

The Value of Value-Added Data



TO THE POINT

- ▶ Value-added data provide principals, teachers, and parents with valuable information about students' past and predicted performance and give teachers feedback about the effectiveness of their own classroom instruction.
- ▶ Value-added data can help school systems create much more coherent, effective, and performance-focused ways of improving and managing teaching talent.
- ▶ Because value-added methods are based on growth in student learning, they can provide revealing diagnostic information on school or district-level performance.



The Education Trust

Educators with access to value-added data are finding many ways to improve their schools. They can analyze students' learning trajectories to target individual interventions, assess the fairness and efficiency of advanced course placements, and improve professional development programs intended to hone teachers' skills. Today, every state has the capacity to provide educators with value-added data.

The Value of Value-Added Data

BY CRAIG D. JERALD

School administrators and teachers make judgments about performance every day. Based on those judgments, they make decisions that can profoundly affect the fortunes of students and educators. Yet even in this era of data-driven decision making, many of those judgments still amount little more than semi-informed hunches.

Consider the following examples:¹

- As a consequence of perennial low performance, district administrators begin to reconstitute a low-performing school. In the process, they ask the principal which underperforming faculty members he would like to transfer. The principal immediately replies that Ms. Jones would be at the top of his list because of her “negativity” about students who don’t work hard enough to meet her high expectations.
- At a school in another district, the principal emphasizes a positive learning environment in every classroom, so Ms. Franklin puts commendable energy into planning engaging lessons and works to establish a strong rapport with her students. As a result, she is considered to be among the best teachers on the faculty, and her classroom is a frequent stop on tours conducted for visitors.

In most school systems, such judgments would never be tested against hard evidence, and the stories would end there. But because both examples occurred in districts with access to “value added” data on actual growth in student learning, these particular stories turned out very differently.

In the first school, district administrators found that Ms. Jones’s students consistently achieved among the *highest* learning gains in the school, so she was not transferred to a higher performing campus. In the second, Ms. Franklin and her principal discovered that her students were making

among the *lowest* math and reading gains in the school. Although the “front end” of her teaching was first-rate, she was not adequately following up to monitor students’ learning and adjust her instruction to ensure all students were mastering the material. Given these results, the school provided her with focused, individualized, and intensive professional development she otherwise would not have received. In both cases, students and teachers alike benefited immensely from the availability of data on teacher effectiveness.

MORE INFORMATION ABOUT STUDENTS

Estimating teacher effectiveness is just one potential use of value-added analyses. In fact, teachers and administrators in places with access to such information are finding many ways it can improve their schools—from targeting individual interventions by analyzing students’ learning trajectories, to assessing the fairness and efficiency of advanced course placements. Perhaps most important, because value-added methods are based on growth in *student learning*, they also can provide adults with valuable diagnostic information about students.

For example, by tracking achievement and value-added data, teachers and administrators stand a far better chance of meeting the needs of all students. Students who are low achievers and progressing more slowly academically will need intensive support to graduate from high school ready for college. And students who are high achievers and not making much progress might be insufficiently challenged.

This second scenario isn’t only a concern in wealthy, majority-white suburbs. A recent study in Texas found that

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the achievement gap between African-American and white students increases much more for African-American students who start out as higher achievers. And the problem is particularly pronounced in high-minority schools.²

Value-added data for groups of students also can provide revealing diagnostic information on school or district-level performance. For example, value-added data can be used to track progress over time of students with different achievement levels. Figure 1, an example of such a diagnostic report, shows how fourth-graders who start out as high performers make solid gains, but those who enter with lower math achievement are not growing as much as they should.

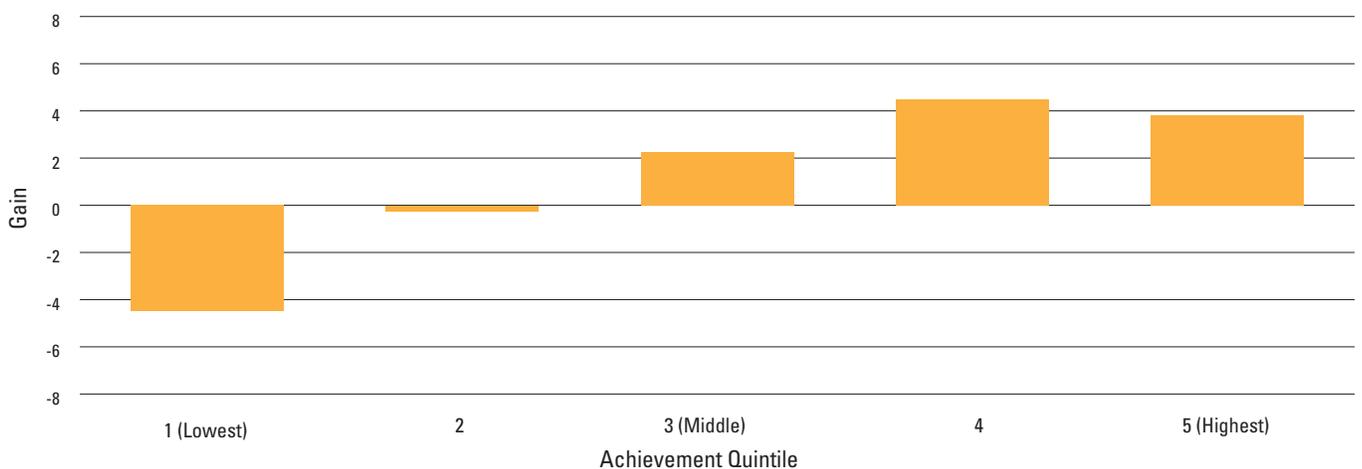
Educators in such states as Tennessee, Pennsylvania, and Ohio not only receive value-added data on student-learning gains, but they also use individual “projection reports” that signal whether a student is on track to perform at a proficient or advanced level on future assessments. In Tennessee, for example, the reports predict student performance on a wide range of tests, including high school end-of-course examinations and even the ACT exam.^{3,4}

“As a high school principal, projection data are invaluable,” says Michael Murphy, principal of Hershey High School in Pennsylvania. Murphy encourages his staff to use the information to ensure that all students reach the proficient level and to increase the percentage who score at the advanced level on the state test. “Knowing the projection data as they enter ninth grade really gives us almost three full years to work with these students to get them to that level.”⁵

Most states make student projection reports available to parents upon request, but some Pennsylvania districts have begun to share the information with parents in hopes of boosting their involvement. The Williamsport Area School District provided parents with projection charts printed in color and an explanatory letter, which teachers subsequently discussed in parent conferences. According to Superintendent Kathleen Kelley, “Showing these charts helped parents see their child’s progress and discuss what the parent and school could do as partners. Where the projection was going down, our message was that we are going to work together to defy that yellow line.”⁶

Besides identifying students who need extra help, projection data allow administrators to find students who are on track to reach advanced levels on state tests. This enables them to plan enrollments for advanced courses. For example, based on projections at the end of sixth grade, one Tennessee principal was shocked to find that more than 100 students were on track to succeed in eighth-grade algebra, but the school was planning to provide algebra seats only for 25.⁷

Figure 1. This example of a diagnostic report shows that fourth-graders who begin as high performers (Quintile 5) make solid gains of about four points in math. But poor performers (Quintile 1) decline by more than four points during the year.



Source: Based on Figure 9.1 in Joel Giffin, Theodore Hershberg, and Claire Robertson-Craft, “Value-Added as Classroom Diagnostic,” in Theodore Hershberg and Claire Robertson-Craft, Eds., *A Grand Bargain for Education* Cambridge, Mass.: Harvard Education Press, 2009, p.138.

A school district in central Ohio has taken that kind of analysis much further. The Olentangy Local School District used projections to evaluate its entire system for placing students in advanced middle school classes and consequently made sweeping policy changes. Two years ago, Olentangy administrators noticed that middle school students generally were achieving below-average growth in mathematics. Concerned whether students were being sufficiently challenged, they decided to compare student projection data with course placements.

The results were surprising. Many middle school students who were projected to score at the advanced level on the state assessment were not taking advanced courses. For example, 114 sixth graders were taking pre-algebra, but an additional 70 students who had a very high probability (more than 80 percent) of scoring at the advanced level on the state's sixth-grade math assessment had been placed in general mathematics.⁸

Rather than simply expanding the number of seats in advanced courses, the district began to question the practice of tracking—especially after another analysis showed that low-income and minority students were disproportionately placed in lower track courses. For example, the district found that though African-American, Latino, and mixed-race students made up 8.6 percent of all seventh-graders, these students accounted for only 4.5 percent of pre-algebra and 3.6 percent of algebra students—and a full 15 percent of general mathematics students. “We saw lots of ‘gate keeping’ going on, wittingly or unwittingly, whether you looked at it using the value-added projection data or information on underserved population data,” recalls Michael Nicholson, the district's executive director of secondary education.⁹

Faced with evidence that the tracking system was as unfair as it was inefficient, administrators and teachers chose to eliminate general mathematics courses in the seventh and eighth grades. Pre-algebra is now the “base” math course for all Olentangy seventh-graders, and algebra is the “base” course for all eighth-graders. At the same time, middle schools expanded math time, revamped curricula, and offered extra support to help all students succeed.

Rather than foundering, students have soared. Mathematics value-added scores are the highest the district has seen. All grade levels in all middle schools have made either average or, more often, above-average growth. Ending the old “gate keeping” system will result in more

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success in high school and college, district officials believe. “What we’ve been saying is that we’ve knocked down the barrier to access to the higher end curriculum,” says Jeff Brown, Olentangy’s executive director of elementary education, “and doing that, if we start early, will open doors to students at the end of their secondary careers.”¹⁰

MORE INFORMATION ABOUT TEACHERS

When newspapers publish articles about the possibility of using value-added methods to measure teacher effectiveness, they often focus on the controversy over using the data for performance or “merit” pay. From the perspective of the news media, that makes sense: Controversy sells. And value-added data certainly have offered an opportunity for some schools and districts to better compensate teachers for good performance. It turns out that neither of the usual compensation criteria—graduate-school credits and years of service—have much positive impact on growth in student learning.

But compensation is only one way school systems manage their most valuable resource—teachers. Administrators and teachers routinely navigate a web of policies that determine who teaches, what they teach, where they teach, and whether teachers have the support necessary to improve over time. Incredibly, most of those policies

are not based on reliable information about the extent to which teachers grow student learning—the most important part of the job.

Teachers are evaluated based on brief visits from principals who use crude checklists and rate most teachers “satisfactory” or “excellent.” For their part, teachers can only raise their salaries by spending money on graduate courses that do not help them become better teachers or by waiting for automatic salary bumps based on their number of years on the job. They waste time in generic professional development programs that have little to do with their specific needs and have not been evaluated to see whether they actually improve teacher effectiveness.

What’s more, teachers are assigned to students, courses, grades, and schools with little attention to how those placements match their strengths, weaknesses, and the needs of students. This lack of focus on performance creates a disjointed array of requirements and incentives for teachers. The current system rewards teachers for complying with bureaucratic or contractual rules, rather than improving their instruction and serving students.

Obviously, value-added data are not the only source of useful information on teacher performance. But they can provide information on teacher *impact* which, especially when accompanied by better evaluations of teacher *actions*, can enable school systems to create much more coherent, effective, and performance-focused ways of improving and managing teaching talent.

According to Virginia Connolly, a New York City middle school principal, new value-added “teacher data reports” empower her with the information she needs to be a better school leader. “One of the things that was helpful in conversations with teachers,” she says, “was the ability to talk not just about their trends [in effectiveness] but also their impact with different groups of students. In a middle school, there are big differences between sixth and eighth-graders, and the reports showed that one teacher was effective with older kids but not younger ones. As a principal, you can go two ways with that. You can say, ‘Okay, let’s get her more professional development on how to work with younger kids.’ ... Or you can make the decision to play to the teacher’s strengths” and assign her to teach only upper grade levels.¹¹ (An example of the four-page teacher-data reports can be downloaded from the district’s Teacher Data Toolkit Web site at <http://schools.nyc.gov/Teachers/TeacherDevelopment/TeacherDataToolkit/default.htm>.)

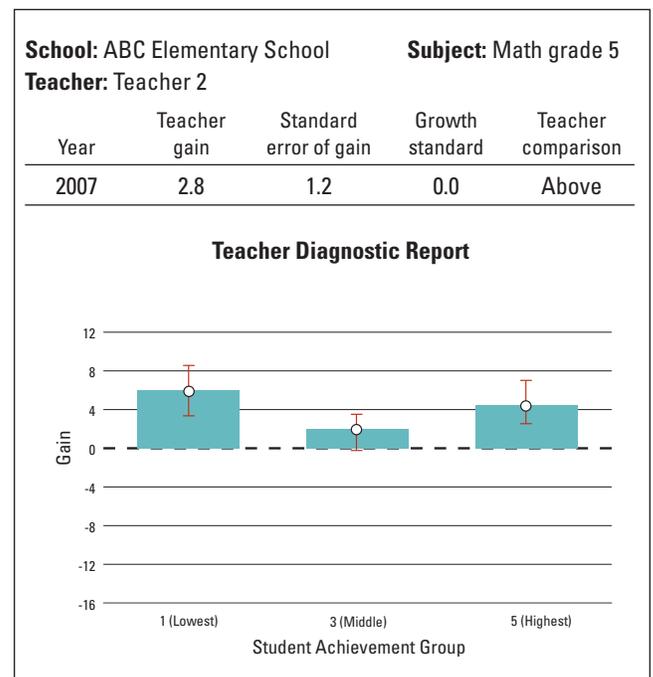
Maryville Middle School in eastern Tennessee proactively uses value-added data to manage assignments to

ensure the best possible fit between students and teachers. Teachers whose value-added reports show they are most effective with low-achieving students teach those students, and vice versa. (See Figure 2 for an example of how value-added reports can show how well teachers are succeeding with students at different achievement levels.)

Former principal Joe Giffin believes the practice has multiple benefits. “This assignment process does not always work seamlessly,” he writes, “but the guiding principle is clear: Principals should use value-added data to make assignment decisions by matching teacher strength to student need. Operating in this way dramatically increases student learning while simultaneously boosting teacher morale.”¹²

Some school systems are also using value-added data to address teacher assignments *across* schools. Districts such as Tennessee’s Hamilton and North Carolina’s Guilford County have identified highly effective teachers and offered them bonuses and other incentives to teach in high-poverty, low-performing schools. And in 2009, the U.S. Department of Education and Mathematica Policy Research began working with seven school districts around the country to implement a Talent Transfer Initiative. The program offers highly effective teachers \$20,000

Figure 2. Example of a Teacher Value-Added Report



Source: Adapted from Figure 9.2 in Joel Giffin, Theodore Hershberg, and Claire Robertson-Craft, “Value-Added as a Classroom Diagnostic,” in Theodore Hershberg and Claire Robertson-Craft, Eds., *A Grand Bargain for Education*. Cambridge, Mass.: Harvard Education Press, 2009, p. 140.

over two years if they agree to transfer to a low-performing school, along with \$10,000 for highly effective teachers who already work in one of the target schools and agree to remain there.¹³

Of course, some districts have found that pay incentives alone are not enough to attract and retain strong teachers in struggling schools. In 2008, realizing that pay incentives alone had failed to do the job, the Charlotte-Mecklenburg schools launched a strategic staffing initiative that placed stronger principals in targeted schools and allowed them to hand-pick a team of trusted administrators. The district then identified teachers who were highly effective, based on student-growth data. At a special recruitment event, administrators invited these teachers to transfer to their schools in return for a hefty salary incentive, extra professional development, and the promise of supportive leadership. Finally, the district provided principals with a list of effective teachers who agreed to participate in the initiative so that school leaders could interview teachers to ensure a good match.

Some of these districts also use value-added data as a basis for transferring ineffective teachers out of low-performing schools, which is another way to ensure fair and effective teacher-student matches. In such cases, leaders have decided that low-performing teachers should first receive professional development and support—including training in how to use value-added data for their own classrooms. But if they ultimately cannot improve, ineffective teachers no longer should be assigned to teach low-performing students. For example, under the Mission Possible program in Guilford County, North Carolina, the district's human-resources department removes tenured teachers in designated high-need schools who earn negative value-added effectiveness ratings for two years in a row and reassigns them elsewhere in the district.¹⁴

Likewise, value-added data could help principals better address teacher retention. A recent study in Florida found that fewer than 30 percent of highly effective beginning teachers remained in their original schools five years after being hired.¹⁵ That represents a tremendous loss of talent. If principals knew who their most effective teachers were, they could work with district leaders to offer stronger retention incentives to prevent talent drain and raise the faculty's effectiveness over time.

Districts also could use value-added data to improve the recruitment and selection of beginning teachers. For example, the Teach for America program closely analyzes how well the preservice characteristics it considered in recruit-

The current system rewards teachers for complying with bureaucratic or contractual rules, rather than improving their instruction and serving students.

ment and selection predicted later success in the classroom. It then tweaks the criteria to raise the effectiveness of the next batch of recruits.¹⁶ A study in New York City found that if the school system recruited and selected new teachers based on a broader set of evidence-based criteria, first-year teachers—who typically are the least effective—could perform as well as current second-year teachers.¹⁷ Some states with value-added data systems have begun to report on the effectiveness of teachers from different teacher-preparation programs—another valuable piece of data that could inform recruitment and selection.

School officials also could use value-added information to evaluate expensive mentoring and professional development programs that districts provide after hiring teachers. This seems tremendously important given the large sums of money districts spend on such programs. Value-added studies show that most first-year teachers begin as relatively ineffective instructors, grow for a time, and then level off in effectiveness after a few years. What if districts could identify schools where mentoring and support produced higher levels of initial teacher effectiveness and steeper “learning curves” for teachers? What if they could follow the careers of teachers who break the leveling-off pattern and continue to improve until they become highly effective? What if they could identify which professional development programs and practices boost effectiveness the most? The information gleaned from such studies could have a tremendous payoff.

But top-down support also can leverage bottom-up expertise. Some districts use value-added analyses to identify and disseminate effective teaching practices. In Long Beach, Calif., district researchers used value-added analyses to identify and study teachers who prompted the largest student-learning gains in the district's successful MAP2D math program (which itself was created by one teacher and later disseminated to other schools). Those teachers then

help others understand how they tweaked the program to eke out better results.¹⁸

In Columbus, Ohio, teachers can earn a bonus for conducting “action research” to demonstrate that a particular instructional practice can boost student learning (based on value-added data for the subjects and grades for which they are available). Teachers can get a second bonus for disseminating the successful practice the following year.¹⁹

Finally, with the proper technical support, data on teaching effectiveness can be just as useful to teachers as it is to administrators. In 2002, Katie Hartley, a fifth-grade math teacher in Miami East Local Schools in western Ohio, decided she was not happy with value-added data the school had received. The information indicated that her math students were achieving only average growth at best.²⁰ Hartley wanted to know whether the school’s math curriculum aligned with the state standards. Sensing some gaps, she created supplemental units and designed new materials and formative assessments to support better math instruction. The following year, value-added reports showed above-average growth for her students.

Even so, she remained unsatisfied. The reports showed that high-achieving students were benefiting from the changes to her instruction far more than low-achieving students and consequently were achieving much greater growth in learning. The following year, Hartley developed ways to support her low-achieving students. She used high school students as math tutors, introduced a “math facts” program so students had the basics to calculate rapidly and fluently, and created weekly review exercises to ensure that all students mastered new material before proceeding to more advanced lessons.

The 2004 and 2005 value-added results confirmed her efforts were paying off: Students from across the performance spectrum all made much higher than average gains. In 2005, when she taught all fifth-grade math classes, the school’s fifth-graders scored a whopping 33.6 points higher than predicted.²¹

Hartley attributes much of her success to her state’s willingness to make value-added data available. “The value-added information I receive has been the sole catalyst for many of the changes in my curriculum and instruction my first seven years of teaching,” she says. “The increase in my students’ value-added scores over the years is directly attributable to my use of value-added information to make decisions about what I teach, how I teach, and how I assess student learning.”²²

School officials can use value-added data to evaluate professional development programs and identify and disseminate effective teaching practices.

As a regional value-added specialist, Hartley now helps other teachers leverage value-added data to improve their own instruction. “Academic growth can and should be measured,” she told the audience at a conference on longitudinal data systems in 2007. “For the first time, good teaching can be quantified.”²³

CONCLUSION

Researchers demonstrated a quarter century ago that schools could effectively employ value-added statistical methods. At the time, only a few states and districts had accumulated the necessary annual assessment data to take advantage of the breakthrough. Today, every state has the capacity to provide educators with value-added data. Yet most American teachers and administrators still lack access to such information.

In its proposed regulations for the Race to the Top program, the U.S. Department of Education has signaled that it wants to change this. Educators should welcome the push. Principals, teachers, and parents will gain valuable information about students’ past and predicted performance. School and district administrators will have more information about teachers and the programs intended to hone teachers’ skills. Last but certainly not least, teachers will have more information about the effectiveness of their own classroom instruction. If used wisely, such information can lead to better informed decisions that benefit everyone with a stake in improving teaching and learning.

NOTES

(Some links may have expired. Some links that appear on multiple lines may not be reachable directly from this document. It may be necessary to copy and paste the entire link into your browser.)

- 1 Both examples are based on real-life situations described in interviews conducted for this paper and for an earlier Education Trust paper, "The Real Value of Teachers." However, the names of the teachers involved have been changed to protect their privacy.
- 2 Eric A. Hanushek and Steven G. Rivkin, "Harming the Best: How Schools Affect the Black-White Achievement Gap." Cambridge, Mass.: National Bureau of Economic Research, August 2008.
- 3 To learn more, visit www.education-consumers.org/tnproject/studentdata.htm.
- 4 Tennessee Department of Education and SAS Institute, Inc., "Academic Preparedness Report." Nashville: Tennessee Department of Education, Spring 2009. Available at <http://news.tennesseeanytoday.com/node/2050>.
- 5 Quoted in Pennsylvania Department of Education, "Frequently Asked Questions about Value-Added Analysis and High-Achieving Students." Harrisburg, Pa.: Pennsylvania Department of Education, August 2009. Available at www.pde.state.pa.us/a_and_t/lib/a_and_t/PVAAS_FAQ_High-Achieving_Students_2009.pdf.
- 6 Quoted in University of Pittsburgh Institute of Politics, "What to Do with PVAAS: Policy and Practical Direction for School Districts." *Institute of Politics Report* Issue 41, Summer 2008.
- 7 Joel Giffin, Theodore Hershberg, and Claire Robertson-Craft, "Value-Added as a Classroom Diagnostic" in Theodore Hershberg and Claire Robertson-Craft, Eds., *A Grand Bargain for Education*. Cambridge, Mass.: Harvard Education Press, 2009.
- 8 Jeff Brown and Michael Nicholson, "Projection Data: The Means of Breaking Down Barriers for Better Student Course Placement." Presentation at the Ohio Value-Added Conference, Columbus, Ohio, September 23, 2009.
- 9 Interview with Jeff Brown and Michael Nicholson, October 13, 2009.
- 10 Interview with Brown and Nicholson.
- 11 Video interview with Virginia Connolly on New York City Department of Education Web site, <http://schools.nyc.gov/Teachers/TeacherDevelopment/TeacherDataToolkit/UseTheReports/Videos/Video2.htm>.
- 12 Joel Giffin, "A Case Study: Maryville Middle School," in Theodore Hershberg and Claire Robertson-Craft, eds., *A Grand Bargain for Education*. Cambridge, Mass.: Harvard Education Press, 2009.
- 13 Talent Transfer Initiative Web site, <http://talenttransferinitiative.org/>.
- 14 Center for Educator Compensation Reform, "Mission Possible: A Comprehensive Teacher Incentive Program in Guilford County, North Carolina." Washington, D.C.: Center for Educator Compensation Reform, April 2008.
- 15 Martin West and Matthew Chingos, "Teacher Effectiveness, Mobility, and Attrition in Florida: A Descriptive Analysis." Nashville: National Center on Performance Incentives, February 2008.
- 16 Telephone interview with Josh Griggs, Teach for America vice president of admissions, June 23, 2009.
- 17 Jonah E. Rockoff, Brian A. Jacob, Thomas J. Kane, and Douglas O. Staiger, "Can You Recognize an Effective Teacher When You Recruit One?" Cambridge, Mass.: National Bureau of Economic Research, November 2008.
- 18 Telephone interview with Rebecca Afghani, Long Beach Unified School District Mathematics Curriculum Leader.
- 19 Columbus City Schools, Performance Advancement System Web site, [www.columbus.k12.oh.us/website.nsf/\(ccs_pages\)/Staff_Resources?opendocument](http://www.columbus.k12.oh.us/website.nsf/(ccs_pages)/Staff_Resources?opendocument).
- 20 At the time, her surname was Peters-Crosby. Battelle for Kids, "Value-Added Analysis Helps Improve Fifth-Grade Math Instruction." Columbus, Ohio: Battelle for Kids, 2006.
- 21 Katie Peters-Crosby, "Using Value-Added Data to Make Instructional and Curricular Decisions." Presentation at Data Quality Campaign Symposium, Washington, D.C., March 12, 2007.
- 22 Quoted in Ohio Value Added Portal, Battelle for Kids, http://portal.battelleforkids.org/Ohio/Value_Added_for_School_Improvement/SOAR/SOAR_Benefits.html?sflang=en.
- 23 Peters-Crosby, "Using Value-Added Data." Presentation at Data Quality Campaign Symposium.

ABOUT THE EDUCATION TRUST

The Education Trust promotes high academic achievement for all students at all levels—pre-kindergarten through college. We work alongside parents, educators, and community and business leaders across the country in transforming schools and colleges into institutions that serve all students well. Lessons learned in these efforts, together with unflinching data analyses, shape our state and national policy agendas. Our goal is to close the gaps in opportunity and achievement that consign far too many young people—especially those who are black, Latino, American Indian, or from low-income families—to lives on the margins of the American mainstream.

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