FAQ

Frequently Asked **Questions** About **Value-Added Analysis** & the Gifted Community

What is value-added analysis?

Value-added analysis is a statistical method used to measure schools' impact on the academic progress rates of individual students and groups of students from year-to-year. Think of academic progress in terms of a child's growth chart. A growth chart shows a child's height at age two, three, four, etc. These data points can be plotted on graph paper to display that child's physical growth in height over a specific period of time. Similarly, if a student's math achievement level is measured annually using state proficiency or nationally-normed tests, the student's "growth pattern" in math can be plotted just as it was for height.

This method of measuring school quality estimates the academic growth for individual students, using all test information in each student's test history. Student growth estimates are aggregated over grades/subjects, schools and systems to note school and system quality comparisons against set growth standards. Because prior achievement histories are considered in the student progress calculation, school quality is measured based on how much academic growth schools facilitate in their students, no matter where their students start the year. This progress measure provides a fairer comparison of school effectiveness across geographic and demographic factors than traditional achievement measures.

How can value-added analysis positively impact gifted students?

Noting whether a gifted student's achievement surpasses a state's proficiency performance level likely reveals very little about the student's growth in a given year. Many gifted students enter school near, at or above that achievement level. Similarly, minimal information is probably gained about a school's effectiveness with gifted students by documenting how many of the high-achieving students have passed a state's proficiency test. For these reasons and others, a progress measure to gauge the amount of student learning realized over a year's time makes more sense to objectively assess gifted students' learning gains and the schools' effectiveness with gifted students.

How can progress measures offer better insight about gifted students' academic progress and their schools' effectiveness over a school year?

Value-added analysis measures progress based on students' scaled scores on standardized tests, not on their achievement relative to a performance standard. By measuring progress using scaled scores, students' passing status on state tests is not related to growth measurement. Progress will be marked from a student's baseline scores on prior year's tests to that student's current year's performance. This difference, often measured in a scaled score quantity or some other common metric, would be compared against whatever growth standard is designated as the system progress expectation.

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> *"[Value-added models] concentrate on gains because student gains provide information on educational effects that measures of ability cannot. High achievement scores do not necessarily indicate progress, but high gains do. By focusing on the gains that all students make from year to year, regardless of where they start, the school systems and the individual schools deemed to be most effective by [value-added models] are those that provide educational opportunities for all students—the advanced learner as well as the slower learner."* (Sanders & Horn, 1995, p. 10).

What assurances are there that the tests used to measure progress can adequately measure high-achieving gifted students?

Using the EVAAS® (Educational Value-Added Assessment System) approach, test data must meet the following criteria to be used in value-added analysis:

- Be highly correlated with curricular objectives
- Meet appropriate standards of test reliability
- Have enough "stretch" to measure the growth of both low- and high-achieving students

This last requirement helps ensure gifted students' learning will be adequately measured. When tests do not provide enough stretch at the high end, high-achieving students' learning may be inadequately measured. A test has enough stretch when there are enough difficult questions to discriminate achievement between the high-performing students.

How can value-added information report gifted students' progress as provided by a school's instructional processes?

There are two primary ways to report a school's influence on gifted students' learning. First, is to make use of the standard school diagnostic report that depicts the school's influence on student learning across the achievement span. In this report, students that comprise a grade cohort are categorized into achievement quintiles based on their prior test performances. The fifth quintile represents students in the top 20 percent of all students in the value-added system. How a school facilitates students' learning in the fifth quintile may offer insight into how the school influences gifted students' learning.

A second way to report a school's influence with gifted students is in the customized report feature of the value-added system. If student records are coded so that gifted status can be discerned, then the aggregate progress for gifted students can be measured.

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How does "regression to the mean" relate to the gains observed in value-added assessment systems?

It may be helpful to remember that quality value-added systems measure schools' influence on student learning by separating out student background factors' influence in their estimation of student progress over time. It is true that "regression to the mean" could confound this estimation if it goes unchecked. Rand researchers Dan McCaffrey et al. (2003) illustrated this phenomenon by noting "students who score at the extremes in fourth grade, [for example,] tend to be less extreme in fifth grade. Regression to the mean is nearly universal in test scores" (p. 49).

In the absence of statistical controls for the "regression effect," the estimation of school influence can be biased upward or downward, depending upon the concentration of low and high achievers in the relevant cohort upon which the school effect is based. The regression effect suggests that the lowest-achieving students tend to score better during subsequent score observations, even in the absence of any instructional influences, positively influencing the school effect. For the same reasons, high-achieving students tend to score lower during subsequent observations, negatively influencing the school effect, even when the truth might hold that the school provided no effect.

Sanders and Horn (1994) noted the challenges regression to the mean pose when evaluating schools using student achievement data.

> *"There [are] enormous statistical problems involved in the use of test scores for evaluative purposes. Among these were the regression to the mean and the problem of missing data…Now, there are statistical models that can deal effectively with all of these difficulties" (p. 305).*

Value-added statistical models that deal with regression effect problems can be seen in accountability systems used in Tennessee, North Carolina (Lee & Landauer-Menchik, 2002) and Arizona (Garcia & Aportela, 2000) among other places. The technology to account for regression effects does exist.

To Learn More

For additional information about value-added analysis and professional development opportunities and resources, contact Battelle for Kids at **(614) 481-3141** and visit **www.BattelleforKids.org**.

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