

# Validation Engine for Observational Protocols

## Introduction

A teacher has more impact on student learning than any other factor controlled by school systems, including class size, school size and the quality of after-school programs—or even which school a student is attending<sup>1</sup>—but currently, there is no agreement among education stakeholders about how to identify and measure effective teaching. In an effort to improve the quality of information about teaching effectiveness, in the fall of 2009, the Bill & Melinda Gates Foundation launched the two-year Measures of Effective Teaching (MET) project to rigorously develop and test multiple measures of teacher effectiveness.

As part of the project, partners from more than a dozen reputable academic, non-profit and for-profit organizations are collecting and analyzing data collected during the 2009-10 and 2010-11 school years from over 3,000 teacher volunteers and their classrooms across Charlotte-Mecklenburg Schools, Dallas Independent School District, Denver Public Schools, Hillsborough County Public Schools, Memphis City Schools and the New York City Department of Education. Teachers and classrooms in Pittsburgh Public Schools are also participating in the project by helping researchers with early-stage development and testing of the effectiveness measures before they are tested in the other MET project districts.

The project's data is collected across five critical research areas:

1. Student achievement gains on state standardized

assessments and supplemental assessments designed to measure higher-order conceptual thinking

2. Classroom observations and teacher reflections
3. Teachers' pedagogical content knowledge
4. Student perceptions of the classroom instructional environment
5. Teachers' perceptions of working conditions and instructional support at their schools

A close analysis of each of these will help establish which teaching practices, skills, and knowledge positively impact student learning. This paper seeks to define and explain how classroom observations and teacher reflections are being used to develop the "validation engine" for reviewing other observational protocols.

## Using Classroom Observations to Validate Protocols<sup>2</sup>

A teacher's classroom instruction style is perhaps one of the most important and least well-understood factors contributing to teacher effectiveness. Data about the instruction style of teachers participating in the MET project is being collected through video observation of classroom lessons. Using video rather than sending observers directly into the classroom creates a record of practice that can be analyzed by multiple raters using different observation frameworks, and can also

<sup>1</sup> Steven G. Rivkin, Eric A. Hanushek, and John F. Kain, "Teachers, Schools, and Academic Achievement," *Econometrica*, Vol. 73, No. 2 (March 2005), pages 417–458.  
<http://edpro.stanford.edu/Hanushek/admin/pages/files/uploads/teachers.econometrica.pdf>

<sup>2</sup> The videotaped lessons used in the MET project research are strictly confidential and, for the purposes of the MET project research, will only be accessed by the project's researchers and by the teacher who has been videotaped. The videos captured for the project will not be available for viewing by superintendents, principals, other teachers or district officials. The only videos used in the validation engine are those where the teacher has explicitly consented for this additional use.

be observed by the teachers themselves. It is also less intrusive for the teacher being observed.

The MET project is using seven different observation protocols to determine the link between specific teaching practices and improved student achievement. However, there are many more protocols developed by researchers, states and districts that were not used in the study. MET project researchers are creating a tool called a validation engine that will provide an opportunity for districts to test whether their observation protocols (either homegrown or adapted from popular protocols) routinely award their highest ratings to teachers whose students' academic performance grew most and their lowest ratings to teachers whose students' academic performance grew least.

### About the Validation Engine

The validation engine is a web-delivered software tool that allows users to view classroom observation videos, rate those videos and then receive a report that evaluates the predictive validity and rater consistency for the protocol. The validation engine, which is being developed by Empirical Education Inc, an education research company, has four components:

- A secure video viewer that provides web-based access to a video library of teacher lessons for raters to watch.
- A **score sheet template** that allows raters to enter scores for each observed video into a web-based system on each domain, and overall for the observation protocol.
- An **analytic engine** that allows users to choose comparisons from among the set of MET project measures, including value-added on state assessments, value-added on supplemental assessments, teacher perceptions, observed classroom practice using different protocols, teacher knowledge for practice, and student perceptions.
- An **automated report generator** that provides feedback on the predictive validity of the observation protocol as scored and how it performs against a set of expert-scored benchmark instruments. Reports can include information about:

- The relationship between the scores on the observational protocol and the student achievement gains,
- A comparison between those scores and the scores given by the expert raters on several established observation protocols, and
- The variability in ratings between different raters observing the same video.

To use the validation engine, the state or district must first identify a group of classroom observers. Those observers will watch a set of videos and rate the instructional practices based on their observation protocol. The state or district will then receive a report with information about the validity of their observation protocol. Results will provide information on individual indicators that can be used to revise the expectation for evidence, or possibly eliminate the indicator if it is not correlated with improvement in student achievement. Multiple observation protocols can be tested and retested regularly to demonstrate validity.

### About Empirical Education

Empirical Education Inc., a research company based in Palo Alto, CA, specializes in studies of the effectiveness of school products, programs and policies. Its clients include federal, state, and local education agencies, publishers, and technology vendors. With the goal of making scientific evidence routinely available to inform practitioner decisions, the company has developed a suite of technology tools to increase the efficiency of research operations. The company has worked in thousands of classrooms in all regions of the US. For more information about Empirical Education and its role in the MET project, contact Kylene Shen at [Kshen@empiricaleducation.com](mailto:Kshen@empiricaleducation.com) or visit <http://www.empiricaleducation.com/>.

### About the Measures of Effective Teaching Project

The Measures of Effective Teaching (MET) project seeks to develop an array of measures that will be viewed by teachers, unions, administrators and policymakers as reliable and credible indicators of effective teaching. By determining

exactly what measures predict the biggest student achievement gains, the MET project will give teachers the feedback (including exemplary practices) they need to improve. In addition, a greater understanding about which teaching practices, skills and knowledge positively impact student learning will allow states and districts to develop teacher evaluation systems that will help strengthen all aspects of teaching—from recruitment through retention.

The MET project has enrolled over 3,000 teachers from a number of school districts around the country and is gathering a variety of data, including videotaped teacher observations, student surveys, teacher surveys and supplemental student assessments, and represents a real opportunity for teachers to inform the national discussion on education reform, in order

to determine which measures are most strongly correlated with high levels of student achievement. The MET project's final findings will be shared broadly at the project's conclusion in winter 2011-2012.

For more information about the MET project, please visit [www.METproject.org](http://www.METproject.org) or send an email to [info@METproject.org](mailto:info@METproject.org).

**Note:** Selection of a given academic, non-profit or for-profit organization to participate in the MET project does not constitute an endorsement by the MET project of that organization. Other organizations may exist who do work that is similar or equivalent to the work done by the organizations participating in the MET project.