



Center for  
K–12 Assessment  
& Performance Management

*An independent catalyst and resource for the improvement of measurement and data systems to enhance student achievement.*

**Exploratory Seminar:**  
Measurement Challenges Within  
the Race to the Top Agenda  
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## VALUE-ADDED MODELS AND THE NEXT GENERATION OF ASSESSMENTS

**This policy brief is based on a presentation by Robert H. Meyer (University of Wisconsin, Madison) at the Exploratory Seminar: Measurement Challenges Within the Race to the Top Agenda, December 2009. Download copies of the final papers written by seminar participants at <http://www.k12center.org/publications.html>.**

*This is an interesting, fluid time when a number of consumers of assessment data, including teachers' unions, want to be well-educated about assessments and help make decisions, largely because of the focus on value-added models. The research community, however, has to push back until it knows more about the technical validity of the data and can improve the assessments.*

Value-added information, which is just one part of what a district needs in order to improve, implies certain demands for the development of assessments. In working with a number of partners including Milwaukee, Chicago, and New York City, we considered the intelligent use of quality data to be central. The components of systemic alignment to the data from a value-added system cover:

- *Those components related to test scores:* Data requirements and data quality, the design of the value-added model and indicators, and embedding value-added within a framework of data-driven decisions.
- *Those components related to instruction and alignment:* Evaluating instructional practices, programs, and policies; alignment with district/state policies; and professional development.

Probably the most important use of value-added data is to prove the point that all students can learn. When teachers see a scatter plot of the attainment of low-achieving students like theirs who attend high value-added schools not far away, the impact can be a real wakeup call. Despite the goals of No Child Left Behind, a large percentage of teachers do not believe its basic premise—all students can learn. In a performance management system, value-added data can cascade—across grades in a school, for grade-level teams, for classrooms, for individual teachers, and for subgroups of students within classrooms.

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## **Value-Added Design Issues**

The first rule in designing a value-added model is that simpler is better (unless it is wrong). This means that the model needs ongoing, quality diagnostic evaluations. The value-added data for Chicago, for example, added contextual information after a principal pointed out her data included high numbers of homeless students and those with incarcerated parents. Even if that control variable did not matter, including it in the model was a statement to the community that the model was protecting against inference errors.

Among the model design issues to consider:

- *How to efficiently use multiple-year longitudinal test data.* Can we really control for differences among students across schools?
- *What control variables to use.* If we control for race, for example, how do we discuss that decision? Controlling for different measures may be interpreted as setting lower expectations for some students.
- *How to account for student mobility (a major factor in urban districts).* The simplest value-added model would attribute the data to the school the student attended on the day the test was given. Another model attributes the test to a school depending on how long the student was there.

There is another set of issues for value-added models when they meet assessment design:

- Comparability of growth across grades
- Horizontal equating errors
- Test measurement errors
- The timing of tests (New York tests at mid-year, which means that 50% of the variance is going to be “noise-induced” by another teacher)
- Expansion of assessments to all teachers (what conditions are necessary for a *value-added mentality* in a performance management system in which all teachers are impacted by the model)

## **Big Questions About Even a Simple Model**

A very simple value-added model could have two periods for testing: a posttest and a pretest, as well as a linking parameter, control for student characteristics, and a statewide productivity parameter with effects of a unit (teacher, classroom, school). What questions should be asked about this model?

- Can it produce value-added numbers that the whole district or whole state can move upwards as the district/state get better, or does the process always have to renorm around the average?

- Do some cohorts of students have more variability than others?
- Can we make meaningful statements about whether value-added improved in a state over time when the growth rises and plummets steeply?
- How do we deal with instability in measures that can cause real interpretation problems?

Norming the data around zero from state value-added models remains highly useful, especially with a large reference point (small districts tend to not like it). While it may seem like a moving target, state data does not move very fast.

Finally, data are beginning to be used in very powerful ways. Data policy people and other users of the data, however, need to push back and figure out how to use the data—warts and weaknesses included—in order to improve assessments on a continual basis. That is the only way to keep one step ahead of poor use of assessment data.

### **For More Information**

For more information on this subject, please see the paper by Dr. Meyer:<sup>1</sup>

Meyer, R. H. (2010). *Value-added models and the next generation of assessments*. Princeton, NJ: Educational Testing Service.

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<sup>1</sup> When available, Dr. Meyer's paper will be posted at <http://www.k12center.org/publications.html>.