

## II TEACHER QUALITY: WHAT DOES RESEARCH TELL US?

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### INTRODUCTION

Common sense suggests a good teacher matters. Personal experiences with inspirational and challenging teachers reinforce this notion. Research has also shown that some teachers have a more significant impact on student achievement than others (McAffrey, Lockwood, Koretz, & Hamilton, 2004; Rivkin, Haushek, & Kain, 2005; Rockoff, 2004). Teacher quality is seen as a key policy lever to narrow achievement gaps that exist along racial and economic lines. Ensuring the quality profile of the teacher workforce is crucial to extend the democratic mission of public schooling to the unprecedented number of students who are more diverse than at any point in US history.

This literature review provides a brief overview to key research findings informing policy efforts to improve teacher quality. It is organized around the following questions:

- What does research say about individual teacher qualifications and characteristics associated with teacher quality?
- What does research say about how schools and districts contribute to teacher quality?

Before turning to these questions, we clarify terms widely used in policy discussions of teacher quality and note some limitations in the research and policy efforts to improve teacher quality.

### Terms in the Teacher Quality Discussion

**HIGHLY QUALIFIED TEACHER [HQT].** This term refers to language used in the federal No Child Left Behind act passed in 2001 (NCLB). In Colorado, highly qualified teachers must (1) hold a bachelor's degree, (2) obtain a state teaching license, and (3) demonstrate subject matter competency (e.g., pass the PLACE<sup>2</sup> or Praxis II<sup>3</sup> licensure tests). This definition sets a minimum bar for teacher knowledge and focuses on input measures and content knowledge. The Colorado teacher licensing tests assess an individual's knowledge of content rather than knowledge of teaching.



**EFFECTIVE TEACHER OR HIGHLY QUALIFIED EFFECTIVE TEACHER.** Teacher effectiveness generally refers to a teacher's ability to foster student achievement. There is a long tradition of research on teacher effectiveness, dating back to the 1960s and 70s (Shulman, 1986). Much of this research examined specific teaching practices (e.g., teacher's questioning strategies) and correlated them with student learning gains. In the recent Aspen Institute report, *Beyond NCLB* (Commission on No Child Left Behind, 2007), written to guide the reauthorization of NCLB, the Commission defines "effective" in terms of a teacher's ability to improve student achievement as measured on standardized tests. The Commission draws upon

<sup>2</sup>PLACE<sup>®</sup> - Program for Licensing Assessment for Colorado Educators<sup>®</sup> was developed as a result of the 1991 Educator Licensing Act. These are criterion referenced and objective based tests designed to measure a candidate's knowledge in relation to an established standard of performance. PLACE was designed to align with the Colorado teacher standards which are aligned with the Colorado Model Content Standards for K-12 students. For more information: [www.place.nesinc.com](http://www.place.nesinc.com)

<sup>3</sup>Praxis II<sup>®</sup> tests measure general and subject-specific knowledge and teaching skills. The test required in Colorado focuses primarily on subject-specific knowledge. For more information: [www.ets.org](http://www.ets.org)

studies using value-added methodologies to argue that in the NCLB reauthorization, emphasis should be placed on developing data systems that allow states and districts to identify those effective teachers who contribute to children's achievement growth each year. This is a shift from a focus on qualifications to describe teacher quality to a focus on achievement outcomes. At this point, Colorado does not have an adequate data system to conduct value-added analyses on all teachers.

*Good teacher* is perhaps the most common and least precise of all terms. Shulman, President of the Carnegie Foundation for the Advancement of Teaching, describes a good teacher in the following way:

In the classroom of a good teacher, students are visible, engaged, attentive and participating...In good teaching, students are responsible for their learning; they are accountable for their understanding....Good teaching is passionate, and it induces an emotional response in students....Good teaching starts with inducing habits of mind, but doesn't stop there. Good teaching engages practical thinking and problem-solving skills that can be applied in a variety of settings. And good teaching affects students' values, commitments, and identities. (as cited in Loeb, Rouse, and Shorris, 2007, p. 7)

Shulman's definition reminds us that a good teacher connects learners with significant ideas, with themselves, and with their world. Good teachers do more than boost achievement, they shape lives.

## Limitations in the Research on Teacher Quality

Both common sense and research tell us that the teacher is one of the most essential factors in student achievement. Three limitations in this body of research deserve mention.

**IMPRECISE INDICATORS.** In large-scale quantitative studies many researchers use imprecise indicators to measure a qualification they think is related to teacher quality. For example, *certification* is sometimes used as a proxy for a teacher's knowledge of how to teach. Requirements for certification vary by state, and they have varied over time, particularly as more states have developed alternative-preparation programs. Thus, whether a teacher is "certified" or "not certified" says little about what kind of teacher preparation an individual has completed, and therefore little about teacher quality. Many other indicators used in large-scale studies are also rough, thus limiting the impact of study findings.

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**CONFOUNDING VARIABLES.** Mary Kennedy (in progress) points out that an inherent problem in most studies of teacher qualifications and teacher quality is that they face challenges in separating sources of quality from background noise, that is they are "susceptible to confounding variables." She explains,

Teachers self-select their own educational programs; consequently, their own values and predispositions are confounded with their credentials. Once certified, their non-random job seeking practices, coupled with districts' non-random hiring practices, yield a pattern of job placements in which teachers' educational backgrounds, credentials, attitudes, and predispositions become confounded with the types of students they eventually teach....Because of these problems, studies of qualifications are tremendously various, as different researchers try different strategies to ferret out the relationships of interest (pp. 1-2).

**COMPLEX CHAIN OF EVIDENCE.** The chain of evidence to connect teachers with student achievement is complex and sensitive to many factors. Most of the studies cited by policy makers are quantitative, involving statistical procedures relating certain teacher or school factors with student achievement outcomes. Whether students achieve desired academic outcomes depends on interactions among many factors, including learner's prior achievement, teacher's knowledge and skills, the appropriateness and relevance of curriculum, learner's willingness and effort, peer-to-peer interactions, a school organization and culture that supports learning, and sensitivity of outcome measures to instructional practice.

Value-added models, which have provided the primary research support for the importance of teachers, do not take into account all of these variables. Braun (2003) writes, "It is essentially impossible to fully disentangle the contributions of the different factors in order to isolate the teacher's contribution (i.e., obtain a statistically unbiased estimate of a teacher's effectiveness" (p. 9). Indeed, "analysis of data from a

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large-scale U.S. government study suggested that teachers are responsible for somewhere between 4 percent and 18 percent of student test score changes" (American Educational Research Association [AERA], 2004, p. 2). More importantly, a central assumption of value-added modeling is that the achievement scores are valid measures of learning. Yet, the longer high stakes testing is used, the more likely the score results will be corrupted

(Nichols & Berliner, 2007). Researchers are grappling with many of these issues. Soon, value-added modeling may provide state-of-the-art ways to isolate an individual teacher's contribution to student learning, but for now, we should view cautiously findings from studies using value-added modeling.

### Comments on Current Framing of the Teacher Quality Movement

The goals of public education are broader than the current focus to improve student achievement as measured by standardized tests. Historically, US society has had many aims for public education. Along with knowledge of core academic subjects, we believe public schools should provide society with an engaged citizenry, productive workers, and creative individuals who will develop new knowledge and innovations in the arts and sciences. Recent reform efforts to improve student achievement in core subjects and to close the achievement gap are critical since strong performances in reading, writing, mathematics, and science are foundational. However, academic achievement is only one of many important outcomes. Moreover, our current measures of student learning are relatively narrow in scope. Thus, efforts to enhance teacher quality are primarily framed around only one essential outcome of public education. Other important learning aims, ones that are difficult to measure, are often overshadowed by student achievement in the teacher quality conversation.



Though we note some limitations in the framing of teacher quality and the research base that informs policy, we underscore the teacher quality movement's ambitious commitment to equity. Students who live in low-income homes or communities, students of color, English language learners and recent arrivals to the US most need quality teachers, yet they are least likely to have them nationally (AERA, 2004; Allgood & Rice, 2002; Carey, 2004; Lankford, Loeb, & Wykoff, 2002; Mayer, Mullens, & Moor, 2000), and in Colorado (Alliance for Quality Teaching, 2006).

In the policy effort to improve teacher quality, “quality” is often synonymous with “effective.” The movement to enhance teacher quality must go farther than its current focus on teachers who improve student achievement on standardized tests. This is particularly important as schools and teachers adapt to the NCLB context and become ever more strategic, focusing instructional energy on those “bubble kids” (Nichols & Berliner, 2007).<sup>4</sup> A quality teacher does promote student achievement, but s/he also contributes to other valued learning outcomes not captured in current tests and s/he does so in ways that are culturally responsive and caring.

The next section considers research over the last 25 years about teacher qualifications and characteristics that are associated with teacher quality. For each qualification or characteristic, relevant research is highlighted and connections to current Colorado policies are noted.

## Teacher Qualifications and Characteristics

One approach to understand teacher quality considers individual teacher qualifications and characteristics associated with teacher performance. Researchers have studied the following factors: academic or intellectual ability, academic subject matter preparation, pedagogical knowledge, teaching experience, race/ethnicity, and pedagogical knowledge for diverse learners.

Measures for each factor vary across studies, with some being more precise than others. For example, to measure intellectual ability different studies have looked at a teacher's verbal ability, college entrance test scores (SAT or ACT), or the selectivity of the undergraduate college s/he attended. Across studies, indicators of teacher effectiveness vary and have included student achievement, principal's evaluation, classroom observation of teacher's practice, teacher's perceptions of her own performance, or teacher retention.

In recent years, policy makers have focused primarily on student achievement gains as the most critical teacher performance measure. Not all studies have looked for relationships between teacher qualifications or characteristics and student achievement. The varied ways in which factors are measured and studies are designed makes it difficult to synthesize across them. Thus, the research base on teacher quality is not highly conclusive.

## Academic or Intellectual Ability

Looking at academic ability boils down to the question, do “smarts” matter? The underlying assumption is that “smarts” do matter and that we should be recruiting our “best and brightest” to teach. Measures for academic intellectual ability have included verbal ability, college entrance tests (SAT or ACT scores), or the selectivity of the college an individual attended.

**VERBAL ABILITY.** Since the Coleman Report (Coleman et al., 1966) found a positive relationship between teachers' verbal ability and composite student achievement, verbal ability has been considered an indicator of teacher quality. The basic logic is that teachers rely on talk to teach (e.g., explaining, questioning, and providing directions). What verbal ability means and how to measure it, it turns out, are not straightforward. For example, the Coleman study measured teachers' verbal ability with a 30-item sentence completion test; others have used SAT-verbal scores to measure this construct.

<sup>4</sup>Nichols & Berliner (2007) define “bubble kids” as “those almost at the point of passing the high-stakes test, perhaps needing a little extra teaching time to help them to pass” (p.75). A recent study by Matthew Springer (2008) suggests that this form of “educational triage” is not occurring.