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Information

General Session

California State University Annual Survey of Teacher Candidates and Supervisors

AGENDA INSERT

Executive Summary: Representatives of the California State University will discuss the CSU's annual survey of teacher candidates and supervisors.

Recommended Action: For information only.

Presenter: Bill Wilson, Assistant Vice Chancellor and Ken Futernick, Associate Director, CSU Chancellor's Office of Teacher Education – Evaluation and Assurance Office.

Strategic Plan Goal: 1

Promote educational excellence through the preparation and certification of professional educators

- ◆ Sustain high quality standards for the preparation of professional educators.
- ◆ Assess and monitor the efficacy of the Accreditation System, Examination System, and State and Federal Funded Programs.

April 2007

The CSU Systemwide Evaluation of Teacher Preparation: Summary Update for the California Commission on Teacher Credentialing

**Bill Wilson, Assistant Vice-Chancellor
Center for Teacher Quality (CTQ)
The California State University System
April 2007**

Introduction

Since 2001, the CSU Center for Teacher Quality (CTQ) has annually evaluated the effects of all CSU teacher preparation programs by asking CSU first-year teaching graduates and their employment supervisors to answer specific questions about the quality, value and effectiveness of CSU preparation. Many first-year teachers and school leaders have responded to CSU questions by providing feedback that is valuable for program improvement. Recently, CTQ began to investigate the impact of CSU teacher preparation on learning gains by the K-12 students of CSU-prepared teachers, while continuing to compile new feedback from teachers and supervisors. This report summarizes the overall scope and structure of the *Systemwide Evaluation*, provides new evidence offered by recent cohorts of CSU teachers, and summarizes recent work on K-12 student learning that is attributable to teachers and their preparation.

Original Scope of the CSU Evaluation of Teacher Preparation Outcomes

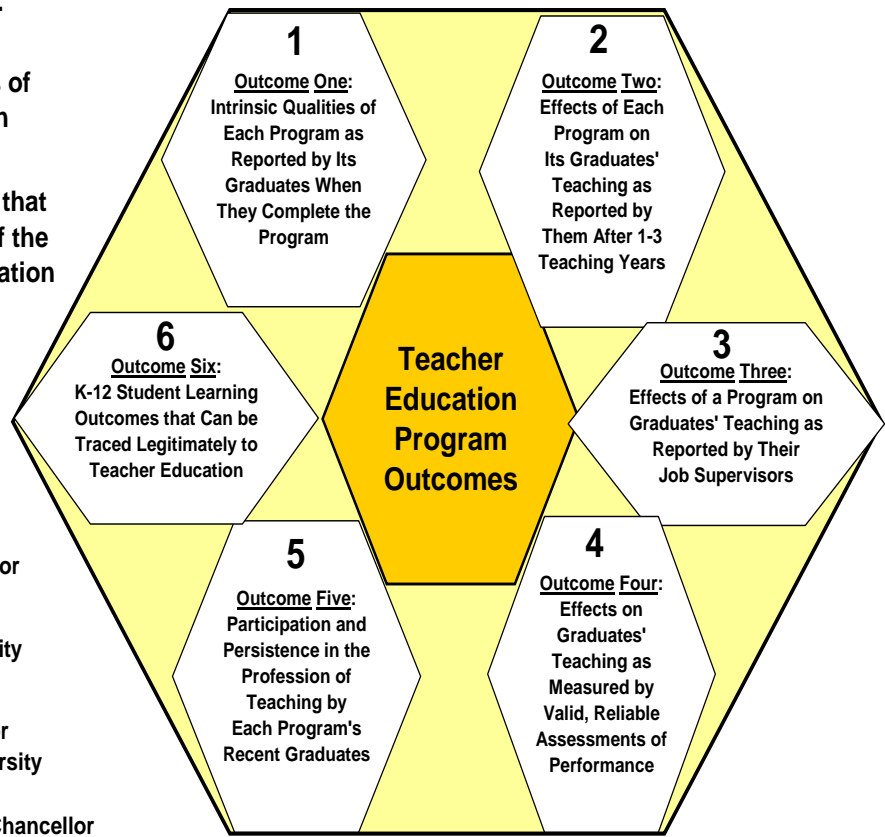
When Chancellor Reed and the 22 CSU campuses initiated the *Systemwide Evaluation of Teacher Preparation* in 2000-01, they recognized that teacher education has many outcomes. The evaluation's leaders and managers consider K-12 student learning to be an outcome of particular significance, but not the only important outcome that should be included in a broad evaluation. To plan the evaluation over time, CTQ developed *The CSU Mosaic* (on the next page) to illustrate graphically the kinds of evidence that contribute to CSU's comprehensive understanding of its overall effectiveness in preparing university students to be excellent teachers.

Outcome One: Exit Evaluation by Preparation Completers. Outcome One consists of new teachers' perspectives about their preparation when they complete it but before they begin to use it as certificated teachers. By including Outcome One in the *Systemwide Evaluation*, CSU implicitly accepts the premise that completers' perspectives are important even before they enter the profession and utilize their new abilities and understandings. While not expecting program completers to feel completely ready for all of a teacher's responsibilities, CSU wants its new teachers to have a realistic but confident sense of their readiness to begin teaching with the support of onsite mentors. The CSU Exit Evaluation assesses completers' views of their readiness and the adequacy of their preparation in several domains of the curriculum, their views of its completeness, their satisfaction with it, and how well they were able to learn it. CSU evaluates Outcome One with the use of an online survey that protects the security and confidentiality of each completer's responses, includes automated analysis of responses made by populations and sub-populations of completers, and enables CSU campuses to access summary analyses electronically in real time.

The CSU Mosaic:

Significant Outcomes of Teacher Preparation

The Conceptual Model that Guides Development of the CSU Systemwide Evaluation



Bill Wilson
Assistant Vice-Chancellor

David Wright
Center for Teacher Quality

Academic Affairs
Office of the Chancellor
The California State University

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Outcome Two: Evaluations by Completers after Specified Amounts of Teaching Practice. Outcome Two is the *value* and *effectiveness* of preparation as reported by an institution's completers one or more years after preparation has been completed and used in certificated teaching. Here the underlying assumptions are that new teachers actually *use* their newly-learned abilities and ideas, that these experiences reveal preparation's *value* and *effectiveness* in practice, and that the experiences should reassure the new teachers about their readiness to grow into seasoned, effective teachers. When new CSU teachers respond to questions about the *value* /*effectiveness* of their preparation, CSU asks them to formulate their answers based on their own work-related experiences. CSU assesses Outcome Two with the use of online surveys of CSU graduates at the end of the first and third teaching years. Since focus groups are not used, each new teacher has only her/his own experiences to inform judgments about Outcome Two.

Outcome Three: Evaluations by the Supervisors of First-Year Teachers. CSU defines a new teacher's "supervisor" as the person with official responsibility to assess the first-year teacher's performance for a decision by the employing district to retain or drop the teacher before the second year. Near the end of the first year, when teachers answer CSU questions about preparation's effectiveness, CSU asks their supervisors approximately the same questions online. This practice enables CSU to compare and contrast the two groups' responses. Instead of asking supervisors to assess the preparation of CSU teachers in general or of new teachers in general, CSU asks each supervisor to assess the preparation of a named CSU teacher.. Prior to analysis, CSU links the two sets of evidence about CSU teacher preparation, which enriches the University's understanding of its effects. Nearly all of the supervisors have previously worked closely with several other new teachers. CSU encourages supervisors to take these prior experiences into

account as they assess a specific teacher's preparation. CSU asks supervisors to record how many times they observed and conferenced with the new teacher during the year. When supervisors answer the CSU evaluation questions, CSU asks them to draw on their prior observations of (and conferences with) the teacher. In analyzing and reporting supervisor responses, CSU includes only those who have observed/conferenced at least once.

Outcome Four: Assessments of Teaching Performance by Selected, Trained Assessors Using Uniform Criteria. Like all other institutions in California, CSU campuses are preparing to implement a uniform assessment of teaching performance as a new requirement for recommending each completer for certification beginning in 2008. When the TPA and PACT assessments become operational on CSU campuses, CSU will incorporate the assessment scores into the *Systemwide Evaluation of Teacher Preparation*. After examining the properties of the score scales, CSU will develop appropriate procedures for compiling, assembling, analyzing and reporting performance outcomes of teacher preparation, in conjunction with the other outcomes in *The CSU Mosaic*. Until then, CSU activity in relation to Outcome Four consists of campus preparations for implementing the assessment that is selected or developed by each campus.

Outcome Five: Participation and Retention of CSU Teachers in the Profession of Teaching. CSU recently completed a major evaluation of teacher retention and attrition evidence, and plans to assemble and analyze additional evidence in the future. The recent analysis focused on reasons for teacher retention and attrition as reported by "stayers" and "leavers" in the teacher population. It constituted an evaluation of teacher education to the extent that preparation was cited by the two groups as a factor in their career decisions. (Preservice preparation tended to be a more important factor in decisions to continue teaching than in decisions to leave teaching.) Further evaluations will focus on additional constructs related to Outcome Five. To examine the construct of *participation in teaching*, in 2007-08 CSU plans to assemble evidence of how many teachers from each campus and program become teachers, and how many of their careers have lengths of one year, two years, etc., up to a maximum of eight years. CSU would also like to assess the construct of *equity in the distribution of teaching talent*, by assembling evidence of teacher transfers among schools in diverse communities, but these bodies of evidence have been unavailable to date.

Outcome Six: Evaluations that Legitimately Link Evidence of K-12 Student Learning to the Preparation of Students' Teachers. Outcome Six is the most challenging to evaluate because suitable evidence is very difficult to obtain, and because the number of factors that affect K-12 student learning is not known. A CSU assumption is that teacher preparation does *not* account for all student learning. The research literature, however, provides little evidence about the relative importance of teacher preparation. Addressing this knowledge gap with the use of suitable evidence is a preliminary step that CSU is taking toward the goal of evaluating campuses and programs in relation to Outcome Six. Substantially larger sets of suitable evidence are needed to assess different campuses and programs. CSU is currently assembling such evidence, including quantitative indicators of many demographic and economic factors known to influence learning. Pilot studies and preliminary evaluations have demonstrated the feasibility of using *hierarchical linear modeling* to address CSU's most critical questions: how important is teacher preparation, and which campuses and programs are most effective? Quantitative findings pertaining to these questions could lead CSU and other universities to a varied set of qualitative studies to determine reasons why some campuses and programs are more strongly associated with student learning gains than others.

Continuing Scope of the CSU Evaluation in 2007 and 2008

While CTQ works closely with school districts in assembling evidence about K-12 student learning and linking this evidence to the preparation of new teachers, CSU campuses continue to benefit from new batches of other evidence being produced according to *The CSU Mosaic*. Related to Outcomes One, Two and Three, campuses receive increasing amounts of valuable feedback as more and more teachers participate in the *CSU Exit Evaluation* and in the *First-Year Teacher Evaluation* each year. Deans and faculties in CSU colleges of education continue to improve teacher education programs based on these findings as well as the *First-Year Supervisor Evaluations* in response to Outcome Three, some of which are summarized next.

In recent years, CSU campuses have asked CTQ to add new questions to the first-year teacher and supervisor evaluations, for the purpose of evaluating additional domains of the teacher preparation curriculum. Responses to these new questions are being discussed extensively on CSU campuses, and are summarized in the following graphs.

In 2006, the job supervisors of 2,165 new teachers assessed CSU's effectiveness in preparing them for the rigors of classroom teaching. The following graphs are based entirely on the judgments of supervisors who (1) had supervised multiple new teachers previously, (2) received the name of a new teachers whose preparation the supervisor was asked to assess, and (3) had observed and conferenced with that teacher on multiple occasions. Pertaining to 42 responsibilities of classroom teachers, CTQ asked the supervisors how well CSU did in preparing each teacher for that responsibility. In evaluating each teacher's readiness to fulfill each responsibility, supervisors reported that individual teachers were "*well prepared*" or "*adequately prepared*" or "*somewhat prepared*" or "*not-at-all prepared*" for the responsibility. (If a supervisor was not able to respond to a specific question, due to a lack of evidence for any reason, s/he was urged to circle "x" instead of a valid response.)

Beginning on page 5, Figures Two through Five present the percentages of CSU teachers who were reported by their supervisors to be either *well-prepared* or *adequately-prepared* by the CSU. The numbers of participating supervisors vary from graph to graph because some questions were answered only by elementary principals, others only by high school department chairs, and still others by both groups of respondents.

Figure Two: Preparing CSU Teachers to Use Instructional Technologies in K-12 Classrooms

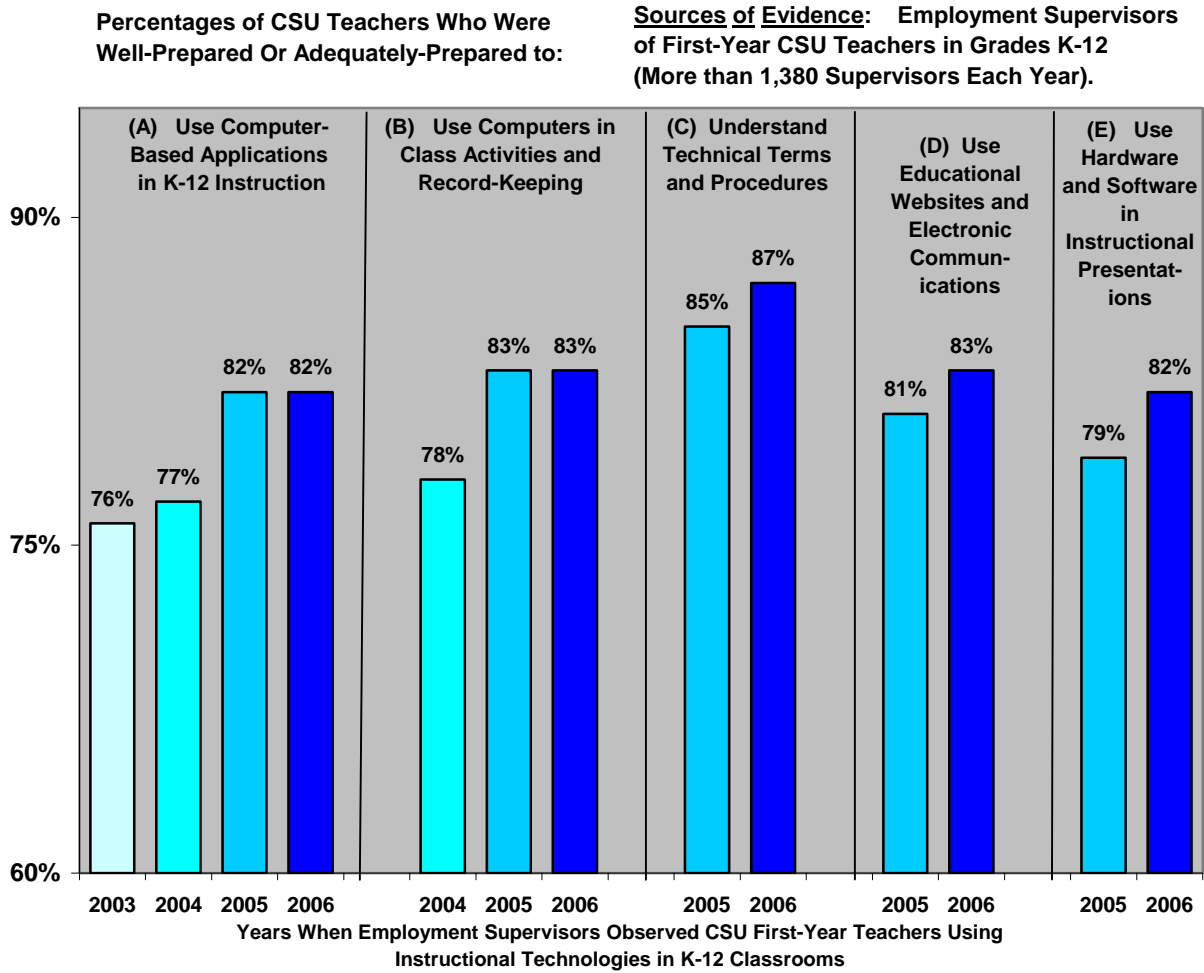


Figure Two summarizes the responses of onsite supervisors of K-12 first-year teachers regarding CSU’s effectiveness in preparing them to know, understand and use instructional technologies. As the graph shows, five distinct questions were phased-in gradually. Each bar combines CSU’s *well-prepared* teachers and CSU’s *adequately-prepared* teachers. Readers should note that the reciprocal of each percent (one hundred percent minus the percent shown) consists of CSU new teachers who were *somewhat-prepared* or *not-at-all prepared* in each area of a teacher’s responsibilities. In all cases, the numbers of these *somewhat-prepared* teachers substantially exceeded the numbers of the *not-at-all prepared* teachers.

While the CSU’s effectiveness is improving in the area of education technology, CSU interprets this evidence to signify that the campuses still have plenty of room for improvement toward the goal of all new teachers being *well-prepared* for these important duties. Each campus receives campus-specific evidence that parallels the systemwide evidence shown in Figure Two. Each campus also receives the systemwide finding, to serve as a benchmark enabling the campus to gauge its effectiveness in relation to that of the entire CSU System.

Figure Three: Preparing CSU Elementary Teachers in Specific Skills for Reading-Language Arts Instruction

Percentages of CSU Teachers Who Were Well-Prepared Or Adequately-Prepared to:

Sources of Evidence: Employment Supervisors of First-Year CSU Teachers in K-8 (More than 945 Supervisors Each Year).

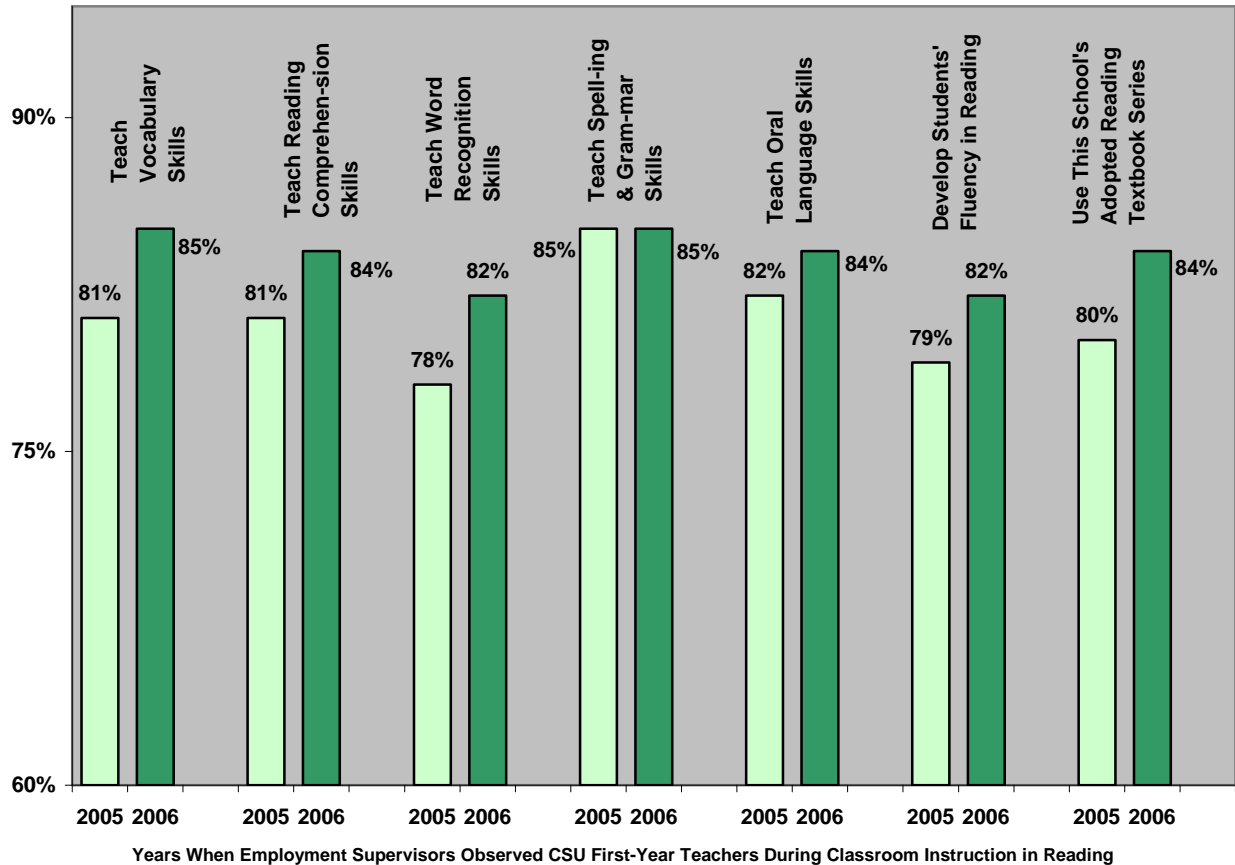


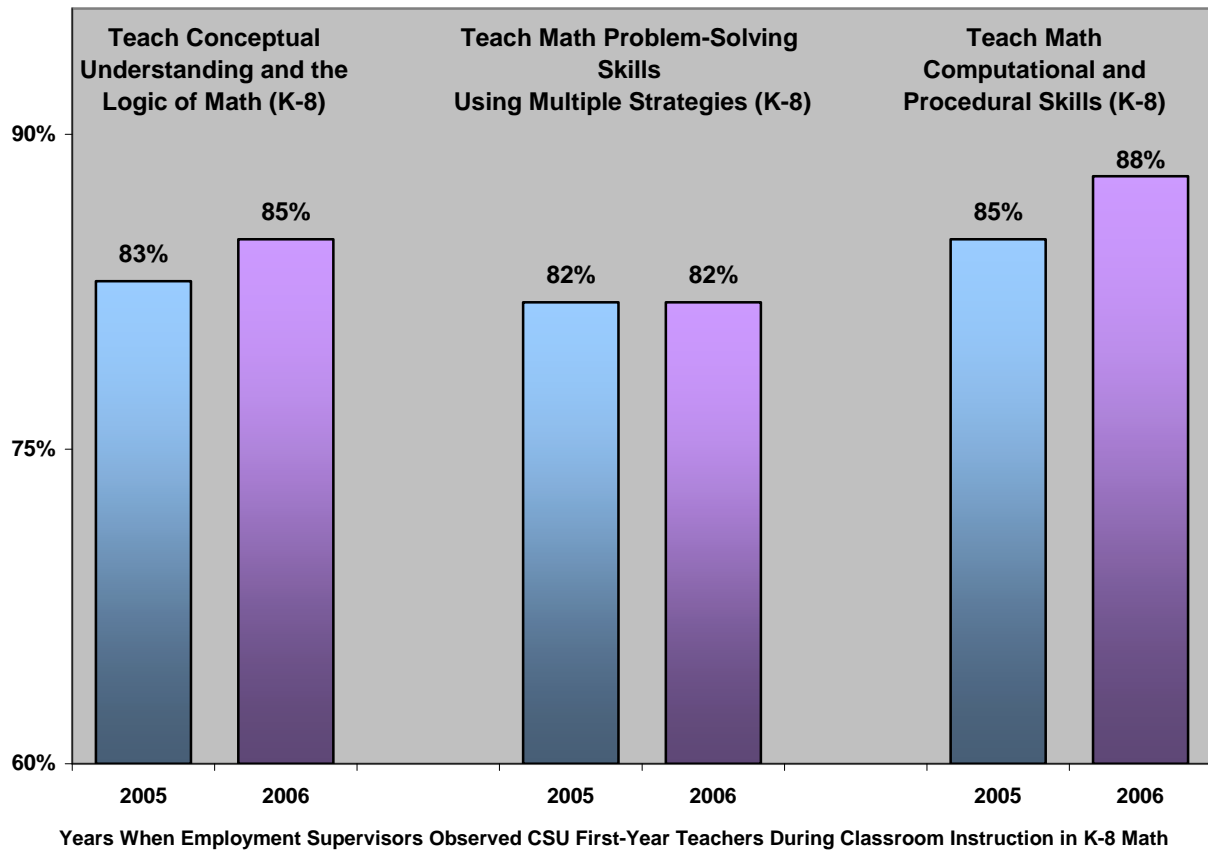
Figure Three examines seven domains of standards-based instruction in K-8 reading-language arts. Each bar shows the percentage of one cohort of CSU completers who were *well-prepared* or *adequately-prepared* to provide instruction in a domain. Limited to K-8, these findings are based on the reflections of more than 945 supervisors each year. The domains of learning-to-read are identified along the top edge of the graph. Along the lower edge are the years in which the participating supervisors conferenced with CSU first-year teachers and observed them during classroom reading-language arts instruction.

Although these judgments by K-8 supervisors show some improvement from one year to the next, it is critical that the improvements continue because the campuses have not yet reached the goal of preparing all new teachers to be effective in teaching this crucial subject of the K-8 curriculum.

Figure Four: Preparing Elementary Teachers in Specific Domains of the K-8 Math Curriculum

Percentages of CSU Teachers Who Were Well-Prepared Or Adequately-Prepared to:

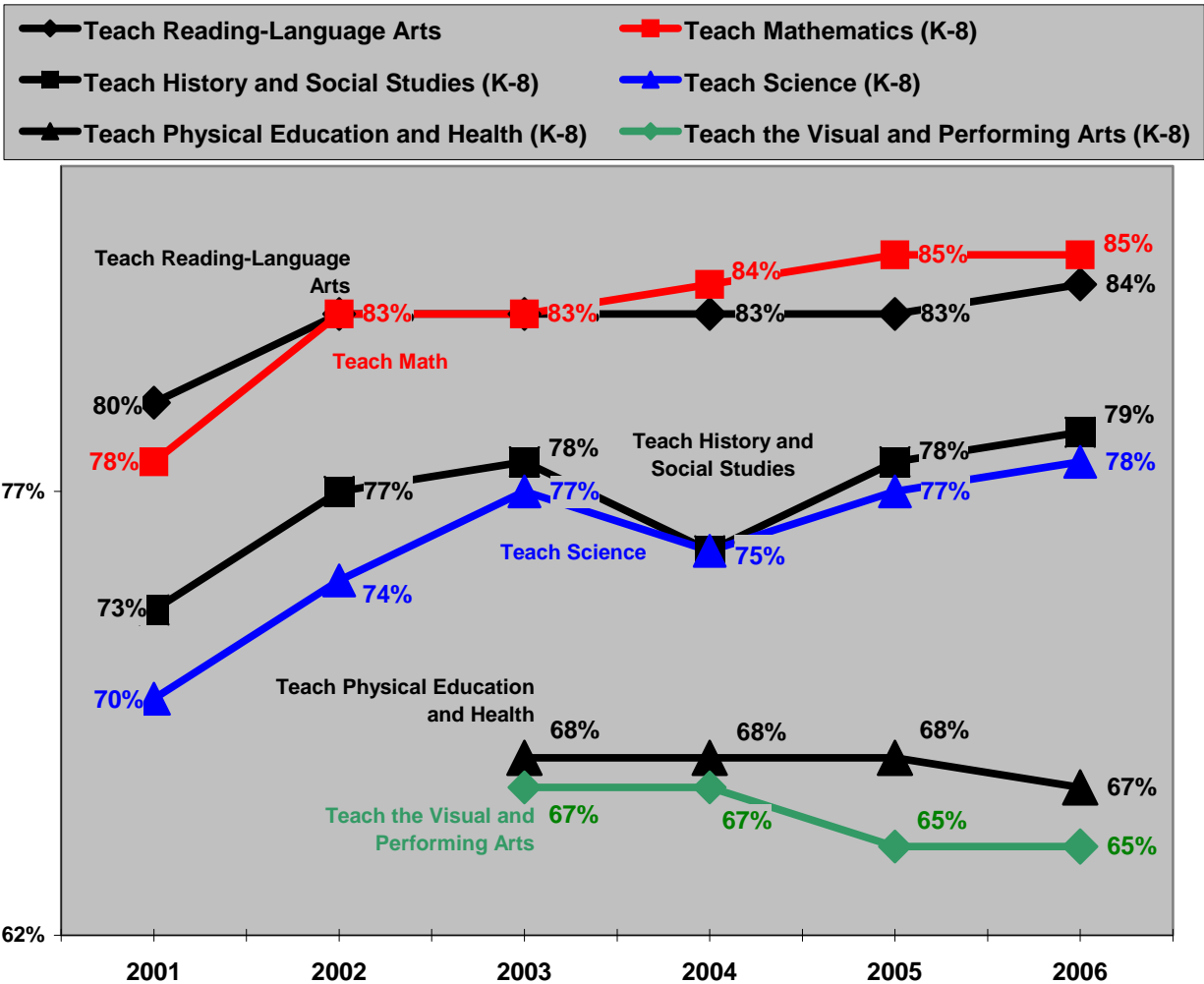
Sources of Evidence: Employment Supervisors of First-Year CSU Teachers in K-8 (More than 965 Supervisors Each Year).



In the subject of teaching elementary mathematics, Figure Four resembles Figure Three on the teaching of elementary reading-language arts. Elementary school supervisors are reporting CSU first-year teachers to be more effectively prepared to provide instruction in computational and procedural skills than in teaching conceptual understanding or math problem-solving skills. This pattern of results may reflect the fact that California Standards in elementary math give more attention to procedural and computational accuracy on the part of K-8 learners. Or it may reflect the fact that conceptual problem-solving skills tend to be more challenging than procedural and computational skills for young students to learn. In either case, CSU wants these percents in Figure Four to continue climbing in the upcoming years.

Figure Five: Percentages of CSU Teachers in K-8 Who Were Well-Prepared Or Adequately-Prepared to Teach Six Major Subjects of the K-8 Curriculum

Sources of Evidence: Elementary School Principals Who Supervised CSU Teachers



Supervisors of new teachers in grades K-8 have answered six questions about CSU’s overall effectiveness in preparation to teach each of six major subjects of the K-8 curriculum. Each question’s language emphasizes preparation to *teach* the subject; different questions pertain to CSU effectiveness in subject-matter preparation. Findings for multiple years in Figure Five illustrate the impact of state education policy on CSU teacher preparation. Although few of the school principals and other supervisors in Figure Five were aware of recent changes in teacher preparation, it is a fact that credential programs give less and less attention to the teaching of K-8 physical education, health and the visual and performing arts, due to the state’s focused emphasis on reading-language arts and math. While CSU’s effectiveness in these areas was very low when the evaluation began, the University’s outcomes have actually declined during the four years in which physical education, health and the visual and performing arts were tracked.

How CSU Uses the Annual Evaluation Evidence

Annually, each CSU campus reviews the evaluation results comprehensively and in detail. Campuses use the evaluation findings to identify strengths and weaknesses in current coursework and fieldwork, and to adopt improvements in place of existing weaknesses. Now that K-12 employment supervisors of first-year teachers have assessed six consecutive cohorts of CSU graduates, campuses are using the most recent findings to track the impact of their recent program improvements. Chancellor Reed requires campuses to report each year their interpretations of the results, the involvement of faculty and field supervisors in developing program remedies, and the newest decisions that have been made based on the most recent findings. *The CSU Systemwide Evaluation of Teacher Preparation provides valuable evidence that has strong validity and reliability, and that campuses translate into specific, needed improvements to realize the goal of producing effective teachers for all of California's schools and students.*

CTQ Questions Related to Student Achievement

CTQ works closely with California school districts to assemble evidence that addresses three evaluation questions, as follows.

- (1) *What is the relative importance of university-based teacher preparation in accounting for the academic progress of K-12 students in California, compared with the relative strength of other factors that are known to influence student learning such as student factors, school factors and community factors?*
- (2) *In relation to teachers prepared outside the CSU, how well do CSU-prepared teachers foster learning gains by their K-12 students, particularly in core subjects, and with a special focus on student groups that have historically been underserved by our system of elementary, secondary and post-secondary education?*
- (3) *Can evidence of K-12 student achievement identify specific programs of professional teacher preparation that are particularly effective and, if this is feasible, can the effective features and characteristics of these programs be identified? For university students who want to teach, would it be feasible for CSU to extend and enlarge the most effective programs?*

While CTQ views these questions as closely related to each other, and to other issues confronting public education in California, the Center's professional evaluator and statistician are assembling three distinct bodies of evidence for the purpose of resolving the three questions thoroughly and comprehensively for Chancellor Reed, the CSU Board of Trustees, and other California officials.

How CTQ Links Teacher Preparation to Student Achievement

Measures of Student Achievement. Conceivably, multiple measures of K-12 student learning could be tapped in an evaluation of teacher preparation. To rely on a comprehensive array of measures would yield important benefits. The following benefits are especially critical and can be realized by using, among other instruments, the standardized achievement examinations that California administers statewide in grades 3-11 each year.

- (a) Relying on a common set of statewide learning measures enables CTQ to combine evidence from diverse communities and regions of the state.
- (b) Most of the state's measures of learning are closely aligned with the standards-based curriculum that the California State Board of Education has adopted for grades K-12.
- (c) Use of the state's standardized exams also enables CTQ to take account of each student's prior level of learning.
- (d) Pupil scores on the state's standardized tests have relatively strong levels of reliability, compensating for the inaccuracies that characterize all measures of learning.

CTQ will pursue opportunities to use *alternative measures of student learning*, but the alternative measures will *complement* and *supplement* evidence provided by standardized exams, which CTQ views as *core measures of student learning* in the CSU evaluation of teacher preparation.

Measuring Instructional Effects on Students. CTQ utilizes alternative approaches to assessing the impact of instruction on K-12 students. One approach is to assess the *gain* that each student realizes by comparing evidence assembled before and after her or his instruction in a subject that is tested on multiple occasions. Another approach focuses on student knowledge levels at the conclusion of an instructional year while taking into account the same students' levels of prior learning in a closely-related subject. In a third approach, CTQ examines student knowledge levels at the conclusion of instruction without considering the students' pre-instructional knowledge levels. When CTQ discloses evidence of student learning attributed to instruction and preparation, the Center specifies exactly how student learning was measured.

Learning by Individual Students and by Groups of Students. CTQ uses a *student-by-student method* of measuring instructional impact, rather than relying on evidence of *average learning levels by large groups of K-12 students*. By analyzing the available evidence on a student-by-student basis, CTQ can differentiate the effects of CSU teacher preparation from those of other colleges and universities, whose graduates teach in the same districts, schools, grades and subjects as CSU-prepared teachers. If CTQ relied on summaries of learning by all students in a district, school, grade or subject (a method used by many others), the effects of different institutions would be co-mingled with each other. To assess *CSU impact on student learning*, it is necessary to proceed on a student-by-student basis.

Expert Advice, National Consultation and External Support. For expert advice on how to address the three CSU evaluation questions on page 1, CTQ consults on an ongoing basis with five advanced scholars and statisticians from throughout the nation, whose own work addresses the same questions. Recently CTQ discussed its measurement plans with a committee of the National Research Council, which generally encouraged CTQ to move forward as planned. CTQ also submitted its plans to the Carnegie Corporation of New York, which endorsed the approach and awarded a three-year grant to support CTQ's work examining the impact of teacher preparation on K-12 student learning. In the course of assembling evidence of this impact, CTQ will remain in close touch with these external advisors and with faculty, administrators and leaders on CSU campuses.

Potential Sources of Learning Evidence. To identify and assess potential sources of learning evidence in California, CTQ has met with organizations linked to K-12 education in the state. In these consultations, CTQ gave particular attention to the organization called *Just for the Kids California*, which offers online public access to learning data from districts and schools throughout the state. School districts are the only organizations that currently maintain comprehensive evidence that enables CTQ to resolve the three evaluation questions under investigation. In the future, CTQ looks forward to using a state database, which is currently being designed, but CTQ cannot postpone its investigation until the forthcoming database has been assembled.

Status Update on Teacher Preparation and Student Achievement

Requests to Collaborate with Seven Large, Urban School Districts in California. In seven of California's largest urban school districts, CTQ has met with superintendents and directors of research, and has submitted requests for evidence that CTQ could use in a statistical analysis of teacher preparation's impact on student learning. Located in distinct regions of the state, these districts educate more than one million students, employ more than 40,000 teachers, and annually hire approximately 3,350 CSU graduates as new teachers. Working closely with these and other districts in California's urban centers (who expect to join the growing initiative), CTQ will be able to assemble large amounts of evidence pertaining to the three evaluation questions.

Assurances of Districts' Willingness to Collaborate with CSU. The seven school districts have assured CTQ of their willingness to cooperate with CSU in assessing the effects of teacher preparation on K-12 student learning. In response to a CSU request for specific evidence, the seven districts indicated their willingness to provide most or all of the requested evidence. The districts' research offices are currently assembling the evidence, and are asking clarifying questions about the CSU request. Given that the districts have other research-related priorities, and that the CSU request is large in magnitude, CTQ expects to receive the requested evidence by the end of June 2007.

Preliminary Files of Evidence from Two School Districts. Early on, two of the seven cooperating districts provided small sets of evidence that CTQ has relied on for preliminary analyses of the CSU evaluation questions. The two sets of preliminary evidence include limited numbers of teachers and students, and encompass only some of the factors that commonly influence learning on the part of K-12 pupils, so CTQ considers the preliminary evidence to be valid but incomplete. CTQ analyzed the two sets of preliminary evidence in order to pilot-test its analysis plans and to be as expeditious as possible in investigating teacher preparation's impact on student learning. In reporting its preliminary findings, CTQ emphasizes the incompleteness of the two sets of evidence, recognizes that comprehensive evidence is likely to be provided soon, and regards the initial analyses as *preliminary* in nature.

Preliminary Analysis of Preliminary Evidence

How CTQ Analyzed the Preliminary Evidence. The CSU Center for Teacher Quality began by examining the relative impact of diverse factors on K-12 student learning. *Compared with factors associated with students, their families and their communities, how much of their learning is associated with their teachers and the preparation of those teachers in CSU and other institutions?* In educational research and evaluation studies, this question and others like it are addressed with a complex statistical procedure called *hierarchical linear modeling*, which CTQ implemented with state-of-the-art software called *HLM 6*. This procedure enabled CTQ to estimate:

- (a) how much learning was associated with *student factors* when teacher factors were statistically held constant;
- (b) how much learning was associated with *teacher factors* when student factors were statistically held constant; and
- (c) how much learning *could not be explained* by this procedure because of the limited numbers of student and teacher factors that were measured in the preliminary evidence.

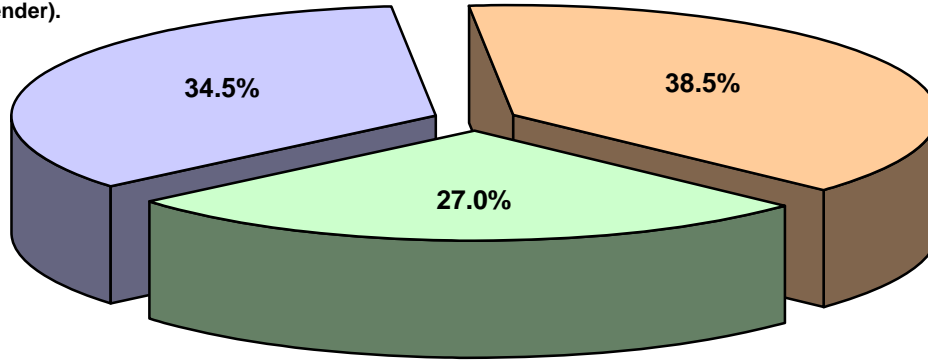
CTQ was able to assess the role of these factors in the learning of reading skills, language skills and math skills, but only in grades 4 and 5 due to technical reasons.

What CTQ Found in the Preliminary Evidence. Figure One illustrates the statistical findings of the preliminary analysis that focused on the learning of *reading skills*. The blue segment of the graph estimates how much student learning (34.5%) was statistically associated with *a few student demographic factors* while the teacher-related evidence was held constant statistically. The green segment indicates how much learning of reading skills (27.0%) was associated with the *universities that prepared the teachers and the duration of teaching experience*, while the student demographic factors were held constant. The tan section of the graph estimates how much literacy learning (38.5%) *could not be associated with student factors or teacher factors* due to limitations in the preliminary evidence.

**Figure One:
Learning to READ in Grades Four and Five
Preliminary Analysis of Important Factors**

Blue: 34.5 Percent of Student Learning in READING Was Statistically Linked to the Individual Students and Their Demographics (e.g., Family Income, Ethnicity, Gender).

Tan: 38.5 Percent of Student Learning in READING Was Statistically Linked to Factors that CTQ Could Not Measure in this Preliminary Analysis (e.g. Student Motivation, Interest, Attendance).



Green: 27 Percent of Student Learning in READING Was Statistically Linked to the Students' Teachers and the Preparation of Those Teachers in CSU and Other Accredited Universities Between 1995 and 1999.

Figure One describes the learning that students experienced in *reading*, as measured by California's standardized tests of reading skills in grades four and five. On the following page, Table One shows how the same learning factors influenced student achievements in all three of the assessed subjects: reading, language and mathematics.

Table One	Reading	Language	Mathematics
Percent of Student Learning Associated with <i>Student Factors</i> in the Preliminary Evidence	34.5%	29.1%	35.2%
Percent of Student Learning Associated with <i>Teacher Factors</i> in the Preliminary Evidence	27.0%	24.5%	22.6%
Percent of Student Learning that <i>Could Not be Estimated Based on Preliminary Evidence</i>	38.5%	46.4%	42.2%
	100.0%	100.0%	100.0%

Evidence about Comparative Institutional Effectiveness. Using the preliminary evidence, CTQ also attempted to assess the comparative effectiveness of institutions and programs for teachers, as suggested by evaluation questions (2) and (3) on page 1. In some comparisons, CSU teacher preparation appeared to be more effective than non-CSU preparation, but these differences were small. Insufficiencies in the evidence were too great for CTQ to reach any conclusions, even tentatively, in relation to questions (2) or (3). CTQ anticipates that the forthcoming evidence will enable the evaluation to address the three questions because the evidence will be more comprehensive in terms of student demographics, family and community circumstances, school conditions that influence the practice of teaching, and specific characteristics and features of preparation programs completed by individual members of the teaching population.

Tentative Status of the Preliminary Evidence. When CTQ receives more comprehensive data about the impact of teachers and their preparation on student learning, the findings may differ from the preliminary findings in several potential ways. Any or all of the percentages in Figure One and Table One may increase or decrease when the evidence portrays larger numbers of students and teachers in a more diverse array of schools, when it includes more student factors such as English language proficiency, and when it includes more information about teachers and their preparation in the CSU and in other institutions.

Implications of the Preliminary Evidence. Although the preliminary evidence is tentative, it suggests that CTQ is pursuing a promising line of inquiry about the effects of teacher education on student learning in California. In reading, language and mathematics, the preliminary evidence suggests tentatively that teachers and their preparation are significant factors in accounting for student academic progress. Of the multiple factors that influence student learning, teachers and their preparation are the specific factors that are most susceptible to improvements through changes in CSU policies and practices. If the forthcoming analysis confirms the preliminary finding that teachers account for substantial amounts of learning, even the tentative finding suggests that CSU campuses may be in a position to contribute substantially to K-12 learning by improving and expanding their effectiveness in preparing new teachers. Preliminary findings based on incomplete evidence also suggest that CTQ's growing focus on K-12 student learning may prove to be a cost-effective investment of the Center's limited resources.

Conclusion. Overall, the CSU Center for Teacher Quality plans to continue pursuing Outcomes One through Six toward the eventual goal of reporting a comprehensive set of evaluation findings to teacher educators and California state officials in the future.