Value-Added Analyses: A Summary of Recent Findings

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Value Added Analysis (VAA)

Definition:
Value Added Analysis (VAA) is any method of analyzing student test data to ascertain students' growth in learning by comparing students' current level of learning to their own past learning. VAA is sometimes referred to as Value-Added Modeling (VAM).

VAA is in contrast to analyzing test data to measure students against an absolute standard of achievement, (as applied in Standards-based or Criterion-referenced assessments);

OR

To rank students against each other, (as applied in Norm-referenced assessments);

OR

To evaluate a school's performance for accreditation purposes (as is done for Adequate Yearly Progress (AYP)).

Background to VAA

•Initial work on VAA was started in the early 1970s by Eric Hanushek, Senior Fellow at the Hoover Institute of Stanford University.

•VAA developed in the early 1980s by Dr. Larry Sanders of the University of Tennessee.

•Sanders and a colleague theorized that a statistical model developed in agriculture (mixed model) to breed sheep could be used to discover how much a teacher's class had learned.

•They gained permission to examine three years' worth of test data from the Knox County schools and found that by examining student growth rather than absolute test scores, and correlating data by classrooms, they could estimate teacher effectiveness in ways that were consistent from year to year, and that also fit with the subjective impressions of school administrators.

•The model was initially known as the "Sanders Model."

Background to VAA

•Despite this early work, the approach did not catch on until 1992, the year the state of Tennessee implemented a comprehensive school reform initiative. At this point, it became known as the Tennessee Value-Added Analysis (TVAA), and later the name changed again to Educator Value-Added Analysis (EVAA).

•In 2000, Dr. Sanders, along with his model, moved to SAS Institute located In North Carolina.

•Several states have studied and or applied the use of VAA into their state accountability systems, including: Ohio, New York, North Carolina, Pennsylvania, Colorado, California, Texas, and Louisiana.

•Widespread application of VAA/VAM has been made possible with the expansion of and access to enhanced computing power and the pools of data now available as a result of standardized testing. The model continues to evolve.

Benefits of Using VAA

- **Focus:** Value-added assessment changes the focus of education statistics from quibbling over demographic factors to asking the essential question: How well are students progressing?
- **Equitable comparison:** By focusing on student growth, value-added provides a way to recognize outstanding student growth accomplished by teachers. This is especially important in schools with high populations of learning disadvantaged students.
- **Accountability:** Because value-added assessment provides results that are less tied to student demographics and more tied to teacher effectiveness, they may provide a fairer accountability measure for schools and teachers.
- **Diagnostic:** Value-added assessment alone cannot identify the cause of poor student achievement. But where the data is sufficiently detailed, it can identify where failures and successes are occurring, giving staff a starting place to begin asking questions and making data-driven decisions. The more extensive forms of value-added can provide useful data for education research.

Risks of the Use of VAA

•**Individual Test Scores are Unreliable Indicators of Teacher Effectiveness:** VAA results should not serve as the sole or principal basis for making consequential decisions about teachers. There are many pitfalls to making causal attributions of teacher effectiveness on the basis of the kinds of data available from typical school districts. We still lack sufficient understanding of how seriously the different technical problems threaten the validity of such interpretations.

•**Teacher Rankings May be Masked by VAA:** Although we can all agree on the importance of teacher evaluation, identifying precisely which teachers are deserving of commendation and which are in need of focused professional support is another matter entirely. Unfortunately, extreme rankings, those near the top or near the bottom, are very unreliable.

•**Need for Multiple Measures:** The use of VAA should not block the examination of the appropriateness or desirability of including other measures, in addition to student test scores, in teacher evaluation. Moreover, we must recognize that statistical models cannot identify the strategies and practices teachers employ. Expert observation, portfolio reviews, conversations with teachers, and so forth, are essential to making informed judgments about whether one teacher truly excels or whether another really needs support. School leaders should also become more skilled in recognizing the kinds of assistance needed by individual teachers.

Concluding Remarks

•Value-Added Analysis has great promise to provide valuable data in determining who are successful teachers, who needs targeted professional development and who needs to be counseled to change and improve or to be moved out of the profession if improvements cannot be achieved.

•Teaching is a complex, multifaceted activity affected by a multitude of elements. Value-Added Analysis is incapable of determining ***how*** a teacher teaches or ***what*** a teacher teaches.

•Looking at the ***attainment*** level of a school or classroom on a state test provides little information about the impact the school or teacher has had on the final score as compared with other influences on student achievement like family background and socioeconomic status. By judging only one score, it is difficult to identify ***how much*** of that score was influenced by factors outside of the school as compared to other factors that can be controlled within the school (e.g., the contributions of the teacher and school).

Current Research on VAA

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Schochet, Peter Z. and Hanley S. Chiang (2010). *Error Rates in Measuring Teacher and School Performance Based on Student Test Score Gains (NCEE 2010-4004).* Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. This report is available on the IES website at http://ncee.ed.gov.

Goe, Laura and Andrew Croft (2009). *Methods of Evaluating Teacher Effectiveness,* Washington, DC: National Comprehensive Center for Teacher Quality, Research-to-Practice Brief. This brief is available at www.tqsource.org.