

Office of the President

TO MEMBERS OF THE ACADEMIC AND STUDENT AFFAIRS COMMITTEE:

DISCUSSION ITEM

For Meeting of November 13, 2019

THE ROLE OF THE UNIVERSITY IN PREPARING HIGH-QUALITY TEACHERS AND ADMINISTRATORS TO SUPPORT ACHIEVEMENT AND OPPORTUNITY FOR ALL STUDENTS

EXECUTIVE SUMMARY

California's K–12 student population, with its demographic diversity and wide range of learning needs, calls for well-trained and highly effective educators and educator leaders. This makes the recruitment, preparation and retention of teachers with credentials in subjects necessary for student success one of California's most pressing issues.

Although the University of California teacher education programs prepare a lower share of the state's educators compared to other segments (5.2 percent of new teaching credentials issued in 2017–18¹), it plays an important and distinctive role in contributing to excellence and equity in teacher preparation. It does this through research on best practices, training of educator leaders and researchers who serve all segments of education, innovations in teacher education programming, and strategies for reaching all students, especially those in high-need schools and school districts. An overview of signature programs and a summary of recent outcomes are included in this item.

The goal of this item is to inform discussion of how the University might marshal its extensive research and practice expertise. We also consider what is needed to grow and scale successful efforts in order to have more impact on gaps in student learning, improve academic preparation for college, address teacher workforce shortages, and inform instructional effectiveness and accountability.

BACKGROUND

As a public research institution, UC is responsible for influencing policy, informing practice and shaping the research agenda in all disciplines, including the field of education. For more than 100 years, UC has prepared educators to serve students in the state's K–12 school system. Teaching is complex, and preparation programs must address multiple dimensions of teaching and learning. Effective teaching is a collaborative, evidence-based and iterative process whereby research informs practice and practice informs research.

¹ Teacher Supply in California A Report to the Legislature Annual Report 2017-2018

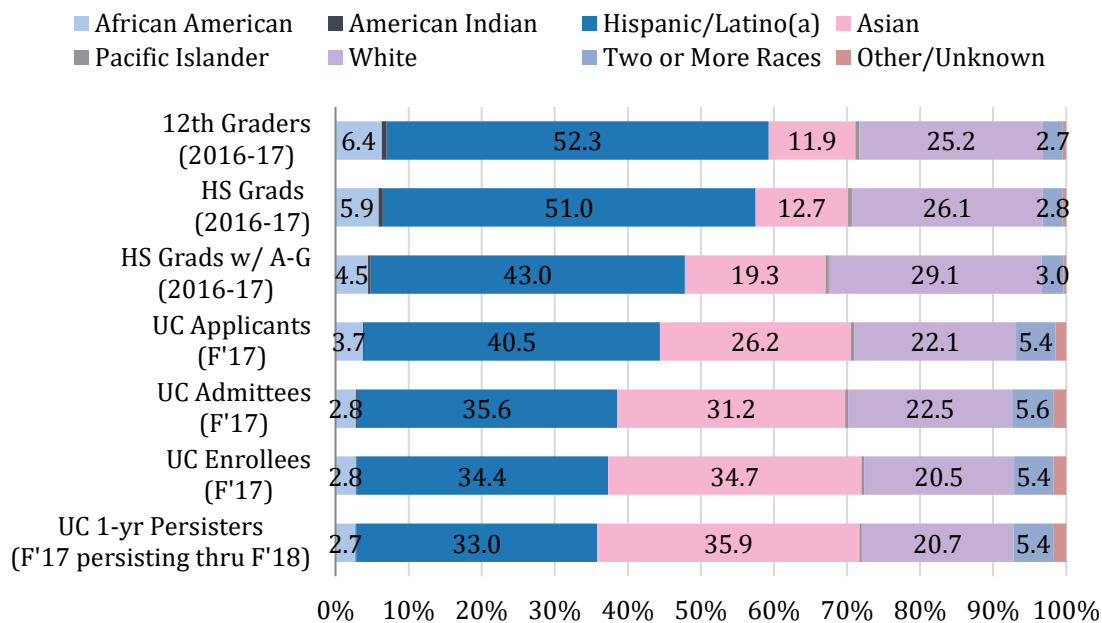
This item highlights the University’s contributions, impacts and challenges in four areas:

- Cultivating undergraduate science, technology, engineering and math (STEM) majors as future K–12 math and science teachers
- Preparing culturally responsive educators, trained to support learning for every student
- Improving teachers’ learning and pedagogy over the course of their careers
- Conducting research that informs policy and practice linked to teacher education and influences teacher training in California, the nation and around the world

The UC pipeline for California high school graduates

At all grade levels along the K–12 continuum, sustained access to highly effective teachers, rigorous curriculum, and innovative and culturally responsive pedagogy are key components for closing educational achievement and attainment gaps and ensuring greater opportunity for a UC education for more students from underrepresented groups (meaning those with African American, American Indian, or Hispanic/Latino(a) backgrounds). However, too few California students from these groups have access to these vital elements for academic preparation for college. Due in part to these disparities, the University has not kept pace with the diversity of California. At almost every point of the eligibility and enrollment process, fewer students from underrepresented ethnic groups are represented at the University relative to all California 12th-graders, as shown in Figure 1 below.

Figure 1. Racial/ethnic distribution of the UC undergraduate pipeline, fall 2017 new freshman cohort from California public high school



In order to advance the University’s imperative to aid in increasing college preparation and eligibility rates among California’s youth, it is critical that the University’s educator programs

are engaged in preparing and supporting the professional learning of highly effective teachers ready to support learning for **all** students.

A CONTINUUM OF EDUCATOR PREPARATION AND PROFESSIONAL LEARNING

All UC undergraduate campuses offer an array of research-based and research- and policy-generating educator preparation and professional learning programs along a continuum, starting with undergraduates, continuing through doctoral education — including the preparation and development of educator leaders — and extending over the course of an educator’s career. All UC educator preparation programs take into account the latest research and outcome data to frame their program improvement strategies.

As described in this item, multiple efforts contribute to advancing schools as equitable and engaging places to learn, with teachers who are critical agents of educational innovation. These efforts include:

- Undergraduate teaching pipelines such as CalTeach
- Teacher education programs
- Principal leadership institutes (PLIs) at UC Berkeley and UCLA
- Teacher professional development networks such as the California Subject Matter Project (CSMP)
- Research-and policy-generating collaboratives such as the California Teacher Education Research and Improvement Network (CTERIN)

UC's programs prepare qualified teachers to teach in the most challenging schools and to help all students meet high academic standards. In addition, they bolster California’s position as a global leader in technology and innovation, a position challenged by a shortage of the math and science teachers needed to prepare future generations for the workforce (Darling-Hammond et al., 2018). UC regularly reassesses its teacher education programs to ensure that they meet not only the needs of teachers and students, but also the statewide goal of building a well-educated and civil society. Rigorous and ongoing research and evaluation support a culture of inquiry for educators, and programs educate future teachers with the expectation that they will assume leadership roles in their schools, districts and beyond.

Undergraduate preparation for teaching

The UC educator preparation continuum begins with strengthening the pipeline of future teachers at the undergraduate level. In order to address the state’s critical need for highly qualified math and science teachers, the University launched the **CalTeach/Science and Mathematics Initiative** program in 2005–06 on nine UC campuses.² CalTeach provides multiple pathways for undergraduate science, technology, engineering and mathematics (STEM) majors to acquire the

² UC and CSU both received State funding to address STEM teacher preparation through undergraduate programming. The State’s shortage of highly qualified math and science teachers has been well documented, most recently by the California Commission on Teacher Credentialing in Teacher Supply in California 2017–18, its annual report to the Legislature.

skills, experience and tools needed to pursue a teaching credential and eventually a career in teaching. Through rigorous CalTeach courses, students learn conceptual teaching skills and then practice these methods in local K–12 classrooms, primarily through field experiences offered through their courses and through intensive summer internships at local schools. Experienced mentor teachers oversee on-site student work in K–12 math and science classrooms.

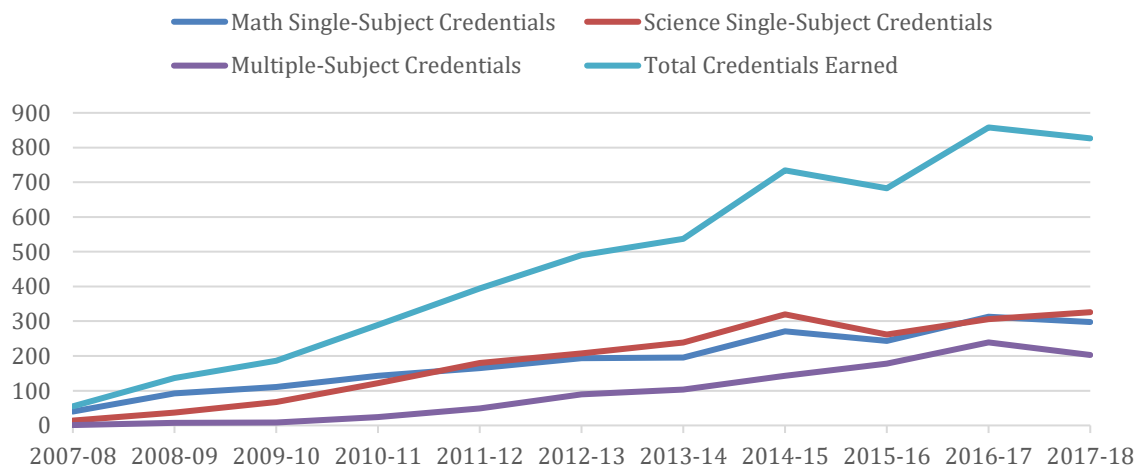
One strategy employed by several CalTeach programs for supporting the recruitment and preparation of future mathematics and science teachers has been to develop new undergraduate minors and concentrations that focus specifically on math and science teaching. These programs bridge math/science and education departments, allowing students to complete their undergraduate coursework in a STEM field while simultaneously exploring and preparing for a career in K–12 teaching.

CalTeach Outcomes

Since it began in 2005 — and despite no increase in state funding since the program’s inception — CalTeach has awarded over 2,000 math and science teaching credentials to UC graduates of the program, many of whom are now in teaching positions in high-need schools located throughout the state. Initial research on the impact of CalTeach courses indicates that they have a positive influence on students’ attitudes toward teaching, make students’ own STEM learning more sophisticated and build a foundation for future teachers to develop the content-specific knowledge and skills needed to teach in a way that is consistent with how people actually learn science (Czworkowski & Seethaler, 2013).

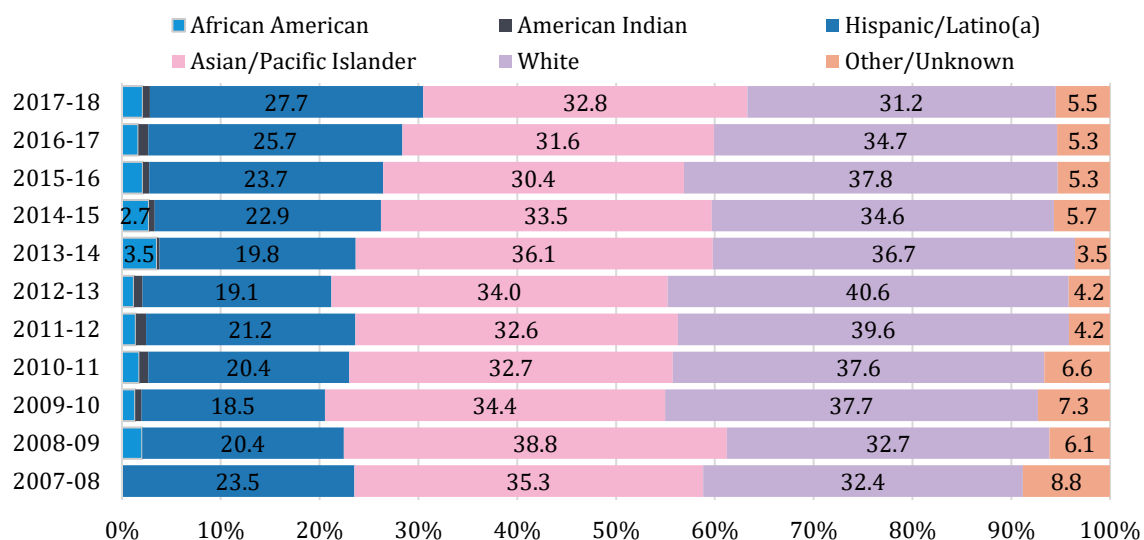
In 2017–18, CalTeach enrolled 2,109 participants, an increase of eight percent over the previous year. At that rate, the program will attract more than 3,000 participants annually by 2023–24. This positive trend in participation has also yielded a steady rise in the number of credentials awarded to CalTeach graduates, as shown in Figure 2 below.

Figure 2. Number of math single-subject, science single-subject, and multiple-subject teaching credentials earned by CalTeach participants by year



In part because of a diminishing statewide number of teacher credentials being awarded (California Commission on Teacher Credentialing [CTC], 2014), CalTeach alumni earned more than 21 percent of all math and science single-subject credentials awarded in California in 2017–18. In addition, CalTeach alumni earning credentials have grown more diverse over time, with the percentage of students from underrepresented groups (meaning those with African American, American Indian, or Hispanic/Latino(a) backgrounds) growing from 24 percent in 2007–08 to 30 percent in 2017–18, as shown in Figure 3 below.

Figure 3. Racial/ethnic distribution of CalTeach participants earning teaching credentials by year



CalTeach helps to ensure that future STEM instructors have the subject matter expertise required to deliver effective instruction. CalTeach also seeks to develop its participants’ abilities to lead classes made up of students from diverse backgrounds. Consistent with the program’s mission to prepare prospective educators that reflect the growing diversity of California’s K–12 students, nearly 71 percent of 2017–18 CalTeach graduates were students of color, meaning students from underrepresented groups (those with African American, American Indian, or Hispanic/Latino(a) backgrounds) and students from Asian/Pacific Islander backgrounds.

CalTeach also provides opportunities in the field for participants to develop their expertise. In 2017–18, CalTeach students participated in field placements in 224 K–12 schools, where they gained real-world classroom experience. Although these field placements occurred throughout the state in schools with a variety of economic and education characteristics, more than 30 percent of field-placement hours were in high-need schools designated as having Local Control Funding Formula (LCFF)+ status.³ After graduating, most participants remain dedicated to serving in public education in the state.

³ A school with Local Control Funding Formula (LCFF)+ status has more than 75 percent of students who are English learners, foster youth and/or qualified for free/reduced-price meals under the National School Lunch Program (NSLP).

Post-baccalaureate educator preparation

The University offers multiple routes to teacher credentialing, including both traditional and alternative certification programs. Offered at the post-baccalaureate level, UC houses **Teacher Education Programs** (TEPs) at all nine UC undergraduate campuses; for most students, the preparation culminates in both a teaching credential and a master's degree. TEPs offer multiple-subject credentials for elementary teachers, single-subject credentials for secondary teachers and education-specialist credentials for both elementary and secondary candidates. All TEPs include emphasis on cross-cultural language and academic development.

UC TEPs have high standards for admissions in support of the core value to prepare highly qualified teachers who are advocates for equity in learning for all students. A minimum GPA of 3.0 is required (the average for UC candidates is 3.3 to 3.4), as well as prior work or volunteer experience with students. In keeping with the core mission to prepare teacher-leaders for ethnically and linguistically diverse school communities, candidates must also demonstrate the capacity and disposition to become teacher-leaders and remain in teaching. In accordance with California law, credential candidates must have a bachelor's degree in a specific discipline, such as mathematics, English or biology. Program coursework draws on current research and prepares students to plan, implement and assess learning in multiple ways, incorporating research-based practices that support academic achievement for all students.

The programs integrate coursework and extensive clinical experiences to provide a carefully sequenced, developmental progression aligned with research on best practices in teacher education (Cochran-Smith & Lytle, 1999). UC candidates spend more than 600 hours in the classroom during their credential programs. During clinical practice, UC supervisors work with mentor teachers to support candidates as they learn to work in diverse classroom settings, and candidates learn from and assist their mentor teachers in the classroom. In addition, candidates are immersed in classrooms, schools and communities where faculty from universities and K–12 schools collaborate to provide supervision, facilitate reflective feedback and evaluate performance based on research and professional standards.

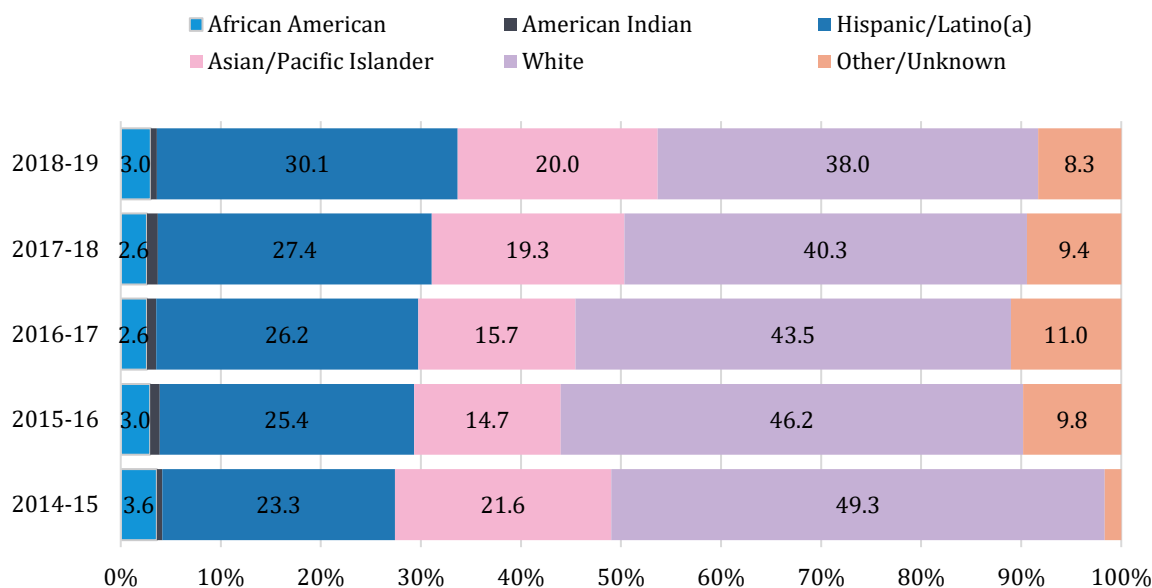
Furthermore, as the U.S. population becomes increasingly diverse and the world increasingly interconnected, this generation of teachers must encounter experiences that prepare them to interact effectively with diverse learners and to be knowledgeable about world cultures. To ensure these outcomes, several UC TEPs employ teacher-candidate exchange programs, collaborative research on teacher effectiveness, joint course offerings with faculty from other countries, and support for first-year graduates teaching internationally.

TEP Outcomes

Over the last five years (from 2014–15 to 2018–19), over 4,500 teacher candidates have enrolled, with the percentage of students from underrepresented groups (meaning those with African American, American Indian, or Hispanic/Latino(a) backgrounds) growing from 27 percent in 2014–15 to 34 percent in 2017–18, as shown in Figure 4 below. In addition, over 3,900 students have completed a UC TEP credential program during the same time span. Furthermore,

21 percent of single-subject credential students were in STEM fields, demonstrating UC’s dedication to producing teachers in high-need fields.

Figure 4. Racial/ethnic distribution of UC TEP enrollees by year



(Note: The change in *Other/Unknown* for 2014–15 versus other years is due in part to a change in reporting methodology, resulting in more students classified as *Two or More Ethnicities* from 2015–16 onward. *Two or More Ethnicities* is included in the *Other/Unknown* category above.)

UC candidates are assessed in multiple ways throughout their preparation via observations and consultations from supervisors, mentors and the edTPA⁴, a national performance-based, subject-specific assessment and support system used by teacher preparation programs to emphasize, measure and support the skills and knowledge that all teachers need in the classroom.

A recent survey of California public school principals by the University of California elicited their views about the quality and skills of their UC-prepared beginning teachers (those in their first three years). Of the principals who responded, more than 70 percent rated those teachers in the top 25 percent, compared to beginning teachers who were not prepared by UC and its programs. In addition, over 85 percent thought that the “overall readiness to teach” of UC-prepared beginning teachers was “good” or “excellent.”

Doctoral preparation for future teacher educators

UC teacher education and professional learning programs are vehicles for preparing future teacher educators for research and practice. Many of the doctoral candidates in UC schools and departments of education were previously classroom teachers who are now interested in the education of new teachers or in the professional learning of current teachers. In fall 2018, of the

⁴ <http://edtpa.aacte.org/>

988 students enrolled in UC academic doctoral degree programs in education, 38 percent were from underrepresented groups (10.6 percent African American, 1.8 percent American Indian and 25.8 percent Hispanic/Latino(a)).

There are important reasons for focusing on doctoral preparation for future teacher educators, among them the ripple effect it has on the education arena as a whole. Each UC education doctoral graduate who joins teacher education — and a large percentage do — will work with a significant number of teacher candidates. This is arguably one of the most underused mechanisms for improving teacher preparation. When one considers that a teacher educator may work with ten to 50 new teachers each year, who each go on to teach between 30 to 150 K–12 students, the impact of an excellent (or poor) teacher educator is significant, as is the impact of a teacher educator from an underrepresented group.

Administrator preparation and induction

According to research studies of urban schools, nearly 30 percent of principals who work in challenging urban schools quit after a year, and, after three years, more than half leave their jobs (Branch, Hanushek, and Rivkin, 2013). The difficulty of leading low-performing urban schools can lead to higher levels of “burn-out” as the leader attempts to mediate inequitable circumstances due to the results of historical discrimination, institutional racism, anti-immigration policies, poverty and lack of physical and mental health services.

Nationally, 80 percent of all principals are White, ten percent of all principals are African American, seven percent are Hispanic/Latino(a) and three percent are from other races (US Department of Education, 2016). In response to California legislation and to a shortage of well-prepared administrators in urban K–12 schools, the University of California established the **Principal Leadership Institute** (PLI) programs at Berkeley and UCLA in 1999. The PLI programs are a statewide model for high-quality leader induction that has supported hundreds of early career leaders in California.

Based on research that examined the characteristics of effective leadership preparation programs (Darling-Hammond, et al., 2007), PLIs prepare urban-school leaders who are committed to academic excellence, equity and increasing educational opportunities for underserved students. Upon completing the preparation program, graduates receive a master’s degree and a Preliminary Administrative Services Credential (PASC). Over 1,300 graduates of the PLI program are currently in leadership roles at urban schools, primarily in the Los Angeles Basin and greater San Francisco Bay Area.

In 20 years, the two PLIs have made a professional workforce impact on local high-need schools and districts who now depend on the University of California to supply a diverse field of talented and highly trained graduates to hire. Over the scope of 20 years, UC Berkeley and UCLA represent more accelerated rates of gender parity, with an average of 65.5 percent female graduates and 34.5 percent male graduates. Furthermore, over the scope of these 20 years, graduates of both programs combined have been 13.5 percent African American, 27.5 percent

Hispanic/Latino(a), 12 percent Asian/Pacific Islander, 40.5 percent White, and 6.5 percent Other/Unknown.

PLI graduates are a diverse group who are highly recognized, well prepared, and strongly committed to serving in leadership roles in high-need urban schools, and the PLIs have made notable contributions to principals of color in urban school districts. For example, 70 percent of Berkeley Unified School District's principals are from underrepresented groups and are graduates of the PLI. The same is true of 40 percent of the principals in West Contra Costa Unified, 34 percent in San Francisco Unified, and 29 percent in Oakland Unified.

Research affirms that retaining effective educators in urban education requires investment into their continued professional growth, allowing them to develop as leaders within and/or outside of the classroom (Olsen & Anderson, 2004). The PLI model has achieved state and national recognition as one of California's most important assets through its preparation and induction of equity-centered school leaders (Task Force on Educator Excellence, 2012; Learning Policy Institute, 2019).

PLI Outcomes

Since 2000, PLIs have produced more than 1,300 graduates — education leaders prepared to tackle the most critical needs of California's underserved students, schools and communities (see table below for racial-ethnic comparisons of cohort 1, which entered in 2000–01, and cohort 20, which entered in 2019–20). Over 90 percent of PLI graduates work as principals, assistant principals or other education leaders in high-poverty, high-need schools in the state.

	African American	Hispanic/Latino(a)	Asian/Pac. Isl.	White	Other/Unknown
Berkeley Cohort 1	19%	15%	4%	62%	0%
Berkeley Cohort 20	18%	24%	12%	46%	0%
UCLA Cohort 1	12%	24%	8%	56%	0%
UCLA Cohort 20	10%	37%	23%	23%	7%
All Cohorts Combined	14%	28%	12%	40.5%	6.5%

Teacher professional learning

UC has a historical commitment to support teachers over the course of their professional learning, and it does so in partnership with California's other education segments. Beginning with the Bay Area Writing Project's inception in 1974, UC has provided leadership for the **California Subject Matter Project (CSMP)**, a statewide network of nine discipline-specific K–12 projects that create communities of practice to promote effective teaching, leadership, and educational equity. These projects encompass the course content represented in California's K–12 standards and frameworks and cover all of the academic disciplines required for high school graduation and for meeting college entrance (A-G) requirements.

CSMP provides educators with a variety of professional learning opportunities, designed collaboratively by teachers and university faculty. These include:

- Sustained school-based programs designed to meet the specific needs of a given school or district
- Online and in-person workshop series to support the development of teacher content knowledge and pedagogical expertise
- Summer and school-year leadership programs designed to develop and sustain teacher leaders ready to support their colleagues' ongoing development
- Participation in leadership in discipline-specific communities of practice organized by the California Department of Education

Expert teacher-leaders, in collaboration with university faculty, help facilitate the inquiry-based instructional approach that supports student learning and engagement. These types of intensive and ongoing professional learning programs have been shown to have the greatest impact on student learning (Bressler et al., 2019). CSMP provides a professional learning infrastructure as a part of California's System of Support⁵ — ready and able to respond to schools and districts that identify specific content or pedagogical support as part of their continuous improvement efforts. In accordance with its legislative mandate, all CSMP programs and services align with California's subject-specific academic standards and frameworks, including mathematics, English/Language Arts, science, visual and performing arts, history-social science, physical education and health, and world languages.

CSMP provides ongoing professional learning support to educators as they build on their content knowledge, pedagogy and instructional strategies to help all students meet the state's rigorous learning goals. CSMP programs support school-level implementation of California's standards and frameworks, as well as local control and accountability plan (LCAP) goals identified by local schools and districts.

CSMP has been recognized as a model for other states “as a means of supporting ongoing professional learning in the content areas for growing networks of teachers” (Task Force on Educator Excellence, 2012, p. 9). Participants consistently rate CSMP Professional Learning (PL) more highly than other professional learning they have received, and the project's investment in intensive and in-depth contact with teachers over time has resulted in changes in teacher practice and improvements to student outcomes in a deep and sustained way (SRI, 2013). This type of PL has also proved to have a positive impact on student achievement; teachers who participate in substantial PL (an average of 49 hours) can boost their students' achievement by more than 20 percent (Yoon, et al., 2007).

⁵ California's system of support is one of the central components of California's accountability and continuous improvement system (California Department of Education, 2019).

CSMP Outcomes

In 2018–19, CSMP provided professional learning programs and training for roughly 25,000 educators from 1,256 school districts throughout California, 54 percent of which were low performing (based on the state’s Differentiated Assistance Status, meaning the districts have been assigned additional forms of assistance due to “... significant disparities of performance among student groups.”⁶ CSMP provided 1,569 programs in these districts across nine subject areas in alignment with goals for the Elementary and Secondary Education Act (ESEA), the nation’s federal education law, which aims to provide equal opportunity for all students. In total, these programs amounted to 17,267 hours of professional learning for California educators. All CSMP programs align with state-adopted standards, and, in 2018–19, more than 86 percent of the programs were explicitly dedicated to developing teacher content knowledge and content-specific pedagogical skills (ESEA Goal II).

The most recent participant survey administered by SRI International yielded positive results related to the influence of CSMP programs on teachers’ knowledge and instructional strategies and on their students’ achievement.

Impact on teachers:

- Increased content knowledge: 87 percent⁷
- Provided new standards-based instructional ideas: 89 percent
- Improved ability to teach to diverse students: 75 percent

Impact on students:

- Improved student learning: 87 percent
- Deepened student engagement: 87 percent
- Increased participation from low-achieving students: 80 percent
- Improved outcomes for English learners: 72 percent

As a collective, CSMP leadership has been instrumental in the development and implementation of state educational policy. Leadership were not only the primary writers for the science, mathematics, history-social science, and visual and performing arts frameworks, but also served on the curriculum framework and evaluation criteria committee for the world language framework. The executive directors of the California Reading and Literature and California History-Social Science Projects have both served as members of the Instructional Quality Commission. CSMP personnel also participate in and serve as leaders of discipline-specific communities of practice organized by the California Department of Education.

⁶ California Department of Education: <https://www.cde.ca.gov/sp/sw/t1/csss.asp>

⁷ All percentages in this section are composites of “Moderate” and “Great” responses.

RESEARCH, POLICY AND INNOVATION

Researchers on UC campuses have authored a number of recent and ongoing studies with implications for educator preparation programs, for assessing teacher and teacher-education program effectiveness and for influencing state and national policy discussions about the adoption of new standards and assessments on the future of public education. In addition, UC campuses have initiated innovative programs to recruit, retain and prepare teachers more effectively and to integrate international perspectives and approaches in teacher preparation programs and professional learning.

Research and policy initiatives

Faculty in the University's schools of education and its teacher-education programs are currently tackling some of the most pressing research questions facing public education related to teacher practice:

- How can UC best prepare teachers who may be culturally and ethnically different from the students they serve?
- What are the program practices along the educator-preparation program continuum that contribute to effective K–12 teaching?
- What are teachers' qualities—both when they enter and when they leave programs—that contribute to effective K–12 teaching?
- In what ways do UC-prepared teachers add value to K–12 learning outcomes?

California Teacher Education Research and Improvement Network (CTERIN)

In response to the State's need to prepare quality teachers efficiently and effectively, researchers in UC launched the California Teacher Education Research and Improvement Network (CTERIN⁸) in 2017. CTERIN is an effort involving nine UC campuses, with over a hundred researchers and practitioners working in collaboration with state agencies (e.g., California Department of Education and California Commission on Teacher Credentialing), higher education institutions (private/independent colleges and the California State University system), P–12 practitioners, and key stakeholders in education. CTERIN received a \$1.5 million Research Catalyst Award from UCOP to seed the work of four primary and interconnected objectives:

- Develop a statewide data system to study recruitment, retention and pathways to the teaching profession,
- Conduct research to identify best practices for the recruitment and preparation of teachers committed to teaching in diverse, underserved communities, as well as with multi-lingual learners.
- Conduct research that informs key policy issues (e.g. effectiveness of teacher preparation pathways in California; preparation of teachers to teach students with disabilities) around California's educators

⁸ <https://cterin.ucop.edu>

- Conduct and facilitate collaborative research and improvement efforts in teacher preparation practice
- Build a systemwide program to better prepare doctoral scholars for the work of teacher education

CTERIN is working with national advisors and the UCLA National Center for Research on Evaluation, Standards, and Student Testing (CRESST⁹) to build a data system that utilizes data from several disconnected databases related to education in California. Initial efforts will allow for investigation into employment and retention patterns linked to California's 247 teacher-preparation institutions (California is behind other states in developing such a system). The data system provides opportunities to understand key policy issues. Findings help researchers focus on areas for "deep dives" into studying problems of practice, which, in turn, provide information to guide the data system.

Key education stakeholders in California guide every aspect of CTERIN's work. These partners inform research questions, participate in research projects, guide areas for center funding, and will help interpret findings once these are available. Such partnerships are how the University ensures that stakeholder needs, rather than individual researchers' interests, guide research.

In the two years since its launch, CTERIN has supported a knowledgeable network of research teams across California with topics that link directly to its aims, creating a feedback loop to inform and direct center activity. Several projects are underway, with outcomes forthcoming:

- In Northern California, groups of researchers are investigating how to recruit, retain, and support bilingual teachers, as well as teachers and teacher educators of color.
- Another project has teamed with UC's CalTeach program to understand STEM teacher retention in underserved schools.
- In Southern California, one research team is investigating whether new teachers feel prepared to teach students with disabilities, while another is developing an assessment instrument for UC-wide use to improve the racial climate within teacher preparation programs.
- One large-scale Networked Improvement Community¹⁰ (NIC) across all UC teacher-preparation programs is studying and improving the preparation of teachers for multilingual learners, while another NIC is examining the practice of faculty who supervise student teachers in classrooms.

GROWING UC'S EFFORTS

While UC is successfully responding to the state's need for highly-prepared teachers, particularly in under-resourced communities throughout California, funding and capacity for these programs has not kept up with demand. For example, the CalTeach program that seeks to address the state's critical shortage of math and science teachers, has not received an increase in State

⁹ <https://cresst.org>

¹⁰ Bryk, Gomez, Grunow (2010) and see Carnegie Center for the Advancement of Teaching

funding since its inception in 2005 despite the growing demand for participating in the program. Increased availability of financial aid for teacher and administrator credential applicants and candidates also has been identified as one of the biggest solutions to attracting more low-income and diverse applicants into UC's teacher education programs.

With additional state investments into graduate education, UC will be able to achieve greater capacity to meet the state's growing need for well-prepared educators, as well as to continue conducting critical research into K-12 teacher education and professional learning.

CONCLUSION

The University of California adheres to its mission of teaching, research and public service, and UC educator preparation and teacher professional learning programs actively translate this mission into practice. Among its many charges as a public research institution, UC is responsible for influencing policy, informing practice, and shaping the research agenda in educator preparation and teacher professional learning. As a member of the state's education community and a land-grant institution, UC has both a responsibility and a unique opportunity to marshal its research and practice expertise to address some of the most complex and challenging issues facing California schools. Through its educator preparation and teacher professional learning programs, UC is uniquely positioned to contribute to the state's ongoing efforts to address persistent gaps in student learning, as well as teacher workforce shortages and instructional effectiveness and accountability in an age of local control. With an additional investment of resources across the continuum of educator preparation and professional development offerings, we can expand our capacity to meet the state's critical need to prepare a diverse cadre of teachers and educator leaders to meet the learning needs and improve higher education access for a greater number of California youth.

Key to Acronyms

CSMP	California Subject Matter Project
CCSS	Common Core State Standards
CTC	California Commission on Teacher Credentialing
CTERIN	California Teacher Research and Improvement Network
ELD	English Language Development
ELL	English Language Learners
ESEA	Elementary and Secondary Education Act
ESSA	Every Student Succeeds Act
LCAP	Local Control and Accountability Plan
LCFF	Local Control Funding Formula
LEA	Local Education Agency
NGSS	Next Generation Science Standards
edTPA	Education Teacher Performance Assessment
PASC	Preliminary Administrative Service Credential
PL	Professional Learning
PLI	Principal Leadership Institute
SBAC	Smarter Balanced Assessment Consortium
STEM	Science, Technology, Engineering and Mathematics
TEP	Teacher Education Program
UCOP	UC Office of the President

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