

The Status of the Teaching Profession

The Center for the Future of
Teaching and Learning

Research conducted by SRI International

California State University
University of California, Office of the President
WestEd

Teaching and
California's
Future



2009

Teaching and California's Future

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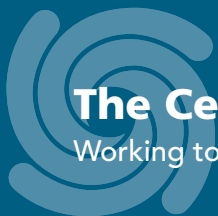
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The Center for the Future of Teaching and Learning

Working to improve education for all students by strengthening the teaching profession

Teaching and California's Future

The Status of the Teaching Profession 2009

Full Report

The Center for the Future of Teaching and Learning

and

California State University
University of California, Office of the President
WestEd

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CONTENTS

Cosponsors	vii
Advisors	vii
Task Force Members	viii
Board of Directors	ix
Acknowledgments	xi
Abbreviations	xiii
Executive Summary	xv
Chapter 1 Introduction	1
Chapter 2 The Teacher Workforce in California	11
Chapter 3 Redesigning California High Schools for the 21st Century	21
Chapter 4 Knowledge, Skills, & Understandings for Teaching in Redesigned High Schools	31
Chapter 5 The Teacher Development System	39
Chapter 6 School Leadership	53
Chapter 7 Summary and Implications	61
Chapter 8 Recommendations from the Center for the Future of Teaching and Learning	63
References	67
Appendix A Additional Teacher Supply, Demand, & Distribution Data	69
Appendix B Research Methods	87
Appendix C Source and Technical Information for Exhibits	93
Appendix D Source and Technical Information for Survey Data	105

EXHIBITS

1	CST Results by Grade and Subject, 2006–09	2
2	College Preparatory Course Test-Taking Patterns, 2003–09	3
3	CST Results by Ethnicity, 2003–09	4
4	Percentage of High School Dropouts by Ethnicity, 2007–08	5
5	Actual and Projected K-12 Enrollment, 1993–94 to 2018–19	12
6	Number of K-12 Teachers in California, 2003–04 to 2008–09	13
7	Number of First- and Second-Year Teachers in Elementary, Middle, and High Schools, 2003–04 to 2008–09	14
8	Number of Enrollees in Teacher Preparation Programs, 2001–02 to 2006–07	15
9	Multiple- and Single-Subject Preliminary and Intern Credentials Issued by University Sector, 2001–02 to 2007–08	15
10	Number of Underprepared Teachers by Credential Type, 1999–2000 to 2008–09	16
11	Percentage of Underprepared and/or Novice High School Teachers in Core Subjects, 2008–09	17
12	Percentage of Underprepared Teachers by API Achievement Quartile, 2002–03 to 2008–09	18
13	Percentage of Underprepared High School Teachers by API Achievement Quartile, 2008–09	18
14	Percentage of Out-of-Field High School Teachers in Core Subjects, 2004–05 and 2008–09	19
15	California High Schools' Top Academic Priorities for Students	22
16	Emphasis on Offering Courses Integrating Authentic Learning and Assessment	25
17	Emphasis on Strategies to Prepare Students for Work and Careers	27
18	Prevalence of Teaching Knowledge and Skills	36
19	Prevalence of Teaching Knowledge and Skills by School-Level Poverty	37
20	Professional Development Priorities of California High Schools	46
21	One School's Use of Collaboration Time	48
22	A Highly Aligned, Structured System of On-the-Job Support for School Leaders	59
A-1	Total K-12 Enrollment in California, 1997–98 to 2008–09	69
A-2	Age Distribution of K-12 Public School Teachers, 2008–09	70
A-3	First- and Second-Year Teachers by Credential Status, 2001–02 to 2008–09	70
A-4	Number of Underprepared Teachers in California, 2000–01 to 2008–09	71
A-5	Percentage of Underprepared Teachers by Authorization, 2001–02 to 2008–09	71
A-6	Percentage of Underprepared First- and Second-Year Teachers by Authorization, 2006–07 to 2008–09	72

A-7	Top 10 California Counties by Number and Percentage of Underprepared Teachers, 2008–09	72
A-8	Distribution of Schools by School-Level Percentage of Underprepared Faculty, 2008–09	73
A-9	New Preliminary Teaching Credentials Issued by IHEs, 1998–99 to 2007–08	73
A-10	New University and District Intern Credentials Issued, 1996–97 to 2007–08	74
A-11	Number of Teacher Preparation Candidates Enrolled in CSU Single-Subject Programs, 2001–02 to 2008–09	74
A-12	University Intern Credentials Issued by Authorization, 2002–03 to 2007–08	75
A-13	Number of California Credentials Issued to Teachers Trained Out of State, 1999–00 to 2007–08	75
A-14	Underprepared and/or Novice Teachers by School-Level API, 2008–09	76
A-15	Distribution of Interns by School-Level API, 2008–09	76
A-16	Underprepared Teachers in Schools with the Highest and Lowest Percentages of Minority Students, 2000–01 to 2008–09	77
A-17	Distribution of Interns by School-Level Percentage of Minority Students, 2008–09	77
A-18	Underprepared Teachers in Schools with the Highest and Lowest Percentages of Students in Poverty, 2000–01 to 2008–09	78
A-19	Distribution of Interns by School-Level Percentage of Students in Poverty, 2008–09	78
A-20	Total Enrollment in Grades 9–12, 2001–02 to 2008–09	79
A-21	Number of High School Teachers in California, 2004–05 to 2008–09	79
A-22	Number of Underprepared High School Teachers, 2003–04 to 2008–09	80
A-23	Number of Career Technical Education Teachers in California, 2000–01 to 2008–09	80
A-24	Percentage of Underprepared High School Teachers by School-Level Percentage of Minority Students, 2008–09	81
A-25	Percentage of Underprepared High School Teachers by School-Level Percentage of Students in Poverty, 2008–09	81
A-26	Percentage of Out-of-Field, Underprepared, and Novice High School Teachers by Assignment, 2008–09	82
A-27	Percentage of Underprepared and Novice Teachers by School-Level Percentage of 10th Grade Students Passing the CAHSEE, 2008–09	82
A-28	Percentage of Underprepared and Novice Teachers in High Schools by School-Level Percentage of Students in Poverty, 2008–09	83
A-29	Percentage of Fully Credentialed Teachers with English Learner Authorization, 2003–04 to 2008–09	84
A-30	Number of California State Teachers Retirement System (CalSTRS) Membership Retirements, 1997–98 to 2007–08	84
A-31	Percentage of Out-of-Field, Underprepared, and Novice High School Teachers by Assignment in Charter Schools, 2008–09	85

A-32	Percentage of Out-of-Field, Underprepared, and Novice High School Teachers by Assignment in Non-Charter Schools, 2008–09	85
A-33	Average Percentage of Underprepared and Novice High School Teachers by Charter Status, 2008–09	86
A-34	Average Percentage of Underprepared and Novice High School Teachers by School Size, 2008–09	86
B-1	Survey Response Rates (Overall and by Charter Status)	88
B-2	Sample of Case Study High Schools	91
C-1	Number of Schools by API Quartile for API Analyses	102
C-2	Number of Schools by School-Level Minority for Minority Analyses	102
C-3	Number of Schools by School-Level Poverty for Poverty Analyses	103
C-4	Number of High Schools by API Quartile for API Analyses	103
C-5	Number of High Schools by School-Level Minority for Minority Analyses	103
C-6	Number of High Schools by School-Level Poverty for Poverty Analyses	104
D-1	Survey Data for Exhibit 15: California High Schools' Top Academic Priorities for Students	105
D-2	Data from Survey of High School Principals: Question 6	106
D-3	Data from Survey of High School Principals: Question 5	107
D-4	Data from Survey of High School Principals: Questions 14 and 17A	108
D-5	Survey Data for Exhibit 16: Emphasis on Offering Courses Integrating Authentic Learning and Assessment	109
D-6	Survey Data for Exhibit 17: Emphasis on Strategies to Prepare Students for Work and Careers	110
D-7	Data from Survey of High School Principals: Question 14	111
D-8	Data from Survey of High School Principals: Question 19	112
D-9	Data from Survey of High School Principals: Question 10	113
D-10	Data from Survey of High School Principals: Question 11	114
D-11	Data from Survey of High School Principals: Questions 8A and 8B	115
D-12	Survey Data for Exhibit 18: Prevalence of Teaching Knowledge and Skills	116
D-13	Survey Data for Exhibit 19: Prevalence of Teaching Knowledge and Skills by School-Level Poverty	117
D-14	Survey Data for Exhibit 20: Professional Development Priorities of California High Schools	118
D-15	Data from Survey of High School Principals: Question 21	119
D-16	Data from Survey of High School Principals: Question 27	120

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ABBREVIATIONS

API	Academic Performance Index
AVID	Advancement Via Individual Determination
BTSA	Beginning Teacher Support and Assessment
CAHSEE	California High School Exit Examination
CALPADS	California Longitudinal Pupil Achievement Data System
CalSTRS	California State Teachers' Retirement System
CALTIDES	California Longitudinal Teacher Integrated Data Education System
CCESA	County Superintendents Educational Services Association
CCTC	California Commission on Teacher Credentialing
CDE	California Department of Education
CMO	Charter Management Organization
CPA	California Partnership Academy
CST	California Standards Test
CSTP	California Standards for the Teaching Profession
CSU	California State University
CTE	Career Technical Education
EAP	Early Assessment Program
FACT	Formative Assessment for California Teachers
GDP	Gross Domestic Product
IAS	Institute for Advanced Study
IHE	Institution of Higher Education
ITSDR	Instructional Time and Staff Development Reform
NCLB	No Child Left Behind Act of 2001
QEIA	Quality Education Investment Act
PLC	Professional Learning Community
RSDSS	Regional System for District and School Support
SBE	State Board of Education
SLC	Small Learning Community
TAP	Teaching as a Priority
TPA	Teaching Performance Assessment
TCF	Teaching and California's Future
TPE	Teaching Performance Expectations
UC	University of California

EXECUTIVE SUMMARY

Our nation needs an educated young citizenry with the capacity to contribute to and gain from the country's future productivity, understand policy choices, and participate in building a sustainable future. (Carnegie/LAS Commission, 2009)

California has suffered mightily through the economic recession of the last few years. Since August 2006, one and a half million Californians have lost their jobs and the unemployment rate has skyrocketed from 4.9% to 12.2% (California Employment Development Department, 2009). As state policymakers search for paths toward recovery, all signs point to the importance of a well-educated workforce. Yet the supply of college-educated workers in California has not kept up with demand, and projections show that the state will suffer a serious shortfall of college graduates by 2025 if current trends continue (Reed, 2008). For individuals, the stakes are similarly high. The wages of workers with college degrees have increased substantially over the past decade, and as demand grows so should compensation. In contrast, the wages of workers without a high school diploma are significantly lower (Alliance for Excellent Education, 2009; Baum & Ma, 2007); these workers—as well as those with just a high school diploma—can expect to see a decline in job opportunities and erosion of compensation (Reed, 2008).

Cognizant of the ever-evolving demands of the economy, state policymakers have raised state standards and implemented a series of accountability measures for both schools and students. Achievement results have been mixed. On the positive side, the number and percentage of students who are proficient on the California Standards Tests (CST) has increased since it was initiated in 2003 (rising from 35% to 50% from 2003 through 2009 in English-language arts, for example). In addition, students are taking more demanding courses—the types of courses that help prepare them for college, such as algebra, biology, geometry, and chemistry. With more students taking advanced courses and overall proficiency rates rising, the absolute number of students reaching proficiency levels is increasing substantially. In 2003, just over 106,000 students in the entire state tested proficient or above in algebra; by 2009, that number had doubled to more than 212,000 (California Department of Education [CDE], 2009a).

These positive patterns, however, are offset by other trends. Nearly one in five students entering ninth grade do not graduate from high school, and the figures are far worse for African American and Latino students. By ethnicity, the dropout rate for students who began high school in 2004 was 33% for African Americans, 24% for Latinos, 12% for Whites, and 8% for Asians (CDE, 2009b).

Even among those who graduate from high school, many are ill prepared for the workforce and for postsecondary education. A minority of those who graduate complete the courses required for admission to a 4-year public university. In 2007–08, just 34% of graduates completed all the courses required for University of California (UC) and California State University (CSU) entrance; that figure ranged from 23% of Latino and African American graduates to 59% of Asian graduates (CDE, 2009c).

Across the state, educators are taking steps to address the challenge of underperformance with the goal of ensuring all students graduate from high school and are prepared for any postsecondary option they choose, whether they go straight into the workforce, attend a 2- or 4-year college, or accept an apprenticeship.

At the high school level, these improvement efforts take various forms, but all seek to alter the high school experience for students through some combination of increasing academic

rigor and expectations, creating more personalized learning environments, increasing the relevance of coursework, and increasing the level of academic and social supports.

These efforts have received considerable private and public support. The Bill and Melinda Gates Foundation and the Carnegie Corporation of New York have invested heavily in high schools, including the development of small schools and the breakup of large, comprehensive high schools. Governor Schwarzenegger has been a strong advocate of career technical education (CTE), which integrates core academic knowledge with technical and occupational knowledge, and Senate Bill 1104 (Chapter 576, Statutes of 2008, Scott) streamlined and simplified CTE credentialing. The James Irvine Foundation has supported the expansion of multiple pathways—multiyear programs of study that connect classroom learning with real-world applications through the integration of a rigorous academic curriculum, a demanding CTE course sequence, and work-based learning. State support for multiple pathways was codified in Assembly Bill 2648 (Chapter 681, Statutes of 2008, Bass).

Given the centrality of teachers to improving student achievement, a relevant policy issue is whether these high school improvement efforts adequately address teacher capacity. That is, *as high schools change, are teachers prepared for the changes?* To answer this question, we conducted a multimethod study that included a statewide survey, a review of current policies and practices, in-depth case studies, and analysis of secondary data sources. Our data collection efforts focused on understanding the implications of these strategies to improve California high schools for teacher practice and the teacher development system.

THE TEACHER WORKFORCE IN CALIFORNIA

To fully understand the context in which California high schools are operating as they undertake efforts to improve student outcomes, we provide an overview of the available data on the teacher workforce. Where possible, we report data for the entire teacher workforce and then highlight the relevant trends for high school teachers. The key trend to report is that with fewer teaching jobs and a tighter labor market, California's overall teacher workforce shrank in 2008–09 for the first time since 2003–04 and the number of prospective teachers is continuing to decline. Likewise, the overall number of underprepared teachers has declined dramatically, but inequities in their distribution persist. Key findings include the following:

- The size of the overall teacher workforce decreased from more than 310,000 in 2007–08 to less than 307,000 in 2008–09, but the number of high school teachers has increased over the past 5 years, from approximately 74,000 to more than 79,000, consistent with a continuing rise in high school enrollment during this period. In the coming years, however, high school enrollment is expected to decline by 5% before beginning to grow again in 2017–18.
- Substantially fewer beginning teachers are entering the profession. From 2007–08 to 2008–09, the number of first- and second-year teachers dropped by more than 20%, from more than 35,000 to less than 28,000. This decline was across all schools levels.
- Fewer credential candidates are entering teacher preparation programs, so fewer individuals are graduating with teaching credentials. From 2001–02 through 2006–07, the number of enrollees in teacher preparation programs declined by one-third, from more than 77,000 to less than 52,000.
- The number of underprepared teachers has decreased dramatically, from more than 42,000 at the beginning of the decade to less than 11,000 in 2008–09, representing

approximately 3.5% of the workforce. The percentage of underprepared teachers is highest in high schools, with about 5% underprepared, the majority in intern programs.

- The maldistribution of underprepared teachers remains a concern across all levels of schooling. Whereas only 1% of the teachers on average in schools in the highest achievement quartile are underprepared, 5% of teachers on average in the lowest achievement quartile are underprepared. The same pattern of greater concentration of underprepared teachers in low-performing schools is evident in high schools.
- Out-of-field teaching in high schools remains a challenge across all content areas, but the percentage of teachers with out-of-field assignments dropped slightly between 2004-05 and 2008-09 in all content areas except social science.
- The state is moving ahead with plans to build a teacher data system, the California Longitudinal Teacher Integrated Data Education System (CALTIDES), to house credential and authorization data. The assignment of unique teacher identifiers will enable the state to track teacher mobility and retention for the first time. The contract to build CALTIDES is set to begin in March 2010.

REDESIGNING CALIFORNIA'S HIGH SCHOOLS FOR THE 21st CENTURY

To assess the extent to which California high school teachers are prepared for and supported in teaching in new and redesigned high schools, we first set out to understand what these schools are like—what they are seeking to do and how they are doing it. Although we found that high schools have a wide range of priorities, we observed a focus on efforts to increase the rigor of the academic curriculum, to make learning more relevant, and to better connect students to school, as well as to provide extensive academic and social supports and interventions. Specifically, we found the following:

- Priorities in California high schools include ensuring that all students have basic reading, writing, mathematics, and writing skills; the academic skills necessary to be successful in college; and 21st century skills, such as problem-solving, critical thinking, communication, and collaboration.
- Academic rigor for California high school students is being raised through such strategies as increased graduation requirements, dual-enrollment opportunities with local colleges, greater academic support for middle-performing students to complete college preparatory courses, and improvements in instructional practice intended to enable more students to learn at high levels.
- By infusing real-world applications, authentic assessments, work-based learning opportunities, and technical coursework into the curriculum, many high schools in California are attempting to make academic content more relevant and to better engage students in the learning process.
- To foster better relationships between students and staff and among students, many large comprehensive high schools are breaking up into smaller learning communities, new small high schools are being created, and schools across the size spectrum are establishing structures to enable adults to work with smaller groups of students over time.
- To support efforts to prepare students for college and the workplace, many California high schools are working to create the conditions for learning and to develop students' basic literacy, mathematics, and study skills.

KNOWLEDGE, SKILLS, AND UNDERSTANDINGS FOR TEACHING IN REDESIGNED HIGH SCHOOLS

Redesigning high schools and creating new ones that are focused on providing students with the tools to succeed in college and the world of work places many demands on teachers. High school teachers often must do more and do things differently; as a result, they need new and different core understandings and beliefs, content knowledge, pedagogical skills, and professional expertise. Specifically, we found:

- Understanding of the rationale for a given strategy fosters teacher support for implementation. Regardless of which strategies a high school is working to adopt, teachers must understand the nature of each strategy and believe in its validity. Teachers' understanding and buy-in are essential because these reforms change their work, often increasing their responsibilities.
- To make learning more challenging and relevant, high school teachers need knowledge of academic or technical subjects and their real-world applications. In many high schools, teachers are expected to know and be able to communicate the real-world and career applications of their subject matter, either through direct industry experience or through some understanding of the industry area being emphasized.
- To implement a given strategy effectively, high school teachers need specific pedagogical skills associated with the demands of that strategy. For instance, in high schools that rely heavily on interdisciplinary projects and other authentic assessments of student learning, such as presentations, portfolios, and exhibitions, teachers must know how to develop such assessments and provide instruction that cuts across content areas and develops students' critical thinking, analytical, and communication skills.
- Teachers need additional professional expertise in areas that transcend the classroom to work effectively in redesigned high schools. Specifically, they need strong interpersonal communication and collaboration skills to work closely with colleagues, industry and higher education partners, and families, and to interact with students in new ways.

THE TEACHER DEVELOPMENT SYSTEM

California's high schools are changing in response to pressure for more students to graduate with the knowledge and skills needed for success in the 21st century economy. At issue is whether the California teacher development system prepares and supports a high school teacher workforce with the knowledge, skills, understandings, and expertise needed to successfully implement the various strategies in use in California high schools. Our research revealed that the California teacher development system as a whole is not sufficiently aligned with the high school reform movement; that is, the state's policies and infrastructure to recruit, train, and support teachers have not kept pace with the increasing demands on students and teachers. The state has long been challenged to recruit and provide sufficient training and support for educators. Now, with increased expectations for students and teachers, our fragile teacher development system is not being strengthened but is instead being threatened by state budget cuts.

Lacking robust system-level support for teacher development aligned with their improvement strategies, many California high schools are developing their own strategies to recruit, hire, and support teachers who can implement school improvement strategies and, more generally, prepare students for the 21st century. Key school-based strategies for teacher preparation, recruitment, and hiring included the following:

- Working with local colleges and universities to train and support novices to generate a pool of candidates whose knowledge and skills are aligned with their improvement strategies.
- Using strategic recruitment and hiring practices, such as setting clear expectations for the job demands during interviews and requiring demonstration lessons, to identify candidates who fit well with a school's vision.
- Involving teachers in the hiring process to identify potential new hires who have the knowledge and skills to implement school improvement efforts.

Despite strategic hiring practices, many high schools—particularly those where reforms are most urgently needed—struggle to attract and retain teachers who have the knowledge and skills to implement the schools' design principles.

Even when high schools are able to overcome these challenges and successfully hire *new* teachers who support and are equipped to implement school improvement efforts, the schools need to ensure that *all* staff have the knowledge and skills to provide instruction that is aligned with their strategies. Key school-based strategies for teacher professional development and new teacher induction include the following:

- Creating opportunities for staff collaboration and active teacher learning that is grounded in a school's context and aligned with a school's design principles.
- Using in-house specialists such as instructional coaches to support individual teachers or groups of teachers as they work together on instructional issues relating to school improvement efforts.
- Attending reform-specific conferences as a staff to generate support for new ideas and provide opportunities for teachers to work together while benefitting from outside resources and expertise.
- Visiting other schools to enable teachers to learn from their peers who are implementing similar innovations at similar schools and bringing experts in to develop the knowledge, skills, and expertise that directly match the school's needs and expectations for teachers.
- Providing targeted supports for new teachers through on site induction programs to ensure that new teachers have the knowledge and skills to implement a school's design principles.

SCHOOL LEADERSHIP

The challenge of organizing school improvement efforts and maintaining systems to support teachers requires strong leadership at the school site. We found that the extent and quality of on-the-job support for teachers in implementing their schools' improvement strategies varies based on this leadership. In addition to providing explicit support for teacher development aligned with their school's improvement strategies, principals and other school leaders play a critical role in motivating teachers to engage in school improvement initiatives and building systems of shared leadership. These efforts help to create conditions that support teachers in developing and refining skills that directly affect instruction and the implementation of school improvement efforts. Key strategies in use by leaders at California high schools include the following:

- Actively engaging in the reform strategies themselves and serving as role models to garner the support and commitment of their faculty members.
- Presenting data to demonstrate the need for change and to document the efficacy of the efforts to build support for improvement efforts.
- Using teacher evaluations to identify the strengths and weaknesses of individual teachers with regard to the school's improvement strategies and tailoring support to improve teachers' skills and knowledge for implementing the strategies.
- Supporting teachers to be innovative and to spearhead and lead school improvement efforts. Several high schools have distributed leadership models that include an expanded role for teacher leaders in leading the implementation of school redesign efforts.
- Sharing leadership to broaden the base of support for reform efforts and to ensure continuity of improvement efforts.

However, the ability of school leaders to provide this support varies widely. High school principals, for instance, face many competing demands for their time, and they may not have the knowledge or skills to provide teachers with the supports needed. At the same time, on-the-job support for principals is limited, and nearly half of high school principals statewide reported they do not feel well supported by their district.

* * *

Our discussion of these school-level efforts to build closer alignment between the demands of their reforms and the knowledge and skills of their teachers is intended to be instructive to policymakers and education reform leaders at the national, state, and local level. We turn now to the Center for the Future of Teaching and Learning's recommendations for state policymakers and education reform leaders.

RECOMMENDATIONS FROM THE CENTER FOR THE FUTURE OF TEACHING AND LEARNING

Our research indicates that many educators throughout California are working to transform high schools to meet 21st century needs, yet the state's teacher development system is not keeping pace with these improvements. The system at large is not currently providing adequate preparation or support for teachers or administrators that would enable them to carry out all their responsibilities in high schools that have adopted innovative strategies.

The recommendations presented here specify ways that state policymakers can help close the gap between the preparation and support that teachers will need in the future and what they currently receive. The recommendations recognize California's budget context and are designed to be realistic, drawing on existing, realigned, or earmarked federal resources. Because high school enrollment is expected to decline by 5% before growing again beginning in 2017–18, the next several years provide an opportunity to strengthen the existing secondary teacher and administrator workforce. These recommendations, derived from data collected over the past 2 years, are offered to California's education leaders and support organizations, policymakers, philanthropic organizations, and others interested in ensuring that our students succeed in high school and beyond.

Build a statewide teacher development system that is better aligned with the needs of high schools that are making a concerted effort to prepare students for success in college, participation in civic life, and the 21st century workforce.

- **Gather the data.** Initiate a second phase of CALTIDES to collect data on both the teacher and administrator workforce. Federal funding dedicated to the construction of comprehensive data systems can be used to secure data from all appropriate agency sources. Information gathered should be of sufficient scope to guide development of policy for building workforce capacity leading to student success in high school and beyond. In addition to teacher data, CALTIDES should include a range of administrator data broad enough to effectively inform policies for strengthening education leadership, with special attention paid to the principalship.
- **Leave no federal funds behind.** State policymakers should apply for all available federal funds dedicated to instructional improvement and reform, ensuring that a portion of the funding be used to improve the ways teachers and administrators address learning conditions in high schools that are working to better prepare students for success in college and the 21st century workforce.
- **Coordinate support for local district and institution of higher education partnerships as they seek federal funds for transforming educator preparation.** State leadership, including the California Department of Education, the Commission on Teacher Credentialing, and the Office of the Secretary of Education, in partnership with higher education institutions, should provide coordinated support for local districts to seek available federal funds dedicated to transforming educator preparation in ways that better align preparation, induction, and professional development programs for teachers and administrators.
- **Revise preparation, induction, and accreditation standards to reflect learning conditions in high schools designed to integrate academic and career technical education.** State leadership, including the Commission on Teacher Credentialing, should work toward revising preparation and induction standards and program accreditation procedures to ensure that principal preparation and teacher preparation, induction, and continuing professional development reflect the learning conditions in high schools designed to integrate academic and career technical education.
- **Systematically identify and remove barriers to integrating academic and career technical education.** State leadership, including the California Department of Education, the Commission on Teacher Credentialing, and the Office of the Secretary of Education, should review all pertinent Education Code, regulatory, and administrative requirements to identify any impediments to the integration of academic and career technical education.
- **Use federal funding to generate increases in the supply of high school teachers who can work effectively in 21st century high schools.** State policymakers, including the Governor and the Legislature, should take steps now to ensure a sufficient supply of fully prepared teachers for all students, particularly students in challenging school settings. These steps specifically should include (1) earmarking available federal funding for the University of California and the California State University systems for teacher preparation to increase full-time equivalence in teacher preparation programs, (2) linking this funding to redesigned preparation programs offering the set of skills necessary for teachers and administrators to succeed in schools that are transforming instruction, and (3) linking this funding to projections for teacher demand by county over the next decade.

- **Guide and support teachers who take on advisory roles.** State leadership, especially the Superintendent of Public Instruction, should include as a priority for the California Department of Education's P-16 Council the discussion and design of guidelines for local teacher advocate advisory programs. As part of this effort, discussants should consider the use of 10th-grade counseling funding to identify and train a broader base of adult support for students in accordance with the guidelines set forward in the Program Advisory for Counseling 10th-Grade Students.

Build a structure of support for local school and district efforts to match curriculum and instruction to post secondary 21st century demands.

- **Guide existing state and federal funding toward professional development opportunities specifically aligned with local school reform strategies.** Policymakers should review resources available to local school districts for professional development to better guide existing state and federal funding toward activities specifically aligned with local school reform strategies, including those that create opportunities for staff to collaborate on the ways student pathways through high school can be made more rigorous and relevant to students' college and career choices.
- **Use Title I funds to enable out-of-field teachers to master subject matter.** State and local policymakers should consider using federal Title I funds to allow local districts to provide intensive test preparation for teachers with out-of-field assignments to enable them to master the subject matter needed to successfully engage students and to become fully certified in compliance with federal statutes.
- **Help high school principals—with targeted professional development, support, and data—to improve their own schools.** Through high-quality and targeted professional development, provide principals with the guidance and support they need to build understanding of and personal commitment to improvement efforts that ensure students are prepared for success in college, employment, and full participation in civic life. Data that show evidence of the potential of the improvement effort and guide its implementation should be readily available for use by staff in these efforts.
- **Infuse the process of hiring new teachers with staff involvement, clear expectations, and demonstration lessons.** Local school districts should be encouraged and supported in their efforts to transform the process of hiring new teachers, including involving staff at the local school level in hiring decisions based on a clear set of expectations, and to require demonstration lessons to identify those potential hires most likely to support and implement the schools' improvement efforts.
- **Reform personnel evaluations by linking them to data that support improved practice.** Education leadership and members of the policy community should encourage the reform of personnel evaluations to focus on the efforts of (1) administrators to offer teachers support and assistance keyed to student performance, attendance, retention and course completion data and (2) teachers to successfully use the data, as well as the support and assistance provided by the principal, to strengthen practice.

Escalate current efforts to provide equitable access to high-quality instructional programs in order to address the learning gap and ensure each and every student is fully prepared to succeed beyond high school.

- **Ensure education equity.** State policymakers should carefully monitor the impact of categorical funding “flexibility” on ongoing efforts to ensure education equity for all students, with special attention to those attending low-performing schools. Policymakers should take all necessary steps to maintain the set of interrelated, research-based initiatives enacted to decrease substantially the number of underprepared teachers while promoting equity in access to fully prepared teachers and administrators.
- **Align programmatic outcomes with the Legislature’s intent.** Outcomes included under the provisions of statewide programs that are not subject to categorical flexibility, including the Quality Education Investment Act (QEIA), should be reviewed and monitored and, if necessary, revised to ensure that the intent of the Legislature is in fact being realized.

CHAPTER 1

INTRODUCTION

Our nation needs an educated young citizenry with the capacity to contribute to and gain from the country's future productivity, understand policy choices, and participate in building a sustainable future. (Carnegie/LAS Commission, 2009)

California has suffered mightily through the economic recession of the last few years. Since August 2006, one and a half million Californians have lost their jobs and the unemployment rate has skyrocketed from 4.9% to 12.2% (California Employment Development Department, 2009). As state policymakers search for paths toward recovery, all signs point to the importance of a well-educated workforce.¹ Yet the supply of college-educated workers in California has not kept up with demand, and projections show that the state will suffer a serious shortfall of college graduates by 2025 if current trends continue (Reed, 2008). For individuals, the stakes are similarly high. The wages of workers with college degrees have increased substantially over the past decade, and as demand grows so should compensation. In contrast, the wages of workers without a high school diploma are significantly lower (Alliance for Excellent Education, 2009; Baum & Ma, 2007); these workers—as well as those with just a high school diploma—can expect to see a decline in job opportunities and erosion of compensation (Reed, 2008).

Just receiving a college degree is no guarantee that a person is prepared for the 21st century economy, however. Employers are concerned that graduates increasingly lack the skills that new jobs demand. A report by The Conference Board, a leading business and membership organization, found “wide gaps between the skills that businesses value and the skills most graduates actually have.” Employers have reported that recent U.S. high school and college graduates lack essential workforce readiness skills, including basic math and science as well as key applied skills needed for the 21st century, such as critical thinking, leadership, teamwork, and communication (Casner-Lotto & Barrington, 2006). Creating a stronger workforce will require strengthening the entire educational system from kindergarten up.

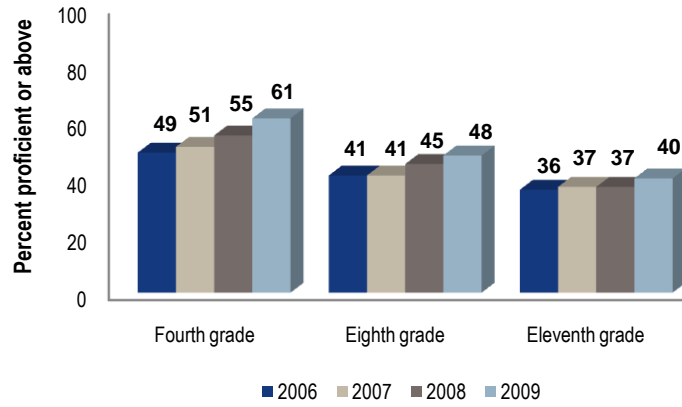
When we examine recent California K-12 student outcomes, the findings are mixed. On the positive side, the number and percentage of students who are proficient on the California Standards Tests (CST) has increased since it was initiated in 2003. Exhibit 1 presents data from the 4 most recent school years. In addition, students are taking more demanding courses—the types of courses that help prepare them for college, such as algebra, biology, geometry, and chemistry. For example, nearly 129,000 more students took the geometry CST in 2009 than 6 years earlier, an increase of 48% (Exhibit 2). With more students taking advanced courses and overall proficiency rates rising, the absolute number of students reaching proficiency levels is increasing substantially. In 2003, just over 106,000 students in the entire state tested proficient or above in algebra; by 2009, that number had doubled to more than 212,000 (California Department of Education [CDE], 2009a).

As state policymakers search for paths toward recovery, all signs point to the importance of a well-educated workforce.

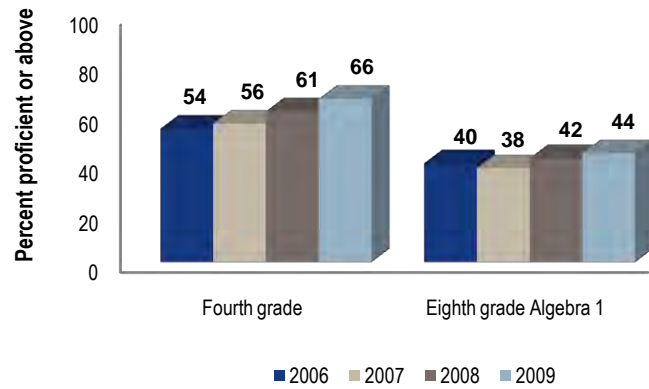
¹ Estimating the impact of increased education on economic productivity is an inexact science. One recent study (McKinsey & Company, 2009) found that if the United States increased its educational levels to those of better performing nations such as Finland and Korea, the gross domestic product in 2008 could have been \$1.3 trillion to \$2.3 trillion higher (or 9 to 16%).

Exhibit 1
CST Results by Grade and Subject, 2006–09

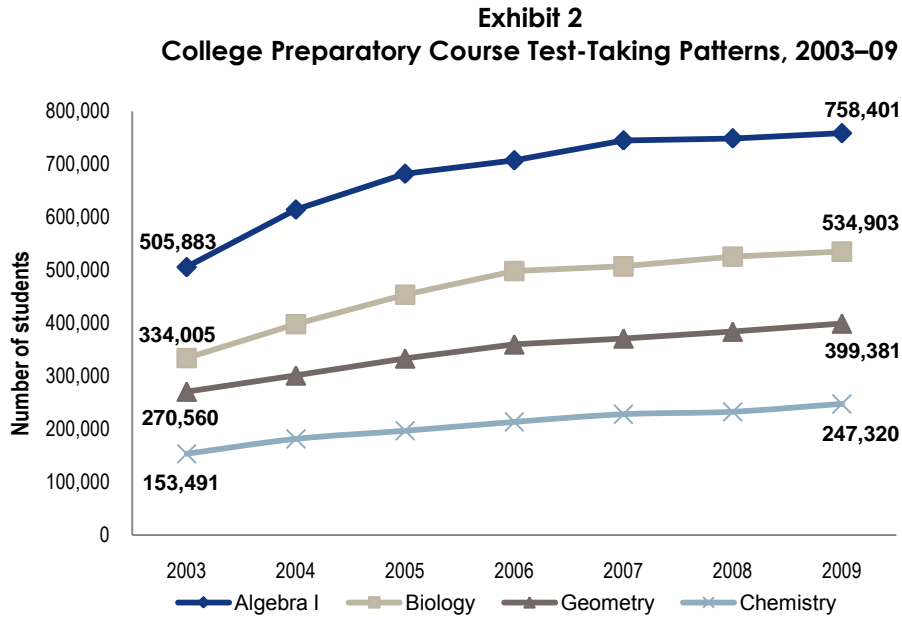
English-Language Arts



Mathematics



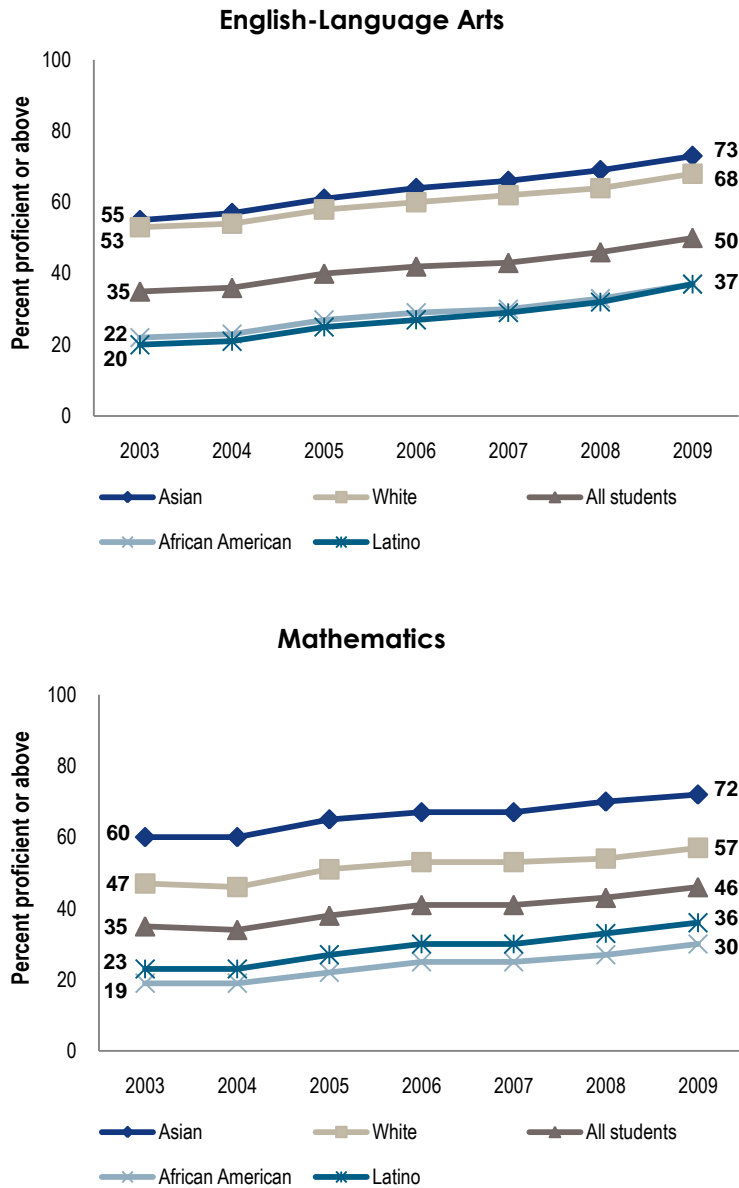
For source and technical information, see Appendix C.



These positive patterns, however, are offset by other trends. Although achievement has risen across ethnic groups, a wide gap remains between African American and Latino students on the one hand and White and Asian students on the other (Exhibit 3). For example, in 2003, there was a 35 percentage point gap between Asians (55% proficient) and Latinos (20% proficient) in English-language arts. By 2009, both groups had gained substantially, but the gap remained at 36 percentage points (73% vs. 37%, Exhibit 3). The same trend holds true in mathematics where achievement for both African American and Asian students increased, but a 41 percentage point gap between African American and Asian students in 2003 (60% vs. 19%) is now a 42-point gap (72% vs. 30%) (CDE, 2009a).

Although achievement has risen across ethnic groups, a wide gap remains between African American and Latino students on the one hand and White and Asian students on the other.

**Exhibit 3
CST Results by Ethnicity, 2003–09**



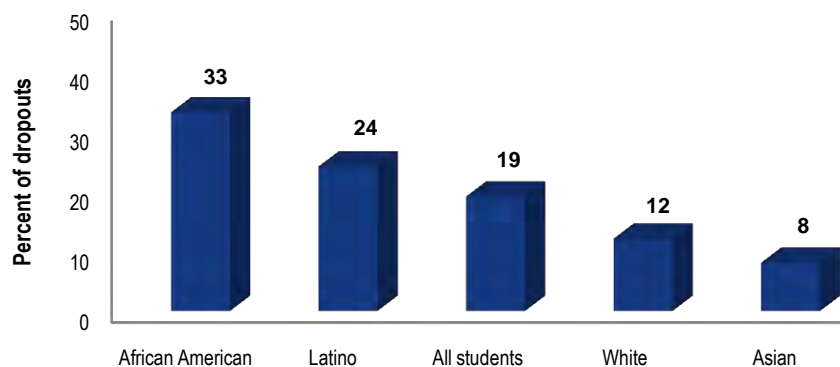
One in five students entering ninth grade do not graduate from high school. The figures are far worse for African American and Latino students.

For source and technical information, see Appendix C.

A second troubling statistic is that nearly one in five students entering ninth grade do not graduate from high school. The figures are far worse for African American and Latino students. By ethnicity, the dropout rate for students who began high school in 2004 was 33% for African Americans, 24% for Latinos, 12% for Whites, and 8% for Asians (CDE, 2009b; Exhibit 4).²

² The CDE calculates dropout rate using an adjusted derived formula. The formula adjusts for dropouts in a given year by calculating the reported dropout total for grades 9–12 minus the reenrolled total of grade 9–12 dropouts plus the total of grade 9–12 lost transfers. The adjusted

Exhibit 4
Percentage of High School Dropouts by Ethnicity, 2007–08



For source and technical information, see Appendix C.

Even among those who graduate from high school, many are ill prepared for the workforce and for postsecondary education. A minority of those who graduate complete the courses required for admission to a 4-year public university. In 2007–08, just 34% of graduates completed all the courses required for University of California (UC) and California State University (CSU) entrance; that figure ranged from 23% of Latino and African American graduates to 59% of Asian graduates (CDE, 2009c). Moreover, many students who do gain admission to California’s public colleges and universities must take remedial coursework in English and mathematics. Among the approximately 40,000 first-time freshmen admitted annually to the CSU system—the largest university system in the country—more than 60% require remedial coursework in English, mathematics, or both (CSU, 2009a). Recent results from CSU’s Early Assessment Program (EAP) indicate that just 13% of 11th-grade students who were tested as part of the EAP in mathematics were deemed “ready for college.”³ In English, the figure was 16% (CSU, 2009b).

Even among those who graduate from high school, many are ill prepared for the workforce and for postsecondary education.

data for that single year is used to calculate a 4-year derived dropout rate, which estimates the percentage of students who would drop out over a 4-year period. The adjusted derived 4-year dropout rate is 18.9% based on 2007–08 data. Details are available in the DataQuest report for Dropouts by Ethnic Designation by Grade, accessible at <http://dq.cde.ca.gov/dataquest/>.

³ To address the large numbers of students requiring remedial instruction, CSU has been collaborating with the CDE and the California State Board of Education on the EAP. Through the EAP, college-bound high school students can take additional items on the 11th-grade English and mathematics CSTs, as well as a writing sample on the English CST, to determine whether they are prepared for university-level coursework. Students who meet CSU expectations are exempt from additional CSU placement tests; those who do not may receive extra support during their senior year to prepare for college. In addition to early testing and supports during the 12th grade, the program provides professional development workshops for high school English and mathematics teachers.

MEETING THE DEMANDS FOR MORE ADVANCED PREPARATION

Across the state, educators are taking steps to address the challenge of underperformance with the goal of ensuring all students graduate from high school and are prepared for any postsecondary option they choose, whether they go straight into the workforce, attend a 2- or 4-year college, or accept an apprenticeship.

At the high school level, these improvement efforts take various forms, but all seek to alter the high school experience for students through some combination of:

- Increasing academic rigor and expectations for some or all students (e.g., requiring all students to complete a-g college entrance course requirements,⁴ increasing or enhancing Advanced Placement/International Baccalaureate course enrollment, and expanding dual-enrollment options such as early college);
- Increasing “personalization” by offering smaller learning environments (including small learning communities and smaller schools) and establishing structures to enable adults to work with smaller groups of students over time;
- Increasing the relevance of coursework by creating explicit connections between classroom instruction and the real world (e.g., through career academies, internships and other work based learning opportunities, and multiple pathways programs that integrate academic coursework and career technical education); and
- Increasing the level of academic and social supports and interventions (e.g., through intensive remediation in reading and mathematics, one-on-one tutoring, development of study and organizational skills, and behavior management).

These efforts have received considerable private and public support. The Bill and Melinda Gates Foundation and the Carnegie Corporation of New York have invested heavily in high schools, including the development of small schools and the breakup of large, comprehensive high schools into small learning communities. Governor Schwarzenegger has been a strong advocate of career technical education (CTE), which integrates core academic knowledge with technical and occupational knowledge. Senate Bill 1104 (Chapter 576, Statutes of 2008, Scott) streamlined and simplified CTE credentialing to make it easier for industry professionals to become CTE teachers. The bill reduced the work experience requirement for the preliminary CTE credential to 3 years from 5 years and stipulated that the preliminary CTE credential be valid for 3 years. The James Irvine Foundation and ConnectEd: The California Center for College and Career have supported the expansion of multiple pathways—multiyear programs of study that connect classroom learning with real-world applications through the integration of a rigorous academic curriculum, a demanding CTE course sequence, and work-based learning. State support for multiple pathways was codified in Assembly Bill 2648 (Chapter 681, Statutes of 2008, Bass), which also requires a report by December 2009 on the feasibility of expanding the multiple pathways approach in California high schools.

TEACHING AND CALIFORNIA'S FUTURE

In this document, its 11th annual report on the status of the teaching profession in California, the Center for the Future of Teaching and Learning focuses on current efforts to improve high school education and their implications for teachers. One overarching research

Across the state, educators are taking steps to address the challenge of underperformance with the goal of ensuring all students are prepared for any postsecondary option they choose.

⁴ The minimum course requirements for admission to California's 4-year public universities.

question guided the study: To what extent are California high school teachers prepared for and supported in teaching in reform-oriented California high schools?

This report, part of the Center's Teaching and California's Future (TCF) initiative, is intended to provide California policymakers with objective and timely data on the state's teacher workforce. TCF has five central goals:

1. Every student will have fully prepared and effective teachers.
2. Every district will be able to attract and retain fully qualified, effective teachers.
3. Every teacher will work in a safe, clean facility conducive to learning; have adequate materials to teach with; and have the guidance and support of a capable leader.
4. Every pathway into teaching will provide high-quality preparation and be based on California's standards for what students should know and be able to do.
5. Every teacher will receive high-quality support as he or she begins teaching, as well as continuing professional development, to ensure that he or she stays current in his or her field.

Research for this report was conducted by a team at SRI International, an independent research and consulting organization.

OVERVIEW OF THE STUDY

It is too early to draw conclusions about the impact of efforts to improve high schools because many of them are relatively new and have been implemented on a large scale only in the past decade. Still, early research on these initiatives has led to a clear conclusion: Efforts to remake high schools through structural changes alone (e.g., reducing size) can make schools nicer places to study and learn, but achievement gains are realized only when schools focus on improving teaching and learning (see, for example, Means et al., 2008). These findings are consistent with a long line of research that has identified the quality of classroom teachers as the single most important school-related factor influencing student achievement (see, for example, Rivkin, Hanushek, & Kain, 2001).

Given the centrality of teachers to improving student achievement, a relevant policy issue is whether these high school improvement efforts adequately address teacher capacity. That is, *as high schools change, are teachers prepared for the changes?*

Our data collection efforts focused on understanding the implications of these strategies to improve California high schools for teacher practice and the teacher development system. The specific research questions were the following:

- What is the composition of the high school teacher workforce?
- What types of strategies are California high schools implementing that emphasize the preparation of students for success in a range of postsecondary options and the global economy of the 21st century?
- What specific knowledge, pedagogical skills, and professional expertise do high school teachers need to prepare all students for postsecondary success?
- To what extent do high school teachers have this knowledge, these pedagogical skills, and this professional expertise?

Efforts to remake high schools through structural changes alone (e.g., reducing size) can make schools nicer places to study and learn, but achievement gains are realized only when schools focus on improving teaching and learning.

- To what extent do high school teachers have access to appropriate professional learning experiences that provide them the knowledge, skills, and professional expertise to prepare students for postsecondary success?
- To what extent do principals feel prepared and supported to lead in reform-oriented high schools?
- To what extent do state policies support or inhibit efforts to prepare and support teachers to teach in these reform-oriented high schools?

To answer these questions, we conducted a multimethod study that included a statewide survey, a review of current policies and practices, in-depth case studies, and analysis of secondary data sources.

Statewide survey of high school principals. We conducted a statewide survey of 414 high school principals during the 2008–09 school year to understand the lay of the land for California high school improvement efforts. The survey addressed school goals and key strategies, supports for students, school structure, teacher knowledge and skills, supports for teachers, and barriers to meeting school goals. The sample of 414 was stratified by charter status; it included the universe of charter high schools (140) and a randomly selected sample of non-charter high schools (274). Two hundred thirty-four principals completed the survey for a response rate of 57%. See Appendix B for additional information about survey methodology.

Background research on policy and practice. In summer 2008, we conducted background research to understand the landscape of existing high school improvement initiatives in California. We reviewed documents related to state and federal policies and programs, and we identified the 20 districts with the largest high school enrollment in the state in 2007–08, as well as 22 influential, reform-oriented intermediaries and other organizations (e.g., charter management organizations, education foundations). From these sources, we compiled information about efforts to implement rigorous high school curricula, form explicit connections between academic content and real-world applications, and support a personalized learning environment, including information about educator training and professional development that equips teachers to engage in these efforts. In fall 2008, the research team conducted semistructured telephone interviews with 15 district administrators and organizational directors identified in our background research in order to obtain the most current information about the high school initiatives and improvement efforts occurring across the state.

Case studies in high schools across the state. To understand secondary school reform in greater depth, we conducted case studies in 16 high schools engaged in various improvement strategies. To identify a sample of case study schools, we solicited nominations from more than 90 education reform leaders, academics, and practitioners. The schools that we ultimately selected for case studies represented a range of geographic locations, demographics, sizes, and reform models. They included comprehensive high schools, high schools that had broken into small learning communities (SLCs), and small autonomous high schools that had been designed around a specific strategy. They also varied in the level of student selectivity (e.g., some schools where attendance was exclusively through neighborhood zoning, some where students opted in to a specific program within the school, and some where all students had to apply or actively choose to attend).

The final sample included eight comprehensive high schools, of which six contained at least one career-themed or non-career-themed SLC; some of the career-themed SLCs were California Partnership Academies (CPA) and/or were implementing the multiple pathways

approach.⁵ One school had gone wall-to-wall with SLCs, meaning that all students were assigned to an SLC. The sample also included eight small high schools, of which two were charter schools, two were early college high schools, and one was implementing the multiple pathways approach schoolwide.

In each of the 16 high schools, researchers conducted semistructured interviews with school principals and, where appropriate, with one or two additional school leaders responsible for coordinating or managing programs of interest (e.g., a director of instruction; an assistant principal overseeing an SLC or career academy; a school coordinator who manages student internships, career and technology education course offerings, or dual-credit options). In each school, we also interviewed as many as nine teachers (depending on school size) who represented a range in teaching experience, grade levels, content areas, and responsibilities. For 10 of the case study schools, researchers also interviewed district administrators who oversee secondary schools, curriculum and instruction, or teacher professional development. In the case of the two charter high schools, researchers interviewed key leaders from the charter management organizations the schools are affiliated with. In total, we interviewed nearly 150 respondents, including 95 teachers. Case studies were conducted in spring 2009. Appendix B provides additional information on case study methodology.

Analysis of secondary data on the teacher workforce. To determine the composition of the teacher workforce, we used publicly available data from the California Department of Education. The CDE annually collects data on California's public schools, staff, and students. To conduct a series of analyses on the supply, demand, and distribution of teachers across the state, SRI's research team used data provided through the California Basic Educational Data System, the Free/Reduced Meals Program CalWORKS data files, the API (Academic Performance Index) Growth data file, and the California High School Exit Exam Research File. The research team also used data provided by the California Commission on Teacher Credentialing, the California State Teachers' Retirement System, and the California Department of Finance to conduct additional analyses. See Appendix C for technical information on secondary data.

OVERVIEW OF THE REPORT

In Chapter 2 of the report, we provide basic descriptive information on trends in the overall teacher workforce, highlighting the pipeline of new credentials issued and addressing the issues of out-of-field teaching and underprepared teachers. Where possible, we note relevant trends for high school teachers. Chapter 3 describes the nature of high school reform and redesign emerging across the state, while Chapter 4 discusses the implications of the various reform strategies for teachers' knowledge, skills, and understandings. Chapter 5 takes a look at the teacher development system and how teachers are supported (or not) in developing the necessary knowledge, skills, and understandings. Chapter 6 focuses on the central role of school leaders, including teachers, in shaping and supporting reform efforts. At the beginning of each chapter, we highlight key findings from our research. Chapter 7 distills the lessons learned from this year's research, and Chapter 8 provides the Center's recommendations to policymakers and education leaders for future action.

⁵ In the CPA model, students participate in a 3-year career-themed program during grades 10 through 12. These programs integrate academic and career technical education and include active business and postsecondary partnerships as well as mentorships and internships for students. They are typically structured as small learning communities within larger high schools. See <http://www.cde.ca.gov/ci/g/hs/cpaoverview.asp> for more detail about the program.

CHAPTER 2

THE TEACHER WORKFORCE IN CALIFORNIA

KEY FINDINGS

With fewer teaching jobs and a tighter labor market, California's overall teacher workforce shrank in 2008–09 for the first time since 2003–04, and the number of prospective teachers is continuing to decline. Likewise, the overall number of underprepared teachers has declined dramatically, but inequities in their distribution persist.

- The size of the overall teacher workforce decreased from more than 310,000 in 2007–08 to less than 307,000 in 2008–09, but the number of high school teachers has increased over the past 5 years, from approximately 74,000 to more than 79,000, consistent with a continuing rise in high school enrollment.
- Substantially fewer beginning teachers are entering the profession. From 2007–08 to 2008–09, the number of first- and second- year teachers dropped by more than 20% from more than 35,000 to less than 28,000. This decline was across all school levels.
- Fewer credential candidates are entering teacher preparation programs, so fewer individuals are graduating with teaching credentials. From 2001–02 through 2006–07, the number of enrollees in teacher preparation programs declined by one third, from more than 77,000 to less than 52,000.
- The number of underprepared teachers has decreased dramatically, from more than 42,000 at the beginning of the decade to less than 11,000 in 2008–09, representing approximately 3.5% of the workforce. The percentage of underprepared teachers is highest in high schools, with about 5% underprepared, the majority in intern programs.
- The maldistribution of underprepared teachers remains a concern across all levels of schooling. Whereas only 1% of the teachers on average in schools in the highest achievement quartile are underprepared, 5% of teachers on average in the lowest achievement quartile are underprepared. The same pattern of greater concentration of underprepared teachers in low-performing schools is evident in high schools.
- Out-of-field teaching in high schools remains a challenge across all content areas, but the percentage of teachers with out-of-field assignments dropped slightly between 2004–05 and 2008–09 in all content areas except social science.
- The state is moving ahead with plans to build a teacher data system, the California Longitudinal Teacher Integrated Data Education System (CALTIDES), to house credential and authorization data. The assignment of unique teacher identifiers will enable the state to track teacher mobility and retention for the first time. The contract to build CALTIDES is set to begin in March 2010.

In 2008–09 more than 306,000 teachers were in California’s K-12 system. Of these, 79,000 were high school teachers, working in slightly over 1,200 high schools, serving more than 2 million students.⁶ To fully understand the current context in which California high schools are operating as they undertake efforts to improve student outcomes, we provide an overview of the available data on the teacher workforce. We examine trends in the size of the workforce and the pipeline for new credential holders. We also report on the number, proportion, and distribution of underprepared teachers and on out-of-field teaching. Where possible, we report data for the entire teacher workforce and then highlight the relevant trends for high school teachers.

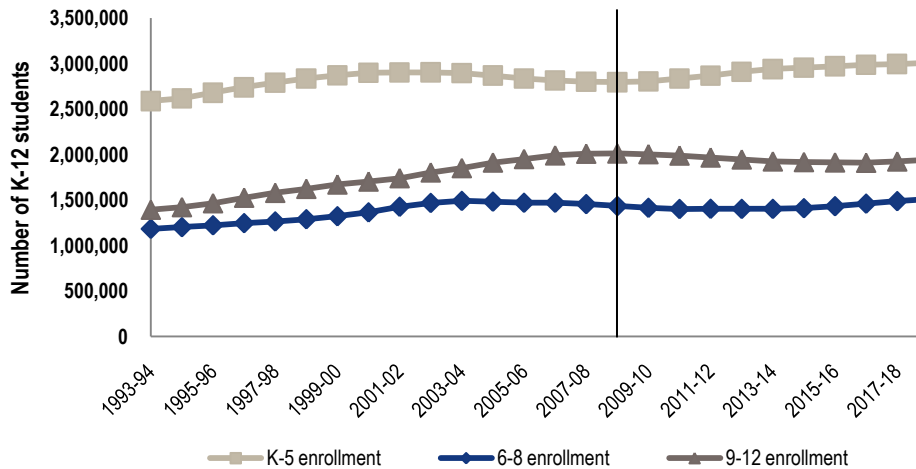
Consistent with K-12 student enrollment patterns, the size of the overall teacher workforce decreased slightly in the last year, whereas the number of high school teachers has increased over the past 5 years.

After more than a decade of explosive growth, enrollment in K-12 schools decreased slightly each year starting in 2005–06. From 2007–08 to 2008–09, enrollment dropped from 6.28 million students to 6.25 million, about half a percentage point (Exhibit A-1). This decline was in elementary and middle school enrollment, however; high school enrollment continued to rise throughout the decade, growing from 1.7 million students in 2000–01 to more than 2 million by 2008–09 (California Department of Finance, 2009; Exhibit 5).

Projections call for these trends to reverse, with a gradual rise in overall enrollment of approximately 4% between 2009–10 and 2018–19, led by a 7% increase at the elementary level. In contrast, high school enrollment is expected to decline by 5% over the next 8 years before beginning to grow again around 2017–18 (California Department of Finance, 2009).

High school enrollment continued to rise throughout the decade, growing from 1.7 million students in 2000–01 to more than 2 million by 2008–09.

**Exhibit 5
Actual and Projected K-12 Enrollment, 1993–94 to 2018–19**

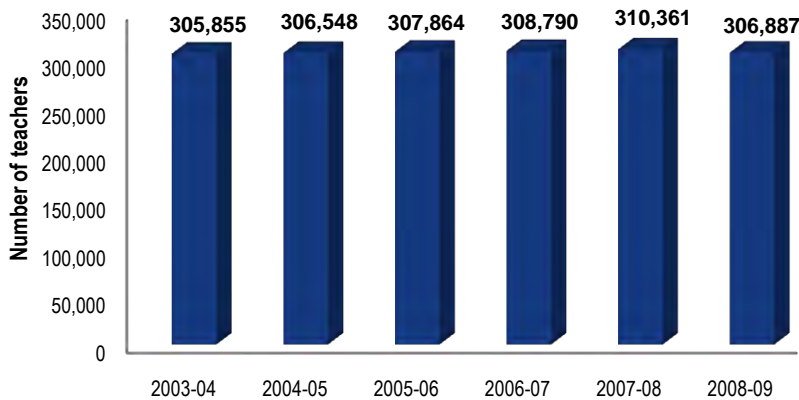


For source and technical information, see Appendix C.

⁶ For the purpose of the analyses in this section, high school teachers are teachers in schools serving grades 9-12. Teachers teaching high school grades in schools other than high schools (e.g., K-12 schools or 6-12 schools) are not included in any analyses in this section.

The number of teachers in the K-12 system decreased a little more than 1%, from more than 310,000 in 2007–08 to less than 307,000 in 2008–09, representing the first decline in the teacher workforce since 2003–04 (Exhibit 6). But consistent with the continuing rise in high school enrollment, the number of teachers in the state’s public high schools increased slightly over the past 5 years, from approximately 74,000 to more than 79,000. Because of strong interest in the role of career technical education (CTE) in improving student outcomes, we also examined trends in the CTE teacher workforce. We found that the total number of CTE teachers has remained relatively steady over the last several years, hovering around 8,000 statewide (Ed-Data, 2009; Exhibit A-23).

Exhibit 6
Number of K-12 Teachers in California, 2003–04 to 2008–09



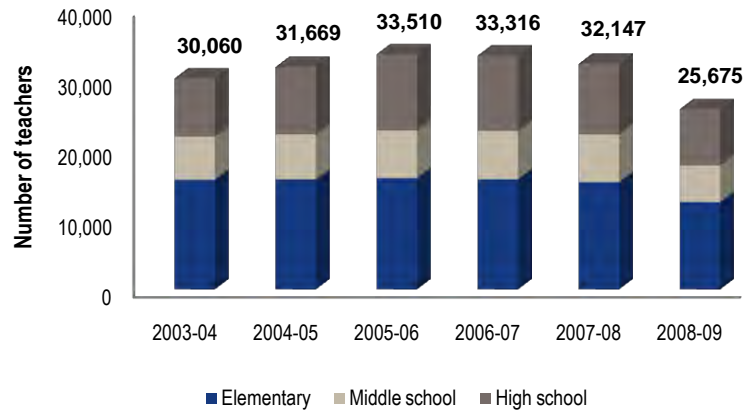
For source and technical information, see Appendix C.

There are substantially fewer beginning teachers entering the system.

With an overall decrease in the size of the teacher workforce, there are substantially fewer beginning teachers entering the system.

As the size of the overall teaching workforce has leveled off and begun to shrink, schools have been hiring fewer new teachers. Consequently, the number of beginning teachers has declined dramatically. From 2007–08 to 2008–09, the number of first- and second-year teachers dropped by more than 20%, from more than 35,000 to less than 28,000 (Exhibit A-3). This decline in the number of first- and second-year teachers is found across all school levels (Exhibit 7).

Exhibit 7
Number of First- and Second-Year Teachers in Elementary, Middle, and High Schools, 2003–04 to 2008–09



For source and technical information, see Appendix C.

Note: Teachers who teach at a school with a different grade configuration, such as a K-12 school, are not included in the exhibit, so these figures are lower than the overall figures for first- and second-year teachers shown in Exhibit A-3.

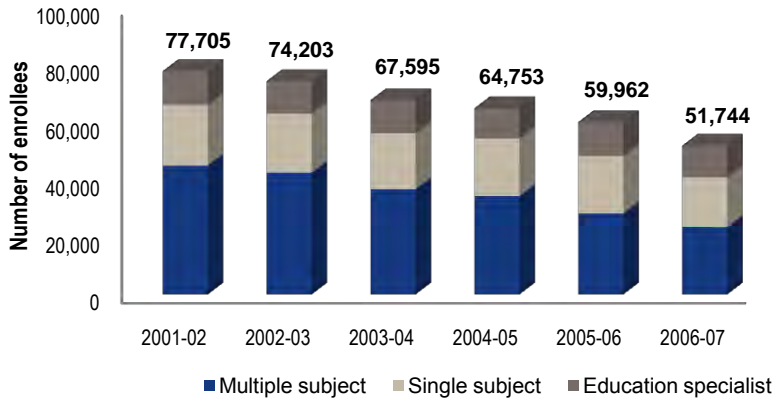
Fewer credential candidates are entering teacher preparation programs.

The decrease in the size of the teacher workforce has been accompanied by a significant reduction in the number of credential candidates entering teacher preparation programs and the number of individuals graduating with teaching credentials.

With fewer jobs available, fewer credential candidates are entering teacher preparation programs; accordingly, fewer individuals are graduating with credentials. From 2001–02 through 2006–07, the number of enrollees in teacher preparation programs declined by one-third, from more than 77,000 to less than 52,000 (California Commission on Teacher Credentialing [CCTC], 2009; Exhibit 8). In the context of the state’s recent budget crisis and particularly in light of news reports that more than 26,000 teachers received layoff notices in 2009, we might expect this decline to continue as individuals interested in a teaching career may choose other professions.⁷

⁷ The Associated Press, the California Teachers Association, and the *Los Angeles Times* reported that more than 26,000 teachers received layoff notices before the March 15 deadline. See <http://abclocal.go.com/kabc/story?section=news/state&id=6710423>, http://www.cta.org/media/newsroom/releases/20090313_1.htm, and <http://latimesblogs.latimes.com/lanow/2009/03/pink-friday.html>

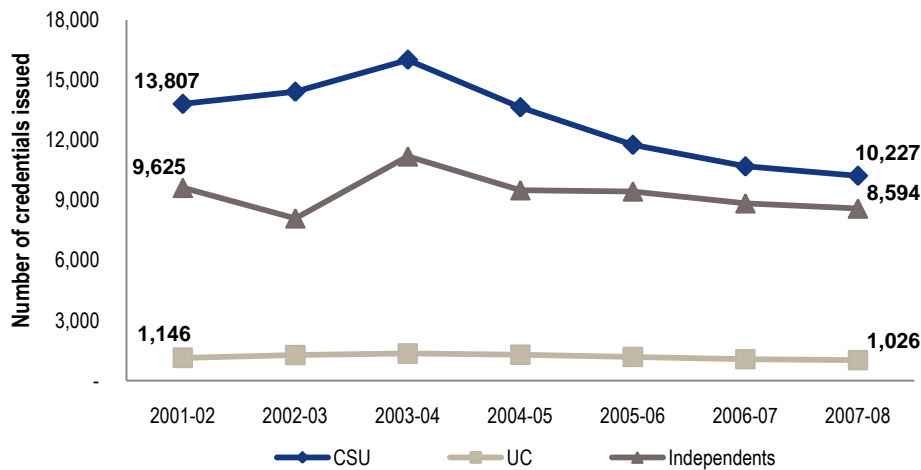
Exhibit 8
Number of Enrollees in Teacher Preparation Programs, 2001–02 to 2006–07



For source and technical information, see Appendix C.

Corresponding to the decrease in enrollment in teacher preparation programs, the number of credentials issued has dropped substantially as well. This drop has been most significant in the California State University (CSU) system, where 25% fewer credential candidates were being produced compared with the beginning of the decade. The drop in the number of credential candidates in the University of California (UC) system and in the independent sector was closer to 10% over the same period (CCTC, 2009; Exhibit 9).

Exhibit 9
Multiple- and Single-Subject Preliminary and Intern Credentials Issued by University Sector, 2001–02 to 2007–08

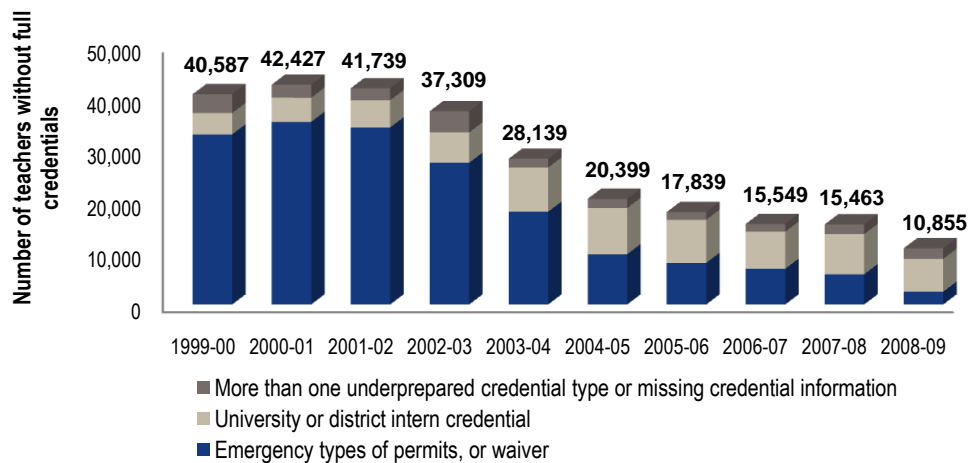


For source and technical information, see Appendix C.

California has made great progress in reducing the number of underprepared teachers. However, the percentage of underprepared teachers is highest in high schools, where approximately 5% are underprepared; the majority of those are in intern programs.

The number of teachers in California classrooms who are underprepared—defined as those who have not yet completed the requirements for a preliminary credential (including those with intern credentials or emergency types of permits)—has decreased dramatically over the last decade. In 2008–09, there were less than 11,000 underprepared teachers, representing approximately 3.5% of the workforce, down from more than 42,000 underprepared teachers at the beginning of the decade (Exhibit 10). Only about 2,500 of these teachers are working on an emergency type of permit or waiver. Among first- and second-year teachers, the number who are underprepared has also declined, from more than 21,000 in 2000–01 (or 47%) to less than 5,000 in 2008–09 (or 18%) (Exhibit A-3).

Exhibit 10
Number of Underprepared Teachers by Credential Type, 1999–2000 to 2008–09

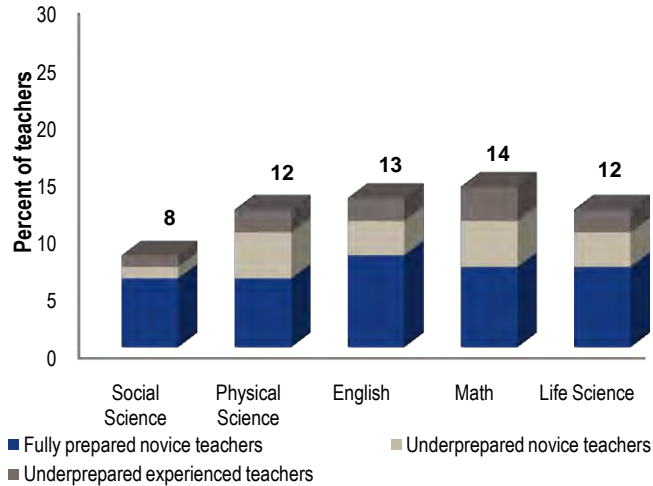


For source and technical information, see Appendix C.

Among high school teachers, about 5% are underprepared. That percentage is down from 14% at the beginning of the decade, a significant improvement. Furthermore, more than 70% of these teachers are in university or district intern programs, which provide them some measure of structured support as they learn the profession. A quarter of the underprepared teachers (a little less than 900 teachers) are on emergency types of permits or waivers.

Of particular concern are the numbers of both underprepared and novice (i.e., in their first- or second-year of teaching) high school teachers. If large numbers of teachers within a high school are underprepared, novice, or both, there may be too many teachers who need extra support and too few able to provide it. In 2008–09, 14% of high school mathematics teachers were underprepared and/or novice; in social science, this figure was 8% (Exhibit 11).

Exhibit 11
Percentage of Underprepared and/or Novice High School Teachers
in Core Subjects, 2008–09



For source and technical information, see Appendix C.

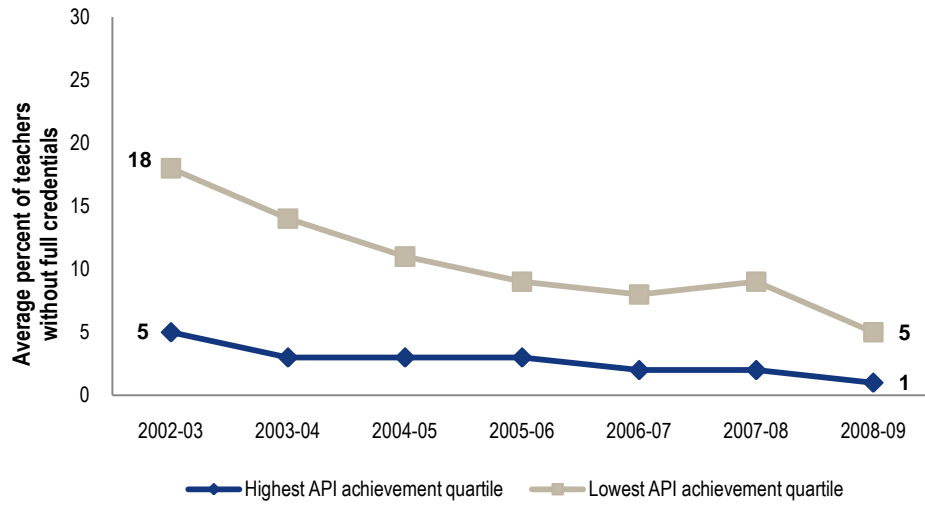
On average, 1 in every 10 teachers in California's lowest performing quartile of high schools is underprepared.

The maldistribution of underprepared teachers remains a concern across all levels of schooling.

Although the total number of underprepared teachers is down, those who remain are still disproportionately likely to be in the highest need schools. For example, on average only 1% of the teachers in schools in the highest Academic Performance Index (API) quartile are underprepared, whereas an average of 5% of teachers in the lowest quartile are underprepared (Exhibit 12). Moreover, a small group of schools across the state have large concentrations of underprepared teachers—in 2008–09, there were 219 schools that had 20% or more underprepared teachers. These schools are mostly in urban areas, and serve, on average, 87% students of color. Charter schools make up more than half (59%) of these schools.

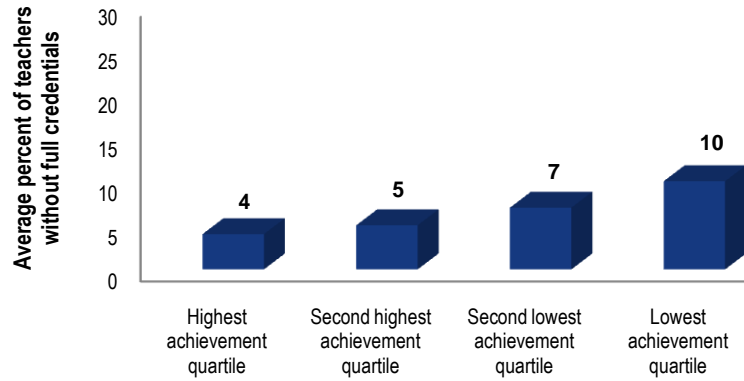
This pattern of disproportionate concentrations of underprepared teachers in low-performing schools is reflected in high schools as well. On average, low-performing high schools have twice the percentage of underprepared teachers as the state's highest performing high schools (Exhibit 13). In fact, on average, 1 in every 10 teachers in California's lowest performing quartile of high schools is underprepared.

Exhibit 12
Percentage of Underprepared Teachers by API Achievement Quartile, 2002–03 to 2008–09



For source and technical information, see Appendix C.

Exhibit 13
Percentage of Underprepared High School Teachers by API Achievement Quartile, 2008–09

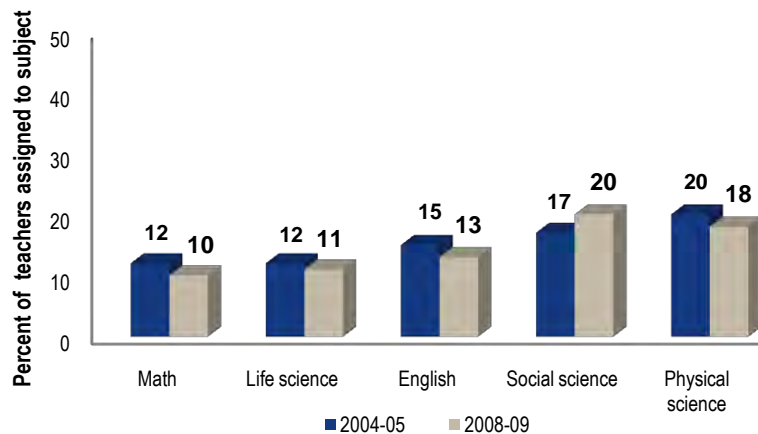


For source and technical information, see Appendix C.

Out-of-field teaching in high schools remains a challenge across all content areas.

Underprepared and novice teachers in high schools are only part of the challenge of staffing high school classrooms. Under normal circumstances, teachers are supposed to be assigned only to classes for which they have the appropriate credential (e.g., a teacher with a biology single-subject credential would be assigned to a biology class). However, high schools often do not have enough fully credentialed teachers to teach all the courses students want or need to take each semester. One way to staff courses in this case is to ask fully credentialed teachers to teach courses not covered by their credentials, thus assigning a teacher “out of field.” For instance, a high school may need seven periods of biology in a six-period school day but have only one full-time teacher with a biology single-subject credential; the school may address this mismatch by assigning a teacher out of field to the remaining course. Such a teacher holds a full credential, but it is in another subject area (e.g., chemistry). Out-of-field assignments are pervasive across high schools and content areas. Exhibit 14 shows the percentage of high school teachers assigned to at least one class out of field in five core content areas. In all core subject areas except social science, the percentage of teachers assigned out of field dropped slightly between 2004–05 and 2008–09. In 2008–09, 20% of teachers with at least one social studies assignment did not report they had an authorization to teach social science.

Exhibit 14
Percentage of Out-of-Field High School Teachers in Core Subjects,
2004–05 and 2008–09



For source and technical information, see Appendix C.

Out-of-field assignments are pervasive across high schools and content areas.

The data reported here and throughout this chapter come from a variety of sources and often required the merging of complex datasets. Consequently, many of the important numbers reported here are not easily accessible to citizens or policymakers. State policymakers have taken a number of steps to build a better data system in the state so that a more timely and accurate picture of the teacher workforce will be readily available.

The state is moving ahead with plans to build a teacher data system, the California Longitudinal Teacher Integrated Data Education System (CALTIDES), to house credential and authorization data. The assignment of unique teacher identifiers will enable the state to track teacher mobility and retention for the first time.

Even within this time of constrained resources, California is building a massive data system that will hold information on more than 6 million students and more than 300,000 teachers and administrators. The new data system has two components: the California Longitudinal Pupil Achievement Data System (CALPADS) and the California Longitudinal Teacher Integrated Data Education System (CALTIDES). CALPADS was launched at the beginning of the 2009–10 school year and will include data on student demographics, program participation, grade level, enrollment, course enrollment and completion, discipline, teacher assignment, and statewide assessments. CALTIDES will house teacher and administrator credential and authorization data. Data from the two systems will be merged to respond to federal and state reporting and monitoring requirements, such as the verification that teachers are appropriately assigned, to meet the highly qualified teacher requirements of No Child Left Behind (NCLB) and to meet the *Williams v. California* settlement requirements.⁸

The new state data system will also provide data for program evaluation. Before the new teacher data system could be built, every teacher in the state had to be assigned a unique identifier to link teacher credential data to teacher assignment data. The identifier will also allow data to be maintained longitudinally and thus enable the state to answer questions about teacher mobility and retention for the first time. The California Commission on Teacher Credentialing rolled out the unique identifiers to county offices of education in spring 2008, and these identifiers were collected for the first time as part of California Department of Education's annual data collection activities for the 2008–09 school year. The CALTIDES contract to build the new teacher data system is scheduled to begin in March 2010.

Recent legislation, Senate Bill 19 (Chapter 159, Statutes of 2009, Simitian), removed from the education code language that barred the use of data from California's new data system to evaluate teachers at the state level. The legislation was passed in response to federal criticism and the threat of losing the opportunity to compete for hundreds of millions of dollars in federal funding.

* * *

Trends in the size and distribution of the California teacher workforce have changed. After more than a decade of rapid growth, the size of the workforce has leveled off, reflecting the flattening in student enrollment. The demand for teachers has dropped, so the state has substantially fewer novice teachers, fewer credentials are being issued, and fewer students are entering teacher preparation programs. Within this context, the state has made great strides in reducing the number of underprepared teachers. Still, those underprepared teachers who remain are disproportionately represented in the lowest achieving and poorest schools. High schools in particular must cope with large numbers of underprepared, novice, and out-of-field teachers. This is particularly important given the efforts under way at high schools across the state to reduce the dropout rate and better prepare all students for postsecondary work and education. We turn next to a discussion of the major strategies high schools are implementing to improve student outcomes.

8 See <http://www.cde.ca.gov/nclb/sr/tq/documents/nclbresourceguide.pdf> for information about the highly qualified teacher requirements under NCLB. For information about the *Williams v. California* settlement and teacher misassignment monitoring and reporting requirements, see <http://www.decentchools.org/>

CHAPTER 3

REDESIGNING CALIFORNIA HIGH SCHOOLS FOR THE 21st CENTURY

KEY FINDINGS

California high schools have a broad range of priorities related to improving student outcomes and are concentrating on efforts to increase the rigor of the academic curriculum, to make learning more relevant, and to better connect students to school, as well as to provide extensive academic and social supports and interventions.

- Priorities in California high schools include ensuring that *all* students have basic reading, writing, mathematics, and writing skills; the academic skills necessary to be successful in college; and 21st century skills, such as problem-solving, critical thinking, communication, and collaboration.
- Academic rigor for California high school students is being raised through such strategies as increased graduation requirements, dual-enrollment opportunities with local colleges, greater academic support for middle-performing students to complete college preparatory courses, and improvements in instructional practice intended to enable more students to learn at high levels.
- By infusing real-world applications, authentic assessments, work-based learning opportunities, and technical coursework into the curriculum, many high schools in California are attempting to make academic content more relevant and to better engage students in the learning process.
- To foster better relationships between students and staff and among students, many large comprehensive high schools are breaking up into smaller learning communities, new small high schools are being created, and schools across the size spectrum are establishing structures to enable adults to work with smaller groups of students over time.
- To support efforts to prepare students for college and the workplace, many California high schools are working to create the conditions for learning and to develop students' basic literacy, mathematics, and study skills.

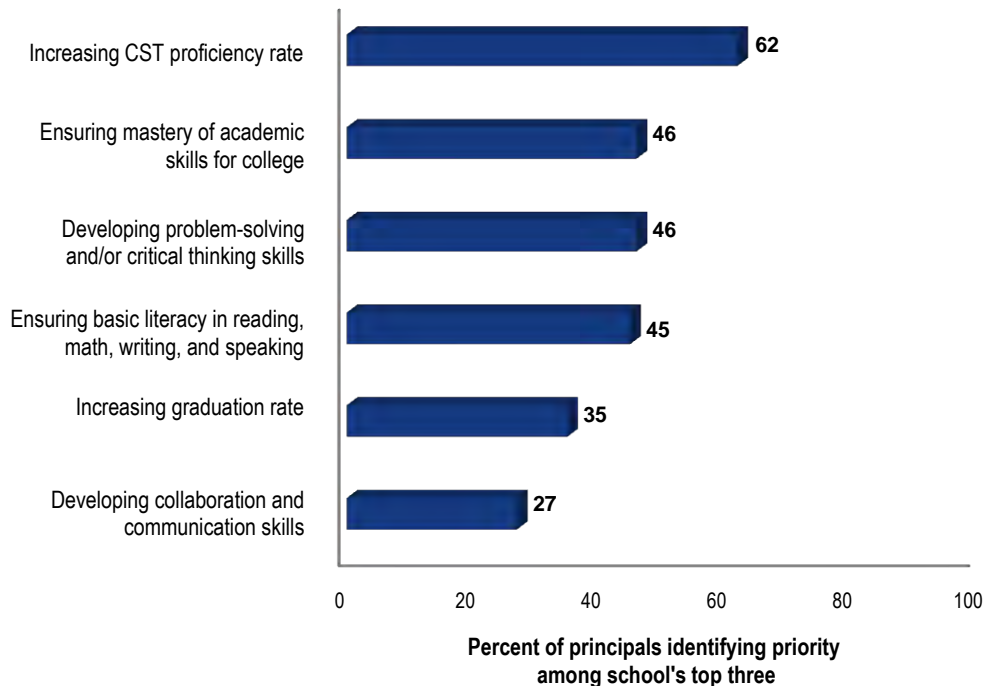
To assess the extent to which California high school teachers are prepared for and supported in teaching in new and redesigned high schools, we first set out to understand what these schools are like, what they are seeking to do, and how they are trying to do it. Our survey of a representative sample of California high school principals provides a statewide perspective on these priorities and strategies, and our case studies of 16 high schools (including interviews with 95 teachers) illustrate the various strategies in action. Although we found that schools have a wide range of priorities, we observed a focus on efforts to increase the rigor of the academic curriculum, to make learning more relevant, and to better connect students to school, as well as to provide extensive academic and social supports and interventions.

California high schools have a broad range of priorities related to improving student outcomes.

Schools have a wide range of priorities, [including] efforts to increase the rigor of the academic curriculum, to make learning more relevant, and to better connect students to school, as well as to provide extensive academic and social supports.

In addressing the needs of their diverse populations, California’s high schools have a wide range of priorities (Exhibit 15). Among them, for example, are ensuring that *all* students have basic reading, mathematics, and writing skills and the academic skills necessary to be successful in college. Principals also reported that the development of 21st century skills such as problem-solving, critical thinking, communication, and collaboration (deemed necessary for success in postsecondary work and education) are also top priorities. Although principals were given the option to list up to three priorities, there was little convergence on any one item. In fact, only one priority—increasing the California Standards Test (CST) proficiency rate—was identified by more than half the principals.

**Exhibit 15
California High Schools’ Top Academic Priorities for Students**



Source: SRI Survey of California High School Principals. For technical information, see Exhibit D-1.

Teachers and administrators from the 16 high schools that we visited for case studies reported focusing on a similarly broad range of priorities. However, we did note differences between the large comprehensive high schools and the smaller high schools that were often established to achieve a specific mission. In the large high schools, teachers and principals reported that their key priorities are engaging and motivating students, improving attendance, increasing academic achievement (and reducing the achievement gap), improving the graduation rate, and preparing students for postsecondary work and education. This broad set of priorities appears to reflect the diverse needs of the student populations these comprehensive high schools serve. The smaller schools we visited were each driven by a core mission, typically to prepare all students, especially low-income students and students of color—youth historically underrepresented in higher education—to enroll in and be successful in college. This more narrow focus may be possible because students and staff actively choose to attend and work at these small schools in lieu of more traditional comprehensive high schools precisely because of their mission.

Our survey of high school principals revealed a range of strategies for addressing the priorities described above, and our case studies illustrated this range of strategies in different combinations and stages of implementation. Like the priorities, most strategies fall into one of three categories: increasing academic expectations and the rigor of the academic curriculum, infusing coursework with real-world applications to make learning more relevant, increasing personalization to better connect students to school, and providing extensive academic and social supports and interventions.

Academic rigor for California high school students is being raised through such strategies as increased graduation requirements, dual-enrollment opportunities with local colleges, greater academic support for middle-performing students to complete college preparatory courses, and improvements in instructional practice intended to enable more students to learn at high levels.

One way districts and schools have sought to raise academic expectations is by increasing high school graduation requirements. In our statewide survey, 42% of principals reported that their district or school requires that all students complete the a-g college preparatory curriculum (i.e., the minimum course requirements for admission to California's 4-year public universities) for graduation, with exceptions made for particular students (e.g., special education students) and/or students who choose to opt out (see Exhibit D-2 in Appendix D for details). Through our case studies, we learned that although the a-g college course of study may be an explicit goal in many California high schools, many students at those schools do not complete this track.

Another approach to increasing academic expectations and rigor is to allow students to earn college credit through enrolling in college courses available at their high school, at a local college campus, or online. Twenty-eight percent of principals surveyed reported that providing students with opportunities to enroll in college courses is a strategy they greatly emphasize for increasing students' college readiness (Exhibit D-3). We found this strategy used in many of the high schools we visited, and it is a key design principle of the two early college high schools.⁹ These schools encourage students to accrue as many college credits as possible with the goal of preparing them for college-level coursework and encouraging them to attend 4-year colleges after high school graduation. As a teacher at an early college high

Although the a-g college course of study may be an explicit goal in many California high schools, many students at those schools do not complete this track.

⁹ Early college high schools target students typically underrepresented in higher education, including low-income students, students of color, English language learners, and first-generation college-goers. Students in early college high schools can simultaneously earn a high school diploma and an associate's degree (or up to 2 years of credit toward a bachelor's degree), tuition free. See <http://www.earlycolleges.org/> for more information.

school noted, the priority is to help students acquire the “skills they need to do well at the college level here and, more importantly, to transfer to 4-year colleges and actually earn their degree.”

Along with increasing graduation requirements and offering dual-enrollment opportunities for all students, many California high schools are concentrating on improving the college readiness of students in the middle of the achievement spectrum. Forty-five percent of high school principals reported that offering instructional support for middle-performing students enrolled in honors and Advanced Placement classes (for example, through the Advancement Via Individual Determination [AVID] program) is a great emphasis at their schools (see Exhibit D-3). AVID is a college preparatory program that targets middle-performing students and focuses on developing skills and habits necessary for success in college.¹⁰

As a part of efforts to increase academic expectations and curricular rigor, some California high schools are directing their energy on the quality of instruction to ensure that more students are successful with high-level work. For instance, one school had a system to monitor the quality of instruction, with teacher coaches and administrators conducting regular walk-throughs and more in-depth classroom observations. Information gathered through these observations was then used to develop schoolwide professional development and provide classroom-based coaching for individual teachers. Leaders at another school had established a school-based infrastructure for ensuring instructional quality by developing professional learning communities that support ongoing reflection and instructional improvement.¹¹ In some cases, this focus on instructional improvement is combined with structural changes or new programs; in many cases, however, structural changes are being implemented without a concurrent focus on instructional quality.

In many cases, structural changes are being implemented without a concurrent focus on instructional quality.

By infusing real-world applications, authentic assessments, work-based learning opportunities, and technical coursework into the curriculum, many high schools in California are attempting to make academic content more relevant and to better engage students in the learning process.

One of the key features of the movement to redesign high schools is the breakup of large comprehensive high schools into small learning communities (SLCs). Although SLCs primarily serve to provide a personalized high school experience for students (discussed below), there are many instances where SLCs are organized around a broad industry theme—for example, building trades and construction, law and public services, health science and medical technology, or arts, media, and entertainment—with the intention of adding relevance to the curriculum. Among the high school principals we surveyed, 30% reported that their schools have SLCs with career themes as the organizing principle (Exhibit D-4). This strategy of using career themes to organize SLCs was prevalent among the large comprehensive high schools we studied in depth and in a few of the small high schools as well.

Developing interdisciplinary units that integrate different academic subjects and infuse academic content with real-world applications is another strategy being used to make courses more relevant (Exhibit 16), and these strategies are at the core of many career-themed SLCs

¹⁰ See <http://www.avidonline.org/> for more information about the AVID approach.

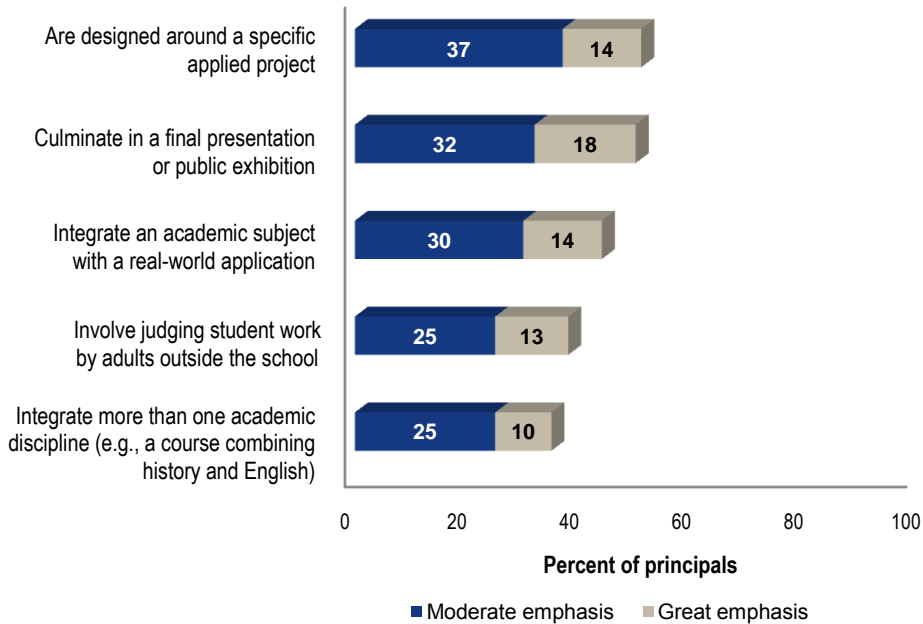
¹¹ This school developed professional learning communities following a model described by Richard DuFour (see, for example, http://pdonline.ascd.org/pd_online/secondary_reading/el200405_dufour.html). He outlines three principles that are central to improving schools through professional learning communities: (1) ensure students learn by shifting the focus from teaching to learning, (2) create structures to promote a collaborative culture among teachers, and (3) judge effectiveness by focusing on results.

and schools. For example, at the biotechnology academy in one high school, students work on interdisciplinary projects that incorporate content from their English, social science, and biotechnology classes. In the health academy at another school, students must complete integrated projects (e.g., a forensics project) that require them to combine their knowledge of medical science with core content knowledge. However, the degree to which the core academic curriculum is integrated with the career theme varies considerably and may be related to how long the academy (or school) has been in existence, funding or grant requirements, leadership and staff stability and expertise, or opportunities for academic and career technical education teachers to collaborate on curriculum and instruction.

Some high schools also are seeking to increase relevance by requiring authentic assessments of student learning. Beyond traditional standardized tests (e.g., CSTs, California High School Exit Examination [CAHSEE], school-level benchmark assessments), these schools expect students to demonstrate their mastery of content through projects, portfolios, presentations, and exhibitions (Exhibit 16). For example, students in one case study high school are required to develop presentations showcasing key assignments for exhibitions held three to four times per academic year. Students give presentations to exhibition panels made up of students, parents, school staff, and community members. The exhibitions give students opportunities to practice presentation skills needed to successfully complete the 10th and 12th grade portfolio defenses that are promotion/graduation requirements.

The degree to which the core academic curriculum is integrated with the career theme varies considerably.

Exhibit 16
Emphasis on Offering Courses Integrating Authentic Learning and Assessment



Source: SRI Survey of California High School Principals. For technical information, see Exhibit D-5.

Some California high schools are using work-based learning opportunities, such as job shadowing, mentors, and internships, to connect academic learning with real-world experiences.

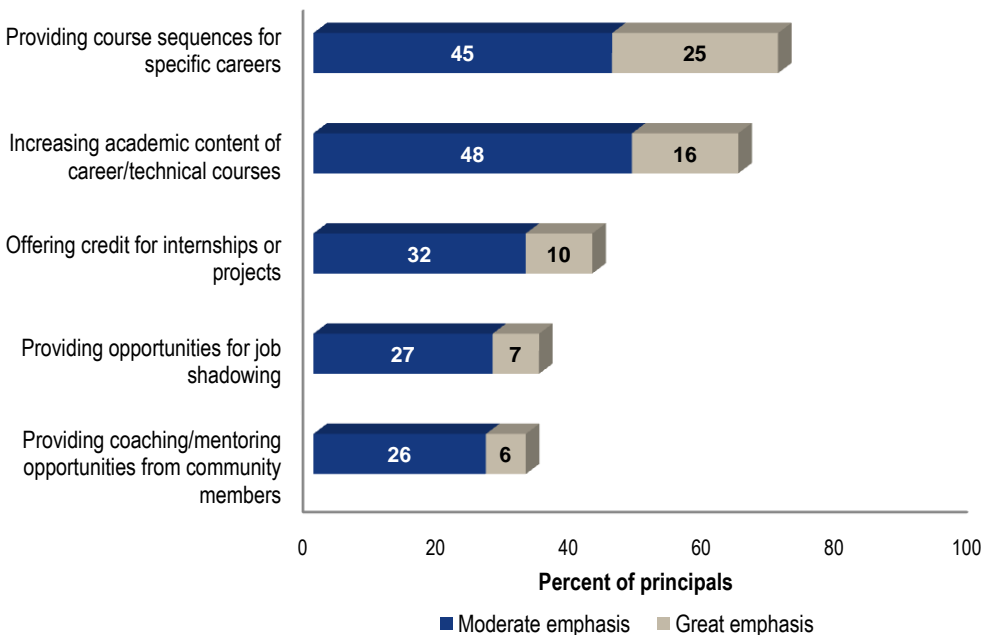
Along with efforts to modify curriculum and assessment to make courses more relevant and engaging, some California high schools are using work-based learning opportunities, such as job shadowing, mentors, and internships, to connect academic learning with real-world experiences (Exhibit 17). In the large comprehensive case study high schools, we found that work-based learning opportunities were typically offered through career-themed SLCs, often as a requirement of the California Department of Education's California Partnership Academy (CPA) program.¹² For example, 11th-graders in the health academy at one school spend 2 hours a day, 2 days a week doing job shadows at a local hospital; in 12th grade, they do an internship where they work alongside a medical professional for 2 hours a day, 3 days a week, and earn health industry certifications. At a small high school with a schoolwide internship program, students begin doing internships in the 9th grade, spending 2 full days per week for a minimum of 10 weeks in each internship. As the principal noted:

We want the internships to be linked to their career interests and their goals so that when they start taking college courses [at the community college where the school offers dual enrollment], they will see the value of studying hard here in high school.

Finally, California high schools continue to offer sequences of career technical courses that are aligned with students' career interests and help prepare students for the workforce while simultaneously focusing on increasing the academic content of these courses. Among the high school principals surveyed, 70% reported that providing course sequences for specific careers is a moderate or great emphasis at their school, whereas 64% reported that increasing the academic content of career technical courses is of moderate or great emphasis (Exhibit 17).

¹² In the CPA model, students participate in a 3-year career-themed program during grades 10 through 12. These programs integrate academic and career technical education and include active business and postsecondary partnerships as well as mentorships and internships for students. They are typically structured as SLCs within larger high schools. See <http://www.cde.ca.gov/ci/gs/hs/cpaoverview.asp> for more detail about the CPA program.

Exhibit 17
Emphasis on Strategies to Prepare Students for Work and Careers



Source: SRI Survey of California High School Principals. For technical information, see Exhibit D-6.

Many of these strategies to make learning more relevant and engaging are core components of California's multiple pathways approach, which has gained considerable attention in recent years from policymakers, philanthropists, and educators as a means to reduce the dropout rate and improve academic achievement. Multiple pathways offer students a choice among several different multiyear programs of study that connect classroom learning with real-world applications through the integration of a rigorous college preparatory curriculum, a demanding technical course sequence, and work-based learning.¹³ Each pathway is organized around a broad industry theme and is intended to prepare all high school students for a full range of postsecondary options.

To foster better relationships between students and staff and among students, many large comprehensive high schools are breaking up into smaller learning communities, new small high schools are being created, and schools across the size spectrum are establishing structures to enable adults to work with smaller groups of students over time.

As described earlier, one of the major strategies to redesign high schools has been the creation of smaller, more personalized environments by breaking up large comprehensive high schools into SLCs (including career academies and multiple pathways) and by starting new small high schools, including alternative schools, charter schools, and magnet schools, that deliberately limit school size. Forty-four percent of high school principals across the state reported that their schools have small learning communities, and 15% reported a schoolwide cap on enrollment in order to create a small, personalized school environment (Exhibits D-7 and D-8). In the large high schools in our case studies, teachers and principals

Forty-four percent of high school principals across the state reported that their schools have small learning communities.

¹³ For more information on California's multiple pathways approach, see the ConnectEd: The California Center for College and Career website: <http://www.connectedcalifornia.org/index.ph>

reported that the SLCs are a key strategy to increase student engagement and achievement by connecting students to a program and community within the larger school. As a teacher in one SLC noted,

It gives them a sense of belonging. We're a big campus, and there are scary places on this campus. We give kids a sense of belonging and a safe place to be. For some kids, we provide a home and a family when they don't really feel they have one.

Similarly, in the small high schools that we visited, school size was frequently cited as an essential ingredient for success. The small size enables teachers to know their students well and for staff members to work together to jointly address the needs of struggling students. For example, a teacher in one small school observed, "In a small school, you get right to the root. Everyone is more than willing to help." A teacher in another small school added, "We're on such a personal level with our students and their family members. There is very little room for anyone to slip through the cracks here."

Another common approach to increasing personalization and better connecting students to school is to assign students to an adult advisor or advocate with whom they have regularly scheduled meeting time (often called "advisory"). Typically, advisory classes pair one teacher (or other adult) with a small group of students for their entire high school career. They use their time together for a variety of purposes, from checking in about basic needs and home life to course and career planning. Seventy-eight percent of high school principals across the state reported that at least some students at their school are assigned to an adult advisor/advocate; in 80% of those schools, teachers are among the adults playing this role (Exhibits D-9 and D-10). We found teacher-led advisories in several of the case study high schools we visited. At one of the case study schools that has a more successful advisory program, teachers meet with their advisory class twice a week for 45 minutes and implement the curriculum developed jointly by teachers and counselors. In several other schools, however, teachers and principals reported weak implementation of the advisory model in large part because of a lack of consistent understanding of the purpose or goals of advisory, a lack of any guidelines for how that time should be used, and/or no set curriculum.

Although making the high school experience more personalized, relevant, and challenging for students is a priority for many high schools in California, most are also concentrating on developing students' basic academic and behavioral skills to ensure they have the foundation necessary to access the high school curriculum and to graduate.

To support efforts to prepare students for college and the workplace, many California high schools are working to create the conditions for learning and to develop students' basic literacy, mathematics, and study skills.

Teachers in the high schools we visited noted the gap between the high expectations they have for students (for example, for all students to be prepared for college) and students' lack of basic skills to access the college preparatory curriculum required for graduation. A teacher at a high school serving a very high poverty student population commented about the school's focus on literacy and vocabulary development given the large number of students who are reading well below grade level: "More and more I believe that the inability to read proficiently is a major barrier for students here." Staff at this school are working to address this tremendous need for remediation while maintaining the school's high academic expectations and college-going culture.

Common strategies to address students' lack of basic skills and bring them up to grade level include intervention classes and extra tutoring. Among the high school principals we surveyed, 85% reported that their school provides intensive catch-up courses in reading and mathematics for some or all students in their first year of high school who are below grade level. In 77% of those schools, classroom teachers (as opposed to specialists or intervention

Teachers noted the gap between the high expectations they have for students and students' lack of basic skills to access the college preparatory curriculum required for graduation.

teachers) teach the courses. Additionally, nearly all high school principals (99%) reported that their school provides one-on-one tutoring for some or all students who need it. In 75% of those schools, tutoring is provided by classroom teachers (Exhibit D-11). Several of the high schools in our case studies offer interventions and supports for struggling students, including reading interventions, and supplementary support in mathematics and one-on-one tutoring by teachers. For example, one high school has implemented a literacy program intended to build “literacy independence” in core content courses. Students who read at least 2 years below grade level are placed in an English intervention class. A teacher/literacy coach explained that the class teaches students strategies to help them make meaning out of a piece of text. Students are taught how to preview a text and take notes about the main themes before a lesson. Once students have been taught how, previewing becomes part of their homework routine.

California high schools are also attempting to develop students’ learning and study skills. Nearly all high school principals (97%) reported that their school is providing assistance with study skills and organization for some or all students, and in 79% of these schools this assistance is being provided by classroom teachers (Exhibit D-11). In fact, one approach to developing students’ study skills is to expand the AVID program to all students. Although AVID has traditionally targeted middle-performing students, the note-taking, study, test-taking, reading for content, and time management skills the program emphasizes are skills that principals and teachers believe all students should have. A few of the case study schools we visited use the AVID program schoolwide as a major support strategy or are in the process of expanding it, whereas others do not use the AVID program specifically but are focused on developing students’ study skills.

Many California high schools are also working to manage student behavior and discipline. Addressing student behavior issues was widely reported by case study school teachers as essential for creating conditions for successful educational improvement. In one case study school, for example, teachers and administrators reported that efforts to improve instructional practice would not have been possible had the school not also focused on its discipline issues. They explained that staff needed to spend an enormous amount of time and effort addressing disciplinary issues and working to set a tone that was conducive to instruction; they reported that they were better able to focus on instruction after they saw the positive results from working through the disciplinary challenges of the first year.

Finally, across these various intervention and support strategies, we observed a specific focus on providing 9th-graders with the skills and support they need to put them on track to high school graduation. For example, one high school offers a summer bridge program for incoming 9th-graders identified as at risk that explains what will be expected of them as students, works on developing their basic study skills, and gives them an opportunity to have early contact with some of their high school teachers. Many of the large high schools we visited have SLCs designed specifically for 9th-graders (called freshmen academies or houses) and/or freshmen centers dedicated to supporting 9th-graders through collaboration of teachers, counselors, and parents and regular tracking of student performance. Teachers at one case study high school that assigns 9th-grade students to one of three, nonthemed “families” (in which students have four periods of core classes together) reported that this structure has been successful, noting decreased failure rates and referrals and increased attendance and honor roll eligibility.

Addressing student behavior issues was widely reported by teachers as a foundational issue necessary to create conditions for successful reforms.

* * *

California high schools are changing in response to the pressure for more students to graduate with the knowledge and skills needed for success in the 21st century economy. To achieve this broad goal, high schools are raising academic expectations for students, attempting to engage more students by making school more relevant to the real world, creating more personalized learning environments, and providing extensive academic and social supports and interventions for students who are behind academically. Implementing these initiatives well enough to make a difference for students hinges on teachers' core beliefs and understandings, content knowledge, pedagogical skills, and professional expertise. We turn next to a discussion about the key knowledge, skills, understandings, and expertise teachers need in the redesigned high school of the 21st century.

CHAPTER 4

KNOWLEDGE, SKILLS, & UNDERSTANDINGS FOR TEACHING IN REDESIGNED HIGH SCHOOLS

KEY FINDINGS

Redesigning high schools and creating new ones that are focused on providing students with the tools to succeed in college and the world of work places many demands on teachers. Teachers often must do more and do things differently; as a result, they need new and different core understandings and beliefs, content knowledge, pedagogical skills, and professional expertise.

- Understanding of the rationale for a given strategy fosters teacher support for implementation. Regardless of which strategies a high school is working to adopt, teachers must understand the nature of each strategy and believe in its validity. Teachers' understanding and buy-in are essential because these reforms change their work, often increasing their responsibilities.
- To make learning more challenging and relevant, high school teachers need knowledge of academic or technical subjects and their real-world applications. In many high schools, teachers are expected to know and be able to communicate the real-world and career applications of their subject matter, either through direct industry experience or through some understanding of the industry area being emphasized.
- To implement a given strategy effectively, high school teachers need specific pedagogical skills associated with the demands of that strategy. For instance, in high schools that rely heavily on interdisciplinary projects and other authentic assessments of student learning, such as presentations, portfolios, and exhibitions, teachers must know how to develop such assessments and provide instruction that cuts across content areas and develops students' critical thinking, analytical, and communication skills.
- Teachers need additional professional expertise in areas that transcend the classroom to work effectively in redesigned high schools. Specifically, they need strong interpersonal communication and collaboration skills to work closely with colleagues, industry and higher education partners, and families and to interact with students in new ways.

Notions of good teaching—within the context of wholly redesigned or new schools—require much more of a high school’s faculty and leadership than has been demanded in the past.

The core high school reform strategies that fall under the umbrella of increasing academic rigor, making coursework more relevant to life and careers, personalizing the learning environment, and providing extensive supports and interventions all have implications for teachers. Teachers need new and different core understandings and beliefs, content knowledge, pedagogical skills, and professional expertise.¹⁴ In many cases, these understandings, content knowledge, pedagogical skills, and professional expertise that teachers need to do their jobs effectively in new or redesigned high schools are consistent with what is already broadly recognized as high-quality teaching practice—for example, many are enumerated in the California Standards for the Teaching Profession. However, operationalizing these standards—and more broadly notions of good teaching—within the context of wholly redesigned or new schools requires much more of a high school’s faculty and leadership than has been demanded in the past. These new expectations, in turn, require an increasingly complex set of skills on the part of teachers. Our case studies suggest several key implications for teacher practice as they relate to teachers’ core understandings, content knowledge, pedagogical skills, and professional expertise.

Understanding of the rationale for a given strategy fosters teacher support for implementation.

Regardless of which strategies a high school is working to adopt, it appears imperative that teachers understand the nature of each strategy and believe in its validity. Indeed, across the case study schools, interviewees noted that teacher understanding of and belief in a given strategy is a prerequisite for that strategy’s success. At one high school where staff members have been pleased with the implementation of a series of instructional improvement strategies, veteran teachers who have seen these strategies evolve attributed their success in large part to a thoughtful, deliberate process to explain each new element to teachers and gain their support. Additionally, school leaders spend a great deal of time and energy setting accurate expectations for new hires during the school’s interview process, the annual retreat for new teachers, and their ongoing professional development activities. Conversely, at a different high school that has recently introduced freshman academies, interviewees explained that teachers have not received effective communication about what they are expected to do, making implementation of these academies rocky and ill defined even for those who support them in concept. Efforts to help teachers understand both the nature and validity of a given reform are especially important in schools that may be experiencing “reform fatigue.” For example, at a high school working to introduce a series of themed small learning communities (SLCs), a teacher warned that the efficacy of these SLCs might be limited because “some of our more veteran teachers who have been here through a lot of different changes still regard SLCs as a passing fad.”

We found that teachers’ understanding and buy-in are essential because these reforms change their work, often increasing their responsibilities. This was the case particularly at small high schools, where teachers are expected to take on multiple responsibilities. For example, at one small case study high school, teachers are expected not only to lead extracurricular activities and oversee tutoring and other academic supports, but also to take on school management roles that are typically under the purview of administrators in larger high schools. Teachers at this school are asked to help develop the master schedule, develop and disseminate advisory curricula, coordinate community college enrollment for students, coordinate school awards applications (e.g., California Distinguished Schools), and serve on committees to help run the school. Several teachers who had been at the school since before

Regardless of which strategies a high school is working to adopt, it appears imperative that teachers understand the nature of each strategy and believe in its validity.

¹⁴ Our framework for describing teachers’ knowledge, skills, and understandings builds on a framework developed by Jeannie Oakes (2007) to describe the knowledge, skills, and understandings needed to teach in a multiple pathways setting.

it was restructured described a palpable difference in teacher engagement in the school's mission. As one explained,

When it [the school] was a large complex, my identity was with my department. I was a math teacher first and second a teacher at [the school]. Now I am a [name of school] teacher first and second is my content area. So I think it gives us a more common identity.

To make learning more challenging and relevant, high school teachers need strong knowledge of academic or technical subjects and the real-world applications of that content.

The traditional expectation that high school teachers have strong content knowledge appears to be fully embraced by high schools that are focusing on efforts to prepare their students for the 21st century. Indeed, teachers and administrators at many of our case study schools discussed strong content knowledge not only as a requirement in and of itself, but also as a prerequisite for teachers to be able to apply additional skills or practices effectively. Beyond strong content knowledge, however, teachers at schools that are implementing career-themed academies or other initiatives to make course content more rigorous and relevant to students are expected to know and be able to communicate the real-world and career applications of their subject matter, either through direct industry experience or through some understanding of the industry area being emphasized. One teacher in a health care-themed academy explained how industry experience helps teachers engage students and convey what is needed to work in that environment:

I've found that my toxicology background and being able to talk about the mechanisms in the body [are helpful] because in chemistry here's the Periodic Table [in the abstract], but the [academy] helps with taking it and applying it to the human body to some degree.

However, our case study work revealed that teachers in career-themed high schools or academies have widely varying knowledge of the career theme and levels of comfort making connections between it and their content area. For example, in a law and justice-themed academy, the lead teacher, who was relatively new to the profession and taught most of the career-themed academy classes, had no background in criminal justice and relied on external resources (including local experts and the Internet) to learn about the field and develop curriculum. She observed, "The first year was rough. I was learning and creating at the same time."

To implement a given reform strategy effectively, high school teachers need specific pedagogical skills associated with the demands of that strategy.

Many of the structures and strategies in place in high schools across California call for specific, associated pedagogical skills. For instance, teachers in high schools that aim to engage students by making the curriculum relevant to their interests are expected to both know the traditional academic content and be able to develop and teach curriculum that integrates academics with real-world and career applications. In schools where students participate in internships or other work-based learning opportunities, teachers must also have the skills to help students connect what they are learning at their work sites with content learned in the classroom. Teachers at one case study school with an internship requirement described working closely with students and their internship supervisors to provide academic support for internship responsibilities. For example, one math teacher explained,

Teachers in career-themed high schools or academies have widely varying knowledge of the career theme and levels of comfort making connections between it and their content area.

Teachers in high schools that aim to engage students by making the curriculum relevant to their interests are expected to be able to develop and teach curriculum that integrates academics with real-world and career applications.

Many high school teachers are expected to provide remedial instruction in core content areas and help students develop basic study skills while simultaneously preparing them to meet higher expectations.

I had one student whose mentor said that the math skills he brought in weren't very good. He was working on a soundstage project at a theater. I had the student come in... and we laid out the diagram of the theater, looked at it visually, and I worked with the student [to improve his math skills] in the direct context of his internship.

Similarly, in high schools that rely heavily on interdisciplinary projects and other authentic assessments of student learning, such as presentations, portfolios, and exhibitions, teachers must know how to develop assessments and provide instruction that cuts across content areas and supports students in developing their critical thinking, analytical, and communication skills. At one case study school where student learning is assessed through exhibitions and portfolio defenses, interviewees explained that teachers need numerous associated skills to support students in developing these exhibitions and portfolios as well as to evaluate them. Furthermore, in high schools where teacher responsibilities have expanded to include such areas as remedial instruction, student advising, or support for development of study skills, teachers must be able to fulfill these additional responsibilities, which often have requirements different from those needed to teach in their core content areas.

Our case studies also revealed that some pedagogical skills—such as classroom management, use of instructional time, and differentiated instruction—appear to be necessary for effective teaching across the range of improvement strategies. These skills, which are considered by sources such as the California Standards for the Teaching Profession to be elements of good teaching practice, are important for any teacher's arsenal and are not specific to a given reform model or strategy. For example, to leverage class time to achieve whatever the goals of a given school's reforms may be, teachers are expected to effectively engage students and manage classrooms, and they need to know how to make good use of instructional time.

One essential skill for teachers is the ability to differentiate instruction to meet the various needs and learning styles of students in their classrooms. This is especially important in small schools and small learning communities where students may not be grouped based on ability as in some larger comprehensive high schools. The ability to differentiate instruction is also critical in high schools where teachers are trying to develop students' basic academic and behavioral skills. As described in Chapter 3, this is a very complex task. Many high school teachers are expected to provide remedial instruction in core content areas and help students develop basic study skills while simultaneously preparing them to meet higher expectations, including the completion of college entrance requirements. For example, at one high school serving a low-income population, teachers must address low student motivation and gaps in academic knowledge and skills, as well as in experience and background understanding, while supporting all students in accessing rigorous college preparatory content. A teacher at the school explained that students are often unfamiliar with the academic vocabulary in their textbooks and that teachers must constantly ask themselves whether they are speaking in a way that makes sense to the students.

Teachers need additional professional expertise in areas that transcend the classroom to work effectively in redesigned high schools.

Teachers need strong communication and collaboration skills to succeed in today's changing high schools.

In addition to the foundational understandings, content knowledge, and pedagogical skills discussed above, teachers need strong communication and collaboration skills to succeed in today's changing high schools. Teachers need sufficient expertise in interpersonal communication to collaborate closely with their colleagues, industry and higher education partners, and students' families and to interact with students in new ways (e.g., as a student advisor). As a teacher from one site visit school summarized, "You are not just a teacher in the classroom [anymore]. You are an advisor, a colleague, and a teacher."

Indeed, many of the structures and strategies in place to better prepare students in California high schools for college and careers dictate that teachers work together. For instance, strong

interpersonal and communication skills are particularly imperative at schools that are implementing interdisciplinary instruction that brings together teachers from across academic and technical content areas. At one career-themed academy within a large comprehensive case study high school, teachers explained that the use of integrated benchmark assessment projects throughout the year requires that all career technical education and core academic teachers be part of each project's development and oversight, requiring substantial communication and "a lot of getting along." Still, teachers at this school also spoke more broadly about collaboration fitting into the context of teachers working toward a common mission. One teacher explained,

[Teachers here] no longer see themselves as being isolated practitioners but as members of a department working together to develop strategies. There is much more of a sense of understanding of how each teacher fits in to what the entire district is trying to accomplish. Some would really rather be left alone to do their own thing in their classroom, but that luxury's not there anymore.

In contrast, in a new environmental science academy at a different comprehensive site visit high school, a biology teacher noted that there is still much work to be done to bridge the gap between the science teachers and agricultural education teachers who teach the academy courses before they can collaborate around curriculum and instruction:

We're just trying to warm up to each other. That's probably the biggest hurdle. There are concerns that one group doesn't trust the other or doesn't respect the other as a true science, and that can lead to a lot of strife, mistrust, and it hurts collaboration.

At another high school that is implementing several career academies, staff attributed the differences between the successful implementation of one academy and the struggles of another to differences in the abilities of teachers and administrators to work together. Teachers in the first academy described their working relationships as extremely productive and "like a family," with regular meetings to develop and refine interdisciplinary units, while the other academy holds poorly attended meetings that one teacher described as "gripe sessions" and has developed no new curriculum to support the integration of their career theme.

Teachers need to be committed to working closely with students to help achieve the goals of a given reform.

Across many of the strategies in place at our case study schools, we also found that teachers need to be committed to working closely with students to help achieve the goals of a given reform. This appears particularly important for schools that are emphasizing personalization as a strategy to improve student outcomes. A district administrator contrasted one small high school focused on student-teacher relationships with the other high schools in his district by explaining,

The teachers become personally involved and become not only a student's instructor, but a strong stakeholder in their educational program.... I think that's probably the biggest piece that looks different from a regular campus.

Teachers also are expected to understand their students' personal context and adapt instruction accordingly. With issues such as poverty, violence, and other challenges or disruptions at home affecting the ability of many California high school students to succeed in school, teachers and administrators alike emphasized the need for teachers to understand the circumstances of their students in order to address barriers to student learning. As one teacher noted,

You have to balance that rigor with the compassion and nurturing that they need. It is not just being confident in your content area. You should have a wide variety of scaffolding techniques to help students, and you need to know how to keep parents involved.

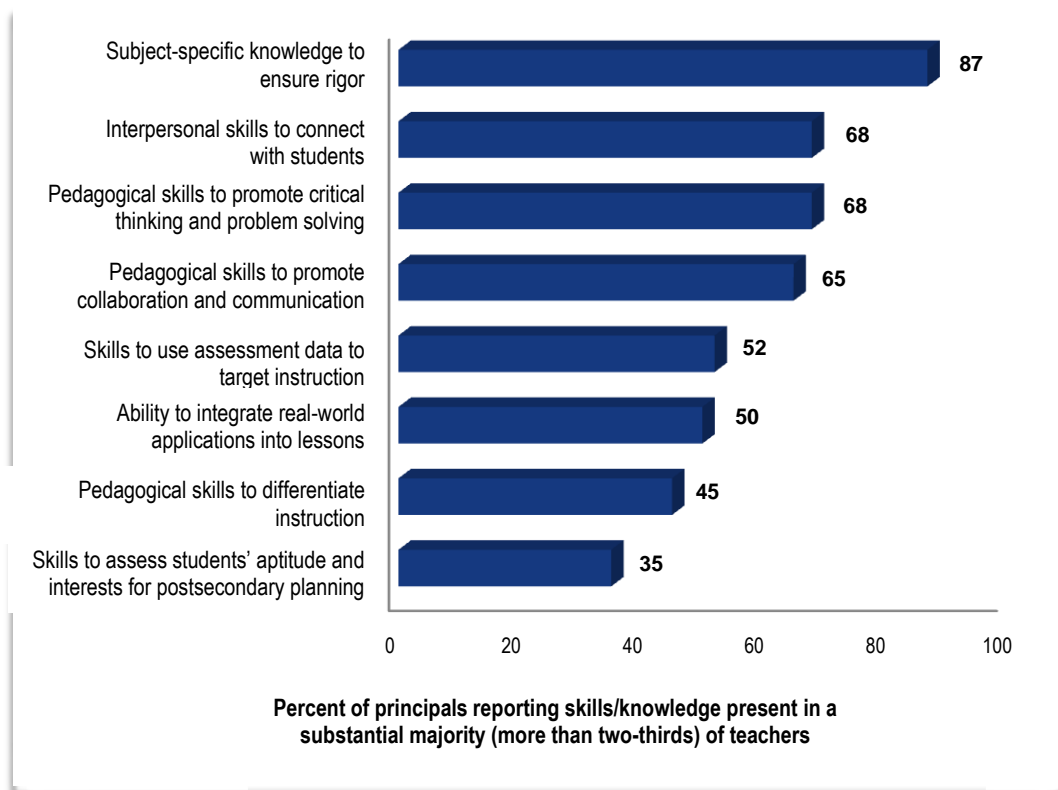
Just 35% of principals reported that a substantial majority of their teachers have the skills to assess students' aptitude and interests for postsecondary planning.

The stakes for understanding students well enough to address barriers to learning are particularly high as schools ratchet up expectations for student performance.

Although many high school teachers possess these understandings, knowledge, skills, and expertise, many others do not.

Although many of the teacher characteristics discussed above appear to be fairly prevalent across California's high school teacher workforce, data from our survey of high school principals suggests that nearly all schools have some teachers who lack knowledge or skills in several key areas (Exhibit 18). For example, despite the efforts that many high schools are making to increase personalization and engage students by placing teachers in advisory roles, only 68% of California high school principals reported that a substantial majority (i.e., more than two-thirds) of their teachers have the interpersonal skills to connect with their students, and just 35% of principals reported that a substantial majority of their teachers have the skills to assess students' aptitude and interests for postsecondary planning.

Exhibit 18
Prevalence of Teaching Knowledge and Skills



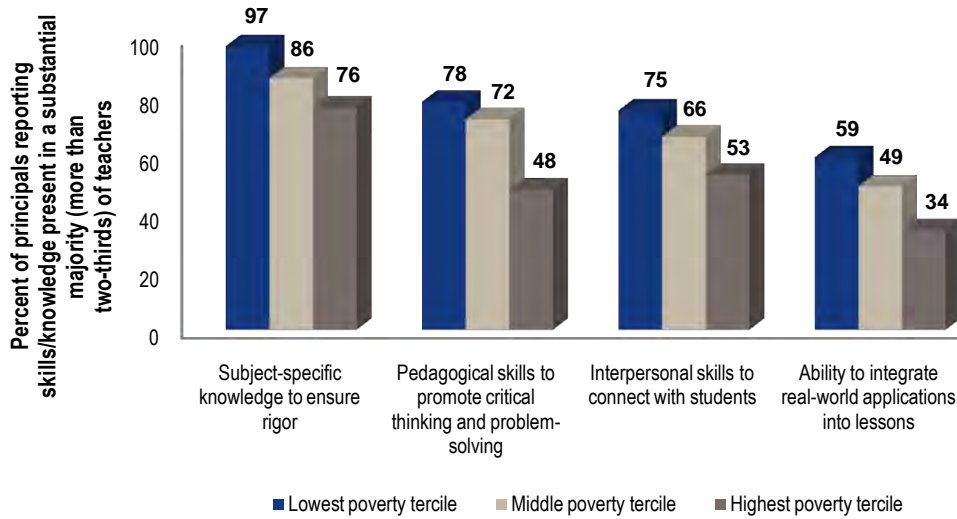
78% of principals in the most affluent high schools reported that a substantial majority of their teachers have the pedagogical skills to promote students' critical thinking and problem-solving abilities; in the least affluent schools, less than half the principals reported this.

Source: SRI Survey of California High School Principals. For technical information, see Exhibit D-12.

Troublingly, teacher knowledge and skills along several of these dimensions differ substantially by school poverty level. Our survey of high school principals revealed that principals in more affluent schools were more likely than principals in less affluent schools (where improvement strategies are often seen as most urgently needed) to report that teachers have certain requisite knowledge and skills to implement many of the strategies described earlier (Exhibit 19). For instance, 78% of principals in the most affluent high schools reported that a substantial majority of their teachers have the pedagogical skills to promote students' critical thinking and problem-solving abilities—skills deemed necessary for success in the 21st century economy; in the least affluent schools, less than half the

principals reported this. These findings are consistent with the fact that across California the least affluent high schools are also those that are more likely to have higher percentages of underprepared and/or novice teachers (Exhibit A-28).

Exhibit 19
Prevalence of Teaching Knowledge and Skills by School-Level Poverty



Source: SRI Survey of California High School Principals. For technical information, see Exhibit D-13.

* * *

Redesigning schools and creating new ones that are focused on providing students with the tools to succeed in college and the world of work places many demands on teachers. Teachers often must do more and do things differently—they must understand the rationale behind their school’s chosen reform strategy, they need strong knowledge of academic or technical subjects and the real-world applications of that content, they need specific pedagogical skills associated with the complex demands of many of the reform strategies, and they need professional expertise in areas that transcend the classroom. We found that although many teachers possess these understandings, knowledge, skills, and expertise, many others do not. We turn now to a discussion of what schools and districts are doing to support teachers as they take on these challenges.

CHAPTER 5

THE TEACHER DEVELOPMENT SYSTEM

KEY FINDINGS

Teaching has always been a complex job, and as expectations and stakes for students are rising, the demands on teachers also are increasing. Meanwhile, the systems for recruiting, training, and supporting high school teachers are not keeping pace and are being further threatened by state budget cuts. Lacking systemic supports, some California high schools are working strategically to develop systems to recruit and support teachers locally so that their teachers have the knowledge, skills, understandings, and expertise to successfully implement improvement efforts.

TEACHER PREPARATION, RECRUITMENT, AND HIRING

- Working with local colleges and universities to train and support novices helps schools generate a pool of candidates whose knowledge and skills align with their improvement strategies.
- Using strategic recruitment and hiring practices, such as setting clear expectations during interviews and requiring demonstration lessons, helps to identify candidates who fit well with a school's vision.
- Involving teachers in the hiring process helps identify potential new hires who support and have the knowledge and skills to implement school improvement efforts.
- Despite strategic hiring practices, many high schools—particularly those where reforms are most urgently needed—struggle to attract and retain teachers who have the knowledge and skills to implement the schools' design principles.

TEACHER PROFESSIONAL DEVELOPMENT AND NEW TEACHER INDUCTION

- Creating opportunities for staff collaboration supports active teacher learning that is grounded in a school's context and aligned with a school's design principles.
- In-house specialists such as instructional coaches also support individual teachers or groups of teachers as they work together on instructional issues relating to school improvement efforts.
- Attending reform-specific conferences as a staff generates support for new ideas and provides opportunities for teachers to work together while benefiting from outside resources and expertise.
- Visiting other schools enables teachers to learn from their peers who are implementing similar innovations at similar schools. Likewise, bringing experts into the schools has the potential to develop the knowledge, skills, and expertise that directly match the school's needs and expectations for teachers.
- Providing targeted supports for new teachers through on site induction programs helps to ensure that new teachers have the knowledge and skills to implement a school's design principles.

The California teacher development system as a whole is not sufficiently aligned with the high school reform movement.

Adopting innovative school strategies requires teachers to have a complex set of skills. At issue is whether the California teacher development system prepares and supports a high school teacher workforce with the knowledge, skills, understandings, and expertise needed to successfully implement the various strategies in use in California high schools. We found that the California teacher development system as a whole is not sufficiently aligned with the high school reform movement to recruit, train, and support teachers so that they are able to carry out all their responsibilities in high schools that have adopted innovative strategies. In the absence of systemic supports, we found that some California high schools are working strategically to develop systems to recruit and support teachers locally so that their teachers have the knowledge and skills necessary to successfully implement reforms.

The California teacher development infrastructure has not kept pace with increasing demands on students and teachers.

Teaching has always been a complex job and, as expectations and stakes for students are rising, the demands on teachers also are increasing. Meanwhile, the systems for recruiting, training, and supporting teachers are not keeping pace. Even before the latest wave of increased expectations for students (e.g., requiring a passing score on the California High School Exit Exam and completion of Algebra I to earn a high school diploma), many schools were struggling to meet the state's expectations for student learning—evidence that the state has long been challenged in recruiting and providing sufficient training and support for educators. Now, with higher expectations for students and teachers, the fragile teacher development system is not being strengthened but instead is being threatened by state budget cuts.

Nearly all state programs related to teacher training and professional development were subject to a 15.4% midyear funding reduction in 2008–09 and a further funding reduction of approximately 4.4% in 2009–10. These programs include the Professional Development Block Grant, which is by far the largest single source of state funding for teacher professional development and serves as the umbrella funding source for Instructional Time and Staff Development Reform (ITSDR), Teaching as a Priority (TAP), and Intersegmental Staff Development (College Readiness Program and the Comprehensive Teacher Education Institute). A large proportion of the Professional Development Block Grant supports ITSDR, which provides funding for up to 3 days of release time for certificated teachers at all grade levels to participate in professional development activities. Moreover, the state has provided districts with the flexibility to transfer up to 100% of funding from these categorical programs to backfill funds for any other “educational purpose.” Although it is not publicly known how funds for these programs are being spent, the decrease of more than 18% to districts' revenue limit funding for the 2009–10 school year means that districts are seeking other sources of funds to maintain existing staffing levels and may be using the block grant for that purpose instead of professional development.

With higher expectations for students and teachers, the fragile teacher development system is not being strengthened but instead is being threatened by state budget cuts.

Because the state's education, business, and community leaders are not likely to back away from the ambitious goals they have set for students, policymakers and educators at all levels of the system will need to rethink the ways high school teachers are recruited, trained, and supported. Our case studies found weak state support for teacher development, but they also revealed numerous examples of school-level efforts to build closer alignment between the demands of their reforms and the knowledge and skills of their teachers. These examples may be instructive to policymakers and education reform leaders at the national, state, and local level. For example, some schools have worked with local teacher preparation programs to train a pool of teachers with the knowledge and skills aligned with their improvement strategies. Other high schools have adopted strategic recruitment and hiring practices to employ teachers who support school strategies and who possess specific aligned knowledge and skills. To provide on-the-job support for teachers, some schools have crafted

professional development programs that include job-embedded supports and reform-specific opportunities to cultivate deep understanding of the improvement efforts. Specifically to support new teachers, some schools have expanded the purview of new teacher induction to include concepts specific to their improvement efforts. In many cases, schools have relied on a patchwork of federal, state, and private grant programs to support their work.

In the rest of this chapter, we describe these various school-level efforts. We also discuss the challenges high schools continue to face in their efforts to recruit, train, and support teachers.

TEACHER PREPARATION, RECRUITMENT, AND HIRING

Through partnerships with local teacher training programs and innovative and purposeful recruitment and hiring practices, school leaders can fill open positions with teachers who already possess the knowledge and skills appropriate for the school's strategies or who understand and support the strategies and are eager to develop the associated knowledge and skills. We identified several case study high schools that work with teacher training programs or use strategic recruitment and hiring practices to staff their reform initiatives. Strategies for working with preparation programs include hosting student teachers and recruiting from this pool, as well as drawing from programs designed to prepare teachers to work in specific contexts (e.g., urban high schools) or to implement specific reforms. Strategies for hiring include a strong emphasis on interview processes that set clear job expectations and screen for the most highly invested candidates, as well as the use of demonstration lessons to assess teaching skills. These approaches require that the people who best understand the school's needs are involved in, and have some control over, hiring decisions. Effective use of these approaches can help the right candidates self-select into positions that are appropriate for them and can help school leaders select the candidates who are the best fit for their schools.

Working with local colleges and universities to train and support novices helps schools generate a pool of teachers whose knowledge and skills align with their improvement strategies.

Every new teacher candidate must pass a Teaching Performance Assessment to demonstrate that he or she has the knowledge, skills, and abilities required of a beginning teacher, as described in the state's Teaching Performance Expectations for beginning teachers. Despite their general level of preparation, however, staff across the case study high schools reported that newly credentialed teachers had limited exposure in their teacher preparation programs to strategies related to increasing rigor, personalizing learning environments, and connecting instruction to real-world applications. For example, initiatives to increase rigor at many of the case study high schools call for simultaneous efforts to build basic literacy and close gaps in foundational skills while supporting students in succeeding in more challenging grade-level courses; however, many new teachers are not prepared for this dual focus. In describing the misalignment between her teacher preparation program and her teaching assignment, a new English teacher in a low-performing urban high school said, "I finished my credential program thinking that teaching high school English was all about reading comprehension when at [my school] it is all about decoding."

Likewise, many administrators and teachers reported that teacher preparation programs did not adequately prepare teacher candidates to work with their students. These interviewees reported that newly credentialed teachers often have difficulty establishing strong relationships with students in many California high schools because they have limited experience with the diverse social, economic, and cultural backgrounds of the students. Administrators and teachers also reported that there was limited formal training in teacher

Newly credentialed teachers had limited exposure in their teacher preparation programs to strategies related to increasing rigor, personalizing learning environments, and connecting instruction to real-world applications.

Newly credentialed teachers often have difficulty establishing strong relationships with students because they have limited experience with the diverse social, economic, and cultural backgrounds of the students.

preparation programs to address other strategies that are critical to many schools' reform models, such as how to create interdisciplinary or project-based curricula or how to collaborate with peers. As one first-year teacher lamented, "We were taught that collaboration and flexibility were useful, but were never taught how to be collaborative."

To generate a pool of candidates whose knowledge and skills align with school improvement efforts, high schools sometimes partner with local teacher training programs to host student teachers and then recruit from this pool. For example, one redesigned case study high school serves as a partner school for a student teaching program at a local university, hosting up to 20 student teachers at a time. Through their practicums, each of the teacher candidates is receiving training specific to the school's small learning community model. Additionally, the teacher candidates participate in the school's weekly teacher collaboration meetings and thus learn as part of their teacher preparation how to work collaboratively with other teachers. As the principal explained, drawing from the student teacher pool gives him a chance to both influence and assess the knowledge and skills of the teacher candidates. The principal reported hiring 12 new teachers last year, 9 of whom came from the partner teacher preparation program.

A second strategy for increasing the pool of candidates with the relevant knowledge and skills is drawing from teacher preparation programs designed to prepare teachers to work in specific contexts. Several new teachers we interviewed attended programs designed specifically to prepare them to work in urban high schools. Programs to prepare teachers for urban settings emphasize many of the knowledge, skills, and understandings cited as important by teachers across reform models, including strong classroom management, an understanding of how students' cultures and backgrounds influence learning, and an engaging curriculum that is connected to real-world applications. New teachers who graduated from these teacher preparation programs reported that they felt well prepared to teach in their school contexts and remarked that the programs prepared them to establish relationships with inner city youth, to develop and deliver project-based curriculum, and to understand the relationship between student cultural backgrounds and learning styles. A new teacher who went through one of these programs reported that, as a result of this preparation, she is more thoughtful and more reflective about how she teaches.

Colleges and universities also offer programs designed to prepare student teachers to implement specific reforms. For example, one focuses on developing teachers' knowledge and skills to understand students' learning needs, implement inquiry-based teaching, and work collaboratively with others. A new teacher who went through this program described an assignment in which she was required to work with candidates in other content areas to develop interdisciplinary units. This requirement provided an opportunity for prospective teachers to experience what it takes to collaborate across content areas. The new teacher said this assignment was invaluable and that it prepared her to work in an academy that is striving to implement interdisciplinary instruction tied to real-world applications.

The demand for teachers with the skills to be successful in reforming high schools is not going unnoticed by some colleges of education in the state. A few colleges are responding by developing new credential programs to prepare candidates to work in specific school contexts, such as multiple pathways high schools or programs. In fall 2008, San Diego State University introduced a multiple pathways lens to a cohort of students going through the single-subject credential program. Students in the multiple pathways cohort earn a regular single-subject credential while also developing the professional knowledge and skills to teach in small schools and academies implementing the multiple pathways approach. Through their coursework and student teaching experience, teacher candidates are taught to work in interdisciplinary teams and to develop lesson plans and projects that combine high-level academic knowledge and technical content with real-world applications. The university is

The demand for credential candidates with the skills to be successful in reforming high schools is not going unnoticed by some colleges of education in the state.

planning to work with seven additional teacher preparation institutions around the state to prepare teachers in the multiple pathways approach; so far, three institutions—California State University, Fresno; California State University, Sacramento; and California State University, San Bernardino—have been identified and begun work to develop a multiple pathways lens in their single-subject credential programs. Staff members at one case study high school reported that they are eagerly awaiting these new graduates because their preparation experiences will be more closely aligned with the school’s strategies to improve student outcomes.

Using strategic recruitment and hiring practices such as setting clear expectations during interviews and requiring demonstration lessons helps to identify candidates who fit well with a school’s vision.

In some high schools, careful interviewing and demonstration lessons are used to set realistic expectations of job demands as well as to screen for candidates who fit best with the school vision. To assess fit in one high school, candidates conduct demonstration lessons during summer school that are observed by the principal and a teacher from a similar content area. The principal makes a point of highlighting the school’s culture of accountability by explaining to candidates that the school uses a very open model of teaching so that teachers must be willing and open to learning and refining their practice. As she explained, “Everyone’s in and out of classrooms all the time here...it’s not for everyone.” She acknowledged that these frank conversations and required demonstration lessons discouraged several applicants last year who had first rights to the position under the local bargaining agreement. Recognizing the importance of a good fit for both the school and the teacher, she acknowledged, “They don’t want to be under that scrutiny.... I want the ones who feed off of it, who are willing to do whatever it takes.”

Likewise, an administrator at a high school that requires teachers to go through a carefully designed interview process and conduct half-hour demonstration lessons explained that the demonstration lessons are important for separating candidates who can only talk about what good teaching looks like from those candidates who actually know how to apply those practices in a classroom with adolescents. She reported, “Generally what you see in the demo lesson is what you get.” This administrator also noted that demonstration lessons help reveal those candidates who may not interview as well as they teach.

At another high school, the interview process focuses on communicating the skills needed to implement the school’s reforms as well as the school’s professional expectations. Staff at this school noted that clear communication of expectations can be just as helpful to the candidate as to the interviewer. As a first-year teacher explained, the interview process ensures that both the hiring committee and teacher candidate are able to assess whether there is a good fit:

What I learned was that it was important at this school that the teacher is open and flexible [and] that the teacher collaborates and keeps in close contact with the other teachers. I wanted to be in this kind of environment.

One administrator described a schoolwide “refusal to settle” in the teacher hiring process, leading to a significant investment of time:

[W]e interviewed about 50-plus people to hire seven. We just wouldn’t stop. If we weren’t satisfied, we just kept interviewing and kept interviewing, and it took a lot of time. It was a huge investment, but it paid off in the end and we hired some excellent math teachers. You can see it in our scores, which just rocketed.

While school leaders varied in the qualities they were looking for in teacher candidates, staff at nearly every case study high school focused on the issue of teacher fit with their school’s vision and values. For example, an administrator at one high school said, “You can learn to

Careful interviewing and demonstration lessons are used to set realistic expectations of job demands as well as to screen for candidates who fit best with the school vision.

be a better teacher, you can learn strategies, you can work with a coach, but if you don't believe a certain way...it is hard to teach a different belief system." An administrator at another school also discussed the importance of finding teachers who are passionate about the school's tenets. He explained, "One of our pillars here is personalization and the idea that teaching is a calling. We want to get that sense from the interview." In contrast, at other schools, staff members defined "fit" as having the right knowledge and skills. At one new charter high school, finding teachers who are a good fit means finding teachers who not only buy in to the school's mission, but who also possess a "start-up stomach," enabling them to contribute effectively to the task of building a school while teaching their courses. A teacher noted, "You need to expect to be working every day, even on the weekends, and...if your heart's not in it, then it's not worth it. You shouldn't come here. You won't last 2 years."

Involving teachers in the hiring process helps identify potential new hires who support and have the knowledge and skills to implement school improvement efforts.

To ensure that the strategic interviewing and demonstration lessons are effective in identifying teachers whose skills are aligned with a school's needs, teachers and administrators alike explained that it is important to include those who best understand the demands of the reform—including current teachers—in the hiring process. For example, at two case study schools that are home to career academies, the principals oversee the hiring of teachers for the school at large, but academy coordinators and teachers participate in the screening process and hiring decisions for their academies. Describing why academy staff in one school give hiring input, a district administrator explained,

We post the position...and with the academy, I let [the academy teachers] really...make the decisions because [the candidates] are going to be working with those students and teachers as a team.

Additionally, teachers at several new or wholly redesigned case study schools share responsibility with administrators for interviewing all prospective new staff to find the right fit. This teacher-level input is seen as critical because the teachers and academy staff possess the most intimate knowledge of both their instructional programs and their existing colleagues and can screen for those candidates who are most likely to be successful in that environment.

Despite strategic hiring practices, many schools—particularly those where reforms are most urgently needed—struggle to attract and retain teachers who have the knowledge and skills to implement the schools' design principles.

Some high schools—reforming and nonreforming—struggle to recruit desirable candidates. In particular, schools that are located in communities where few teachers live or that fail to offer competitive salaries and benefits are at a particular disadvantage. In schools that are working to implement specific improvement efforts, these challenges may be compounded. For example, while low pay and benefit levels can affect the ability of any school to recruit and hire qualified teachers, schools that are seeking to attract teachers from industry without the advantage of comparable salaries or benefits face additional challenges. A district administrator explained the difficulty of recruiting industry candidates to apply for a coordinator position in a local career academy:

We had minimal applicants, even though it's well recognized and it has...everything that you would think teachers would want out of teaching.... I think specifically in the health care area, it probably is a salary issue.

Additionally, even the most strategic and successful hiring can be undone by teacher layoffs. As budgets tighten and districts must reduce their teaching staffs, pink slips tend to go to the most recent hires in accordance with local collective bargaining agreements. Staff members at several case study schools reported that as a result of pink slips, they have lost novice

Teachers and administrators alike explained that it is important to include those who best understand the demands of the reform—including current teachers—in the hiring process.

teachers who were hired specifically for their fit with the schools' improvement strategies. At one small school, for example, staff members reported that they hired new teachers who were attracted to the school's career-themed instructional model. Because so many of the teachers were nontenured, however, the faculty has been drastically impacted by recent layoffs. When interviewed in spring 2009, school administrators reported that they were expecting to lose 7 of their 20 teachers, 5 of whom had already received pink slips. One of the pink-slipped teachers led two grant initiatives and helped develop the school's career-themed curriculum. Loss of teachers playing such critical roles could very well hinder full implementation of the school's instructional program. Furthermore, the school was anticipating that laid-off teachers would be replaced by other district teachers who may or may not support the school's design principles and may or may not have the requisite skills to implement them.

Finally, although case study school personnel reported that small schools can support the development of relationships among students and between teachers and students, we found that small schools in particular struggle with staffing because they cannot hire individual teachers for each subject area and are often unable to find teachers who are qualified to teach multiple subjects. For example, administrators at one small school explained that student enrollment is too low to justify hiring separate chemistry and physics teachers and mentioned that it was especially difficult to find a teacher who was highly qualified in both disciplines.

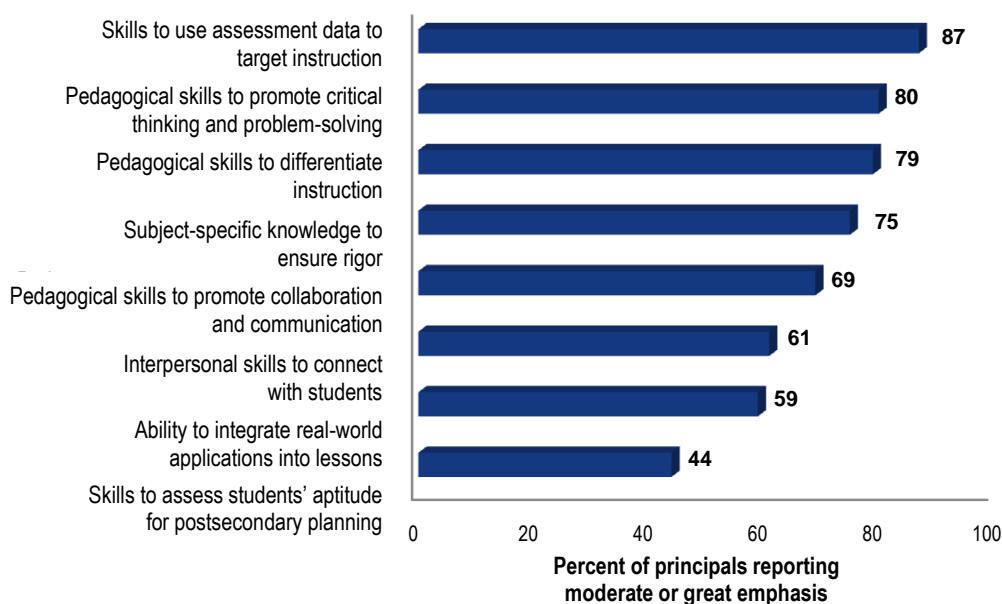
Even when high schools are able to overcome these challenges and successfully hire *new* teachers who support and are equipped to implement school improvement efforts, schools need to ensure that *all* staff have the knowledge and skills to provide instruction that is aligned with their strategies. We turn next to a discussion of the professional development opportunities that help to provide teachers with these aligned knowledge and skills.

TEACHER PROFESSIONAL DEVELOPMENT AND NEW TEACHER INDUCTION

Professional development is an important means for building the knowledge and skills of new and existing teachers for implementing high schools' improvement strategies. In general, priorities for professional development in high schools across the state are aligned with the knowledge, skills, and understandings teachers need to be effective in improving high schools. According to our survey of high school principals, at least three-quarters of California high schools have as a priority professional development that focuses on skills to use assessment data to target instruction (87%), pedagogical skills to promote critical thinking and problem-solving (80%), pedagogical skills to differentiate instruction (79%), and subject-specific knowledge to ensure rigor (75%) (Exhibit 20).

Professional development is an important means for building the knowledge and skills of new and existing teachers for implementing high schools' improvement strategies.

Exhibit 20
Professional Development Priorities of California High Schools



Source: SRI Survey of California High School Principals. For technical information, see Exhibit D-14.

Too often, professional development emphasizes the practicalities of a given structure or strategy more than curriculum or instruction associated with that structure or strategy.

Further, principals at high schools that place priority on a given focus area (i.e., increased academic rigor, real-world applications, or personalization) were more likely to report an emphasis on professional development topics within that focus area. For example, principals at schools concentrating on increasing academic expectations were more likely than principals at schools with this as a lesser focus to report an emphasis on teacher professional development to build skills in using student assessment data effectively to target instruction and to develop pedagogical skills to promote students' critical thinking and problem-solving abilities. Similarly, principals at schools focusing on real-world applications were more likely than principals at schools that were not to report an emphasis on professional development designed to help teachers integrate real-world applications into lessons. Finally, principals at schools working on personalization were more likely than principals at schools not focusing on relationships to report an emphasis on professional development aimed at augmenting teachers' capacity to assess students' aptitudes and interests for postsecondary planning (Exhibit D-15).

High schools that are attempting to manage multiple reform initiatives can find it challenging to support the development of the knowledge and skills required across the reforms. Further, too often professional development emphasizes the practicalities of a given structure or strategy more than curriculum or instruction associated with that structure or strategy. As one teacher at a large case study high school implementing small learning communities (SLCs) explained,

The difficulty is implementing SLCs themselves is a huge undertaking. This school struggles with time constraints, and the amount of time needed for professional development outside of establishing the SLC becomes difficult, so there's not enough time to have genuine conversations about student success and individual student needs *and* instructional strategies.

Our case studies illustrate how high schools have approached teacher learning to support their various school priorities. For all teachers, these approaches include job-embedded structures such as opportunities for teacher collaboration that are designed to improve teacher practice as well as professional development specific to individual schools' reform initiatives. For new teachers, these approaches include tailored induction support to build their knowledge and skills for implementing the school's improvement efforts.

Creating opportunities for staff collaboration supports active teacher learning that is grounded in a school's context and aligned with a school's design principles.

Job-embedded structures incorporate learning into the daily lives of teachers rather than supporting learning that is removed from the classroom or school. Because job-embedded professional development is supported internally within a school, it facilitates the transfer of knowledge to teacher practice. Across the case study high schools, one prevalent strategy for developing teachers' knowledge and skills was to create opportunities for teachers to work collaboratively. Most of the case study high schools have structured time in the school day or school week for teacher collaboration. This time ranges anywhere from 55 minutes to 3 hours per week. When teachers focus on teaching and learning rather than on "housekeeping" issues, these job-embedded opportunities to meet and work together provide the means for teachers to support each other's professional growth as they work to implement their schools' reform initiatives.

In one large case study high school, the primary strategy for supporting all students in reaching higher levels of proficiency is to improve instruction through formalized teacher collaboration in professional learning communities (PLCs). This school has instituted PLCs for groups of teachers who teach identical or closely related subjects. The PLCs meet once a week for 45 minutes to review student assessment data, collaborate on lessons, and discuss best practices. A teacher participating in the Algebra 1 PLC explained that the opportunity to work together provides teachers with a forum to collectively consult data and seek advice on teaching strategies from colleagues whose students' scores indicate mastery of the material:

This new PLC basically brings the best practices [together]... It's not uncommon for a teacher to go up to the board and teach other teachers how they taught a particular concept.... If I'm not sitting in that classroom every Friday learning his best practices or another teacher's best practices, then it's lost on the kids, so it requires everybody to work together.

In case study schools seeking to make instruction more relevant by incorporating real-world applications, teachers reported using collaboration time to share information and to work together to plan interdisciplinary units that connect academic and workplace skills. Likewise, in schools with a focus on increased personalization, teachers reported conferring about individual students' needs and ways to address them. Some schools use their collaborative time for all these purposes. Exhibit 21 presents an example of how one case study school uses 3 hours per week of collaborative time.

Job-embedded professional development facilitates the transfer of knowledge to teacher practice.

Exhibit 21 One School's Use of Collaboration Time

At one charter high school, teachers meet for about 3 hours each week for professional development and collaboration time within their academic families (each academic family has 6 teachers and 120 students, and teachers stay with the same group of students for 2 years). The focus of professional development during early-release Wednesdays is established each academic year by the leadership team during its planning week the previous June. The principal reported that a recent year's focus was on student engagement. During collaboration time that year, teachers discussed what student engagement is and what it looks like. Teachers and administrators then conducted classroom observations using a student engagement rubric. When observations were completed, teachers and administrators used the collaboration time to discuss the results and brainstorm ways to improve student engagement. Teachers also brought in specific lesson plans for group discussions on ways to make a lesson more engaging. The principal reported that she wants her teachers to be stimulated as learners (just like the students), so professional development is inquiry based and based on real lessons the teachers are grappling.

In addition to focusing on the selected topic (e.g., student engagement), teachers also use their collaborative time more generally to share instructional strategies, discuss their school's authentic assessment system, and develop interdisciplinary, project-based activities. This time is also used to discuss struggling students and to strategize on ways to help them. Advisors are responsible for following up with students identified as struggling during this collaboration time and are expected to report back at the next meeting what they learned about the students' situation either from the students or from their family.

Collaboration was reported to be especially valuable when it was facilitated.

In several case study schools, collaboration was reported to be especially valuable when it was facilitated. Facilitators help define the goals for collaboration and develop a work plan for meeting them, making meetings more productive. For example, at the large case study high school previously described as implementing PLCs, members of the principal's leadership team provide support to ensure that conversations within individual PLCs are based on data and remained focused on instructional improvement. Some case study schools have had department chairs or academy coordinators facilitate this collaboration, but the extent to which these individuals have the requisite facilitation skills varies. In the case of one charter high school, those charged with facilitating collaborative meetings have received support to develop the skills to do so from a coach provided by the school's charter management organization.

Although teachers identified collaboration as one of the most valuable professional development opportunities they participated in, they also reported that collaboration has not been without its challenges. Even in case study high schools with specific time set aside for collaboration, teachers felt they could use more time. Given the scarcity of collaboration time, teachers at large schools reported that a related challenge is finding time for teachers from different SLCs or academies within the same school to collaborate with each other and share best practices. Additionally, small schools and SLCs or academies within large schools can present size-related impediments because there is often only one teacher for a particular course. Accordingly, teachers may not have colleagues within their school or academy with whom to develop common syllabi, lesson plans, or assessments. Another challenge to teacher collaboration is that teachers do not have experience working together. As described in Chapter 4, succeeding in today's changing high schools requires substantial expertise in communication and collaboration. Because many high school teachers were not trained to

work collaboratively and did not have much opportunity for collaboration before their schools' restructuring, many lack the knowledge and skills to engage in productive collaboration.

In-house specialists such as instructional coaches also support individual teachers or groups of teachers as they work together on instructional issues relating to school improvement efforts.

In addition to collaboration time, several case study schools provide job-embedded professional development by hiring specialists such as instructional coaches to support teachers with school improvement efforts. Instructional coaches serve many roles, including developing and leading in-service training opportunities; assisting teachers in developing syllabi, lesson plans, assessments, grading rubrics, and other instructional materials; analyzing data; developing model lessons; observing teachers' lessons and providing feedback; and maintaining an open classroom for other teachers to observe.

At one case study high school where the improvement efforts are focused on increasing rigor by carefully attending to the quality of instruction, two teachers were selected to serve as instructional coaches in a partial-release capacity while maintaining the majority of their teaching responsibilities. Both teachers had developed considerable expertise implementing the school's instructional approach, and the fact that they maintained their primary teaching responsibilities contributed to their credibility because they are able to draw on their own practices when coaching others. These coaches lead school-based professional development and spend substantial time observing teachers and being observed. One of the instructional coaches contrasted traditional school cultures of closed practice to his school's culture of openness to instructional feedback:

[The] culture of most teachers is that teaching is a very private practice. You go into your classroom and close the door and something happens between you and your students. It can be uncomfortable, especially at the high school level, to have another professional in there.... [Here], very much the opposite is the case. Teachers see the benefit of having an open door.

Because instructional coaches tend to have a nonevaluative role, teachers reported that working with coaches is not threatening and that they are therefore more open to their assistance.

In other schools we visited, instructional assistance has not come solely from individuals hired specifically to be coaches, but from other internal experts as well. In one case study high school, for example, a department chair took advantage of time dedicated for professional learning communities to support colleagues new to specific courses by teaching them the content of the courses over the school year. Having experts in the schools with the knowledge and time to support others contributes to the professional growth of teachers, which in turn supports effective implementation of reforms.

Attending reform-specific conferences as a staff generates support for new ideas and provides opportunities for teachers to work together while benefitting from outside resources and expertise.

In addition to job-embedded structures to develop teachers' knowledge and skills, nearly all of the case study high schools had teachers engage in professional development that specifically targeted the structures and improvement strategies being deployed in their individual schools. Many high schools had staff members participate in conferences or multisite trainings designed to address specific strategies. Hosts of these conferences include Advancement Via Individual Determination (AVID), California Partnership Academies or other networks of career-themed schools, and charter management organizations or other

Having experts in the schools with the knowledge and time to support others contributes to the professional growth of teachers, which in turn supports effective implementation of reforms.

school networks. Teachers participating in conferences reported valuing these opportunities both for the specific content addressed and for the opportunity to develop a common understanding with their colleagues.

At one case study high school, a federal small learning community grant enabled approximately 40 teachers and a few administrators, out of a staff of 120, to attend national conferences and professional development events to learn about school improvement strategies from the “premier gurus of school reform.” Teachers reported that their participation opened them up to new ideas and helped them become leaders of the change efforts. Likewise, at two high schools that require staff-wide participation in summer conferences on their specific strategies, teachers explained that the conferences provide an important “enculturation model” used to communicate and calibrate schoolwide expectations on an annual basis. At one of these schools, all teachers attend a week-long AVID conference every summer. A counselor noted that the administration has never wavered on sending every teacher to the institute and explained that the purpose is not just to learn new strategies, but also to have an opportunity to work closely with their colleagues attending the conference.

Additionally, many teachers expressed appreciation for the opportunity such conferences provide to network and share ideas. For example, one group of teachers and administrators attended a national institute to develop the curricular content of their new career-themed school. Together with teachers from other areas of the country, staff brainstormed in groups on this particular industry theme and its focus, its correlation to state standards, and how these standards would be met while integrating the theme.

Visiting other schools enables teachers to learn from their peers who are implementing similar innovations at similar schools. Likewise, bringing experts into the schools helps develop the knowledge, skills, and expertise that directly match the school’s needs and expectations for teachers.

In addition to attending conferences, several high schools have provided more in-depth opportunities for professional development related to reforms by setting up opportunities for some or all staff members to visit other schools implementing the same strategies. Such visits enable teachers and administrators to learn from their peers and see concrete examples of initiatives that are less developed at their own schools. A teacher at a case study high school that is implementing small learning communities described the benefits of visiting another school implementing the same model:

A few of our SLC teachers...went to a high school that had already implemented SLCs and talked to them about how they did it, challenges they faced, solutions they [came up with], classroom examples of how SLCs can look.... They’re much further along in the process than we are. That was quite helpful to see what a finished product might look like.

In some cases, visits to other schools prompt ideas for innovation. Staff at a small case study high school reported that a recent visit to another school that was using project-based learning to differentiate instruction prompted a similar initiative at their own school.

Similarly, several case study high schools had outside experts lead on-site professional development activities specifically aligned with one or more of the school’s key strategies. Experts brought in to the high schools represented a range of organizations, including county offices of education, charter management organizations, colleges and universities, local or regional technical assistance providers, and consulting firms. Teachers and school administrators widely reported satisfaction with these experts because of the school-specific nature of their assistance. For example, at one charter high school that requires students to develop a comprehensive performance-based graduation portfolio, teachers have worked

extensively with a school coach provided by the charter management organization and with other external technical assistance providers to define proficiency, articulate skills required at each grade level, and identify common teacher practices useful to this model. Teachers and administrators reported that working with experts was highly valuable because their assistance was personalized to the school's needs.

Visiting other schools and bringing in experts, as well as sending teachers to conferences, hiring coaches, and creating time for teacher collaboration, has the potential to help align teachers' knowledge and skill sets with the specific needs of high schools' improvement initiatives. Still, helping new teachers develop the knowledge and skills to succeed in reform-oriented high schools tends to be especially challenging because new teachers require support in the basics of teaching as well as in developing the skills required by a school's improvement strategies.

Providing targeted supports for new teachers through on-site induction programs helps to ensure that new teachers have the knowledge and skills to implement a school's design principles.

New teachers, regardless of placement, struggle to master the basics of teaching, from developing curricula to managing classroom behavior to delivering instruction. In redesigned high schools, new teachers often must acquire an additional set of skills related to increasing rigor, creating personalized learning environments, and connecting course content to real-world applications. By law, all California districts are required to provide induction support for new teachers, and most fulfill this obligation through the state's Beginning Teacher Support and Assessment (BTSA) program, which is designed to support professional growth along the dimensions of the California Standards for the Teaching Profession (CSTP). Through BTSA, new teachers are assigned to support providers who are responsible for working with the teachers to complete the Formative Assessment for California Teachers (FACT)—BTSA's new assessment system that was rolled out statewide in 2007–08.

The new high school teachers we interviewed varied in their assessment of BTSA from very positive to critical. One new teacher, for example, reported that she had developed a very strong relationship with her BTSA mentor and now works collaboratively with her mentor to jointly develop the syllabi for the classes they teach. On the other hand, another new teacher expressed frustration with the efficacy of BTSA, complaining that the FACT was a repeat, rather than an extension, of activities she completed while enrolled in a teacher preparation program. As we found in previous research, induction support does not typically draw on information (e.g., Teaching Performance Assessment) gathered during a teacher's preparation program (Wechsler et al., 2007). Even in the most successful cases, however, BTSA is not tailored to the specific skills and knowledge teachers need to implement schools' improvement strategies. While important to their development, BTSA may not be sufficient to support new teachers' effectiveness in their particular contexts.

To build new teachers' skills in areas specific to their priorities and improvement efforts, many high schools incorporate additional induction strategies to augment BTSA. Several case study schools, for example, hold in-depth orientation programs for all new teachers. One high school provides a 2-day "boot camp" for all new teachers during the summer before their first year of teaching. This boot camp serves an important role in ensuring that new teachers understand the school's main priority of increasing academic rigor, the rationale for that focus, and what increasing academic rigor means for classroom instruction as well as for working with colleagues. New teachers praised the boot camp, reporting that it addressed and clarified explicit expectations for teacher practice. One teacher explained that "They go through what is expected in every single classroom, every day for every lesson." Another teacher reported

Helping new teachers develop the knowledge and skills to succeed in reforming high schools tends to be especially challenging.

I went to two semesters of credential classes, and after I finished I didn't know the difference between a concept and an objective. I went to boot camp and the instructional coach explained it in 10 minutes.

In fact, when new teacher supports do not include discussions about a given school's improvement efforts, the rationale for them, and the strategies for operationalizing those efforts, that school runs the risk of losing forward momentum. For example, one case study school that shifted to a block schedule provided all teachers with professional development on how to effectively teach a 2-hour class. This professional development did not continue after the first few years, however, and was not incorporated into the support new teachers received. As a result, new teachers were ill equipped to teach a block schedule. As one veteran teacher explained,

At the beginning we were very good at bringing in professional development for the block schedule and how to make that work. I don't know that we have done the things we need to do to bring the newer people on board. We do have mentors who help with the new teachers, but I know that our new teachers struggle with the 2-hour period.

In addition to schoolwide induction for new teachers, some high schools provide individualized supports for new teachers that play an important role in helping familiarize the teachers with norms and expectations tied to their school's specific priorities and improvement efforts. One such type of support is informal new teacher mentoring or coaching by more experienced teachers. Veteran teachers reported making themselves available to new teachers to help them learn how to teach within the context of the school's priorities. For example, one school initiated an informal new teacher mentoring structure in response to losing three teachers in the first year of the high school's reopening as a small school. These informal mentors support new teachers by observing them in their classrooms and providing feedback. Other types of tailored supports for new teachers include more frequent administrator visits to new teachers' classrooms and intensive instructional support for new teachers from instructional coaches. Both new and veteran teachers commented on the importance of these tailored supports in building the skills of new teachers as well as helping to retain new teachers in new or redesigned high schools. A teacher at one school that incorporates several of these personalized induction strategies summarized:

I don't think I could be...as successful as I have been in my job if I hadn't started at this school...My teaching and who I am in the classroom would be different had I not started at [this school]. I mean, what I thought versus what they've taught me and provided me—the support has been pretty overwhelming.

In some cases, the improvement strategy itself, while focused on opportunities for students, has the additional benefit of supporting new teachers. For example, in one case study school, veteran teachers reported they developed a very supportive environment for new teachers within the academy structure. A new teacher in the same academy confirmed this, stating that she could not imagine being a new teacher outside the academy structure because “the support is just not there.”

* * *

This chapter describes the strategies that California high schools have put in place to recruit, hire, and support teachers who can implement their school improvement strategies and, more generally, prepare students for the 21st century. The challenge of organizing and maintaining these various systems and supports typically requires strong leadership at the school site. We address issues related to school leadership in the next chapter.

CHAPTER 6

SCHOOL LEADERSHIP

KEY FINDINGS

The challenge of organizing school improvement efforts and maintaining systems to support teachers requires strong leadership at the school site. We found that the extent and quality of on-the-job support for teachers in implementing their schools' improvement strategies often varies based on school leadership. Principals face many competing demands for their time, and they may not have the knowledge or skills to provide teachers with needed supports.

- Principals can play a key role in motivating teachers to support improvement efforts. By actively engaging in the efforts themselves and serving as role models, principals can garner the support and commitment of their faculty members.
- School leaders can create support for improvement efforts by presenting data to demonstrate the need for change and to document the efficacy of the efforts.
- School leaders can use teacher evaluations to identify the strengths and weaknesses of individual teachers with regard to the school's improvement strategies and tailor support to improve teachers' skills and knowledge for implementing the strategies.
- Teachers also can spearhead and lead school improvement efforts if they are supported to be innovative. Several case study high schools have distributed leadership models that include an expanded role for teacher leaders in leading the implementation of school redesign efforts.
- Shared leadership can broaden the base of support for improvement efforts and help to ensure continuity.
- School redesign and instructional improvement require school leaders to have certain knowledge and skills (e.g., how to understand and present data in a compelling manner). However, on-the-job support for principals is limited, and nearly half of high school principals statewide reported they do not feel well supported by their district.
- Some principals are part of school districts or charter management organizations that provide on-the-job support needed to successfully lead their school improvement efforts.

The extent and quality of on-the-job support for teachers in implementing their schools' improvement strategies often depends on the leadership at the school site. In addition to providing explicit support for teacher development aligned with their school's improvement strategies, principals and other school leaders play a critical role in motivating teachers to engage in school improvement initiatives and building systems of shared leadership. These efforts help to create conditions that support teachers in developing and refining skills that directly affect instruction and the implementation of school improvement efforts. However, the ability of school leaders to provide this support varies widely. High school principals, for instance, face many competing demands for their time, and they may not have the knowledge or skills to provide teachers with needed supports.

In this section, we discuss the approaches that principals and other school leaders use to motivate teachers, build shared leadership, and support teacher leaders. We conclude with a discussion of the sources of support that school leaders can themselves draw on to help support teachers and create the conditions for positive change.

Principals can lead by actively engaging in school improvement efforts.

Principals can play a key role in motivating teachers to support improvement efforts.

Principals can play a key role in motivating teachers to support improvement efforts. By actively engaging in the efforts themselves and serving as role models, principals can garner the support and commitment of their faculty members.

In case study one high school, the principal inspired teachers to change their instructional practices by learning the new instructional strategies himself. To show his commitment, the principal publicly participated in a formal process to qualify him as a coach in direct instruction—the school's primary instructional strategy. The qualification process included working with a direct instruction coach and conducting a model lesson. By being the first staff member to participate in the qualification process, the principal achieved great credibility in asking teachers to engage with this strategy. As he explained, "Why would I ask teachers to do something that I'm not willing to do?" Additionally, while this principal failed in his first attempt to qualify as a coach when his model lesson—which was conducted in front of the entire staff—did not satisfy the requirements for the direct instruction model, teachers reported that the principal's willingness to take risks in front of his staff demonstrated to teachers that they would be supported through their own challenges. That the principal kept working toward the qualification further demonstrated his commitment to instructional change.

Another case study high school has focused its improvement efforts on closing the achievement gap through two strategies: improving instruction through professional learning communities and increasing personalization through advisories. Teachers in this school reported that they were motivated by the principal's personal commitment to addressing the achievement gap. One teacher characterized the principal's vision for closing the gap as "an incredible plan" and added, "It's exciting to think we're going to be a part of this." The principal plans to ask teachers to develop contracts with individual students. But he, too, will be engaging in the strategy. To serve as a model and exemplify the importance of the strategy, the principal has committed to establishing contracts with the most at-risk students, asking them what they want out of life, what they need to get there, and what he can do to help them. Teachers explained that the principal's emphasis on the importance of closing the achievement gap and his clear commitment to this cause have fostered staff support for the school's improvement strategies.

School leaders can use data to demonstrate the need for change and to document the efficacy of improvement efforts.

In addition to actively engaging in improvement efforts, school leaders can create support for them by presenting data that demonstrates the need for change. For instance, the principal described above who is focused on closing the school's achievement gap makes a point of always sharing data that are disaggregated by subgroup. Because the school is among the state's highest performing high schools, awareness of the achievement gap might become lost if the principal did not use data to remind his faculty of the room for growth and the need for improvement.

Likewise, to maintain faculty commitment to the improvement efforts, some school leaders present data demonstrating the positive results of their efforts. In one case study high school that is focused on improving time on task, the principal used data to provide teachers evidence that the initial changes in practice were making a difference in student learning. As he described,

We worked on some strategies to improve time on task...and our API [Academic Performance Index] went up 105 points.... We were at 85% time on task. The teachers got it.... We did something different and our students were achieving at a higher level. And I tell them, "Look, it was the instruction that made the difference."

When teachers see that their efforts are making a difference in student achievement, they may develop confidence in the improvement strategies, furthering commitment to those strategies.

School leaders can use teacher evaluations as a powerful strategy to improve teaching practice.

Even those leaders who are able to inspire most teachers to participate in schools improvement efforts may come to find that some teachers are unable to meet the expectations the schools established. School administrators can use teacher evaluations to identify the strengths and weaknesses of individual teachers with regard to school improvement strategies and tailor support to improve teachers' knowledge and skills for implementing the strategies.

At one case study high school, the principal informally observes teachers at least twice during the year. Using both the California Standards for the Teaching Profession and the district's evaluation form as a guide, the principal spends an entire period in the classroom during which she takes extensive notes on her observations. These notes form the basis for detailed feedback that she gives the teachers about strengths and areas in need of improvement. As the principal noted, "I know who my weak teachers are because I'm in classrooms and we talk about instruction. We have hard conversations about what is not working." During later observations, the principal focuses on teachers' areas for improvement and identifies areas where there is notable growth and areas where growth is still needed. According to both the principal and the teachers, especially the less experienced teachers, this process of observations, tailored feedback, and follow-up has contributed to positive instructional change.

At a charter case study high school, administrators formally evaluate teachers six times per year. During these observations, administrators give teachers specific feedback on ways to improve their instruction, and the teachers are expected to incorporate this feedback into their practice. Several teachers reported that they valued this administrator feedback, citing it as an important source of professional learning. One first-year science teacher, for example, said her meetings with the assistant principal have been extremely helpful, particularly the applied, practical approach of the feedback. As she explained, "The most helpful things were

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School administrators can use teacher evaluations to identify the strengths and weaknesses of individual teachers with regard to school improvement strategies and tailor support to improve teachers' knowledge and skills for implementing the strategies.

Teachers can play a key role in spearheading and leading school improvement efforts.

very specific suggestions.... This is what we're going to focus on; this is how we're going to improve it." Likewise, the assistant principal reported that the observation and feedback process was "the most powerful" source of professional development for teachers at the school.

In both these schools, teachers and leaders recognize the dual roles of evaluation: summative evaluation for contract or tenure decisions and formative evaluation for improvement. Both schools have adopted cycles of evaluation and feedback as a means of improving teacher practice and supporting overall school improvement strategies.

Leadership for school improvement can be teacher driven when teachers are supported to be innovative.

Like administrators, teachers can play a key role in spearheading and leading school improvement efforts. We visited several schools with distributed leadership models that included an expanded role for teachers in leading the implementation of school redesign efforts. For instance, one charter high school was started by a group of teachers who had previously worked together in a reforming high school. These teachers continue to shape the direction of the school by serving as lead teachers and members of the school leadership team.

We also observed successful teacher-initiated change efforts in a large comprehensive high school, where a career academy was initiated by a teacher and now has a pair of coordinators that function like co-principals of their own small school. The career academy started 17 years ago when a medical professional contacted a biology teacher saying that more students needed to enter the medical industry. Together, they set up an internship and job-shadowing program for an initial class of approximately 30 students, which eventually grew into a career academy serving approximately 500 students each year. The academy's clinical coordinator acknowledged that she functions "like a principal for the academy" when she is not teaching. Given the academy's continued success, the school principal stated that his approach to leadership with these "self-sustaining" staff members is fairly hands off, explaining that "I don't want to be the principal that got in the way of [this] academy."

Likewise, at another large comprehensive high school, current improvement strategies, including small learning communities and academies, came about as a direct result of the school's teacher-driven approach to leadership. As one teacher explained,

Here, more so than anywhere else, teachers are involved because these reform efforts have really come out of things that we here have said we need to try... It was teacher driven, not administrator driven. That's how the freshman academy came about... Same thing with the [career] academies. Teachers decided to write those grants. They were supported by the administration, but it was all teacher driven.

Having school and district leaders who are in support of cultivating this atmosphere of teacher innovation seems key to successful implementation of this school's strategies. Whereas at some schools, teacher-driven efforts that go ignored by the administration may stagnate or never take flight, this school seems to exemplify a grassroots effort that gained traction with the help of leaders' support. As the school's former principal noted, school change has to be teacher driven: "They can't hear it from me. They can't hear it from [the current principal]. It has to be the teachers' voice saying... this is what's happening."

School change has to be teacher driven.

Shared leadership can broaden the base of support for improvement efforts and help to ensure continuity.

Even in schools where teachers initially do not generate the ideas for improvement, administrators can foster teachers' knowledge of improvement strategies and elicit their enthusiasm and eventual leadership in these strategies' implementation. In one large case

study high school, for example, administrators sent a third of the teachers to conferences to learn about small learning communities. They sent both enthusiasts and detractors of the concept to the conferences in an attempt to broaden support. As the former principal said,

We targeted some of the naysayers to go to these conferences.... We knew who we needed to send to get all factions on board. You have to know the people. Who do we need to target and with what constituency on campus? ...If you don't get every constituency you won't get all the departments. There are certain departments who are notoriously going to sandbag it.

After learning about the concept, teachers began to emerge in leadership roles, deciding how to implement small learning communities in the school and leading the implementation efforts. One of the self-described resistant teachers explained how he came to understand the possible benefits of small learning communities and described the role he played in launching the strategy:

[The] small learning community summer institute...was really my first connection with the ideas, which I have basically latched on to. At first I was...pretty resistant. But when I latched on to it and saw the benefits of it, one of the first things we decided as a team was breaking our school into small learning communities of teachers.... The whole bio team—chemistry, bio, physics, etc.—would work together to align our curriculum in such a way that there was consistency in every class.

The strategy of gaining the support of a diverse staff requires that a leader know the staff well enough to recognize possible dissenters and be willing to consider different perspectives. In turn, teachers may develop a sense of ownership of, and personal investment in, the school's direction.

In addition to developing teachers' knowledge to encourage their participation in leading current improvement efforts, school leaders can set up structures to encourage teacher involvement in making decisions at the school level and in deciding what future reforms are needed. In one large case study high school, teachers can exercise leadership by voluntarily participating in the principal's instructional cabinet. According to an experienced teacher, the cabinet functions as "a ruling cabinet for our school, just like a site-based council. Anyone's welcome to join. One year we had 80 people...these are the leaders of the school." Another teacher echoed

[T]he principal's instructional cabinet...[is] where you get that teacher input. There's no such thing as the administration making all decisions, because the teachers...they go, they vent, they are part of the [classroom] observations, they are part of spreading the word to the rest of the teachers and staff. That's how I started getting really involved originally.

Following through on a goal of developing teachers to be "leaders in their own right," teachers at another school have been encouraged to participate alongside administrators on a school leadership team responsible for designing and facilitating professional development and hiring new staff. All teachers in the school are also encouraged to propose and vote on solutions to challenges. Similarly, the principal of another school explained:

Part of what I have tried to do here is empower teachers to help make those decisions. They can present ideas to the school staff to make changes. I feel like I'm more of a facilitator, not a decision maker.

This principal serves with some of her teachers on the school leadership team that she described as "the heart of the school," responsible for investigating and communicating new strategies and programs to the rest of the staff. Correspondingly, one of her teachers

School leaders can set up structures to encourage teacher involvement in making decisions at the school level and in deciding what future reforms are needed.

Having a distributed leadership structure within a school can create a natural career path for teachers.

acknowledged, “[It] is nice to feel that you have a lot of pull at the school—you are influencing things for the better.”

Having a distributed leadership structure within a school can create a natural career path for teachers as teacher leaders grow into administrative roles. For example, at one case study high school characterized by a culture of shared leadership, teachers are involved in school-level decision-making, and the principal has brought teachers to district meetings so they could experience administration at that level, too. According to the assistant principal in charge of that school’s freshman center,

The best thing that we received, the gift I received, is from the former principal who developed a culture of collaboration, of increasing capacity for leadership on the campus...whether it’s being at the table for budget, devising master schedules, etc.

This school’s culture of growing its own leaders has helped sustain commitment to the school’s improvement strategies over time.

Some schools are part of systems—school districts or charter management organizations—that provide on-the-job support for school leaders that is aligned with their school’s improvement efforts; many are not.

The high school redesign efforts and instructional improvements that we have described require knowledge and skills on the part of school leaders, for example, to understand and present data in a compelling manner, to develop evaluation practices that support instructional improvement, and to establish school cultures that benefit from distributed leadership structures. However, we found that on-the-job support for school leaders to develop such skills is limited. Only 53% of high school principals statewide reported feeling well supported by their districts (Exhibit D-16).

High school redesign efforts and instructional improvements require knowledge and skills on the part of school leaders, [but] on-the-job support for school leaders is limited.

Some principals are part of districts or charter management organizations (CMOs) that provide the support needed to successfully lead their school improvement efforts. For example, the CMO of one case study charter school provides a principal support system that is highly aligned with principals’ day-to-day work of supporting teachers. Supports include a school leadership coach, a principal professional development network, and a team of experienced educators to provide additional assistance (see Exhibit 22). Similarly, a comprehensive high school benefits from a combination of site-based management and district supports. This district allows school leadership substantial autonomy while simultaneously providing supports such as an evaluation tool for self study. The district has developed a comprehensive school evaluation rubric to help schools self-assess their holistic effectiveness, as well as to identify the areas in which they need to improve. The district then uses this rubric to identify focus areas for its own formal school evaluation process that occurs every 3 to 4 years.

Exhibit 22**A Highly Aligned, Structured System of On-the-Job Support for School Leaders**

One case study high school is part of a CMO network that provides principals with a highly aligned system of on-the-job, individualized support and technical assistance. The CMO's school coach visits the school twice a week, spending half a day with the principal to discuss major issues facing the school. The coach also helps the principal gauge the effectiveness of the school's lead teachers and leadership team and strategizes with the principal about how to accomplish the business of the leadership team while running leadership team meetings in a way that builds that team's collective capacity. The principal described the coach as crucial in helping to plan professional development and facilitate adult learning, as well as serving as a critical friend.

This CMO also fosters a professional learning community for principals in the CMO network through monthly leadership meetings. At these meetings, principals from the different schools meet with CMO staff to engage in professional development and to discuss pressing issues and progress alongside key performance indicators. The principal reported appreciating this opportunity to harness the network's collective expertise in solving campus-specific problems, which better enables her to effectively lead her school and support her teaching staff.

Finally, the CMO staff includes teaching and learning experts who are available to help develop specific tools, such as protocols for teacher performance reviews and student graduation portfolios. The principal explained that she appreciates these supports in part because they free her staff's time for instruction. This support team also serves as an intermediary for communicating school needs to the CMO's central office. The principal commented on how she feels strongly supported by the CMO, stating that the CMO hires people committed to the CMO's mission and "that helps me and my school because the support office staff are focused on getting us what we need to achieve our mission."

Administrators, like teachers, need school-specific supports if they are to effectively implement change initiatives.

Across the other case study high schools, district efforts to improve school leaders' abilities to support teacher development varied but were generally lacking. For example, we learned from one comprehensive high school that principals across the district are required to participate in a number of regular district meetings and a series of administrator trainings. These meetings and trainings tend to focus on issues such as school accountability and performance on benchmark testing without addressing specific, actionable steps for leaders to take toward supporting staff in implementing improvement efforts. An administrator at this school contrasted his notion of ideal, site-specific professional development against the district's more general supports:

The most helpful [professional development] is when [technical assistance providers] come to our site to work with us here, because then it focuses solely on [our school] and the task at hand. When you go to big group sessions and all [district schools] are there...you start talking more about theory and it's too general. When [technical assistance providers] come here, we're able to really focus on what we're doing here...So I appreciate that much more.

As this example highlights, administrators, like teachers, need school-specific supports if they are to effectively implement change initiatives. This support can come from the district, as in the above example, or from external partners such as local colleges and universities or county offices of education. Leaders at one comprehensive high school receive professional development from a local university that helps them support teachers in changing their practice. A school administrator said that some of the most challenging aspects of his job were to engage in difficult conversations with teachers over "philosophical differences" and to motivate veteran teachers to change their instructional techniques. He is supported,

though, by the university training, which is focused on using protocols for effectively communicating with teachers. A principal at another comprehensive high school sought out ongoing technical assistance through its Regional System for District and School Support (RSDSS) team.¹⁵ RSDSS personnel have served as critical partners in implementing this school's instructional reforms. The RSDSS regional director, working with the principal, identified instructional practice as an initial area for reform and has continued to help the principal by providing less formal support in addition to technical assistance related to specific instructional practices. This external support has enabled the principal to better support his teachers.

* * *

The case studies underscore the central role that leadership plays in taking on the difficult task of redesigning high schools. For all staff, it takes a great deal of personal motivation and hard work to put new reforms in place, and leaders can do much to motivate other staff through personal commitment and effort. Yet we also found that leadership was not synonymous with the principal—in fact, in these rapidly changing schools, it was important for leaders to emerge throughout the building and for teachers to learn to work with one another to address tough challenges. Finally, the cases underscore the importance of outside resources to support the leaders in guiding their schools.

¹⁵ RSDSS is part of California's statewide system of school support (required under No Child Left Behind) for local education agencies and schools receiving Title I funds to increase the opportunity for all students to meet the state's academic content and achievement standards. RSDSS is organized around the 11 county superintendent regions identified by the California County Superintendents Educational Services Association (CCSESA). See <http://www.cde.ca.gov/sp/sw/ss/> for more information.

CHAPTER 7

SUMMARY AND IMPLICATIONS

California's high schools are changing in response to pressure for more students to graduate with the knowledge and skills needed for success in the 21st century economy. To achieve this broad goal, high schools are raising expectations for students, attempting to engage more students by making school more relevant to the real world, creating more personalized learning environments, and providing intensive supports and interventions. All these changes have implications for teachers. In many cases, the content knowledge, pedagogical skills, understandings, and professional expertise that teachers need to do their jobs effectively in new or redesigned high schools are consistent with what is already broadly recognized as high-quality teaching practice and are enumerated in the California Standards for the Teaching Profession. However, operationalizing these standards—and, more broadly, notions of good teaching—within the context of wholly redesigned or new schools requires much more of a high school's faculty and leadership than has been demanded in the past.

At issue is whether the California teacher development system prepares and supports a high school teacher workforce with the, knowledge, skills, understandings, and expertise needed to successfully implement the various strategies in use in California high schools. Our research revealed that the California teacher development system as a whole is not sufficiently aligned with the high school reform movement; that is, the state's policies and infrastructure to recruit, train, and support teachers have not kept pace with the increasing demands on students and teachers. Even before the latest wave of increased requirements for students, many schools were struggling to meet the expectations for student learning—evidence that the state has long been challenged to recruit and provide sufficient training and support for educators. Now, with increased expectations for students and teachers, our fragile teacher development system is not being strengthened but is instead being threatened by state budget cuts.

In the absence of robust system-level support for teacher development aligned with their improvement efforts, many California high schools develop their own strategies to recruit, hire, and support teachers who can implement school improvement and, more generally, prepare students for the 21st century. In many cases, schools benefit from the support of a patchwork of federal, state, and private funding sources. In all cases, the challenge of organizing and maintaining these various systems and supports requires strong leadership at the school site. Our discussion of these school-level efforts to build closer alignment between the demands of their reforms and the knowledge and skills of their teachers is intended to be instructive to policymakers and education reform leaders at the national, state, and local level. Here we distill the lessons from these reforming high schools.

At all levels of the system, stakeholders should work together to align support for teachers with what they are expected to know and do.

With changing demands on teachers, leaders at the state, regional, district, and school levels, together with leaders in colleges of education, should ensure that teachers are recruited for and supported in developing the knowledge, skills, understandings, and expertise needed to implement ongoing school improvement initiatives. Moreover, policymakers at all levels of the system should acknowledge that efforts to improve high schools serving distressed communities will require increased systemic support.

Teacher preparation. Leaders of teacher preparation programs should work together with school and district leaders and business and industry groups to exchange information about the demands that improvement initiatives are placing on teachers and develop or redesign

The state's policies and infrastructure to recruit, train, and support teachers have not kept pace with the increasing demands on students and teachers.

programs to support the most relevant teacher learning. Programs should be designed to prepare teachers to be successful in high-need schools, and alternative models—e.g., professional development schools, teacher residencies—that enable teacher candidates to spend more time in redesigned high schools serving high-poverty students should be explored. School and district leaders can support the design and implementation of teacher preparation programs by opening up their schools to prospective teachers (for example, for structured observation, student teaching, and residencies).

Teacher recruitment, hiring, and evaluation. School and district leaders should ensure that recruitment and hiring processes include careful screening to ensure a good fit and clear communication of on-the-job expectations for teachers. Meanwhile, policymakers at all levels of the system (local, state, and national) should consider incentives for experienced teachers to work in hard-to-staff high schools. School and district leaders should work with teachers to develop evaluation systems that can be used to identify teachers' strengths and weaknesses and tailor support for ongoing improvement.

Teacher induction and professional development. School and district leaders should ensure that high school teachers receive job-embedded induction and professional development by providing them with opportunities to work with expert colleagues (for example, instructional coaches) and by providing them with time and support to collaborate on school improvement efforts. Teachers should work collaboratively and take advantage of their collective expertise to continually refine their craft, support new colleagues, and ensure greater coordination of instruction across courses and programs (e.g., across career technical education and academic courses). School and district leaders should also provide teachers with opportunities to engage in professional development that is specific to schools' improvement initiatives, including visits to schools that may be farther along in implementation and opportunities to network with educators working toward similar goals. Regional entities, including county offices of education, can help—for example, by coordinating the development of curricular units that integrate academic and career and technical study and associated professional development. Business and industry groups, too, can participate in these efforts. Finally, school and district administrators should collaborate with teachers and share decision-making to ensure that teachers have a stake in school improvement initiatives.

Support for school leaders. District leaders and other partner organizations, including county offices of education, should provide high school leaders with targeted support, such as mentoring, coaching, and networking with administrators doing similar work, to ensure that they have the skills to support ongoing teacher development. They should support school leaders in aligning the teacher evaluation process with school improvement goals and in using the evaluation process as a means of supporting teachers—new and experienced—in improving their practice.

This report does not advocate for a particular approach to improving California's high schools; however, we do argue that improvement strategies are not likely to be well implemented without attending to teacher development. Prior research tells us that structural reforms are not sufficient to improve student achievement. School improvement efforts must be accompanied by support for teachers to implement the strategies effectively and improve instructional practice. With all the resources and human energy that are being put into high school improvement, this report serves as a reminder to heed the lessons of prior efforts and attend to teacher development if we expect to see improved student outcomes.

***Structural reforms
are not sufficient
to improve
student
achievement.***

CHAPTER 8

RECOMMENDATIONS FROM THE CENTER FOR THE FUTURE OF TEACHING AND LEARNING

Our research indicates that many educators throughout California are working to transform high schools to meet 21st century needs, yet the state's teacher development system is not keeping pace with these improvements. The system at large is not currently providing adequate preparation or support for teachers or administrators that would enable them to carry out all their responsibilities in high schools that have adopted innovative strategies.

The recommendations presented here specify ways that state policymakers can help close the gap between the preparation and support that teachers will need in the future and what they currently receive. The recommendations recognize California's budget context and are designed to be realistic, drawing on existing, realigned, or earmarked federal resources. Because high school enrollment is expected to decline by 5% before growing again beginning in 2017–18, the next several years provide an opportunity to strengthen the existing secondary teacher and administrator workforce. These recommendations, derived from data collected over the past 2 years, are offered to California's education leaders and support organizations, policymakers, philanthropic organizations, and others interested in ensuring that our students succeed in high school and beyond.

Build a statewide teacher development system that is better aligned with the needs of high schools that are making a concerted effort to prepare students for success in college, participation in civic life, and the 21st century workforce.

- **Gather the data.** Initiate a second phase of CALTIDES to collect data on both the teacher and administrator workforce. Federal funding dedicated to the construction of comprehensive data systems can be used to secure data from all appropriate agency sources. Information gathered should be of sufficient scope to guide development of policy for building workforce capacity leading to student success in high school and beyond. In addition to teacher data, CALTIDES should include a range of administrator data broad enough to effectively inform policies for strengthening education leadership, with special attention paid to the principalship.
- **Leave no federal funds behind.** State policymakers should apply for all available federal funds dedicated to instructional improvement and reform, ensuring that a portion of the funding be used to improve the ways teachers and administrators address learning conditions in high schools that are working to better prepare students for success in college and the 21st century workforce.
- **Coordinate support for local district and institution of higher education partnerships as they seek federal funds for transforming educator preparation.** State leadership, including the California Department of Education, the Commission on Teacher Credentialing, and the Office of the Secretary of Education, in partnership with higher education institutions, should provide coordinated support for local districts to seek available federal funds dedicated to transforming educator preparation in ways that better align preparation, induction, and professional development programs for teachers and administrators.
- **Revise preparation, induction, and accreditation standards to reflect learning conditions in high schools designed to integrate academic and career technical education.** State leadership, including the Commission on Teacher Credentialing,

should work toward revising preparation and induction standards and program accreditation procedures to ensure that principal preparation and teacher preparation, induction, and continuing professional development reflect the learning conditions in high schools designed to integrate academic and career technical education.

- **Systematically identify and remove barriers to integrating academic and career technical education.** State leadership, including the California Department of Education, the Commission on Teacher Credentialing, and the Office of the Secretary of Education, should review all pertinent Education Code, regulatory, and administrative requirements to identify any impediments to the integration of academic and career technical education.
- **Use federal funding to generate increases in the supply of high school teachers who can work effectively in 21st century high schools.** State policymakers, including the Governor and the Legislature, should take steps now to ensure a sufficient supply of fully prepared teachers for all students, particularly students in challenging school settings. These steps specifically should include (1) earmarking available federal funding for the University of California and the California State University systems for teacher preparation to increase full-time equivalence in teacher preparation programs, (2) linking this funding to redesigned preparation programs offering the set of skills necessary for teachers and administrators to succeed in schools that are transforming instruction, and (3) linking this funding to projections for teacher demand by county over the next decade.
- **Guide and support teachers who take on advisory roles.** State leadership, especially the Superintendent of Public Instruction, should include as a priority for the California Department of Education's P-16 Council the discussion and design of guidelines for local teacher advocate advisory programs. As part of this effort, discussants should consider the use of 10th-grade counseling funding to identify and train a broader base of adult support for students in accordance with the guidelines set forward in the Program Advisory for Counseling 10th-Grade Students.

Build a structure of support for local school and district efforts to match curriculum and instruction to post secondary 21st century demands.

- **Guide existing state and federal funding toward professional development opportunities specifically aligned with local school reform strategies.** Policymakers should review resources available to local school districts for professional development to better guide existing state and federal funding toward activities specifically aligned with local school reform strategies, including those that create opportunities for staff to collaborate on the ways student pathways through high school can be made more rigorous and relevant to students' college and career choices.
- **Use Title I funds to enable out-of-field teachers to master subject matter.** State and local policymakers should consider using federal Title I funds to allow local districts to provide intensive test preparation for teachers with out-of-field assignments to enable them to master the subject matter needed to successfully engage students and to become fully certified in compliance with federal statutes.
- **Help high school principals—with targeted professional development, support, and data—to improve their own schools.** Through high-quality and targeted professional development, provide principals with the guidance and support they need to build understanding of and personal commitment to improvement efforts that ensure students are prepared for success in college, employment, and full participation in civic

life. Data that show evidence of the potential of the improvement effort and guide its implementation should be readily available for use by staff in these efforts.

- **Infuse the process of hiring new teachers with staff involvement, clear expectations, and demonstration lessons.** Local school districts should be encouraged and supported in their efforts to transform the process of hiring new teachers, including involving staff at the local school level in hiring decisions based on a clear set of expectations, and to require demonstration lessons to identify those potential hires most likely to support and implement the schools' improvement efforts.
- **Reform personnel evaluations by linking them to data that support improved practice.** Education leadership and members of the policy community should encourage the reform of personnel evaluations to focus on the efforts of (1) administrators to offer teachers support and assistance keyed to student performance, attendance, retention and course completion data and (2) teachers to successfully use the data, as well as the support and assistance provided by the principal, to strengthen practice.

Escalate current efforts to provide equitable access to high-quality instructional programs in order to address the learning gap and ensure each and every student is fully prepared to succeed beyond high school.

- **Ensure education equity.** State policymakers should carefully monitor the impact of categorical funding "flexibility" on ongoing efforts to ensure education equity for all students, with special attention to those attending low-performing schools. Policymakers should take all necessary steps to maintain the set of interrelated, research-based initiatives enacted to decrease substantially the number of underprepared teachers while promoting equity in access to fully prepared teachers and administrators.
- **Align programmatic outcomes with the Legislature's intent.** Outcomes included under the provisions of statewide programs that are not subject to categorical flexibility, including the Quality Education Investment Act (QEIA), should be reviewed and monitored and, if necessary, revised to ensure that the intent of the Legislature is in fact being realized.

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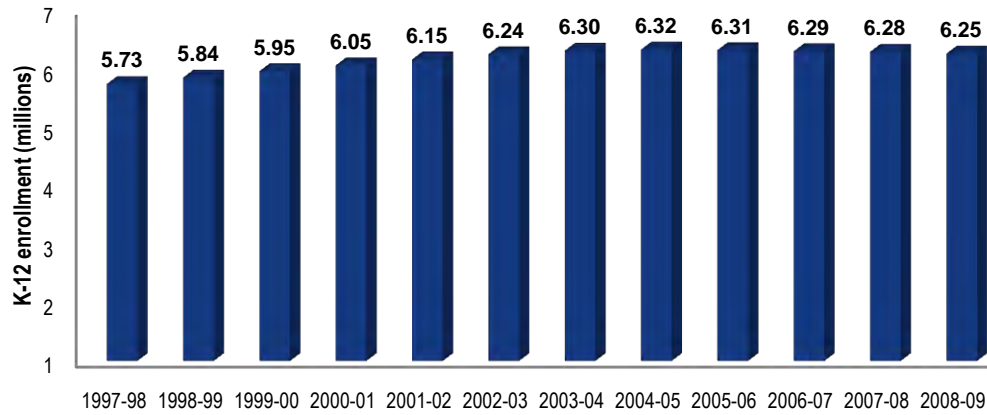
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APPENDIX A

ADDITIONAL TEACHER SUPPLY, DEMAND, & DISTRIBUTION DATA

K-12 ENROLLMENT

Exhibit A-1
Total K-12 Enrollment in California, 1997-98 to 2008-09



CALIFORNIA TEACHER WORKFORCE

Exhibit A-2
Age Distribution of K-12 Public School Teachers, 2008-09

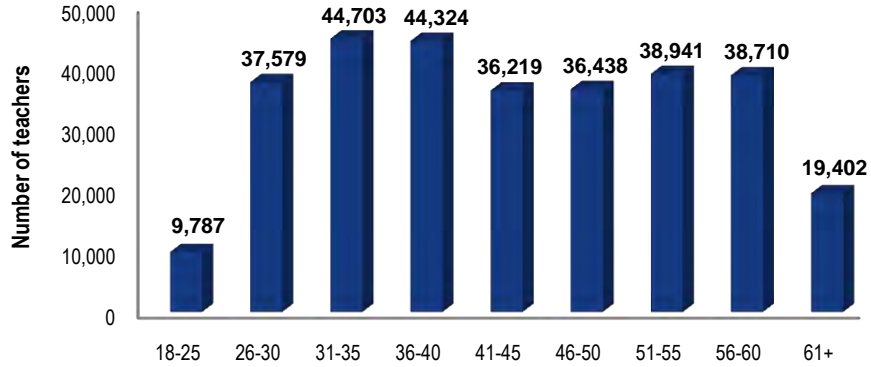


Exhibit A-3
First- and Second-Year Teachers by Credential Status, 2001-02 to 2008-09

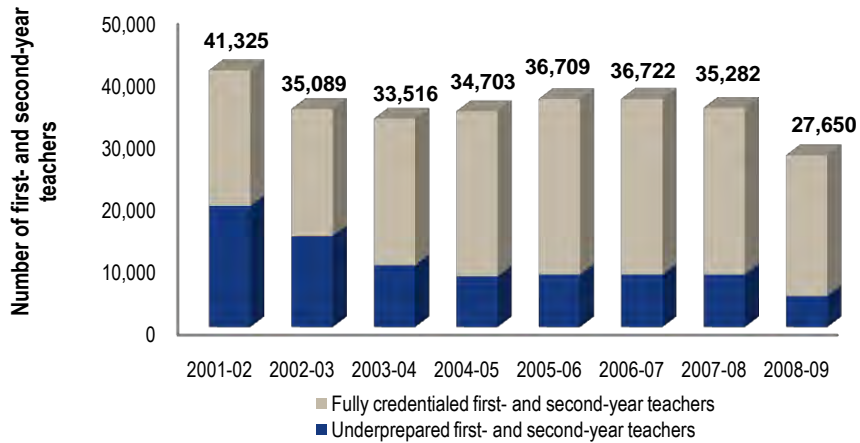


Exhibit A-4
Number of Underprepared Teachers in California, 2000-01 to 2008-09

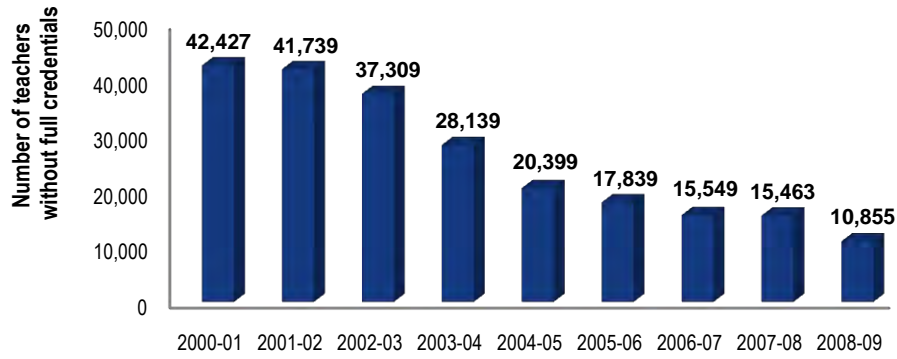


Exhibit A-5
Percentage of Underprepared Teachers by Authorization, 2001-02 to 2008-09

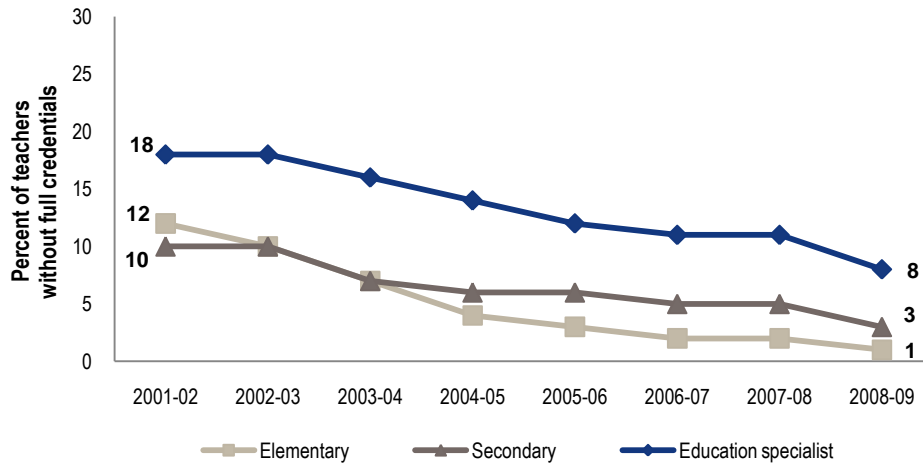


Exhibit A-6
Percentage of Underprepared First- and Second-Year Teachers by Authorization, 2006-07 to 2008-09

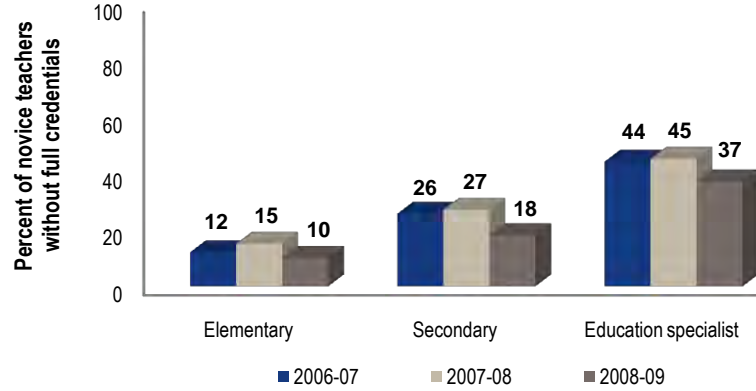
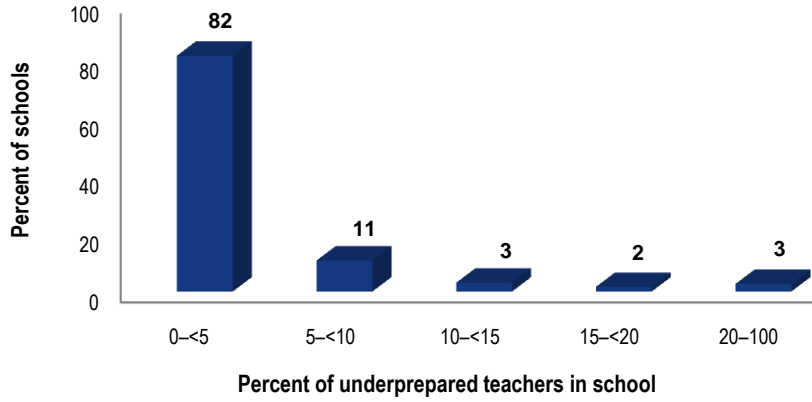


Exhibit A-7
Top 10 California Counties by Number and Percentage of Underprepared Teachers, 2008-09

County	Number of Underprepared Teachers	County	Percent of Underprepared Teachers (as a percent of all teachers in the county)
Los Angeles	3136	Imperial	8.4
San Bernardino	827	San Joaquin	7.5
Riverside	708	Yuba	7.2
Santa Clara	702	San Benito	6.4
Alameda	662	Contra Costa	6.1
Contra Costa	516	Lassen	6.0
San Joaquin	516	Alameda	5.9
Kern	369	Kings	5.7
Orange	336	Calaveras	5.6
Sacramento	300	Merced	5.5

*San Diego County was not included in this analysis because the staffing information for one of its districts, Poway Unified School District, was misreported for the 2008-09 school year.

Exhibit A-8
Distribution of Schools by School-Level Percentage of Underprepared Faculty, 2008–09



CREDENTIALING

Exhibit A-9
New Preliminary Teaching Credentials Issued by IHEs, 1998–99 to 2007–08

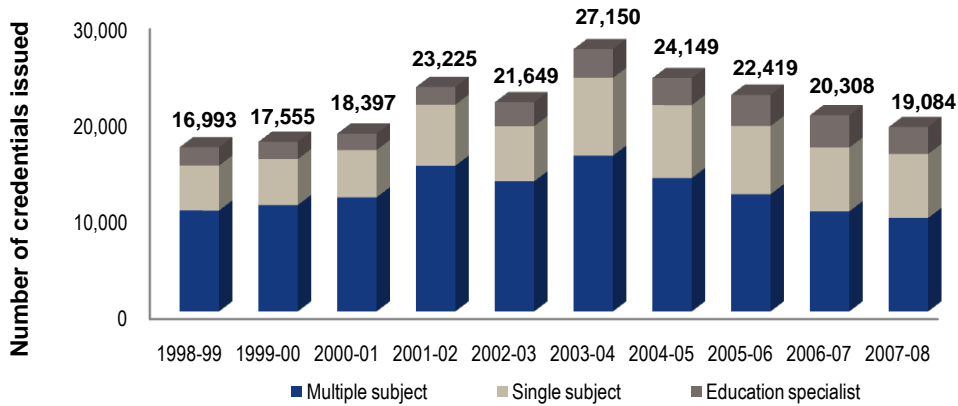


Exhibit A-10
New University and District Intern Credentials Issued, 1996-97 to 2007-08

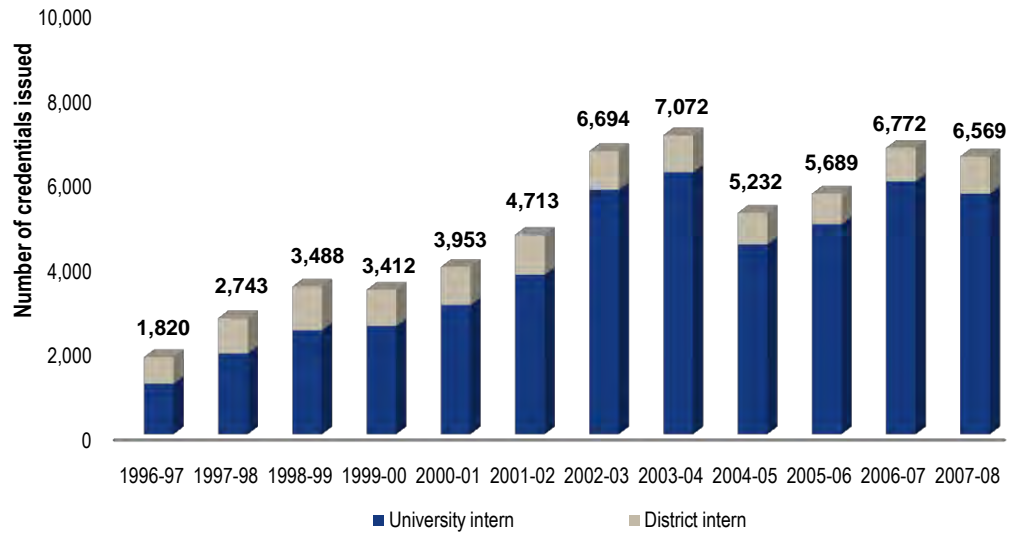


Exhibit A-11
Number of Teacher Preparation Candidates Enrolled in CSU Single-Subject Programs, 2001-02 to 2008-09

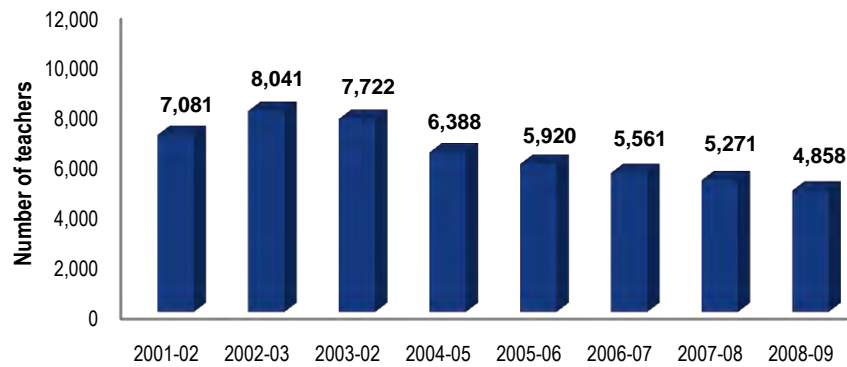


Exhibit A-12
University Intern Credentials Issued by Authorization, 2002-03 to 2007-08

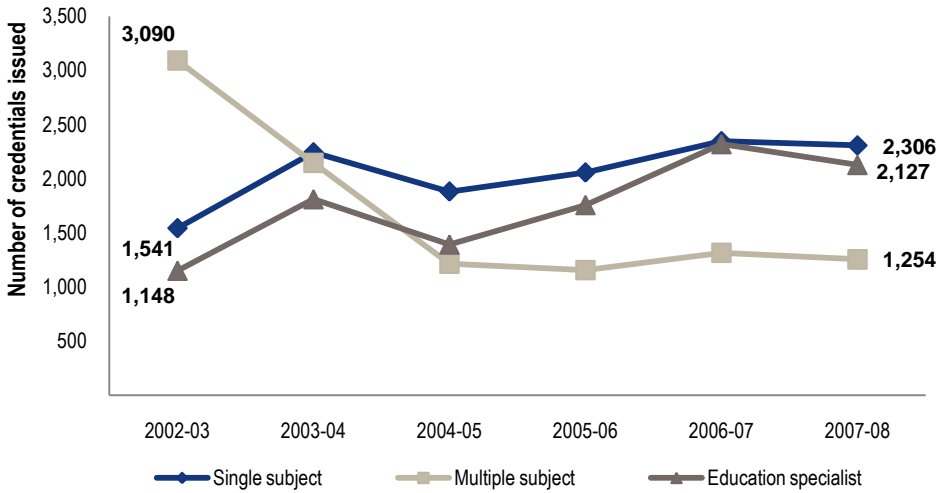
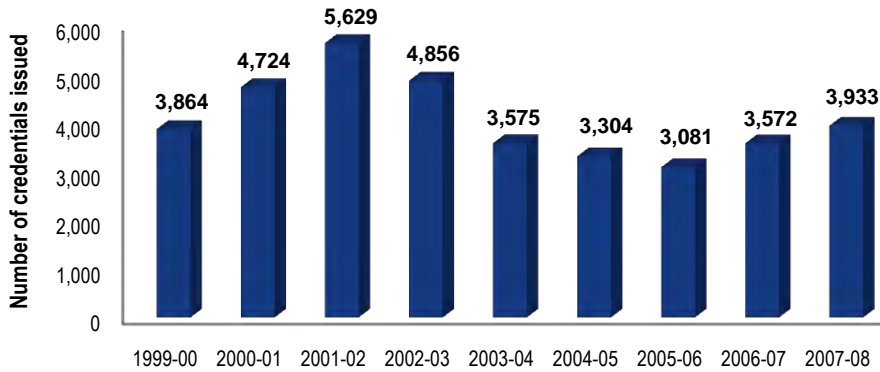


Exhibit A-13
Number of California Credentials Issued to Teachers Trained Out of State, 1999-00 to 2007-08



DISTRIBUTION OF SCHOOL-LEVEL API CATEGORIES

Exhibit A-14
Underprepared and/or Novice Teachers by School-Level API, 2008–09

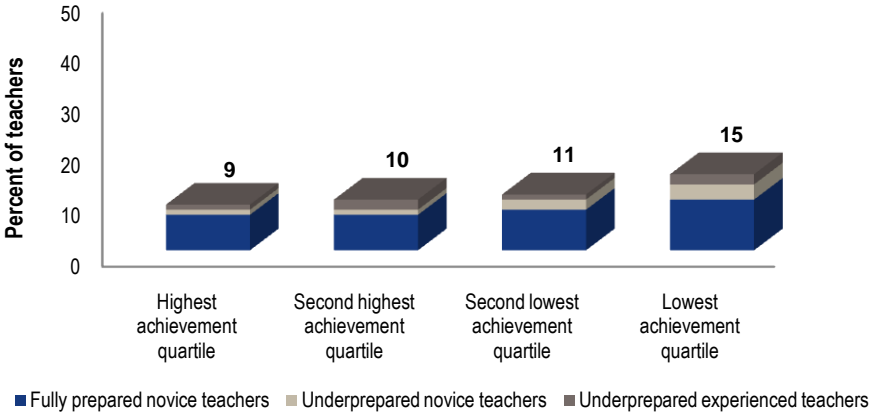
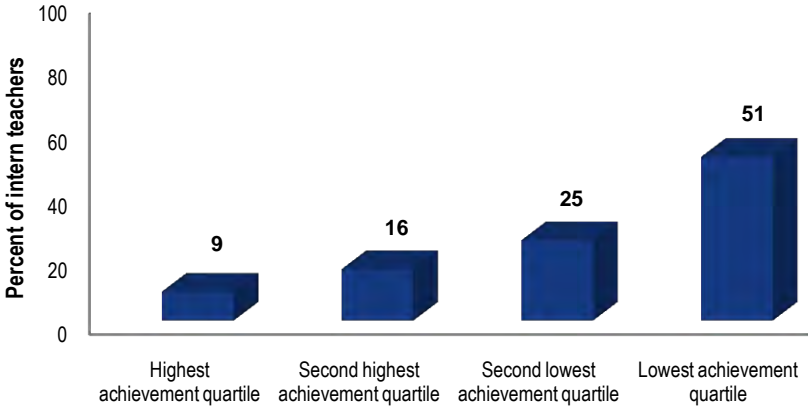


Exhibit A-15
Distribution of Interns by School-Level API, 2008–09



DISTRIBUTION OF SCHOOL-LEVEL MINORITY CATEGORIES

Exhibit A-16
Underprepared Teachers in Schools with the Highest and Lowest Percentages of
Minority Students, 2000–01 to 2008–09

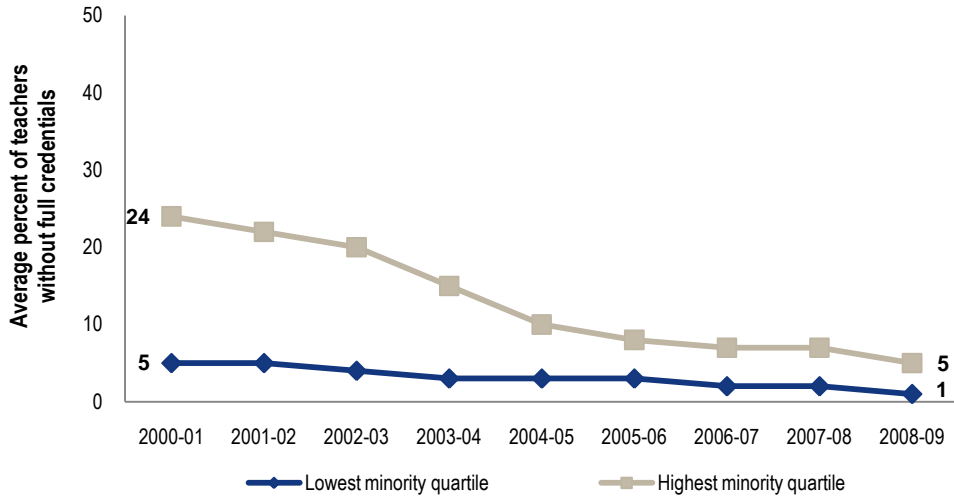
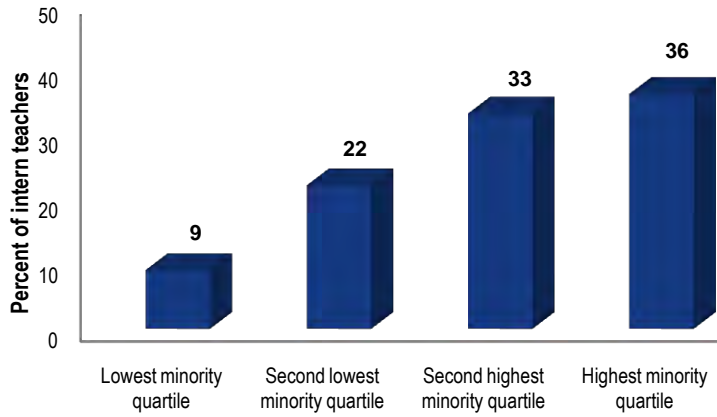


Exhibit A-17
Distribution of Interns by School-Level Percentage of Minority Students, 2008–09



DISTRIBUTION OF SCHOOL-LEVEL POVERTY CATEGORIES

Exhibit A-18
Underprepared Teachers in Schools with the Highest and Lowest Percentages of Students in Poverty, 2000–01 to 2008–09

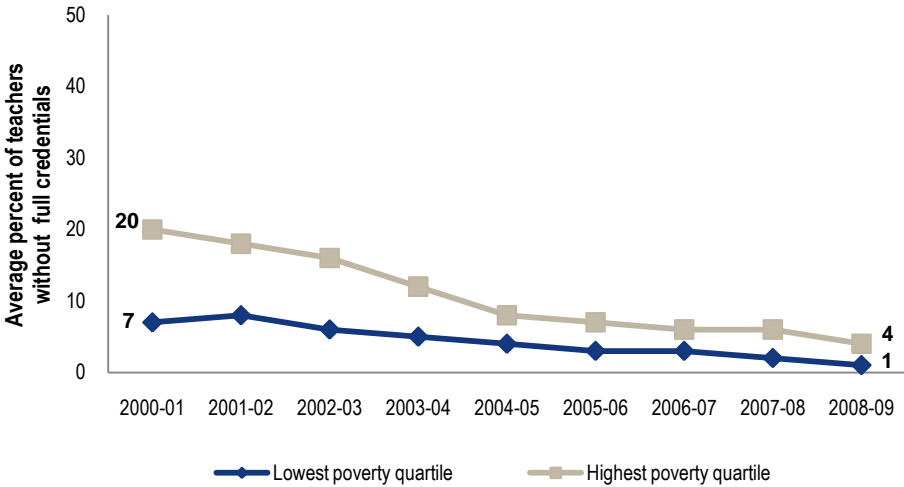
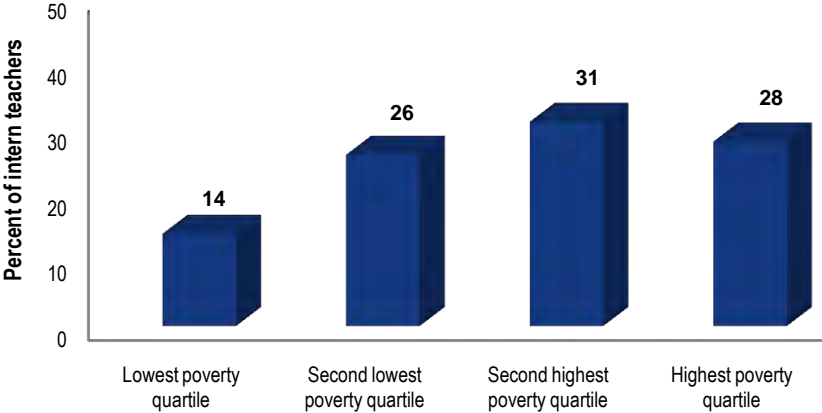


Exhibit A-19
Distribution of Interns by School-Level Percentage of Students in Poverty, 2008–09



HIGH SCHOOLS

Exhibit A-20
Total Enrollment in Grades 9–12, 2001–02 to 2008–09

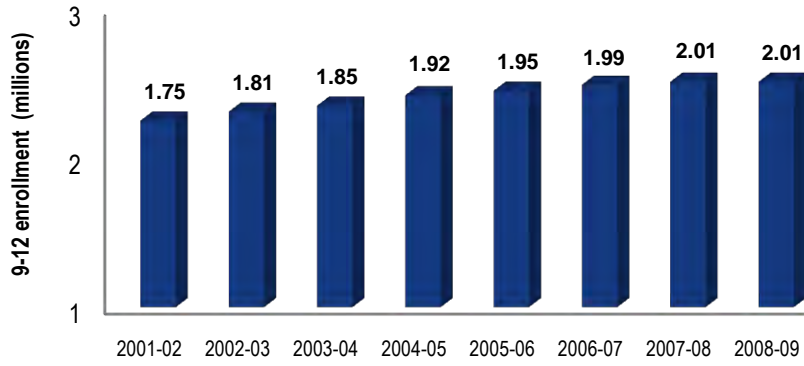


Exhibit A-21
Number of High School Teachers in California, 2004–05 to 2008–09

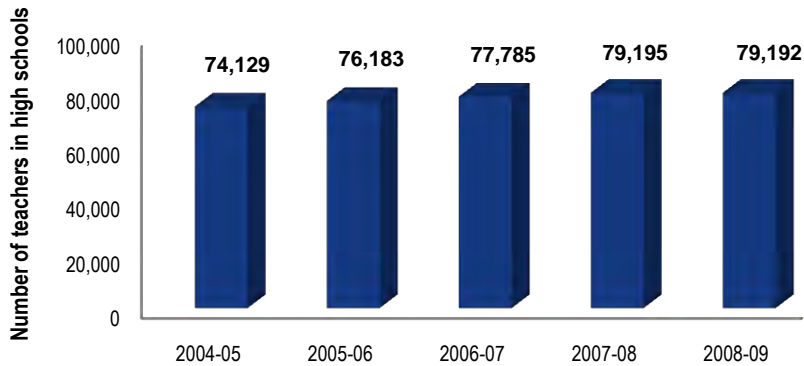


Exhibit A-22
Number of Underprepared High School Teachers, 2003-04 to 2008-09

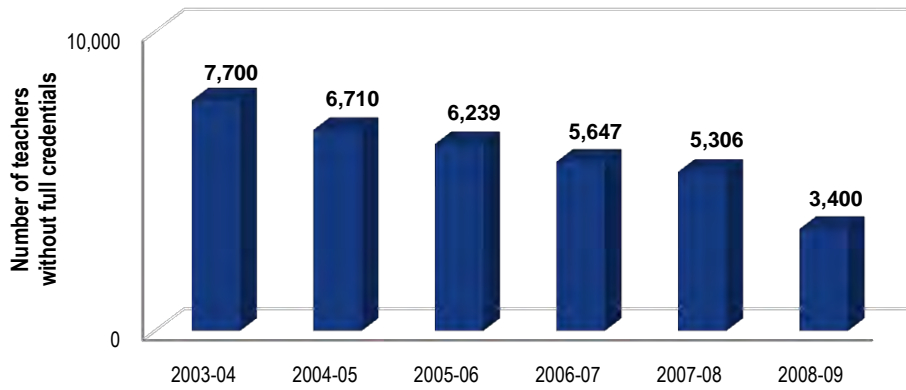


Exhibit A-23
Number of Career Technical Education Teachers in California, 2000-01 to 2008-09

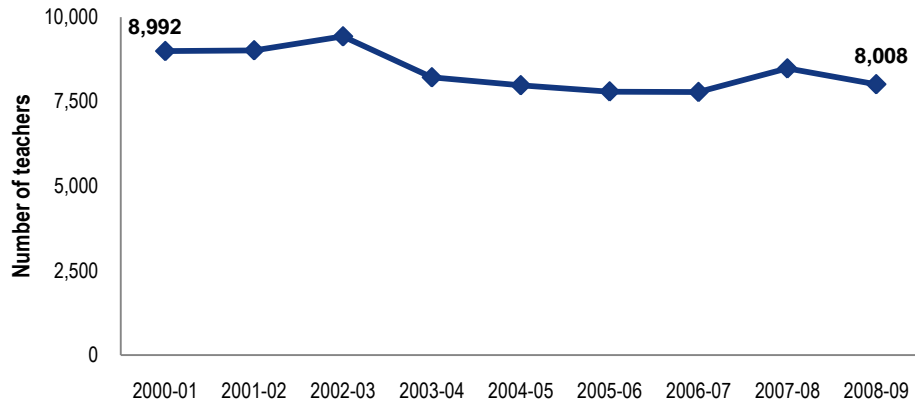


Exhibit A-24
Percentage of Underprepared High School Teachers by School-Level Percentage of Minority Students, 2008–09

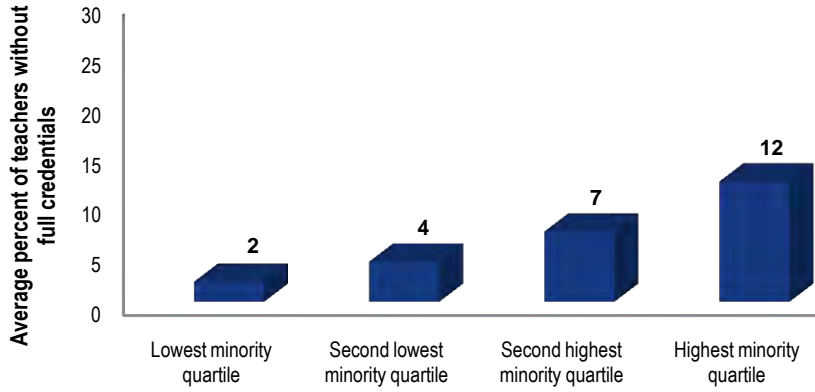


Exhibit A-25
Percentage of Underprepared High School Teachers by School-Level Percentage of Students in Poverty, 2008–09

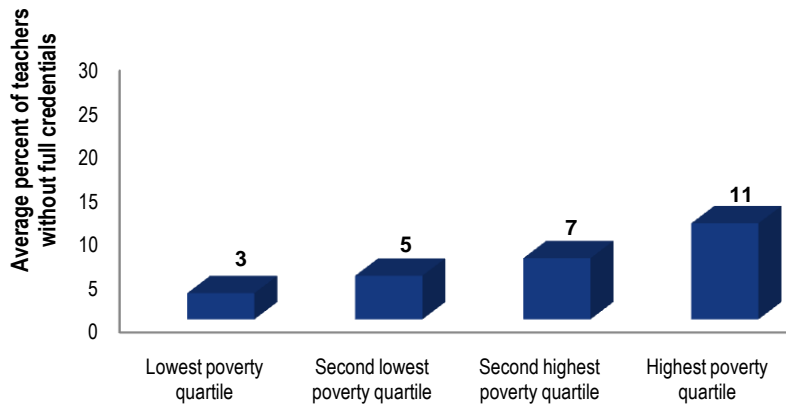


Exhibit A-26
Percentage of Out-of-Field, Underprepared, and Novice High School Teachers by Assignment, 2008–09

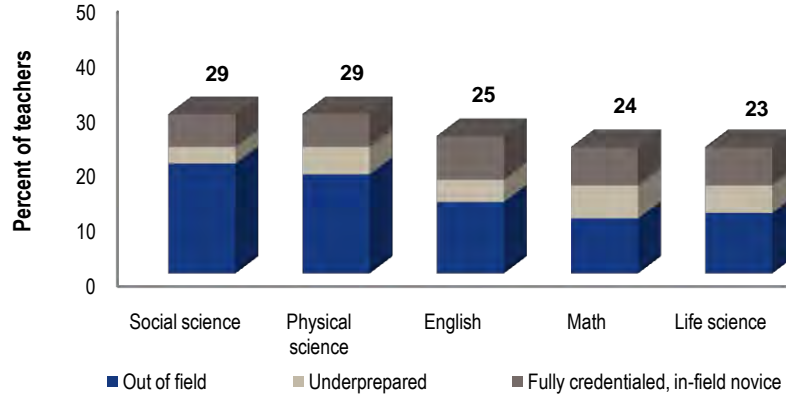
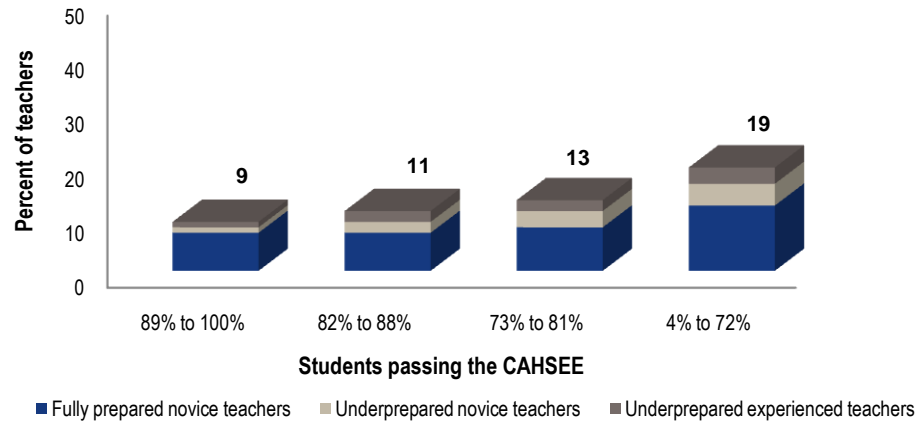


Exhibit A-27
Percentage of Underprepared and Novice Teachers by School-Level Percentage of 10th Grade Students Passing the CAHSEE, 2008–09

English



Mathematics

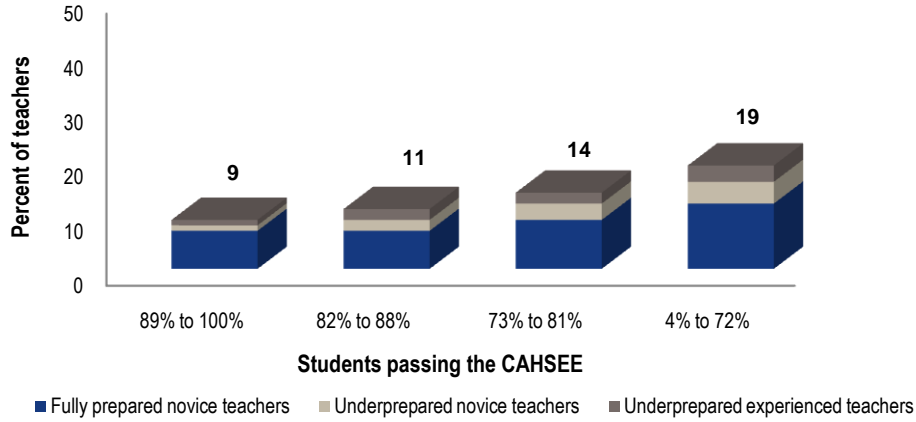
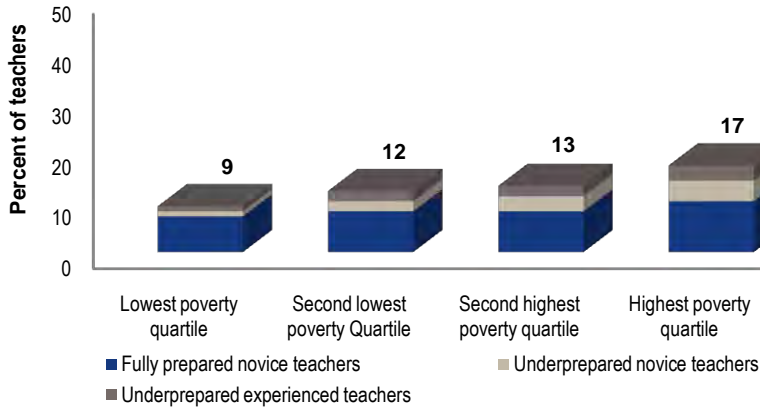


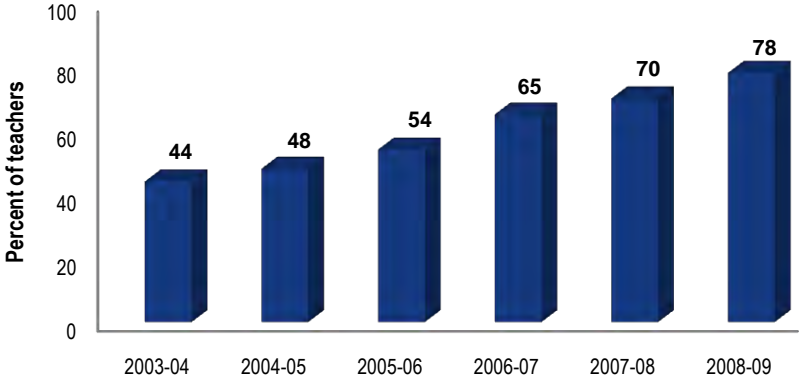
Exhibit A-28

Percentage of Underprepared and Novice Teachers in High Schools by School-Level Percentage of Students in Poverty, 2008–09



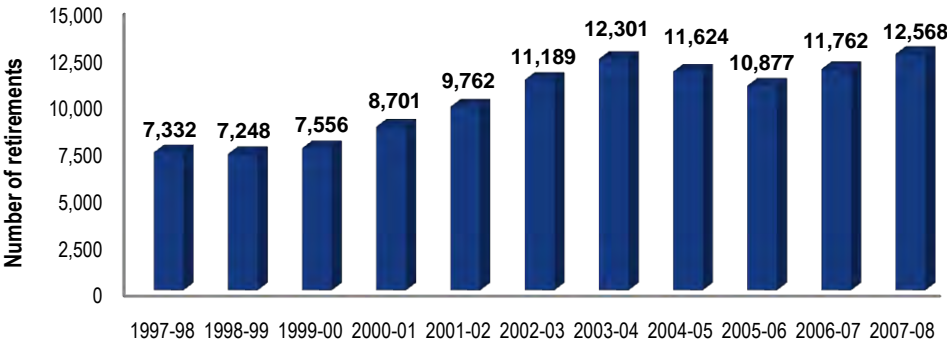
ENGLISH LEARNERS

Exhibit A-29
Percentage of Fully Credentialed Teachers with English Learner Authorization, 2003-04 to 2008-09



TEACHER RETIREMENT

Exhibit A-30
Number of California State Teachers Retirement System (CalSTRS) Membership Retirements, 1997-98 to 2007-08



CHARTER AND SMALL HIGH SCHOOLS

Exhibit A-31
Percentage of Out-of-Field, Underprepared, and Novice High School Teachers
by Assignment in Charter Schools, 2008–09

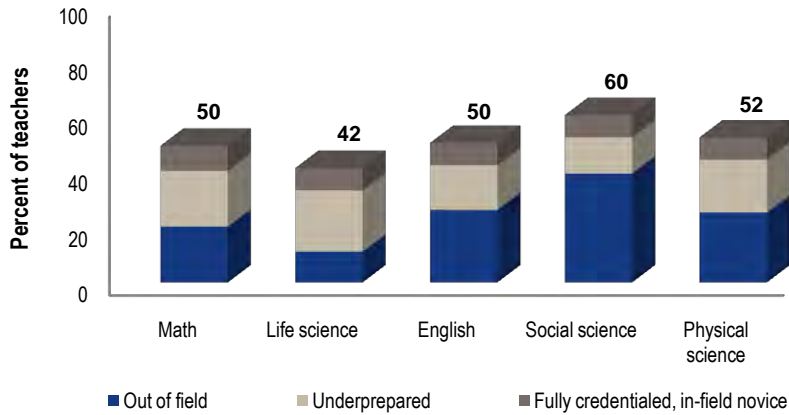


Exhibit A-32
Percentage of Out-of-Field, Underprepared, and Novice High School Teachers
by Assignment in Non-Charter Schools, 2008–09

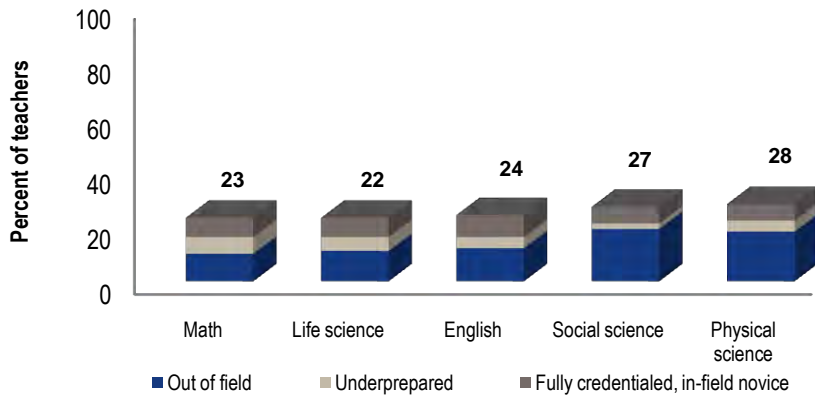


Exhibit A-33
Average Percentage of Underprepared and Novice High School Teachers by Charter Status, 2008-09

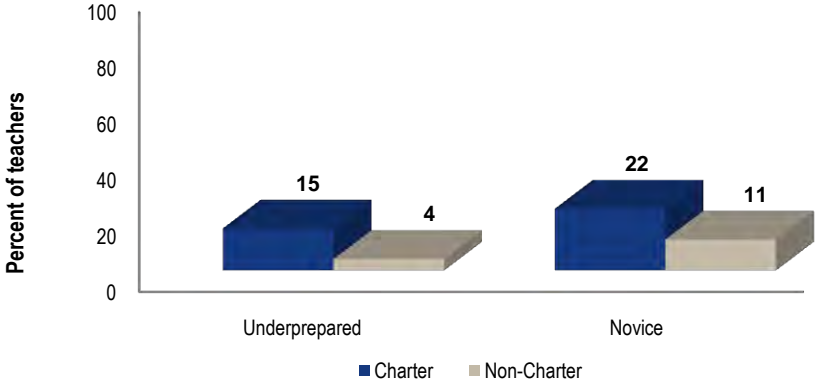
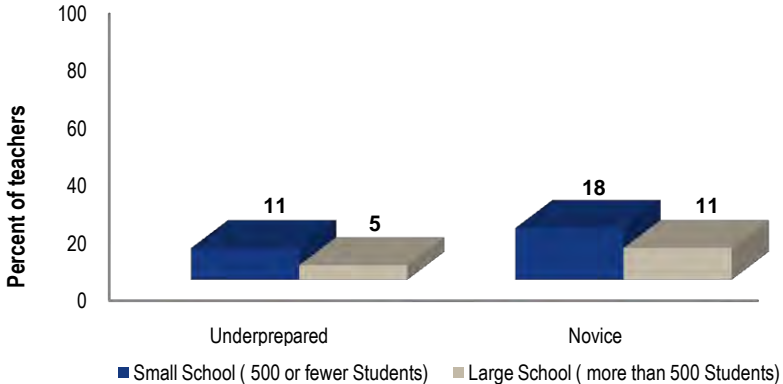


Exhibit A-34
Average Percentage of Underprepared and Novice High School Teachers by School Size, 2008-09



APPENDIX B

RESEARCH METHODS

During the 2008–09 academic year, we collected original data on the knowledge and skills teachers need and the preparation, professional development, and ongoing support teachers receive to prepare high school students for the demands of postsecondary education and training, work, and life in the 21st century. This appendix details the design and procedures for the primary data collection methods and analyses used in this study. Specifically, we discuss the sampling, administration, and analysis of the statewide survey of high school principals; the procedures for our review of current policies and practices; the procedures for case study data collection; and the procedures for secondary data analysis.

STATEWIDE SURVEY OF HIGH SCHOOL PRINCIPALS

The survey of California high school principals was designed to provide a statewide look at high schools' priorities, strategies for reform, and associated teacher knowledge, skills, and supports.

Principals were asked to report on a variety of topics, grouped into the following sections:

- School-level educational goals and priorities
- Reform strategies
- Supports for students
- School structure
- Teacher knowledge, skills, and supports
- Barriers to meeting school's educational goals
- Principal's background and work context.

We surveyed 414 principals from high schools across the state. A total of 234 principals completed the survey, for a response rate of 57%. The research team restricted the school sample to schools identified as high schools in California's Public Schools and Districts database as of July 2008.¹⁶

Sampling procedures. The research team selected a random sample of California public high schools, stratified by charter status, to participate in the survey portion of the study. The sampling frame included all California high schools that served two or more grade levels, excluding less traditional schools such as alternative schools, community day schools, and continuation high schools. The sampling plan was designed to provide a sufficiently large number of respondents to conduct analyses of, and make comparisons across, subgroups of schools. The survey sample included all charter high schools across the state (140), as well as a representative statewide sample of 274 non-charter high schools.

¹⁶ The original sample size was 422 schools, including all 147 charter high schools listed in the California Public Schools and Districts Database as of July 2008 and a representative sample of 275 comprehensive high schools. However, eight schools (seven charter schools and one comprehensive high school) in the sample were determined ineligible because of school closure, reducing the sample size to 414.

Instrument development. The research team drew on survey items developed for other surveys of principals from around the country and developed its own survey items to address the study's specific questions. After drafting the initial survey instrument, the research team piloted it with a small sample of high school principals whose schools were not included in the survey sample to gauge item clarity and time needed to complete the form. The survey was also reviewed by six reviewers internal to SRI and nine external reviewers, all with expertise related to high school reform. The team finalized the survey instrument based on recommendations and feedback from pilot respondents and these reviewers.

Survey administration. The survey was distributed to the sample of 414 high school principals in online and hard-copy formats from October 2008 through January 2009.¹⁷ Respondents were offered a \$150 gift certificate to amazon.com as an incentive for completing the survey. Before the survey's distribution, hard-copy introduction letters were sent to the principals explaining the purpose of the study and notifying them that they would be receiving an online link to the survey unless they requested a paper copy. Approximately 1 week after the introduction letters were mailed, e-mail invitations to participate in the survey were sent to each principal in the sample along with a link to the online questionnaire. Approximately 1 month after the introduction letters were sent, hard-copy surveys were mailed to all nonrespondents along with a cover letter explaining the survey and a postage-paid return envelope. During the survey administration period, nonrespondents periodically received reminder e-mails, postcards, and telephone calls encouraging their participation.

The survey team created a tracking system by assigning principals unique identifiers to link them to their school information. As surveys were returned, the response information was logged into the tracking system, enabling the research team to track response rates overall and by charter status. Exhibit B-1 displays the final response rates overall and by charter status.

Exhibit B-1
Survey Response Rates (Overall and by Charter Status)

	Number of eligible high schools (open as of 2008–09)*	Number of high schools sampled	Number of high schools responding	Response rate of high schools sampled
All high schools	1,098	414	234	57%
Charter high schools	140	140	76	54%
Non-charter high schools	958	274	158	58%

*Excludes eight high schools (seven charter, one non-charter) dropped from the sample because they were open in 2007–08 but not in 2008–09.

Survey analysis. Data from the paper surveys were hand-entered into a computer file, with entries verified by a second researcher to ensure accuracy. Data from online surveys were collected via the web host. Data from the paper and online surveys were merged to create one data file for analysis. Before analysis, charter and non-charter schools were assigned separate weights to reflect their relative frequency in the population. The study team weighted schools in each of the two strata by the stratum size in the overall population (N) divided by the actual number of respondents in each stratum (n). In addition, the weights

¹⁷ The study team used an outside vendor to administer the online and paper surveys, send follow-up e-mails and postcards, and send gift certificates to survey respondents.

were scaled to add up to the total number of survey respondents by multiplying them by the total number of respondents (Total n) divided by the total population size from the sampling frame (Total N). This scaling was performed to ensure the correct calculation of standard errors using the SAS statistical software package. The weight assigned to each stratum equals $(N/n) * (\text{Total } n / \text{Total } N)$. This weighting strategy makes the final sample representative of the target population in each stratum.

All survey analyses were conducted with the SAS statistical software package. The research team computed summary statistics and examined the response distribution for each item. Comparative analyses were used to determine differences by charter status and across poverty, minority, and API levels (broken into terciles based on statewide data from 2008). Chi-square tests were used for categorical variables, and analysis of variance (ANOVA) tests were used for continuous variables. Reported contrasts between groups are statistically significant at $p < .05$ unless noted otherwise (for statistical support for survey data, see Appendix D).

BACKGROUND RESEARCH ON POLICY AND PRACTICE

Literature review. We began in summer 2008 by conducting an extensive review of literature to understand the high school reform landscape and to learn about the key strategies identified in the literature as promising approaches to improving student outcomes. We also conducted web research to understand the range of current high school initiatives in California, as well as the supports provided teachers to effectively engage in these initiatives. We identified the 20 districts that as of 2007–08 had the largest high school enrollment in the state, 12 charter organizations and education foundations, and 10 influential networks that operate as intermediaries for high school redesign and restructuring efforts or that develop and improve access to college-level curriculum. For each of these entities, a team of two researchers reviewed websites and compiled information about efforts to implement rigorous high school curricula, form explicit connections between academic content and real-world applications, and support a personalized learning environment, as well as information about educator training and professional development that equips teachers to engage in the aforementioned efforts. We also compiled information on special grants, programs, and partnerships that influence the reform initiatives undertaken by these districts and organizations, as well as contact information for relevant personnel listed on each website.

We used a systematic process for reviewing the background research by developing specific criteria for a summary matrix. These criteria were developed via a process of regular meetings with the larger research team to discuss emerging themes around high school improvement initiatives across districts, organizations, and intermediaries. The background research was then synthesized in this summary matrix as well as in more detailed reports for each district, organization, and network.

Phone interviews. To obtain the most current information about the high school initiatives and improvement efforts taking place across the state, our research team used semistructured interview guides to conduct 15 telephone interviews in fall 2008 with relevant district administrators and organizational directors identified in our background research. We attempted to interview at least one administrator in each of the state's 10 largest districts; we were successful in conducting interviews with administrators from 8 of the 10 districts. Interviews were recorded using Quindi software, notes were typed up and cleaned for accuracy, and findings were summarized in a standardized debrief form for discussion with the entire research team.

CASE STUDIES

Nomination process. To develop a list of potential case study sites, we developed and refined an electronic nomination form, which asked for nominations of public high schools that met our criteria. The form also asked nominators to explain their reason for nominating a given school by indicating the types of structural, social, and/or instructional change initiatives and improvement efforts that applied to the nominated high school, the current implementation stage of related strategies, and the extent to which teachers at the school were provided professional development to build the skills needed to implement these strategies. We also invited nominators to forward the form to colleagues they deemed qualified to respond.

We solicited nominations primarily from individuals representing four different levels in the education system: the state, counties, institutions of higher education, and districts. At the state level, we contacted five staff members in the California Department of Education, including those who oversee the Secondary, Postsecondary & Adult Leadership Division and the Professional Development and Curriculum Support Division. At the county level, we solicited one to three primary and alternate contacts in each of the 58 County Offices of Education who serve as assistant superintendents, directors, or other county administrators overseeing curriculum and instruction or education services and programs. For each of the 10 University of California campuses and 10 California State Universities with the highest enrollment in 2007 (<http://www.calstate.edu/as/inbrief/inbrief07.pdf>), we identified faculty within schools of education at these institutions with expertise in high school reform initiatives and instruction, and secondary-level teacher preparation and development. We also identified researchers from university research centers (e.g., University of California All Campus Consortium on Research for Diversity, University of California Los Angeles Institute for Democracy, Education, & Access), private universities, and other independent research organizations who have written reports and articles on topics related to high school reform and teacher supports. Finally, at the district level, we solicited nominations for case study high schools from each of the district administrators we interviewed in the fall, bringing our total list of contacts to more than 90 prospective nominators.

We received a total of 78 nominations, of which 66 were unique entities. Of the 66 unique nominations, 6 were atypical nominations (e.g., entire CMOs, districts, or groups of alternative K-12 schools).

Site selection. Our goal was to select a geographically diverse sample of up to 20 high schools engaged in innovative improvement efforts to better serve a range of student needs. Because four of the nominated schools were already participating in other major research studies or evaluations, we omitted consideration of them to avoid burdening them with additional data collection. For the remaining potential case study sites, we assessed the reasons for why each of the sites was nominated and excluded nominations that lacked any tangible alignment with our overarching research questions about schools' efforts to promote rigorous, relevant, and personalized learning experiences. This excluded the majority of atypical nominations. For a handful of other schools, we followed up with their school administrators by phone to obtain more detailed information about their instructional initiatives, improvement efforts, and admissions processes. We categorized nominated schools by a series of dimensions, including reform model (e.g., early college high school, career academies), governance (e.g., charter, magnet), size or structure (e.g., small learning communities, small or comprehensive high school), geographic region, student demographics, district and school enrollment, level of implementation (e.g., a 9th -grade freshman academy in its first year of implementation), and CMO or non-CMO charter school governance.

After omitting the majority of sites that implement selective admissions processes, we were left with 47 nominations spanning nine geographic regions. We narrowed down this sample to 20 primary case study sites and 27 possible alternates, so that the number of case study schools in each region would be roughly proportionate to the regional student population. We also selected this primary sample to represent the different reform models, types of governance, school sizes, and structures found among our nominations.

The sampling strategy yielded a final case study sample of 16 schools in 14 districts. The sample included eight small high schools, of which two were charter schools, two were early college high schools, and one that was implementing the multiple pathways approach schoolwide. The sample also contained eight comprehensive high schools, of which six contained at least one career-themed or non-career-themed SLC; some of the career-themed SLCs were California Partnership Academies (CPA) and/or were implementing the multiple pathways approach (Exhibit B-2). We were unable to gain access to 4 of the original 20 schools.

Exhibit B-2
Sample of Case Study High Schools

	Small school size (500 or fewer students)	Charter high school	Early college high school	Multiple pathways*	California Partnership Academy**
School 1					✓
School 2					
School 3					✓
School 4					✓
School 5					✓
School 6				✓	✓
School 7					
School 8					✓
School 9	✓	✓			
School 10	✓				✓
School 11	✓	✓			
School 12	✓			✓	
School 13	✓				
School 14	✓				
School 15	✓		✓		
School 16	✓		✓		

*School is part of the ConnectEd network of schools that feature model pathway programs.

**School has at least one career academy supported by a California Partnership Academy grant.

Data collection and analysis. Case study site visits were conducted in spring 2009. The research team used semistructured interview guides linked to the study’s overarching

research questions for interviews with teachers and administrators at the school and district levels. In each of the 16 schools, we interviewed principals, teachers, and where appropriate one to two additional school leaders with responsibilities for coordinating or managing programs of interest, such as a director of instruction, an assistant principal overseeing a small learning community or career academy, or a school coordinator who manages student internships, career and technology education course offerings, or dual-credit options. Within each school, we interviewed up to nine teachers, depending on school size, representing a range in teaching experience, grade levels, content areas, and responsibilities. In total, we interviewed 147 respondents, including 95 teachers, as well as principals, assistant school administrators, program coordinators, and guidance counselors. At the district level, respondents included district or charter management organization administrators in charge of overseeing secondary schools, curriculum and instruction, or teacher professional development. We interviewed 10 district administrators and in the case of the two charter high schools two key leaders from the charter management organizations the schools are affiliated with. Interviews were recorded using Quindi software, and notes were typed up and cleaned for accuracy.

Each case study team analyzed the data collected for its own site and synthesized the data in detailed case study debriefing reports. During our data collection and after the completion of the internal case study reports, the entire research team assembled for regular meetings to discuss findings within and across cases and to identify cross-site themes about the nature of high school reforms; teacher knowledge, skills, understandings, and expertise; teacher recruitment, hiring, and development; teacher and school leadership; and policy implications.

ANALYSIS OF SECONDARY DATA ON THE HIGH SCHOOL TEACHER WORKFORCE

To determine the composition of the high school teacher workforce, we used publicly available data from the California Department of Education (CDE). The CDE conducts an annual collection of data on California's public schools, staff, and students. SRI's research team used data provided through the California Basic Educational Data System, Free/Reduced Meals Program and CalWORKS data files, the API Growth data file, and the California High School Exit Exam Research File to conduct a series of analyses on the supply, demand, and distribution of teachers across the state. The research team also used data provided by the California Commission on Teacher Credentialing, the California State Teachers' Retirement System, and the California Department of Finance to conduct additional analyses. See Appendix C for technical information.

APPENDIX C

SOURCE AND TECHNICAL INFORMATION FOR EXHIBITS

Exhibit 1 - CST Results by Grade and Subject, 2006–09. Data were obtained from the California Department of Education’s (CDE’s) website, <http://www.cde.ca.gov/nr/ne/yr09/yr09rel119.asp#tab1>.

Exhibit 2 - College Preparatory Course Test-Taking Patterns, 2003–09. Data were obtained from CDE’s DataQuest website, <http://dq.cde.ca.gov/dataquest/>.

Exhibit 3 - CST Results by Ethnicity, 2003–09. Data were obtained from CDE’s website, <http://www.cde.ca.gov/nr/ne/yr09/yr09rel119.asp#tab1>.

Exhibit 4 - Percentage of High School Dropouts by Ethnicity, 2007–08. Data were obtained from CDE’s DataQuest website, <http://dq.cde.ca.gov/dataquest/>.

Exhibit 5 - Actual and Projected K-12 Enrollment, 1993–94 to 2018–19. Data from the California Department of Finance (DOF) 2009 Series *California K-12 Public Enrollment and High School Graduates* are presented in this exhibit. The 2009 Series was obtained from DOF’s website, <http://www.dof.ca.gov/research/demographic/reports/projections/k-12/>.

Exhibit 6 - Number of K-12 Teachers in California, 2003–04 to 2008–09. Data were obtained from CDE’s DataQuest website, <http://dq.cde.ca.gov/dataquest/>.

Exhibit 7 - Number of First- and Second-Year Teachers in Elementary, Middle, and High Schools, 2003–04 to 2008–09. Two data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts and (2) the Professional Assignment Information Form (PAIF). These data files were obtained from CDE’s California Basic Educational Data System (CBEDS) website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>.

Exhibit 8 - Number of Enrollees in Teacher Preparation Programs, 2001–02 to 2006–07. Data from the California Commission on Teacher Credentialing’s (CCTC) *Teacher Supply in California* 2007–08 report are presented in this exhibit. These data were obtained from the CCTC’s website, http://www.ctc.ca.gov/reports/TS_2007-2008_AnnualRpt.pdf.

Exhibit 9 - Multiple- and Single-Subject Preliminary and Intern Credentials Issued by University Sector, 2001–02 to 2007–08. Data from the CCTC’s *Teacher Supply in California* 2007–08 report are presented in this exhibit. These data were obtained from the CCTC’s website, http://www.ctc.ca.gov/reports/TS_2007-2008_AnnualRpt.pdf.

Exhibit 10 - Number of Underprepared Teachers by Credential Type, 1999–2000 to 2008–09. Data from the PAIF were used for this analysis. These data were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). Teachers with “more than one underprepared credential type” are those teachers who reported holding a district or university intern credential and an emergency permit, pre-intern certificate, or waiver; these teachers cannot be placed in one of the other two categories. Teachers who did not report holding any type of credential, permit, or certificate were identified as “missing credential information.”

Exhibit 11 - Percentage of Underprepared and/or Novice High School Teachers in Core Subjects, 2008–09. Two data files were merged to conduct this analysis: (1) the PAIF and (2) the List of California Public Schools and Districts. These data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Teachers were identified as being “assigned” to a subject if they reported on the PAIF that they taught at least one class in a core subject—English, mathematics, social science, physical science, or life science. Teachers who reported on the PAIF that they held a credential, permit, or certificate other than a “full credential” are defined as “underprepared.” Novice teachers are those who reported 0, 1, or 2 years of teaching experience on the PAIF.

Exhibit 12 - Percentage of Underprepared Teachers by API Achievement Quartile, 2002–03 to 2008–09. For each year presented in this exhibit, three data files were merged to conduct the analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Academic Performance Index (API) Growth data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The API Growth data file was obtained from CDE’s Testing and Accountability website, <http://www.cde.ca.gov/ta/ac/ap/apidatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. The numbers of schools included in these analyses vary each year because (1) the number of open schools changes from year to year as schools open and close, and (2) the number of schools with complete data in all three files changes from year to year (see Exhibit C-1).

Exhibit 13 - Percentage of Underprepared High School Teachers by API Achievement Quartile, 2008–2009. For each year presented in this exhibit, four data files were merged to conduct the analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, (3) Course Data by Assignment (Assign08), and (4) the API Growth data file. The List of California Public Schools and Districts, the PAIF, and Assign08 data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The API Growth data file was obtained from CDE’s Testing and Accountability website, <http://www.cde.ca.gov/ta/ac/ap/apidatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential other than a “full” credential (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. Teachers were identified as being “assigned” to mathematics if they reported on the PAIF that they taught at least one mathematics course. Teachers were identified as being “assigned” to science if they reported on the PAIF that they taught at least one science course. See Exhibit C-4 for numbers of schools included in each API quartile.

Exhibit 14 - Percentage of Out-of-Field High School Teachers in Core Subjects, 2004–05 and 2008–09. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) Course Data by Assignment (Assign08). These data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers in California high schools are included in this analysis. Teachers who indicated they were fully credentialed but did not have subject matter authorization in their assigned subject are defined as “out of field.” Teachers were identified as being “assigned” to a subject if they

reported on the PAIF that they taught at least one class in a core subject—English, mathematics, social science, physical science, or life science. Physical science assignments are limited to chemistry, physics, and physical science courses; life science assignments are limited to biology courses. Teachers with earth science, integrated/coordinated science, or other science assignments (e.g., astronomy, zoology, oceanography) are not included in the analysis. Teachers can have more than one assignment.

Exhibits 15-20. See Appendix D for Source and Technical Information for Principal Survey data.

Exhibit A-1 - Total K-12 Enrollment in California, 1997–98 to 2008–09. Data were obtained from CDE’s DataQuest website, <http://dq.cde.ca.gov/dataquest/>.

Exhibit A-2 - Age Distribution of K-12 Public School Teachers, 2008–09. Data from the PAIF are presented in this exhibit. These data were obtained by special request from CDE.

Exhibit A-3 - First- and Second-Year Teachers by Credential Status, 2001–02 to 2008–09. Data from the PAIF were used for this analysis. These data were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers who reported that they had 0, 1, or 2 years of teaching experience are included in this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). Teachers who did not report holding any type of credential, permit, or certificate are not included in this analysis.

Exhibit A-4 - Number of Underprepared Teachers in California, 2000–01 to 2008–09. Data from the PAIF were used for this analysis. These data were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>.

Exhibit A-5 - Percentage of Underprepared Teachers by Authorization, 2001–02 to 2008–09. Data from the PAIF were used for this analysis. These data were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers are included in this analysis. For each credential authorization—elementary, secondary, and special education—the percentage of underprepared teachers (those who reported on the PAIF that they held a credential, permit, or certificate other than a “full credential”) is calculated as a proportion of full-time teachers. Teachers could report more than one type of credential authorization. Teachers who did not report holding any type of credential, permit, or certificate are not included in this analysis.

Exhibit A-6 - Percentage of Underprepared First- and Second-Year Teachers by Authorization, 2006–07 to 2008–09. Data from the PAIF were used for this analysis. These data were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers who reported that they had 0, 1, or 2 years of teaching experience are included in this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). Teachers who did not report holding any type of credential, permit, or certificate are not included in this analysis.

Exhibit A-7 - Top 10 California Counties by Number and Percentage of Underprepared Teachers, 2008–09. Data from DataQuest are presented in this exhibit. These data were obtained from CDE’s DataQuest website, <http://dq.cde.ca.gov/dataquest/>.

Exhibit A-8 - Distribution of Schools by School-Level Percentage of Underprepared Faculty, 2008–09. Two data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts and (2) the PAIF. These data files were obtained

from CDE's CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a "full credential" (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates.

Exhibit A-9 - New Preliminary Teaching Credentials Issued by IHEs, 1998–99 to 2007–08. Data from the CCTC are presented in this exhibit. Data for 1998–99 were obtained from the CCTC by special request. Data for 1999–2000 through 2007–08 were obtained from the CCTC's annual *Teacher Supply in California* reports at <http://www.ctc.ca.gov/reports/all-reports.html>. "New preliminary credentials" include first-time, new-type preliminary or professional clear credentials. (First-time, new-type professional clear credentials typically represent a newly credentialed teacher, not an experienced veteran earning a Level II credential.) Intern credentials are not included in this exhibit.

Exhibit A-10 - New University and District Intern Credentials Issued, 1996–97 to 2007–08. Data from the CCTC are presented in this exhibit. Data for 1996–97 through 1998–99 were obtained from the CCTC by special request. Data for 1999–2000 through 2007–08 were obtained from the CCTC's annual *Teacher Supply in California* reports at <http://www.ctc.ca.gov/reports/all-reports.html>.

Exhibit A-11 - Number of Teacher Preparation Candidates Enrolled in CSU Single-Subject Programs, 2001–02 to 2008–09. This information was gathered from the Analytical Studies Department at California State University. Information can be found at <http://www.calstate.edu/as/credential/index.shtml>.

Exhibit A-12 - University Intern Credentials Issued by Authorization, 2002–03 to 2007–08. Data from the CCTC are presented in this exhibit. These data were obtained from the CCTC's annual *Teacher Supply in California* reports at <http://www.ctc.ca.gov/reports/all-reports.html>.

Exhibit A-13 - Number of California Credentials Issued to Teachers Trained Out of State, 1999–00 to 2007–08. Data from the CCTC's *Teacher Supply in California* 2007–08 report are presented in this exhibit. These data were obtained from the CCTC's website, http://www.ctc.ca.gov/reports/TS_2007-2008_AnnualRpt.pdf.

Exhibit A-14 - Underprepared and/or Novice Teachers by School-Level API, 2008–09. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the API Growth data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE's CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The API Growth data file was obtained from CDE's Testing and Accountability website, <http://www.cde.ca.gov/ta/ac/ap/apidatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in this analysis. Novice teachers are those who reported 0, 1, or 2 years of teaching experience on the PAIF. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a "full credential" (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. See Exhibit C-1 for the number of schools included in this analysis.

Exhibit A-15 - Distribution of Interns by School-Level API, 2008–09. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the API Growth data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The API Growth data file was obtained from CDE’s Testing and Accountability website, <http://www.cde.ca.gov/ta/ac/ap/apidatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. This analysis includes teachers who responded on the PAIF that they were a “university intern” or a “district intern.” Only full-time teachers are included in this analysis. See Exhibit C-1 for numbers of schools included in each quartile.

Exhibit A-16 - Underprepared Teachers in Schools with the Highest and Lowest Percentages of Minority Students, 2000–01 to 2008–09. For data for 2001–02 to 2004–05, and 2006–07 to 2008–09., three data files were merged to conduct the analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Enrollment by Ethnic Group and School aggregate data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The Enrollment by Ethnic Group and School aggregate data file was obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>.

In 2005–06, the Enrollment by Ethnic Group and School aggregate data file was not released. The School Information Form (SIF) - Section B was used to calculate school-level percentage of minority students and merged with the List of California Public Schools and Districts and the PAIF. The SIF - Section B was obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>.

All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates.

The numbers of schools included in these analyses vary each year because (1) the number of open schools changes from year to year as schools open and close, (2) the number of schools with complete data in all three files changes from year to year, and (3) for 2005–06, we had to use a different data file to calculate minority percentages, and many schools did not have complete data in this file (see Exhibit C-2 for the numbers of schools included in this analysis).

Exhibit A-17 - Distribution of Interns by School-Level Percentage of Minority Students, 2008–09. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the SIF - Section B. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The SIF - Section B was obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. This analysis includes teachers who responded on the PAIF that they were a “university intern” or a “district intern.” Only full-time teachers are included in this analysis. See Exhibit C-2 for numbers of schools included in this analysis.

Exhibit A-18 - Underprepared Teachers in Schools with the Highest and Lowest Percentages of Students in Poverty, 2000–01 to 2008–09. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Free and Reduced-Price Meals data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The Free and Reduced-Price Meals data file was obtained from CDE’s CalWORKS website, <http://www.cde.ca.gov/ds/sh/cw/filesafdc.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. See Exhibit C-3 for the numbers of schools included in this analysis.

Exhibit A-19 - Distribution of Interns by School-Level Percentage of Students in Poverty, 2008–09. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Free and Reduced-Price Meals data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The Free and Reduced-Price Meals data file was obtained from CDE’s CalWORKS website, <http://www.cde.ca.gov/ds/sh/cw/filesafdc.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. This analysis includes teachers who responded on the PAIF that they were a “university intern” or a “district intern.” Only full-time teachers are included in this analysis. See Exhibit C-3 for the numbers of schools included in this analysis.

Exhibit A-20 - Total Enrollment in Grades 9–12, 2001–02 to 2008–09. Data were obtained from CDE’s DataQuest website, <http://dq.cde.ca.gov/dataquest/>.

Exhibit A-21 - Number of High School Teachers in California, 2004–05 to 2008–09. Two data files were merged to conduct this analysis: (1) the PAIF and (2) the List of California Public Schools and Districts. These data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>.

Exhibit A-22 - Number of Underprepared High School Teachers, 2003–04 to 2008–09. Two data files were merged to conduct this analysis: (1) the PAIF and (2) the List of California Public Schools and Districts. These data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>.

Exhibit A-23 - Number of Career Technical Education Teachers in California, 2000–01 to 2008–09. Data were obtained from California’s Ed-Data website, <http://www.ed-data.k12.ca.us/>.

Exhibit A-24 - Percentage of Underprepared High School Teachers by School-Level Percentage of Minority Students, 2008–09. For data for 2001–02 to 2004–05 and 2006–07 to 2008–09, three data files were merged to conduct the analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Enrollment by Ethnic Group and School aggregate data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The Enrollment by Ethnic Group and School aggregate data file was obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>.

In 2005–06, the Enrollment by Ethnic Group and School aggregate data file was not released. The School Information Form (SIF) - Section B was used to calculate school-level percentage of minority students and merged with the List of California Public Schools and Districts and the PAIF. The SIF - Section B was obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>.

All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates.

The numbers of schools included in these analyses vary each year because (1) the number of open schools changes from year to year as schools open and close, (2) the number of schools with complete data in all three files changes from year to year, and (3) for 2005–06, we had to use a different data file to calculate minority percentages, and many schools did not have complete data in this file (see Exhibit C-5 for the numbers of schools included in this analysis).

Exhibit A-25 - Percentage of Underprepared High School Teachers by School-Level Percentage of Students in Poverty, 2008–09. For data for 2001–02 to 2004–05 and 2006–07 to 2008–09, three data files were merged to conduct the analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Free and Reduced-Price Meals data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The Free and Reduced-Price Meals data file was obtained from CDE’s CalWORKS website, <http://www.cde.ca.gov/ds/sh/cw/filesafdc.asp>.

All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates.

The numbers of schools included in these analyses vary each year because (1) the number of open schools changes from year to year as schools open and close, (2) the number of schools with complete data in all three files changes from year to year, and (3) for 2005–06, we had to use a different data file to calculate minority percentages, and many schools did not have complete data in this file (see Exhibit C-6 for the numbers of schools included in this analysis).

Exhibit A-26 - Percentage of Out-of-Field, Underprepared, and Novice High School Teachers by Assignment, 2008–09. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) Course Data by Assignment (Assign08). These data files were obtained from CDE’s CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers in California high school teachers are included in this analysis. Teachers who indicated they were fully credentialed but did not have subject matter authorization in their teaching assignment are defined as “out of field.” Teachers were identified as being “assigned” to a subject if they reported on the PAIF that they taught at least one class in a core subject—English, mathematics, social science, physical science, or life science. Teachers who reported on the PAIF that they held a credential, permit, or certificate other than a “full credential” are defined as “underprepared.” Teachers who reported teaching 0, 1, or 2 years on the PAIF and indicate having a full credential and subject matter authorization in their assigned subject are defined as “fully credentialed, in-field novice teachers.”

The School Information Form (SIF) - Section B was used to calculate total school enrollment and was merged with the List of California Public Schools and Districts and the PAIF. The SIF - Section B was obtained from CDE's CBEDS website, <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>.

Exhibit A-27 - Percentage of Underprepared and Novice Teachers by School-Level Percentage of 10th Grade Students Passing the CAHSEE, 2008–09.

This exhibit shows the average percentage of underprepared and novice teachers in a school, based on that school's 10th grade CAHSEE passing rate.

Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the California High School Exit Exam (CAHSEE) Statewide Research File. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE's CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The CAHSEE Statewide Research File was obtained from CDE's CAHSEE website, <http://cahsee.cde.ca.gov/datafiles.asp>.

All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in this analysis. Novice teachers are those who reported 0, 1, or 2 years of teaching experience on the PAIF. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a "full credential" (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates.

Tenth-grade students were given one opportunity to take the CAHSEE. Students absent on the day of the examination were generally given a makeup test at a later date during the school year. To determine the total number of 10th-grade students who passed the English portion of the CAHSEE, the variable "combined administration" was used to capture students who took the examination on either the established test date or the makeup test date. To protect student privacy, the state gave all schools with 10 or fewer 10th-grade students taking the examination a value of 0 for the percentage of students passing the English or the mathematics portion of the examination. Because this 0" did not mean that no students passed the English or mathematics portion of the CAHSEE, schools with 10 or fewer students in either English or mathematics are not included in the analysis.

Exhibit A-28 - Percentage of Underprepared and Novice Teachers in High Schools by School-Level Percentage of Students in Poverty, 2008–09.

Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Free and Reduced-Price Meals data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE's CBEDS website, <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The Free and Reduced-Price Meals data file was obtained from CDE's CalWORKS website, <http://www.cde.ca.gov/ds/sh/cw/filesafdc.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Novice teachers are those who reported 0, 1, or 2 years of teaching experience on the PAIF. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a "full credential" (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. See Exhibit C-6 for the numbers of schools included in this analysis.

Exhibit A-29 - Percentage of Fully Credentialed Teachers with English Learner Authorization, 2003–04 to 2008–09. Data from the PAIF were used to conduct this analysis. Only full-time teachers are included in the analysis. Teachers who reported they

were fully credentialed and were authorized to teach bilingual education, English Language Development, or Specially Designed Academic Instruction in English are defined as “fully credentialed teachers with English learner authorization.”

Exhibit A-30 - Number of California State Teachers Retirement System (CalSTRS) Membership Retirements, 1997–98 to 2007–08.

Data from the CalSTRS 2008 Comprehensive Annual Financial Report are presented in this exhibit. The 2008 report was obtained from the CalSTRS website, http://www.calstrs.com/Help/forms_publications/printed/CurrentCAFR/CAFRStat.pdf.

Exhibit A-31 - Percentage of Out-of-Field, Underprepared, and Novice High School Teachers by Assignment in Charter Schools, 2008–09.

Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) Course Data by Assignment (Assign08). These data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers in California high school teachers are included in this analysis. Teachers who indicated they were fully credentialed but did not have subject matter authorization in their teaching assignment are defined as “out-of-field.” Teachers were identified as being “assigned” to a subject if they reported on the PAIF that they taught at least one class in a core subject—English, mathematics, social science, physical science, or life science. Teachers who reported on the PAIF that they held a credential, permit, or certificate other than a “full credential” are defined as “underprepared.” Teachers who reported teaching 0, 1, or 2 years on the PAIF and indicate having a full credential and subject matter authorization in their assigned subject are defined as “fully credentialed, in-field novice teachers.”

Exhibit A-32 - Percentage of Out-of-Field, Underprepared, and Novice High School Teachers by Assignment in Non-Charter Schools, 2008–09.

Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) Course Data by Assignment (Assign08). These data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers in California high school teachers are included in this analysis. Teachers who indicated they were fully credentialed but did not have subject matter authorization in their teaching assignment are defined as “out-of-field.” Teachers were identified as being “assigned” to a subject if they reported on the PAIF that they taught at least one class in a core subject—English, mathematics, social science, physical science, or life science. Teachers who reported on the PAIF that they held a credential, permit, or certificate other than a “full credential” are defined as “underprepared.” Teachers who reported teaching 0, 1, or 2 years on the PAIF and indicate having a full credential and subject matter authorization in their assigned subject are defined as “fully credentialed, in-field novice teachers.”

Exhibit A-33 - Average Percentage of Underprepared and Novice High School Teachers by Charter Status, 2008–2009.

Two data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, and (2) the PAIF. Only full-time teachers are included in this analysis. Novice teachers are those who reported 0, 1, or 2 years of teaching experience on the PAIF. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates.

Exhibit A-34 - Average Percentage of Underprepared and Novice High School Teachers by School Size, 2008–2009.

Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) The School Information Form (SIF) - Section B.)

Only full-time teachers are included in this analysis. Novice teachers are those who reported 0, 1, or 2 years of teaching experience on the PAIF. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates.

The School Information Form (SIF) - Section B was used to calculate total school enrollment and was merged with the List of California Public Schools and Districts and the PAIF. The SIF - Section B was obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>.

Exhibit C-1
Number of Schools by API Quartile for API Analyses

API Quartile	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09
Highest achievement quartile	1,737	1,830	1,878	1,920	1,970	2,027	2,006	2,017
Second highest achievement quartile	1,747	1,833	1,887	1,952	2,016	1,991	2,029	2,028
Second lowest achievement quartile	1,745	1,855	1,896	1,958	1,965	2,006	2,038	2,003
Lowest achievement quartile	1,764	1,859	1,892	1,970	2,025	1,986	2,039	2,029
Total	6,993	7,377	7,553	7,800	7,976	8,010	8,112	8,077

Exhibit C-2
Number of Schools by School-Level Minority for Minority Analyses

Percent of Nonwhite Student Populations	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09
Lowest minority quartile	1,859	1,900	1,939	2,006	1,864	1,877	1,867	2,072
Second minority quartile	1,866	1,902	1,947	2,000	1,864	1,877	1,869	2,074
Third minority quartile	1,852	1,898	1,938	2,007	1,865	1,877	1,868	2,074
Highest minority quartile	1,857	1,906	1,950	2,012	1,865	1,877	1,869	2,072
Total	7,452	7,606	7,774	8,025	7,458	7,508	7,473	8,292

**Exhibit C-3
Number of Schools by School-Level Poverty for Poverty Analyses**

Poverty Level	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Lowest poverty quartile	2,165	2,160	2,263	1,982	1,935	2,004	1,939	2,013
Second poverty quartile	2,167	2,237	2,262	1,983	1,934	2,004	1,941	2,013
Third poverty quartile	2,166	2,157	2,264	1,982	1,936	2,004	1,940	2,014
Highest poverty quartile	2,167	2,292	2,263	1,983	1,936	2,005	1,941	2,013
Total	8,665	8,846	9,052	7,930	7,741	8,017	7,761	8,053

Note: School-level percentage of students receiving free or reduced-price lunches is used as the measure of poverty.

**Exhibit C-4
Number of High Schools by API Quartile for API Analyses**

API Quartile	2008-09
Highest achievement quartile	296
Second highest achievement quartile	288
Second lowest achievement quartile	299
Lowest achievement quartile	294
Total	1,177

**Exhibit C-5
Number of High Schools by School-Level Minority for Minority Analyses**

Percent of Nonwhite Student Populations	2008-09
Lowest minority quartile	304
Second minority quartile	305
Third minority quartile	305
Highest minority quartile	304
Total	1,218

Exhibit C-6
Number of High Schools by School-Level Poverty for Poverty Analyses

Poverty Level	2008–09
Lowest poverty quartile	290
Second poverty quartile	290
Third poverty quartile	291
Highest poverty quartile	290
Total	1,161

Note: School-level percentage of students receiving free or reduced-price lunches is used as the measure of poverty.

APPENDIX D

SOURCE AND TECHNICAL INFORMATION FOR SURVEY DATA

Exhibit D-1
Survey Data for Exhibit 15:
California High Schools' Top Academic Priorities for Students

		Not selected	Selected	<i>n</i>
Reducing the number of students who leave school without graduating	%	65	35	234
	SE	3.37	3.37	
Ensuring basic literacy in reading, math, writing, and speaking	%	55	45	234
	SE	3.52	3.52	
Developing problem-solving and/or critical thinking skills	%	54	46	234
	SE	3.52	3.52	
Developing collaboration and/or communication skills	%	73	27	234
	SE	3.11	3.11	
Ensuring mastery of academic skills for college	%	54	46	234
	SE	3.52	3.52	
Increasing CST proficiency rate	%	38	62	234
	SE	3.39	3.39	

*Note: Survey question specifies that principal had the option of selecting up to 3 priorities.
Source: 2008 SRI Survey of California High School Principals, Question 1.*

Exhibit D-2
Data from Survey of High School Principals:
Does your district or school require students to complete the a-g college preparatory curriculum for graduation?

Yes, required of all students except exempt students (e.g., special education students)	%	27
	SE	3.04
Yes, required of all students except exempt students AND those who opt out	%	15
	SE	2.65
No	%	57
	SE	3.51
	<i>n</i>	229

Note: Percentages do not add to 100 because of rounding.

Source: 2008 SRI Survey of California High School Principals, Question 6.

Exhibit D-3
Data from Survey of High School Principals:
During the current school year (2008–09), how much emphasis is your school
placing on any of the following strategies for increasing students’
college-readiness?

		Not an emphasis	Minor emphasis	Moderate emphasis	Great emphasis	<i>n</i>
Instructional support for middle-performing students enrolled in honors and AP classes (e.g., AVID)	%	13	17	25	45	233
	SE	2.16	2.68	3.07	3.55	
Participation of 11th grade students in California State University’s (CSU’s) Early Assessment Program (i.e., having students take the augmented 11th grade California Standards Tests in English and mathematics to assess preparation for CSU’s English and mathematics courses)	%	9	7	29	55	234
	SE	1.68	1.77	3.24	3.50	
Enrollment in college courses (offered on a college campus, online, or at your school, for example through early college or middle college high school)	%	10	25	36	28	234
	SE	2.19	3.11	3.44	3.10	
Partnerships with local institutions of higher education (e.g., hosting of college outreach programs)	%	4	21	36	40	233
	SE	1.30	2.93	3.42	3.45	
College entrance exam enrollment (e.g., PSAT, SAT, ACT)	%	4	3	30	62	233
	SE	1.26	1.10	3.29	3.42	

Note: Percentages do not always add to 100 because of rounding.
Source: 2008 SRI Survey of California High School Principals, Question 5.

Exhibit D-4**Data from Survey of High School Principals:**

For schools broken into any kind of small learning community (where at least some students and teachers are grouped together in subunits such as houses, academies, or other units for much of their coursework), what is the organizing principle behind the subunit(s)?

		No	Yes	<i>n</i>
Career themes (e.g., engineering, technology, design)	%	70	30	234
	SE	3.31	3.31	

Source: 2008 SRI Survey of California High School Principals, Questions 14 and 17A.

**Exhibit D-5
Survey Data for Exhibit 16:
Emphasis on Offering Courses Integrating Authentic Learning and Assessment**

		Not an emphasis	Minor emphasis	Moderate emphasis	Great emphasis	<i>n</i>
Integrate more than one academic discipline (e.g., a course combining history and English)	%	36	30	25	10	232
	SE	3.43	3.26	3.07	1.93	
Integrate an academic subject with a real-world application, such as physics and bridge design	%	18	38	30	14	232
	SE	2.78	3.45	3.29	2.37	
Are designed around a specific applied project designed to promote student inquiry and problem-solving skills (e.g., project-based learning)	%	14	34	37	14	234
	SE	2.55	3.38	3.42	2.38	
Culminate in a final presentation or public exhibition by students	%	20	30	32	18	234
	SE	2.92	3.24	3.30	2.67	
Involve assessment or judging of student work (e.g., projects, presentations, or exhibitions) by adults from outside the school, such as a panel of experts	%	23	39	25	13	232
	SE	2.94	3.47	3.10	2.41	

*Note: Percentages do not always add to 100 because of rounding.
Source: 2008 SRI Survey of California High School Principals, Question 4.*

Exhibit D-6
Survey Data for Exhibit 17:
Emphasis on Strategies to Prepare Students for Work and Careers

		Not an emphasis	Minor emphasis	Moderate emphasis	Great emphasis	<i>n</i>
Increasing the academic content of career/technical courses	%	11	24	48	16	231
	SE	2.00	3.07	3.56	2.62	
Offering community or work-based internships or projects in which students earn course credits for supervised learning activities	%	24	35	32	10	232
	SE	3.02	3.41	3.33	1.94	
Providing job shadowing or visits where students can observe the activities of real job-holders	%	23	42	27	7	231
	SE	2.99	3.54	3.18	1.75	
Providing students with coaching or mentoring from community members	%	22	46	26	6	233
	SE	2.93	3.54	3.15	1.55	
Providing course sequences that prepare students for specific careers after high school	%	9	22	45	25	233
	SE	1.81	2.90	3.55	3.06	

Note: Percentages do not always add to 100 because of rounding.
Source: 2008 SRI Survey of California High School Principals, Question 3.

Exhibit D-7

Data from Survey of High School Principals:

Is your school broken into any kind of small learning community, where at least some students and teachers are grouped together in subunits such as houses, academies, or other units for much of their coursework?

	Yes	No	<i>n</i>
%	44	56	
SE	3.56	3.56	228

Source: 2008 SRI Survey of California High School Principals, Question 14.

Exhibit D-8**Data from Survey of High School Principals:**

We are interested in getting a picture of your school as a whole. Thinking of your entire school (not a particular program available at your school), answer “Yes” or “No” to the following questions. Is your entire school...

		Yes	No	<i>n</i>
A magnet school or school with selective admissions	%	6	94	228
	SE	1.66	1.66	
A school that caps enrollment in order to create a small, personalized school environment	%	15	85	227
	SE	2.06	2.06	
Organized around particular career themes (e.g., engineering, technology, design)	%	18	82	228
	SE	2.74	2.74	
Organized around particular academic themes (e.g., science, mathematics, humanities, arts)	%	20	80	230
	SE	2.83	2.83	

Source: 2008 SRI Survey of California High School Principals, Question 19.

Exhibit D-9
Data from Survey of High School Principals:
Approximately how many students in your school are assigned to an adult
advisor or advocate with whom they have a regularly scheduled meeting time
(e.g., advisories)?

	None	Some	Most	All	Don't know	<i>n</i>
%	22	38	4	34	1	231
SE	3.06	3.48	1.45	3.28	0.80	

Note: Percentages do not add to 100 because of rounding. Additionally, the sum of the relevant percentages does not exactly match the data presented in the report text because aggregated items presented in the report text were added before rounding.

Source: 2008 SRI Survey of California High School Principals, Question 10.

Exhibit D-10
Data from Survey of High School Principals:
For those schools at which at least some students are assigned to an adult advisor
or advocate with whom they have a regularly scheduled
meeting time (e.g., advisories), who provides this advising to students?

		Not selected	Selected	<i>n</i>
Teachers	%	20	80	179
	SE	3.25	3.25	
School administrators	%	45	55	179
	SE	3.98	3.98	
Other school staff (e.g., counselors)	%	21	79	179
	SE	3.19	3.19	
Other adults outside of the school	%	77	23	179
	SE	3.36	3.36	

Source: 2008 SRI Survey of California High School Principals, Question 11.

Exhibit D-11

Data from Survey of High School Principals:

Level of support provided: During the current school year (2008-09), were the following school-sponsored supports offered at your school?

Source of support, if offered: For those supports that are offered, indicate whether they are provided by classroom teachers.

		Level of support provided				Source of support, if offered: Provided by classroom teachers?		
		Not offered	Offered to SOME students who need it	Offered to ALL students who need it	<i>n</i>	No	Yes	<i>n</i>
One-on-one tutoring	%	1	33	67	231	25	75	233
	SE	0.56	3.38	3.40		3.10	3.10	
Assistance with study skills and organization	%	3	41	57	223	21	79	228
	SE	1.17	3.59	3.61		2.93	2.93	
Behavioral, social or emotional supports for students	%	3	36	61	230	62	38	227
	SE	1.16	3.47	3.51		3.47	3.47	
Intensive catch-up courses in reading and math for students in their first year of high school who are below grade level	%	15	35	50	228	23	77	200
	SE	2.49	3.46	3.58		3.23	3.23	

Note: Percentages do not always add to 100 because of rounding. Additionally, the sums of some percentages do not exactly match the data presented in the report text because aggregated items presented in the report text were added before rounding.

Note: Teachers were asked to indicate a source of support only for those supports offered at their school.

Source: 2008 SRI Survey of California High School Principals, Questions 8A and 8B.

Exhibit D-12
Survey Data for Exhibit 18:
Prevalence of Teaching Knowledge and Skills

		Less than one-third of teachers	Between one-third and two-thirds of teachers	More than two-thirds (but less than all) teachers	All teachers	<i>n</i>
Subject-specific knowledge to make course content academically rigorous	%	2	12	42	45	232
	SE	0.85	2.30	3.52	3.52	
Pedagogical skills to promote students' critical thinking and problem-solving skills	%	6	26	50	18	232
	SE	1.65	3.16	3.55	2.63	
Pedagogical skills to promote students' collaboration and communication skills	%	7	29	48	17	230
	SE	1.82	3.24	3.57	2.56	
Ability to integrate real-world applications into lessons to make course content relevant	%	14	36	34	16	232
	SE	2.49	3.45	3.36	2.49	
Skills to use student assessment data effectively to target instruction	%	16	32	34	18	232
	SE	2.60	3.35	3.35	2.72	
Pedagogical skills to differentiate instruction to meet the needs of students at varying academic levels within the same class	%	18	36	33	12	230
	SE	2.76	3.46	3.36	2.21	
Interpersonal skills to connect with students (e.g., in an advisory role)	%	9	23	52	15	231
	SE	2.13	3.04	3.55	2.33	
Skills to assess students' aptitude and interests for career and college planning	%	28	37	28	6	228
	SE	3.24	3.47	3.22	1.53	

Note: Percentages do not always add to 100 because of rounding. Additionally, the sums of some percentages do not exactly match the data presented in the report text because aggregated items presented in the report text were added before rounding.
Source: 2008 SRI Survey of California High School Principals, Question 20.

Exhibit D-13
Survey Data for Exhibit 19:
Prevalence of Teaching Knowledge and Skills by School-Level Poverty

		School Poverty Tercile			χ^2	df	p-value	n
		Lowest	Middle	Highest				
Interpersonal skills to connect with students (e.g., in an advisory role)	Skills/knowledge <i>not</i> present in at least two-thirds of teachers	25%	34%	47%	7.12	2	0.03	209
	Skills/knowledge present in at least two-thirds of teachers	75%	66%	53%				
Ability to integrate real-world applications into lessons to make course content relevant	Skills/knowledge <i>not</i> present in at least two-thirds of teachers	41%	51%	66%	8.44	2	0.01	211
	Skills/knowledge present in at least two-thirds of teachers	59%	49%	34%				
Pedagogical skills to promote students' critical thinking and problem-solving skills	Skills/knowledge <i>not</i> present in at least two-thirds of teachers	22%	28%	52%	14.96	2	< 0.01	211
	Skills/knowledge present in at least two-thirds of teachers	78%	72%	48%				
Subject-specific knowledge to make course content academically rigorous	Skills/knowledge <i>not</i> present in at least two-thirds of teachers	3%	14%	24%	12.56	2	< 0.01	211
	Skills/knowledge present in at least two-thirds of teachers	97%	86%	76%				

Source: 2008 SRI Survey of California High School Principals, Question 20.

Exhibit D-14
Survey Data for Exhibit 20:
Professional Development Priorities of California High Schools

		Not an emphasis	Minor emphasis	Moderate emphasis	Great emphasis	<i>n</i>
Subject-specific knowledge to make course content academically rigorous	%	6	20	38	37	230
	SE	1.60	2.87	3.46	3.45	
Pedagogical skills to promote students' critical thinking and problem-solving skills	%	3	17	48	32	227
	SE	1.28	2.75	3.59	3.32	
Pedagogical skills to promote students' collaboration and communication skills	%	7	24	45	25	227
	SE	1.83	3.10	3.57	3.06	
Ability to integrate real-world applications into lessons to make course content relevant	%	10	31	42	16	230
	SE	2.21	3.34	3.53	2.52	
Skills to use student assessment data effectively to target instruction	%	2	11	32	55	226
	SE	0.84	2.20	3.36	3.57	
Pedagogical skills to differentiate instruction to meet the needs of students at varying academic levels within the same class	%	2	19	46	33	228
	SE	1.00	2.83	3.58	3.36	
Interpersonal skills to connect with students (e.g., in an advisory role)	%	11	28	38	23	229
	SE	2.27	3.22	3.50	2.89	
Skills to assess students' aptitude and interests for career and college planning	%	19	37	35	9	229
	SE	2.82	3.48	3.40	2.01	

Note: Percentages do not always add to 100 because of rounding. Additionally, the sums of some percentages do not exactly match the data presented in the report text because aggregated items presented in the report text were added before rounding.
Source: 2008 SRI Survey of California High School Principals, Question 21.

Exhibit D-15
Data from Survey of High School Principals:
During the current school year (2008-09), to what extent does teacher
professional development at your school emphasize the following areas?

		Not an emphasis or minor emphasis	Moderate or great emphasis	χ^2	df	p-value	n
Subject-specific knowledge to make course content academically rigorous	High schools prioritizing rigor	12%	88%	11.17	1	< 0.01	230
	All other high schools	32%	68%				
Pedagogical skills to promote students' critical thinking and problem-solving skills	High schools prioritizing rigor	8%	92%	11.84	1	< 0.01	227
	All other high schools	27%	73%				
Skills to use student assessment data effectively to target instruction	High schools prioritizing rigor	7%	93%	4.30	1	0.04	226
	All other high schools	16%	84%				
Pedagogical skills to differentiate instruction to meet the needs of students at varying academic levels within the same class	High schools prioritizing rigor	11%	89%	6.45	1	0.01	228
	All other high schools	26%	74%				
Pedagogical skills to promote students' collaboration and communication skills	High schools prioritizing relevance	10%	90%	8.03	1	< 0.01	227
	All other high schools	34%	66%				
Ability to integrate real-world applications into lessons to make course content relevant	High schools prioritizing relevance	5%	95%	21.64	1	< 0.01	230
	All other high schools	48%	52%				
Interpersonal skills to connect with students (e.g., in an advisory role)	High schools prioritizing relationships	24%	76%	6.39	1	0.01	229
	All other high schools	44%	56%				
Skills to assess students' aptitude and interests for career and college planning	High schools prioritizing relationships	34%	66%	12.08	1	< 0.01	229
	All other high schools	62%	38%				

Note: To define schools as prioritizing a particular area of focus—increased academic rigor, real-world applications, or personalization—we identified survey items listing strategies that address each of these areas directly and classified schools based on the number of strategies they reported to be greatly emphasized at their schools.

Source: 2008 SRI Survey of California High School Principals, Question 21.

Exhibit D-16
Data from Survey of High School Principals:
How supported do you feel by the district in the leadership position to which
you are currently assigned?

	%	2
Not at all supported	SE	0.84
	%	9
Minimally supported	SE	2.04
	%	36
Moderately supported	SE	3.42
	%	53
Well-supported	SE	3.55
	<i>n</i>	232

Source: 2008 SRI Survey of California High School Principals, Question 27.



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The Center for the Future of Teaching and Learning

Working to improve education for all students by strengthening the teaching profession

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The Status of the Teaching Profession

Teaching and
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