

## INTRODUCTION

The No Child Left Behind (NCLB) Act mandates that states require all teachers to earn full certification and demonstrate competency in the subject area in which they teach. But do these requirements really produce *effective* teachers—teachers who actually improve student learning and achievement? The existing research base is decidedly mixed, highly politicized, and often just plain confusing. Some experts maintain that teachers' pedagogical knowledge shows even stronger relationships to teaching effectiveness than their subject matter knowledge (Darling-Hammond, 1997; Darling-Hammond & Youngs, 2002); others insist that teachers' expertise in their content area is a far better predictor of student achievement (Ballou & Podgursky, 2000).

Shortly after the implementation of NCLB, the U.S. Department of Education issued its first annual report, *Meeting the Highly Qualified Teachers Challenge* (2002), in an attempt to make sense out of these conflicting research findings. Despite the fact that NCLB requires teachers to be fully certified, the Department concluded that "there is little evidence that education school [pedagogical] course work leads to improved student achievement" (p. 19), adding that "virtually all" of the studies linking certification to student achievement are "not scientifically rigorous" (p. 8).

The Department's conclusions were based in large part upon a literature review written by Kate Walsh for the Abell Foundation in 2001, which claimed that there is "no credible research that supports using the teacher certification process as a regulatory barrier to teaching" (p. 5). It should be noted that Walsh's report was also vigorously objected by other researchers such as Darling-Hammond & Youngs (2002).

## REACHING A CONSENSUS

Two more recent reviews of the research literature on teacher effectiveness suggest that a mixture of both pedagogical skill and subject-area expertise is ideal. In *Teacher Quality: Understanding the Effectiveness of Teacher Attributes* (2003), Jennifer Rice King examined the empirical research on teacher quality and performance from peer-reviewed journals over the past three decades. Another extensive literature review was released last year by the Education Commission of the States (Allen, 2003). While each study reviewed found a variety of outcomes (some conflicting), a few stood out:

### Teacher Experience:

- Experience matters. Not surprisingly, the longer a teacher has been in the classroom, the more effective he or she becomes in raising student achievement.

### Teacher Preparation Programs and Degrees:

- The selectivity or prestige of the college a teacher attended is positively correlated with student achievement, particularly for middle and high school students.
- Teachers with advanced degrees in math and science are more likely to raise high school students' math and science achievement; however, the effect of advanced degrees at the elementary level is mixed.

### Teacher Certification:

- Teacher certification in math can enhance high school students' math achievement. The effect of this subject-specific teacher certification is less obvious in other high school subject areas, and the effect is zero or even negative in elementary-level math and reading.
- There is little difference in math or science performance between students with teachers

who acquired standard certification and teachers who took emergency or alternative routes into the classroom.

#### **Teacher Coursework:**

- Coursework in pedagogy and subject areas both have a positive impact on student achievement.
- However, it is less clear *how much* coursework is important for teaching specific courses and grade levels.

#### **Teacher Test Scores:**

- Teachers' scores on tests that assess their literacy or verbal ability (such as the ACT) are related to higher student achievement.
- However, the National Teachers Examination (NTE) and other state-mandated tests of basic skills and/or teaching abilities are not necessarily consistent predictors of teacher performance.

#### **LIMITATIONS IN THE RESEARCH**

The authors of both literature reviews note that there were many methodological weaknesses in the hundreds of studies that they reviewed. For example, they found that there is relatively little research on teacher preparation that looks directly at the *outcomes* (rather than just inputs) in which most policymakers and parents are interested: the actual measured achievement of students. Secondly, the research (in particular, correlational studies) overwhelmingly uses aggregated data to measure teacher characteristics and teaching effectiveness, rather than data linking information about individual teachers to the actual performance of their students.

Furthermore, measures of "impact" or "effectiveness" vary greatly from study to study, ranging from teacher retention and attrition to teachers' beliefs and instructional practices, performance on examinations, supervisors' ratings of instructional practice, and students' performance on various kinds of tests.

If there is one conclusion that the research does strongly support, it is that more rigorous research is needed in order to determine what really makes a highly-effective teacher.

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