



Respecting complexity in measures of teaching: Keeping students and schools in focus



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HIGHLIGHTS

- Explicit strategy instruction, classroom discussion, and classroom environment in ELA classrooms were associated with student achievement gains across students.
- Opportunities for text-based instruction and guided practice in ELA classrooms were associated with gains for Black and Hispanic students, but not other students.
- Scores on intellectual challenge in ELA lessons were associated with gains for Black students, but not other students.
- Effective instructional practices in ELA also varied by school environment.
- Mixed-methods studies would enrich our understanding of how teaching quality.

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ABSTRACT

Many studies have found moderate relationships between measures of teaching practice and student achievement gains, but have focused on teacher quality as a uniform construct. This paper draws on data from 179 middle school language arts teachers to explore factors that might mediate the relationships between measures of teaching and student achievement, using the Protocol for Language Arts Teaching Observation (PLATO) and value-added measures. We find various factors— including student demographics and school characteristics—may mediate the relationship between teaching variables and student outcomes. Discussion focuses on theoretical issues in research on teacher quality and empirical lessons learned about research design and methods.

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1. Introduction

As part of the current accountability movement, policymakers have focused their attention on identifying “effective teachers,” based on value-added estimates, and features of “effective teaching,” as measured by standardized classroom observation instruments. In response, a rapidly growing body of research has analyzed the relationship between teaching practices and teacher value-added metrics, including the most visible example, the *Measures of Effective Teaching* (MET) project funded by the Bill and

Melinda Gates Foundation (Kane & Staiger, 2012). Some of these studies have found relatively high correlations among scores on teaching measures and value-added measures (Schacter & Thum, 2004), but most find fairly modest to low correlations between multiple measures of effectiveness (Grossman, Loeb, Cohen, & Wyckoff, 2013; Hill, Kapitula, & Umland, 2011; Kane & Staiger, 2012).

In a perfectly measured world, we might expect to see clear relationships between measures of high quality instruction and sophisticated measures of student achievement, but the empirical evidence collected thus far does not suggest such clarity. This paper draws on data from an exploratory study of instructional quality in English Language Arts to explore some of the factors that might mediate the relationships between measures of teaching and

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measures of learning. We look at relationships between teaching practices, as measured by the Protocol for Language Arts Teaching Observation (PLATO), a structured classroom observation instrument, and teacher value-added measures (VAMs) as a vehicle for exploring various hypotheses about *why* we might not see such clear relationships among multiple measures of quality. In doing so, we surface some theoretical issues in research on teaching and teacher quality as well as some empirical lessons learned about research design and methods. In particular, we focus on the possibility that various factors—including the composition of students in a classroom and the characteristics of the school environment—may mediate the relationship between teaching variables and student outcomes measures. We highlight the limitations of purely quantitative data collection in understanding the mechanisms underlying these relationships and conclude with future directions for research on teaching quality.

2. Background literature and conceptual framework

In many ways, the quest to understand the facets of effective teaching has been a global effort, with researchers from across the world trying to identify characteristics of high-quality instruction (c.f. Hattie, 2013; Helmke & Weinert, 1997; Muijs & Reynolds, 2000; Seidel & Scheerens, 2005). Researchers in the area of teacher education have been engaged on a related quest to identify “core” or “high leverage” practices that could inform professional preparation (Grossman & McDonald, 2008; Ball & Forzani, 2009; McDonald, Kazemi, & Kavanagh, 2013). The lack of a clear, linear relationship among multiple measures of teaching quality has raised a number of empirical and theoretical questions in the research community. In particular, it is not clear if we would expect to see uniform relationships between measures of quality teaching practices and teacher effectiveness on student achievement. There are numerous possible mediators—including the composition of students in a classroom and the nature of the school environment—that may be associated with different types of measures and the relationship between them.

First, it may be that VAMs and classroom observations acknowledge and adjust for these contextual factors to differing degrees. VAMs are designed to measure the degree to which students performed better or worse on a standardized test than would have been expected, based on their prior performance, after controlling for various characteristics of classrooms and schools that research suggests are related to student achievement. Thus these models recognize and statistically control for the readily measurable contextual factors that might be confounded with the teacher's impact on student achievement growth.

These value-added methodologies, however, assume there is a uniform construct of “effectiveness” that cuts across groups of students. Teachers may not be equally effective at raising achievement for all their students. Some teachers may, for example, be quite effective at teaching students from backgrounds similar to their own, and less effective with students from different backgrounds (Aaronson, Barrow, & Sander, 2007; Dee, 2005, 2007; Lockwood & McCaffrey, 2009). There is a small but growing body of evidence that suggests that teachers are indeed differentially effective for different for different groups of students (Loeb & Candelaria, 2012; Master, Loeb, Whitney, & Wyckoff, 2012). Recent studies demonstrate differential teacher effectiveness for students with disabilities (Jones, Buzick, & Turkan, 2013; McCaffrey & Buzick, 2014) and English language learners (Loeb, Soland, & Fox, 2014).

In contrast to value-added models that assume student characteristics need to be controlled for statistically, most commonly used observation tools do not account for these contextual factors

when scoring the quality of teaching practices. Observation protocols largely treat “good teaching” as consistent across schools and groups of students. The scales used in observational instruments are applied the same way across classrooms at different grade levels, with different populations of students with diverse needs, in differing school environments.

Research suggests that specific student subgroups benefit from distinct instructional approaches (Abedi, Hofstetter, & Lord, 2004; August & Pease-Alvarez, 1996; Goldenberg, 2008; Ladson-Billings, 1995). Pedagogical choices that are responsive to the needs of students in a classroom might inherently vary by the composition of students, and this variance flies in the face of the assumptions underlying most observational protocols. Studies in the process-product tradition found that teachers vary in both their instructional approaches and their effect on achievement gains when teaching the same material to different groups of students (Evertson, Emmer, & Brophy, 1980; Rosenshine, 1970; for a summary of this literature, see Konstantopoulos, 2014).

More recent studies indicate that student characteristics may contribute to biased ratings on classroom observations. Whitehurst, Chingos, and Lindquist (2014) show that under current teacher evaluation systems, teachers with students with higher prior achievement receive higher classroom observation scores. They argue that these high achieving students may be “easier” to teach, inflating the teachers' scores on observational metrics. Adjusting teacher observation scores based on student demographics, including prior achievement, could mitigate the issue of what they term “observation bias.” Lazarev & Newman (2014) also find consistent and pervasive correlations between the characteristics of students in classes and scores on two content-generic observation tools, Danielson's Framework for Teaching (Danielson, 2007) and CLASS (Pianta, LaParo, & Stuhlman, 2004). These relationships suggest that observational measures might be assessing something about the students as well as something about the teaching. What is not yet clear is whether the construct of teaching quality is so inherently situated that it would always be contingent upon or related to the students in the classroom.

Features of schools, like the characteristics of student in a classroom, may also be associated with both instructional practices and teacher effectiveness at raising student achievement. Numerous studies suggest that schools foster different intellectual, emotional, and instructional cultures that have been shown to influence the nature of teaching, as well as student learning outcomes (Little, 2001; McLaughlin & Talbert, 2006; Sarason, 1996). Jackson and Bruegmann (2009) and Ladd (2009) demonstrate that the effectiveness of other teachers in a school is associated with individual teacher effectiveness. This suggests possible “spillover” in terms of impact on student achievement. High quality teachers may be attracted to schools with effective colleagues, or specific school leaders may cultivate collaboration or school-wide routines that foster higher levels of collective capacity.

Research has also demonstrated that school-level contextual factors are associated with job satisfaction, retention, and instructional practices (Boyd, Lankford, Loeb, Ronfeldt, & Wyckoff, 2011; Bryk & Schneider, 2002; Horng, 2009; Johnson, Kraft, & Papay, 2012). Schools support instructional quality through a number of mechanisms from the support of colleagues, school leaders, parents and community members to the opportunities for autonomy and leadership. The material, curricular, and intellectual resources made available vary widely from school to school. Seminal work by the Chicago Consortium on School Research underscores the importance of the relationships and relational trust in supporting the diffusion of resources and facilitating or impeding the permeation of instructional quality across an entire school (Bryk, Sebring, Allensworth, Easton, & Luppescu, 2010).

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