

Teacher Preparation's Effects on K-12 Student Learning

Center for Teacher Quality
California State University
2012

Introduction

In a typical school year, more than 750,000 students in elementary and secondary schools learn math, science, reading, writing and history from recent graduates of teacher preparation programs in the California State University. How well do beginning teachers from the CSU foster academic learning by their students, especially groups who have been persistently underserved by the education system? To address this question for the first time in California, 22 school districts in several regions are cooperating with CSU campuses and the Center for Teacher Quality (CTQ) to assess the effects of CSU programs on student academic achievement.

P-12 Student Learning as a Product of CSU Teacher Preparation

Drawing on data from a large group of low-performing schools, CTQ is measuring the learning gains of students taught by 1st-year and 2nd-year teachers from different CSU programs, from different CSU campuses, and from outside the CSU system. The Center is examining the effectiveness of these teachers in five subjects, nine grade-levels, eight school years, and with different groups of students. This initiative is part of a national reform in which assessments of student learning, called *value-added assessments*, are part of many educational evaluations. Estimating how well recent CSU graduates teach our state's diverse students in core curriculum subjects is CTQ's highest priority.

For 12 years, CTQ evaluated CSU teacher education with the help of experienced school leaders who supervised, guided and assisted the University's first-year teachers. Extensive evidence indicated that school leaders identified many needed changes in CSU programs, the programs incorporated many reforms, and they become more effective as a result of the changes. Now that CTQ also assesses teacher education on the basis of P-12 student learning, the Center is encountering a new set of evaluation issues. This report summarizes how CTQ is addressing seven key issues in the design and analysis of value-added evidence.

Seven New Evaluation Issues Related to P-12 Student Learning as a CSU Outcome

1. What can CSU campuses and other universities learn from these assessments? CTQ is examining policies and features that are embedded in many CSU teacher education programs. Campuses offer several options to prospective teachers. Candidates for teaching credentials may learn professional skills in student-teaching programs or intern-teaching programs. They may enroll in undergraduate programs that combine content studies with pedagogical studies or five-year programs that separate subject-matter studies from the analysis and practice of teaching. The Center is assessing *recent changes* in CSU preparation as well as *traditional features* of programs on the basis of elementary and secondary student test scores. For the first time, CSU campuses and other sponsors of teacher preparation can learn about the student-achievement effects of prominent program features and of widely-offered preparation alternatives.

2. In value-added assessments, what assumptions does CTQ make about the scope of public education? The recent expansion of standardized testing is narrowing the breadth of schooling in California. Academic achievement in core curriculum subjects is *not* the only significant outcome of effective teacher education or effective school teaching. Student progress in math, science, reading, writing and history are critically important indicators of CSU effectiveness,

but so is each student's familiarity with several other subjects that California does not assess uniformly. In a democracy, moreover, education has important civic functions that extend beyond knowledge to include personal conduct such as participation in civic life; these functions of schools are also important outcomes of CSU teacher education. When CSU graduates become teachers, they have essential roles and responsibilities related to all the purposes and functions of schooling. Student gains in core academic subjects are important measures of the University's success, but CSU cannot comprehensively understand its effectiveness solely by examining test scores earned by the young students of its former students.

3. Given the limitations in California's tests and the fact that better tests are being developed in the United States, why should CSU programs be assessed on the basis of current exams? CTQ's value-added assessments are based on recent standardized test scores in California. The Center recognizes and acknowledges the substantial limitations of these exams. For example, CTQ cannot report the effects of CSU teachers on students' 21st-century skills such as group problem-solving and the critical analysis of complex issues because the current tests hardly touch upon these skills. At least half of CSU's new teachers cannot be included in value-added assessments because they teach grades and subjects that are not assessed statewide. CTQ examined the contents and limitations of California's tests, which *measure important learning incompletely*. It also studied the design of new exams being developed for the future. Although the next generation of assessments will probably yield more useful and significant results for universities from four to five years from now, important effects of existing policies and programs can be investigated now on the basis of currently-available evidence that is recognized to be incomplete.

4. How is student learning measured in evaluations of teacher preparation? In CTQ's value-added approach, scores that students earn after being taught by CSU teachers are compared with scores that the same students earned prior to CSU-prepared instruction. In this way, the CTQ measures *the size of learning gains* that result from instruction by CSU teachers. The Center also counts *how many students achieve proficiency* with CSU teachers, and how many of them do so for the first time during CSU-prepared instruction. Both proficiency studies *and* analyses of learning gains are consistent with a new *value-added paradigm* that is gaining widespread recognition and adoption in the field of educational measurement.

5. Since the University does not control several important factors that influence pupil learning, how can the University's role in P-12 achievement be assessed accurately? CTQ uses available evidence to account for many factors that influence student learning. The Center measures the effects of CSU preparation while *statistically minimizing* the effects of different English proficiency levels, varying levels of parent education and family income, documented learning disabilities, and the school attendance records of individual students. Each analysis also includes test scores that the same students earned prior to CSU-prepared instruction; enabling the Center to statistically control for variability in students' prior learning of the subjects taught by CSU graduates. Unfortunately, current data describing student demographic factors are imperfect and incomplete, so CTQ cannot produce "pure" reports of CSU effects. The Center's analyses use statistical methods that are widely advocated by professional statisticians. Its findings *estimate* the University's "true effects" and cannot be perfect measures of its actual effects. Despite these limitations in the available data, value-added assessments of P-12 learning will enable CSU campuses to become more effective in preparing successive cohorts of thousands of teachers who will, in turn, teach hundreds of thousands of future CSU students.

6. What about measurement experts who criticize value-added assessments in education? What do they say about this work? Value-added assessments of teaching are controversial in California and the nation. CTQ has examined diverse perspectives about emerging issues in educational measurement. Current debates focus on value-added assessments of *teachers* and *schools*, but the CSU does not evaluate *teachers* or *schools*. Specialists in education statistics consider value-added methods to be promising ways to assess the preparation of teachers,

provided each evaluation includes sufficient numbers of teachers and has considerable content validity. For sufficient numbers, CTQ combines data from multiple large school districts and several campuses that prepare thousands of new teachers each year. For high levels of content validity, the Center analyzes test scores earned by students of first-year and second-year teachers whose teaching assignments are consistent with each teacher's CSU preparation, and whose classes are clearly aligned with state examinations. CTQ currently benefits from the valuable advice of several national leaders in value-added assessment of teacher education, who view the Center's value-added methodology to be responsible and significant.

7. How could CSU teacher education potentially benefit from value-added assessments? In any enterprise, evaluations yield benefits when policy makers and practitioners use evaluation results to improve their work. CSU leaders, administrators and faculties need to be well-informed about CSU's effectiveness, but it's also critical for the University to use value-added findings to improve CSU programs, and then to track the effects of resulting program changes. Under the leadership of CSU Chancellor Charles B. Reed, program improvement has been the primary purpose of the *CSU Systemwide Evaluation of Teacher Preparation* since its inception in 2001. As a result, campuses are accustomed to using evidence of program effects in their program-improvement discussions and decisions. Evidence of P-12 learning will add to the scope and value of CTQ data that campuses already use to reach the goal of providing an outstanding education to every California student.

Compiling and Using Data from Multiple Sources to Improve CSU Teacher Preparation

In elementary and secondary schools, the somewhat narrow scope of current standardized exams is not the only limit embedded in value-added assessments of teacher education. *These evaluations also have limited implications for improving CSU programs for prospective teachers.* If a test-based study shows that a program on one campus yields poorer math scores in middle schools than a similar program at another campus, it's important and urgent for the less-effective program to improve its outcomes in middle-school math. *By themselves, however, students' test scores almost never indicate clearly what changes the less-effective program needs to adopt and pursue.* Encouraged by the Chancellor's Office, CSU campuses often share effective program practices with each other. Additionally, the *Systemwide Evaluation of Teacher Preparation* provides campuses with data that (1) identify each program's strengths and weaknesses, and (2) are not based on student test scores. If CSU is to prepare outstanding teachers for all of California's learners, standardized exam scores *must be supplemented by other kinds of data and by other institutional-development practices in teacher education.*

When universities examine data about academic learning among students taught by their teachers, they should also review other kinds of data about their preparation programs. Do CSU teachers from a campus use effective instructional methods skillfully in P-12 classrooms? Which teaching practices are used skill-fully, and which ones are not? Are CSU teachers well-prepared to motivate students, get them involved in hands-on activities, assess their learning accurately, and report their progress often to parents and administrators? Students' test scores have implications for these issues, but evaluation results that identify each program's triumphs and disappointments are also valuable for universities.

CSU campuses annually receive CTQ evaluations that focus on questions such as the examples cited above. These evaluations are based on judgments about the readiness of individual CSU teachers to perform the important responsibilities of professional teachers. The judgments are provided voluntarily by *school principals and other experienced site-leaders* who want every young person in California to be college- and career-ready, and who consider teacher preparation to be a significant source of teacher effectiveness. The Center's reports to campuses are based on assessments by site supervisors who (a) studied instructional leadership and teacher evaluation, (b) observe the

CSU teacher's classroom several times, and (c) confer with the teacher about important instructional issues. When the graduates of a campus are insufficiently effective in producing student academic achievement as measured by test scores, the professional judgments of veteran school leaders frequently pinpoint the sources of the new teachers' problems.

The CSU systemwide Center for Teacher Quality is currently reporting the recent results of value-added assessments of teacher preparation, and will soon post these results on its portion of the Chancellor's Office website.