Multiple Measures

by Victoria L. Bernhardt

Let's talk about multiple measures. Many state and federal regulations now require schools to report multiple measures — multiple measures of student achievement, that is. While we applaud these changes from the old method of using one standardized achievement score to make decisions about how well a school is doing, multiple measures of student learning alone are not sufficient for comprehensive school improvement, and, in fact, can be misleading in this regard.

Many educators believe that over 50 percent of student achievement results can be explained by *other factors*. That being true, if we want to change the results we are getting, we have to understand the other 50 percent to know why we are getting the results we are getting. Then we need to change what we do in order to get different results.

Any definition of multiple measures should include *four* major measures of data — not just student learning, but also demographics, perceptions, and school processes. Analyses of *demographics, perceptions, student learning,* and *school processes* provide a powerful picture that will help us understand the school's impact on student achievement. When used together, these measures give schools the information they need to improve teaching and learning to get positive results.

In the figure that follows, the four major measures are shown as overlapping circles. The figure illustrates the type of information that one can gain from individual measures and the enhanced levels of analyses that can be gained from the intersections of the measures.

One measure by itself gives useful information. Comprehensive measures, used together and over time, provide much richer information. Ultimately, scho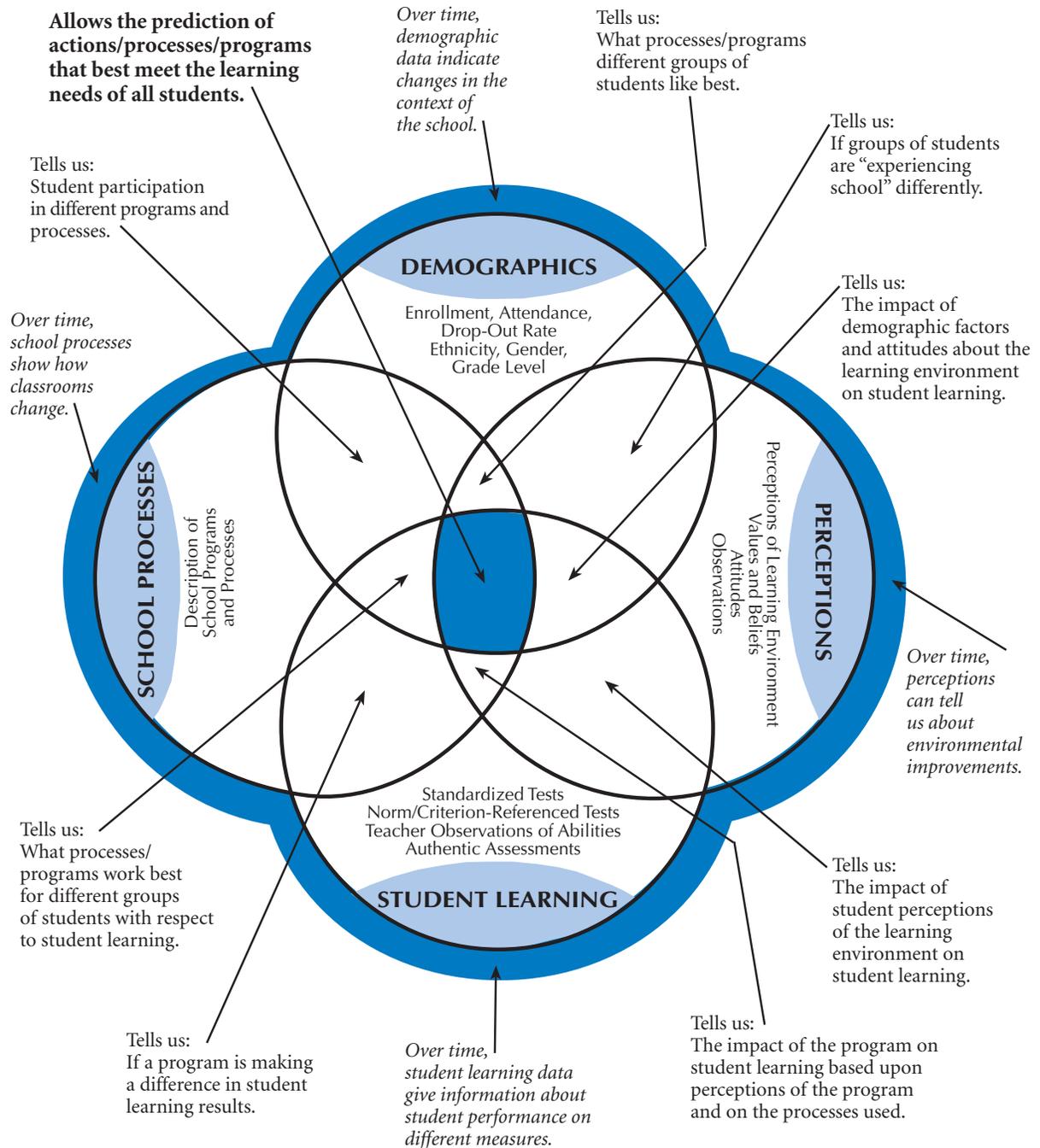ols need to be able to predict what we must do to meet the needs of *all* students they have, or will have in the future. The information gleaned from the intersections of these four measures (demographics, perceptions, student learning, and school processes) helps us to define the questions we want to ask, and focuses us on what data are necessary in order to find the answers.

Demographic data provide descriptive information about the school community, such as enrollment, attendance, grade level, ethnicity, gender, and native language. Demographic data are very important for us to understand. They are the part of our educational system over which we have little or no control, but with which we can observe trends and glean information for purposes of prediction and planning. Demographic data assist us in understanding the results of all parts of our educational system through the disaggregation of other measures by demographic variables.

Perceptions data help us understand what students, parents, teachers, and others think about the learning environment. Perceptions can be gathered in a variety of ways—through questionnaires, interviews, and observations. Perceptions are important since people act in congruence with what they believe, perceive, or think about different topics. It is important to know student, teacher, and parent perceptions of the school so school personnel know what they can do to improve the system. Perceptions data can also tell us what is possible.

Student Learning describes the results of our educational system in terms of standardized test results, grade point averages, standards assessments, and authentic assessments. Schools use a variety of student learning measurements—usually separately—and sometimes without thinking about

MULTIPLE MEASURES OF DATA

Allows the prediction of actions/processes/programs that best meet the learning needs of all students.

Over time, demographic data indicate changes in the context of the school.

Tells us: What processes/programs different groups of students like best.

Tells us: If groups of students are "experiencing school" differently.

Tells us: Student participation in different programs and processes.

Tells us: The impact of demographic factors and attitudes about the learning environment on student learning.

Over time, school processes show how classrooms change.

DEMOGRAPHICS

Enrollment, Attendance, Drop-Out Rate Ethnicity, Gender, Grade Level

SCHOOL PROCESSES

Description of School Programs and Processes

PERCEPTIONS

Perceptions of Learning Environment Values and Beliefs Attitudes Observations

Over time, perceptions can tell us about environmental improvements.

Tells us: What processes/ programs work best for different groups of students with respect to student learning.

Standardized Tests Norm/Criterion-Referenced Tests Teacher Observations of Abilities Authentic Assessments

STUDENT LEARNING

Tells us: The impact of student perceptions of the learning environment on student learning.

Tells us: If a program is making a difference in student learning results.

Over time, student learning data give information about student performance on different measures.

Tells us: The impact of the program on student learning based upon perceptions of the program and on the processes used.

Note. Adapted from *Data Analysis for Comprehensive Schoolwide Improvement* (p.15), by Victoria L. Bernhardt, 1998, Larchmont, NY: Eye on Education. Copyright © 1998 Eye on Education, Inc. Reprinted with permission.

how these measurements are interrelated. Schools normally think of multiple measures as looking only at different measures of student learning, rather than including demographics, perceptions, and school processes.

School Processes define what teachers are doing to get the results that we are getting. For example, how is reading being taught at grade two, or math at grade six? School Processes include programs, instructional strategies, and classroom practices. This is the measure that seems to be the hardest for teachers to describe. Most often, teachers say they do what they do intuitively, and that they are too busy doing whatever they do to systematically document and reflect on their processes. To change the results schools are getting, teachers and school personnel must begin to document these processes and align them with the results they are getting in order to understand what to change to get different results, and to share their successes with others.

A Snapshot of the Measures

Looking at each of the four measures separately, we get snapshots of data in isolation from any other data at the school level. At this level we can answer questions such as—

- How many students are enrolled in the school this year? (*Demographic*)
- How satisfied are parents, students, and/or staff with the learning environment? (*Perceptions*)
- How did students at the school score on a test? (*Student Learning*)
- What programs are operating in the school this year? (*School Processes*)

By looking over time we can answer questions such as, but not limited to:
- How has enrollment in the school changed over the past five years? (*Demographics*)
- How have student perceptions of the learning environment changed over time? (*Perceptions*)
- Are there differences in student scores on standardized tests over the years? (*Student Learning*)
- What programs have operated in the school in the past five years? (*School Processes*)

Intersection of Two Measures

Crossing two measures, we begin to see a much more vivid picture of the school, allowing us to answer questions such as:
- Do students who attend school every day perform better on the state assessment than students who miss more than five days per month? (*Demographics by Student Learning*)
- What strategies do third-grade teachers use with students whose native languages are different from that of the teacher? (*Demographics by School Processes*)
- Is there a gender difference in students' perceptions of the learning environment? (*Perceptions by Demographics*)
- Do students with positive attitudes about school do better academically, as measured by the state assessment? (*Perceptions by Student Learning*)
- Are there differences in how students enrolled in different programs perceive the learning environment? (*Perceptions by School Processes*)
- Do students who were enrolled in active hands-on content courses this year perform better on standardized achievement tests than those who took the content courses in a more traditional manner? (*Student Learning by School Processes*)

Looking at the interaction of two of the measures over time allows us to see trends as they develop (e.g., standardized achievement scores disaggregated by ethnicity over the past three years can help us see if the equality of scores, by ethnicity, is truly a trend or an initial fluctuation.) This interaction also begins to show the relationship of the multiple measures and why it is so important to look at all the measures together.

Intersection of Three Measures

As we intersect three of the measures at the school level (e.g., student learning measures disaggregated by ethnicity compared to student questionnaire responses disaggregated by ethnicity,) the types of questions that we are able to answer include the following:

- Do students of different ethnicities perceive the learning environment differently, and are their scores on standardized achievement tests consistent with these perceptions? (*Demographics by Perceptions by Student Learning*)
- What instructional process(es) did the previously non-English-speaking students enjoy most in their all-English classrooms this year? (*Perceptions by Demographics by School Processes*)
- Is there a difference in students' reports of what they like most about the school by whether or not they participate in extracurricular activities? Do these students have higher grade point averages than students who do not participate in extracurricular activities? (*Perceptions by Student Learning by School Processes*)
- Which program is making the biggest difference with respect to student achievement for at-risk students this year, and is one group of students

responding "better" to the processes? (*School Processes by Student Learning by Demographics*)

Looking at three measures over time allows us to see trends, to begin to understand the learning environment from the students' perspectives, and to know how to deliver instruction to get the desired results from and for *all* students.

Intersection of Four Measures

Our ultimate analysis is the intersection of all four measures, at the school level (e.g., standardized achievement tests disaggregated by program, by gender, within grade level, compared to questionnaire results for students by program, by gender, within grade level.) These interactions allow us to answer such questions like:

- Are there differences in achievement scores for eighth-grade girls and boys who report that they like school, by the type of program and grade level in which they are enrolled? (*Demographics by Perceptions by School Processes by Student Learning*)

It is not until we intersect all four circles, at the school level, and over time that we are able to answer questions that will predict if the actions, processes, and programs that we are establishing will meet the needs of *all* students. With this intersection, we can answer the ultimate question:

- Based on whom we have as students and how they prefer to learn, and what programs they are in, are all students learning at the same rate? (*Student Learning by Demographics by Perceptions by School Processes*)

Focusing the Data

Data analysis should not be about gathering data. It is very easy to get *analysis paralysis* by spending time pulling data together and not spending time using

the data. School level data analysis should be about helping schools understand if they are achieving their purpose and guiding principles and meeting the needs of *all* students—and, if not, why not? A good way to avoid *analysis paralysis* is to consider using *key questions* and building your analyses around the answers to these questions.

This type of data analysis is easy when schools are clear on their purpose and what they expect students to know and be able to do. These analyses comfortably flow from questions that teachers and administrators naturally ask themselves to learn if these purposes are being met. The good news is that by looking at trends of the intersected four major measures, schools do not have to conduct complicated program evaluations or needs analyses. These intersections can tell them just about everything they would want to know, and the data are fairly readily available.

Summary

The moral of the story is, if we want to get different results, we have to change the processes that create the results. Just looking at student achievement measures focuses teachers only on the results, it does not give them information about what they need to do to get different results.

By asking for student achievement measures alone, state and federal program officers can never use these data because the *context* is missing. This request might also mislead schools into thinking they are analyzing student learning in a comprehensive fashion. Just looking at student learning measures could in fact keep teachers from progressing and truly meeting the needs of students.

When we focus only on student learning measures, we see school personnel using their time figuring out how to look better on the student learning measures. We want school personnel to use their time figuring out how to *be* better for *all* students.