

Research Points

Teachers Matter: Evidence from Value-Added Assessments

Today's accountability systems place the blame on schools for inadequate student academic achievement, which seems unfair to many people. They believe that family background and the socioeconomic mix of students in the classroom exert such a strong influence on student learning that teachers and schools can have only a limited effect. Important research from the 1960s appeared to bolster that view,¹ but recent studies show clearly that a student can learn more from one teacher than from another and that teachers and schools matter. So the question now is not *whether* schools and teachers can make a difference, but *how much* they affect student learning.

Value-Added Assessment and How It Works

A teacher's impact on student achievement can range from small but meaningful to huge. To help quantify that influence, a new approach to teacher performance research, called "value-added" assessment, focuses on gains in academic achievement over a given year that can be attributed to a district, a school, or an individual teacher. Those gains are the "value" that teachers, schools, and districts add. The improvement in student performance from year to year is what matters most, not the overall achievement score on a test. Students with

low starting scores can show strong gains and vice versa. In this way, value-added assessments allow us to see how educators add to student knowledge, over and above what students' families and neighborhoods contribute.

This approach is the essence of the Tennessee Value-Added Assessment System (TVAAS), an early and much-discussed example of a value-added accountability initiative. Developed in the mid-1990s, TVAAS relied on complex statistical methods to isolate contributions to student learning made by specific teachers, schools, and districts.²



Recent Studies and the Impact of Individual Teachers

While findings are frequently disputed, research is concluding that teachers do make an important difference to student learning. For example, after a careful (and highly critical) review of recent value-added research, the RAND Corporation found convincing evidence that individual teachers can have a differential effect on students' academic progress.³

It is difficult, however, to estimate precisely the size of the impact teachers have on student achievement or to report that effect clearly. The most common way is to describe the "percentage of variance" in students' achievement accounted for by teachers.

A value-added analysis of a large group of Texas elementary schools estimated that teachers accounted for 3 percent of the variance in student achievement,⁴ while analysis of data from a large-scale U.S. government study suggested that teachers are responsible for somewhere between 4 percent and 18 percent of student test score changes.⁵

Another way to express teacher impact is in terms of extra months of student academic growth expected from a student's assignment to a highly effective teacher. One study concluded that having a highly effective teacher rather than a teacher of average effectiveness would result in two additional months of academic achievement for a student.⁶

Several studies have found that students assigned to highly effective teachers several years in a row have much higher test scores than students assigned to particularly ineffective teachers for consecutive years.^{7,8,9}

Using Value-Added Assessments to Support Better Teaching

Value-added studies underscore that some students experience less academic growth than would otherwise be expected simply because they are assigned to less effective classrooms and teachers. The question for policymakers is how to use value-added measurement to help improve overall levels of teaching and learning.

A value-added assessment system can be a valuable tool for determining whether a school or system is making a difference in student learning, beyond family and community impact. Instead of just comparing districts or schools on end-of-year test scores, value-added assess-

ments would compare them on gains in achievement. This comparison would help to statistically "level the playing field" among schools and districts with different populations of students by removing the substantial differences in student background. Although gain scores can depend on student characteristics, initial status is generally considered to have a greater impact on student improvement. Use of gain scores also would make results somewhat less susceptible to variation in a school's population from one year to the next.¹⁰

Of course, sophisticated value-added assessments are only as good as their underlying tests. Annual student testing can be an imprecise gauge of whether teachers and schools are producing the desired results, partly because many tests currently in use are not aligned with state education standards (see *Research Points*, "Standards and Tests: Keeping Them Aligned," spring 2003).

Despite these limitations, value-added assessment is an improvement over simply comparing end-of-year achievement scores without controlling for what students knew at the beginning of the year.

Less clear is its value for making personnel decisions about individual teachers. Some states and districts (e.g., Tennessee and Dallas) have adopted value-added teacher assessment. Implementation of this assessment required developing databases that link student achievement scores with school, classroom, and student demographic data, as well as analyzing such data with complex statistical models.

However, experience in Tennessee suggests that this endeavor could face sticky issues of fairness, accuracy, and legitimacy.¹¹ Identifying more and less effective teachers using value-added measures is subject to great statistical uncertainty, and research offers very little guidance in determining how much weight to give value-added assessments. Consequently, many researchers are skeptical about relying on value-added estimates in high-stakes personnel decisions.^{3,12}

Still, value-added measurement might prove useful in combination with other types of personnel evaluation. For example, one study related variance in teaching effectiveness, as measured by value-added assessment, to teachers' educational background and preparation;¹² another demonstrated that teachers' use of time, content coverage decisions, and use of particular teaching activities are associated with value-added effectiveness.⁶ A

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Value-Added Assessment: Pros and Cons

Advantages

- ▶ Establishes that good teaching matters.
- ▶ Focuses attention on student knowledge and skills.
- ▶ Can be used to track effectiveness of districts, schools, and programs.

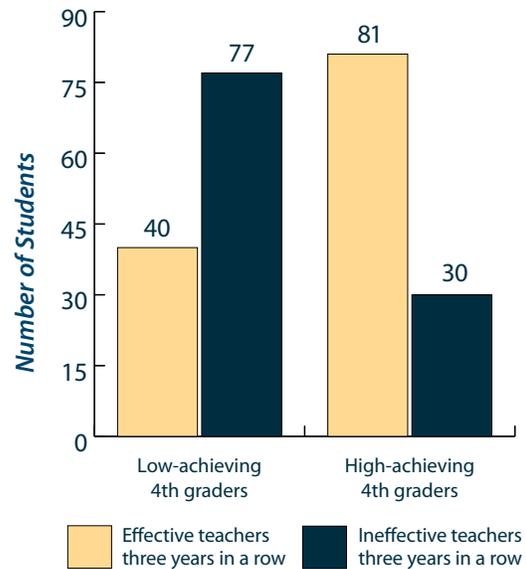
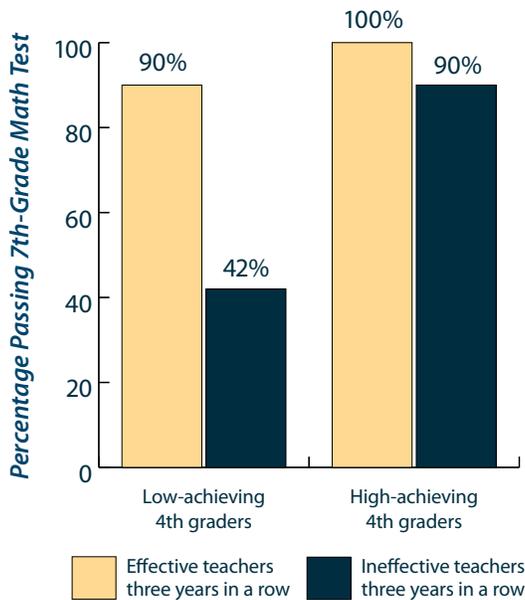
Disadvantages

- ▶ Cannot tell us what better teaching looks like or how to create it.
- ▶ Is only as good as the quality of student tests.
- ▶ Should not be the sole measure of individual teacher effectiveness.

Students Who Would Benefit Most Are Least Likely To Get Effective Teachers

When low-achieving fourth-grade students were assigned to effective teachers three years in a row, they were twice as likely to pass the seventh-grade math test. Almost all high-achieving fourth graders passed, regardless of teachers ...

but the low-achieving students were twice as likely to be assigned to ineffective teachers three years in a row.



Source: *Sitha Babu and Robert Mendro, Teacher Accountability: HLM-Based Teacher Effectiveness Indices in the Investigation of Teacher Effects in a State Assessment Program, AERA Annual Meeting, 2003.*

Facts at a Glance

- ▶ Value-added assessment proves that very good teaching can boost student learning and that family background does not determine a student's destiny.
- ▶ Students taught by highly effective teachers several years in a row earn higher test scores than students assigned to particularly ineffective teachers.

third study showed that conclusions about teacher effectiveness drawn from value-added measurement closely mirrored those reached by directly observing teachers, a method frequently used in school systems.¹³ Thus, it makes sense to use teacher observation and other data on teaching practices to help confirm value-added measures of teaching effectiveness.

Another caveat: While value-added measurement can help to identify strong or weak teachers, it cannot by itself *create* more good teachers. Like any other assessment system, it can flag problems and successes, but it does not specify the interventions needed to improve performance. Therefore, when making value-added assessments of teacher quality, the primary goal should be to determine whether or not variations in teachers' teaching and classroom practices add to, or subtract from, a student's academic growth.

Conclusion

Value-added measurement has proven that very good teaching can enhance student learning; that family background does not determine a student's destiny; and that decisions made about teacher hiring, placement, and training make a difference for academic achievement.

Effective policymaking needs to focus on improving teacher practices, not just measuring how teachers compare to other teachers. As teaching improves, policymakers should strive to spread the benefits by adding more capacity. Such expansion helps to avoid playing the "trading game" of assigning the best teachers to some students while denying top-quality instruction to others.

First, use value-added assessment to determine how well schools and districts are performing.

Second, in evaluating teachers, supplement value-added assessments with alternative assessment methods such as supervisor ratings, observational protocols, student work samples, and teacher portfolios.

Third, recognize that although using value-added assessment is superior to relying on simple end-of-year achievement scores, uncertainty is inherent in all measurement.

Fourth, for high-stakes decisions, collect several years of convergent evidence.

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