the rollout of QSP, CRESST designed and implemented a training program to help practitioners acquire effective data-analysis skills. The program comprises five online, self-paced, interactive modules and focuses on the process and five core skills that CRESST staff members have identified as essential for using data effectively for school improvement.

1. *Determine what you want to know.* Questions start the process of investigation and determine what data will be collected. Different kinds of questions are asked throughout the process, often leading to further data collection. In the QSP training program, we identify three types of questions — general, drill-down, and interpretive — each of which has a different function.

Recall the investigation into reading achievement at Adams Elementary. A general question the practitioners could ask to start the process might be "How well are our students doing in reading as measured by their aggregated scores on the state and district assessments?" To get more detailed information, they could ask a drill-down question, such as "What are the strengths and weaknesses in reading at each grade level?" Interpretive questions might include "How do these scores compare with last year's scores for the same students? Why are we getting these results? What other data do we need to consider?"

The training program also focuses on the features of questions that are well framed for data analysis. These features include clear definitions of the purpose of the investigation, what will be measured, how and when it will be measured, who will be assessed, and how the results will be interpreted. In order to evaluate the bene-

fits of an after-school program at Adams Elementary, the practitioners might ask, “Do the students who have been in the after-school program for one semester perform better on the schoolwide assessment in vocabulary and reading comprehension than they did prior to participating in the program?” This question contains all of the elements needed to guide their data collection and analysis.

2. *Collect data.* This step involves gathering existing data or generating new data to answer the initial research questions, as well as questions that may arise from the analysis of the data. Collection also involves considering the factors that influence data quality. Because collecting good data is the key to getting credible information, QSP training teaches practitioners about factors that influence data quality. It is critically important to be able to answer the question “Do my data allow me to draw accurate conclusions about my students?”

We provide plenty of examples of the factors that can affect the accuracy of administrators’ and teachers’ conclusions, focusing on the validity and reliability of the assessments used to generate their data. An assessment is considered valid if it effectively measures what it is supposed to measure. For example, a performance-based task assessing the math content that has been taught in a class is not a valid measure of achievement for *all* students if it includes unfamiliar vocabulary or is written at a level that is beyond the comprehension of some students. Another factor useful in judging the validity of a test is the degree to which it is aligned with the standards it is intended to assess. Without strong alignment with the standards, test results will not provide accurate information about students’ progress. In addition to validity, practitioners must consider the *reliability* of assessments, a term that refers to the consistency of test

results. For example, are different scores on the same test the result of different levels of achievement or the result of graders using different scoring criteria or interpreting the same criteria inconsistently? Could a major difference in a student’s SAT scores between the first time the student took the test and the second time be because he was sick on the second occasion? Or is the difference due to flaws in the test itself?

In our training program, we highlight the dangers of making judgments about student performance based on a single measure — in part because of validity and reliability issues — and emphasize the need to use multiple measures from different sources to draw conclusions about what students know and can do. Victoria Bernhardt notes that integrating data elements from different sources can give a clearer picture of achievement.³ In order to describe indicators that can be combined with achievement data to fully explore student achievement, we borrow from Bernhardt’s definition of data domains. These include opportunity-to-learn data, which can measure how well teachers organize and deliver instruction to provide comprehensive coverage of content; demographic data, which can provide a context for achievement results; and perception data, which can reveal students’, teachers’, and parents’ attitudes about learning, teaching, school programs, and safety.⁴

3. *Analyze results.* Effective action depends on the capacity of teachers and administrators to analyze data accurately and to infer a reasonable next step. The QSP training concentrates on the information yielded by descriptive, comparative, and correlational analyses of data and on the appropriate use of longitudinal and cross-sectional analyses.

We first consider the information that can be gained from a descriptive analysis of data, such as the mean, median, standard deviation, and percentiles of achievement scores. When interpreting descriptive results, we emphasize that, although this type of analysis can provide information about student background characteristics or how individuals or groups of students perform, it does not tell us why things are the way they are. For example, while descriptive analysis provided the educators at Adams Elementary with information about their students’ reading achievement scores, it did not tell them why the students achieved at the levels they did.

A comparative analysis of data can address questions about the differences or similarities between or within groups (e.g., Did students in the classes that spent more class time on independent reading perform better on



“Can Bobby come out and do my homework?”

the reading assessments than students in classes that spent less time? Did fifth-grade students perform better on the reading assessment this year than fifth-graders did last year?). Cross-sectional or longitudinal analyses can be conducted to compare the performance of different groups of students or that of one group over time. For example, the principal and teachers at Adams Elementary might use a cross-sectional analysis to compare third-grade African American students' reading scores with the scores of third-grade Hispanic students. And, in order to identify trends, they might choose a longitudinal analysis that follows the same students for several years, excluding those who did not take the test each year.

A correlational analysis provides information about the relationship between two variables (e.g., time spent on independent reading and performance on reading assessments). Correlational analysis also can be useful for predicting the scores on one test from students' performance on other indicators (e.g., a prediction of statewide test scores based on class grades).

4. *Set priorities and goals.* After comprehensive data analysis, the next step in the process of investigation is to identify priorities and set goals for school improvement. We caution that trying to address too many needs at once can be overwhelming and can derail improvement efforts. Once priorities are determined, goals can be created. We use Mike Schmoker's criteria for setting goals: they must be measurable, time-sensitive, focused on student achievement, linked to assessment, written in clear language, realistic, and achievable.⁵ For example, the goal that the principal and teachers at Adams Elementary might set for the upcoming year to increase the number of students reaching proficiency on the statewide test from 55% to 65% meets these criteria.

5. *Develop strategies.* Knowing the "what" (the goals) without knowing the "how" (the strategies for achieving the goals) will not result in focused school improvement. Setting targets for the goal will provide the details of what has to be achieved for success. An example of a target for the goal of raising reading proficiency might be to increase the number of students scoring 65 on the vocabulary section of the schoolwide reading assessment by 5%. Next, establishing clear strategies will define the specific actions that need to occur to achieve the target. For example, one strategy for reaching the vocabulary target could be to use semantic webs to develop vocabulary in content areas and to have teachers who have expertise in this strategy support their colleagues in developing the skills needed to do this effectively. The combination of targets and strategies will

provide the pathway to achieve the goal.

HELPING EDUCATORS DEVELOP DATA SKILLS

How have teachers and administrators responded to our data-use training program? From surveys and interviews, we have learned that the training program enables participants to develop a better understanding of the process of data investigation. Participants reported gaining the skills needed to use data effectively, as well as feeling more confident in examining data, tracking the root of problems, and coming up with action plans for improvement.

We know that our participants will need to develop more sophisticated skills, which will depend on the continuous use of data — the use-it-or-lose-it principle. Continuous data use will happen only in those schools where the principal and teachers believe in data analysis as a means to school improvement and where practitioners work collaboratively to examine data to determine school improvement goals and monitor progress toward the goals. Our view is that educators are more likely to believe in the value of data if they have the skills to use them.

We have highlighted what we think are the basic skills in data use that all educators need. Until the process and skills that we address in our program become an integral part of all administrators' and teachers' professional "tool kit," widespread effective use of data to guide and monitor school improvement will remain a hope for the future rather than a reality of the present.

1. Gordon Cawelti and Nancy Protheroe, *High Student Achievement: How Six School Districts Changed into High-Performance Systems* (Arlington, Va.: Educational Research Service, 2001); Jason Snipes, Fred Doolittle, and Corinne Herlihy, *Foundations for Success: Case Studies of How Urban School Systems Improve Student Achievement* (New York: MDRC, 2002); Charles Teddlie and David Reynolds, *The International Handbook of School Effectiveness Research* (London: Falmer, 2000); and Wendy Tognieri and Stephen E. Anderson, *Beyond Islands of Excellence: What Districts Can Do to Improve Instruction and Achievement in All Schools* (Washington, D.C.: Learning First Alliance, 2003), available at www.learningfirst.org/publications/districts.

2. Allison Cromey, "Using Student Assessment Data: What Can We Learn from Schools?," *Policy Issues*, November 2000, pp. 1-12; and Joan Herman and Barry Gribbons, *Lessons Learned in Using Data to Support School Inquiry and Continuous Improvement: Final Report to the Stuart Foundation* (Los Angeles: National Center for Research on Evaluation, Standards, and Student Testing, University of California, 2001).

3. Victoria L. Bernhardt, "No Schools Left Behind," *Educational Leadership*, February 2003, pp. 26-30.

4. Victoria L. Bernhardt, *Data Analysis for Comprehensive Schoolwide Improvement* (Larchmont, N.Y.: Eye on Education, 1998).

5. Mike Schmoker, *Results: The Key to Continuous School Improvement*, 2nd ed. (Alexandria, Va.: Association for Supervision and Curriculum Development, 1999).

