



Educating Teachers in California

What Matters for Teacher Preparedness?

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Executive Summary

High-quality teacher preparation is a critical building block of an effective and stable teacher workforce. In California, the Commission on Teacher Credentialing (CTC) currently oversees teacher preparation programs (TPPs) at more than 100 institutions, and these programs graduate more than 10,000 teacher candidates per year. Over the past decade, California has considerably revised its statewide licensing and accreditation systems that set standards for teacher preparation and performance expectations for beginning teachers. These new teaching standards emphasize teachers' abilities to teach to the more ambitious student learning standards the state adopted in 2010. The standards are focused on preparing teachers to enable the development of higher-order thinking skills, support social-emotional as well as academic learning, and effectively teach a wide range of students with different language and learning needs. The evolving licensure system incorporates these standards into teacher performance assessments that evaluate how teachers plan, implement, and assess instruction for diverse learners within subject matter contexts.

Meanwhile, following a long decline in teacher education enrollments, shortages of teachers began to re-emerge in California by 2015, particularly among special education and STEM teaching fields and across multiple fields in high-poverty schools. From 2012–13 to 2018–19, California saw substantial increases in the number of credentials and permits issued to those without full training to teach. In 2016–17, the number of substandard credentials issued in the state outpaced the number of new preliminary credentials issued to teachers fully prepared in California TPPs. The state has since invested in new program models—like teacher residencies—to stem shortages and strengthen preparation, along with subsidies to offset tuition and living expenses for teacher candidates.

In 2016, the CTC also implemented a new accreditation framework for TPPs that included new program standards, new outcome measures, and a new accreditation data system and dashboard capturing different aspects of teacher preparation and candidate readiness. The redesigned accreditation system uses data about how and where the teaching performance expectations are taught and supported, how supervised clinical practice is organized, and how coursework and clinical work cohere. As part of this new system, the CTC began administering surveys to all teacher candidates completing an approved TPP who were applying for their preliminary teaching credential. The surveys are meant to serve as a tool for continuous improvement for programs (which receive the data from the CTC) and input for accreditation decisions.

What can 5 years of new teacher perceptions captured in these surveys tell us about the state of teacher preparation in California? This analysis examines statewide patterns that emerge from the responses of almost 60,000 completers of TPPs across California applying for their preliminary teaching credentials from 2016–17 to

2020–21 as well as perceptions from employers hiring these new teachers and cooperating teachers working with student teachers during their preparation. The report describes who is receiving preliminary teaching credentials after completing California-based TPPs, how well prepared completers of TPPs feel across all of the domains of the teaching performance expectations, what kind of coursework and clinical experiences they received, and what aspects of preparation explain how prepared completers feel to enter the profession.

Summary of Findings

- **The pool of recently prepared graduates from California TPPs has increased in size and racial/ethnic diversity.** California’s long-dwindling teacher pipeline has recently grown. The number of California TPP completers applying for preliminary teaching credentials increased by 35% between 2016–17 and 2020–21, making California one of only a few states with increasing TPP completion numbers. Also notable, and a shift from past trends, is that most of the increases were for graduates who completed preservice programs offering student teaching or a residency, a new approach funded by the state to reduce shortages. More than half of California’s recent completers identified as teachers of color as compared to only 27% nationally.
- **Completers rate their preparation programs highly.** Ninety percent of responding completers rated their TPP as effective or very effective, and 90% or more felt at least adequately prepared in all areas represented by the state’s teaching performance expectations. More than 80% of completers reported being well or very well prepared for each teaching performance expectation on the survey, with two exceptions: 72% felt well prepared to work with families and 79% felt well prepared to involve students in self-assessments.
- **Cooperating teachers’ and employers’ perceptions about preparation largely align with completers.** Representing a smaller sample from fewer programs, 82% of cooperating teachers and 68% of employers gave high ratings to the TPPs they worked with or hired from. Across the teaching performance expectations included in all three surveys, completers, cooperating teachers, and employers rated preparation most positively for connecting classroom learning to the real world and creating and maintaining effective environments for student learning. These three groups shared relatively lower average ratings on three teaching performance expectations: (1) meeting instructional needs of English learners; (2) identifying and addressing special learning needs with appropriate teaching strategies; and (3) involving all students in self-assessment, goal setting, and monitoring progress.
- **Completers who participated in residencies were the most likely to rate their programs as highly effective,** closely followed by those who participated in student teaching. Across all credential types and demographic groups, completers who participated in student teaching or residencies had more

positive perceptions of their preparation compared to those who participated in internships or completed their preparation while teaching on emergency-style permits.

- **Teacher residencies, which provide a full academic year of subsidized clinical training while candidates complete credential coursework, now prepare about 10% of new teachers.** Of approximately 1,200 residency completers in 2020–21, about 60% were teachers of color. Residency completers were slightly more likely to be teachers of color than those completing student teaching or intern programs. Residency completers were the group most likely to report intensive student teaching experiences and frequent clinical support.
- **The nature and extent of clinical support from TPPs is uneven and strongly related to completers' feelings of preparedness and employers' views of program quality.** Both hours of student teaching and the amount of clinical support (e.g., being observed and getting feedback on teaching) varied considerably across programs. Although the CTC requires at least 600 hours of supervised clinical practice in all programs, 43% of completers in preservice programs reported less than 600 hours of student teaching. (The survey does not currently include questions that allow a similar calculation for interns or other program completers, who constitute 29% of total respondents.) In addition, completers from all clinical pathways who reported more communication, observation, and feedback about teaching from their preparation programs were more likely to rate their preparation programs as effective or very effective. Completers also had more positive assessments of their preparation when they had cooperating/mentor teachers who frequently observed teaching and offered feedback, helped plan and organize curriculum materials, and provided support in other ways. Employers also rated more highly those institutions in which completers reported having more clinical support.
- **Most multiple subject and education specialist completers reported having substantial preparation for teaching reading, writing, and math.** When asked about their opportunity to learn elements of teaching reading, writing, and math, at least 75% of respondents reported that their program had “spent time discussing or doing” each teaching element, such as learning foundational reading skills and learning how to adapt math lessons for students with diverse needs. Student teachers and residents were more likely to report opportunities to learn each aspect of reading, writing, and math teaching than interns or completers who finished their preparation while working on an emergency-style permit. Completers who reported having an extensive opportunity to learn all aspects of reading, writing, and math teaching were much more likely to rate their TPP as very effective and to describe themselves as well prepared overall.

- **The small number of lower-rated programs offer fewer opportunities to learn critical content and less supported clinical experiences.** A small number of TPPs have much lower survey ratings than the norm. Notably, two intern programs run by school districts had particularly low ratings, with completers who reported much less opportunity to learn about reading, writing, and math teaching as well as fewer supports from their cooperating/mentor teachers. Another subset of university-based programs had notably lower ratings than the norm, and their completers reported less clinical support, although the differences were not as stark. Of all survey questions, the amount of clinical support reported by completers varied the most across programs.
- **Teacher candidates have unequal access to highly rated preparation and clinical experiences.** Only 46% of Black and 50% of Native American completers reported participating in student teaching or residencies, compared to at least two thirds of all other racial/ethnic groups. In addition, less than one third of education specialists (i.e., special education teachers) participated in student teaching or residencies, as compared to about 7 in 10 multiple subject and single subject completers.

Policy Considerations

The findings from this analysis of 5 years of teacher preparation program completer data suggest that California’s recent policy changes to strengthen teacher preparation and increase the supply of well-prepared teachers may be paying off. In 2020-21, only 58% of new California teaching credentials/permits issued were preliminary credentials for those who had completed a TPP, while the remaining documents were issued to those still enrolled in internship programs or serving on an emergency-style permit. While TPP completers generally report feeling well prepared, many students in California continue to be taught by teachers who have not had the benefit of full preparation. Among those who complete preparation for their preliminary teaching credential, some are getting strong clinical experiences, in which they have sustained clinical placements and support, and others are not. The results suggest four steps that California policymakers and practitioners can take to further strengthen teacher preparation:

1. **Continue to expand and improve access to high-quality preparation experiences and pathways, especially for education specialists and historically underserved candidates of color.** California should continue supporting the strong implementation of the state’s recent investments meant to substantially cover the cost of preparation for teacher candidates who commit to teaching in high-need schools or fields, including Golden State Scholarships, subsidies for classified staff to become teachers, and teacher residencies, especially for teachers in shortage fields like special education. These programs are diversifying and strengthening the teacher workforce. Given the impact of student debt on candidates’ preparation choices, especially for candidates of color, the state might also consider increasing support to financially needy

teacher candidates and leveraging new federal funding under the Higher Education Act to expand TPPs at minority-serving institutions. The state might also leverage state and federal funding to support high-quality apprenticeships into teaching, which allow candidates to earn while they learn, receiving pay while they gain teaching skills under the supervision of a cooperating or mentor teacher and take coursework to earn their preliminary teaching credentials. A more robust state recruitment and communication strategy could help potential teacher candidates understand both the full array of financial supports available to them and the different pathways into teaching so that they can afford to choose the pathway that is right for them.

- 2. Increase opportunities for teacher candidates to learn how to work with families and support the needs of English learners (ELs) and students with disabilities (SWDs)** by deepening coursework and clinical learning opportunities, supporting TPPs in redesigning their programs, and expanding access to dual credential programs. Working with families and supporting students who have exceptional learning needs are areas that typically require deeper and more focused clinical experiences, as well as integrated coursework. The CTC and teacher education networks can encourage the exchange of information and exemplars. The state could also incentivize the creation or expansion of integrated and dual credential programs, in which candidates earn a dual credential or endorsement that provides additional, specialized preparation to meet the needs of ELs and/or SWDs.
- 3. Strengthen access to high-quality preparation by improving the quality of all pathways through the implementation and enforcement of the CTC's new accreditation framework.** Both clinical support and opportunities to learn ELA and math foundations were strongly related to completers' perceptions of preparedness, but not all completers reported having these opportunities. For example, the amount of clinical support reported by completers varies considerably across institutions, and there are some institutions with substantial proportions of completers reporting limited clinical observations or feedback. These findings suggest a need for continued efforts to strengthen the implementation and enforcement of the CTC's new accreditation framework as well as the newly adopted education specialist program standards and literacy standards. For example, institution-level survey results can be used to flag programs for further review or support.
- 4. Support TPPs in using their survey data for continuous improvement.** These survey data can be leveraged as part of the program accreditation process to identify struggling programs as well as provide an additional tool for TPPs to support continuous improvement. The CTC, along with other organizations based at universities and nonprofits, can help support TPPs to use these data—and other metrics of program effectiveness—to guide programmatic decision-making and continuous improvement.

Finally, California's recent efforts to strengthen its teacher preparation systems offer a valuable example for other states hoping to redesign preparation standards or integrate surveys into the evaluation of TPPs. California's approach to surveys highlights some important best practices, including how to (1) integrate completer surveys into the state's teacher licensure process, (2) align surveys to statewide standards for teaching, (3) administer surveys to all completers across preparation pathways, and (4) build statewide capacity for data use by offering results in multiple forms. This approach ensures that survey results can offer helpful perspectives on teacher preparation across the state to support both accreditation processes and continuous improvement efforts.

Introduction

High-quality teacher preparation is a critical building block of an effective and stable teacher workforce. Nationally, a growing number of students are taught by novice teachers.¹ Ensuring that novice teachers are adequately prepared is particularly important for addressing educational equity because students from low-income families and students of color are more likely to have novice teachers.² Many different elements of teacher preparation can influence how well prepared teachers are when they enter the classroom. Prior research has highlighted how certain aspects of teacher preparation—including the type of coursework, duration and type of clinical practice, and quality of clinical support or mentorship—are associated with teachers' effectiveness in the classroom and their likelihood of staying in the profession.³

Teacher Education Policy in California

As of 2019–20, almost 1 in 10 of the nation's teacher preparation completers attended a California-based preparation program. California's Commission on Teacher Credentialing (CTC) currently oversees teacher preparation programs (TPPs) at more than 100 institutions, and these programs graduate more than 10,000 teacher candidates per year. Over the past decade, California has considerably revised its statewide systems that set standards for teacher preparation and performance expectations for beginning teachers.

Following the state's adoption of the Common Core standards in English language arts and mathematics and the Next Generation Science Standards, the CTC adopted revised general education preparation program standards in 2015.⁴ The standards revision process also followed calls for action from several statewide advisory committees, including a joint CTC–California Department of Education (CDE) Educator Excellence Task Force, the CTC's own Teacher Preparation Advisory Panel, and the Statewide Special Education Task Force.⁵ Along with updating program standards, the CTC also revised the state's teaching performance expectations (TPEs). TPEs delineate specific teaching practices, aligned with the state's teaching standards, that beginning teachers should have the opportunity to learn during their teacher preparation through coursework and clinical experiences (i.e., opportunities for hands-on practice in authentic educational settings).⁶ The TPEs, which are meant to guide TPP development, were revised in 2016, and California TPPs were required to implement them and the revised preparation program standards by the 2017–18 academic year.⁷ Revised program standards and TPEs for education specialists (i.e., special education teachers) followed shortly after, with new standards adopted in 2018 that TPPS must implement by 2022–23.

The revised program standards and associated TPEs reflect an approach to teacher preparation that is more focused on meeting the needs of the whole child and creating inclusive educational environments.⁸ For example, the revised TPEs include a focus on:

- creating inclusive, healthy, safe, and culturally responsive learning environments;
- supporting students' social-emotional growth and individual responsibility, including through restorative practices;
- using a variety of developmentally and ability-appropriate instructional strategies, including universal design for learning and multi-tiered systems of support;
- engaging students in their learning by connecting subject matter to real-life contexts, providing active learning experiences, and creating opportunities for inquiry, problem-solving, responding to and framing meaningful questions, and reflection; and
- collaborating among educators, families, and community members.⁹

The revised standards also strengthened requirements for clinical practice. Prior program standards included little oversight over clinical practice, and there was wide variation in the amount and type of clinical practice TPP completers were getting across programs.¹⁰ The newly revised program standards included more direct guidance for TPPs, including a requirement that candidates must be provided with a minimum of 600 hours of supervised clinical practice whether they are completing a preservice program or an alternative route offering an internship model.¹¹ Importantly, in contrast to some other states, California's program standards and TPEs apply to all beginning teachers, whether they are prepared in more "traditional" student teaching pathways or "alternative" internship pathways.

As a requirement for earning a preliminary teaching credential, teacher candidates must demonstrate that they have met the TPEs through a state-approved teaching performance assessment.¹² California was at the forefront nationally in adopting a performance assessment requirement, which was created by legislation in 1998 with a decade-long phase-in period, during which the CTC and TPPs designed and piloted three state-approved assessments.¹³ Each of the state's approved assessment models requires a teacher candidate to complete defined performance tasks relating to subject-specific pedagogy, design and implementation of instruction, and student assessment. Candidates must video-record teaching from their clinical practice site and reflect on their practice as part of the assessment. Performance assessments are scored using rubrics by trained, calibrated, content-specific assessors. The performance assessment requirements were updated in 2018 to align with the revised program standards and TPEs.

In 2016, the CTC also implemented a new accreditation framework for TPPs that included new program standards, new outcome measures (including candidates' performance assessment scores), and a new accreditation data system and dashboard capturing different aspects of teacher preparation and candidate

readiness.¹⁴ As part of this new system, the CTC began administering surveys to all teacher candidates after they completed an approved TPP. This survey is embedded into the application process for the preliminary teaching credential, which has led to a high response rate for programs statewide. Administered since 2016–17, these surveys are meant to capture completers' perceptions of their preparation in various domains of teaching, overall program quality, and aspects of their clinical experiences. Survey results are integrated into a public data dashboard showing statewide trends, while institution-level results are available to programs to support programmatic improvement.¹⁵

Finally, while California instituted these policy changes to strengthen teacher preparation, the state has also made significant investments in teacher recruitment and preparation to respond to its widespread teacher shortages.¹⁶ Major investments to help address teacher shortages include:

- the **Golden State Teacher Grant program** (\$515 million), which provides \$20,000 scholarships to teacher candidates who commit to teaching for 4 years in high-need schools¹⁷;
- the **Teacher Residency Grant program** (\$670 million), which provides \$25,000 in state funding (with a required local match) to partnerships between local education agencies (LEAs) and TPPs to train teacher and school counselor candidates in a yearlong, financially supported residency alongside an expert mentor, with candidates committing to serve for 4 years in the high-need district in which they train;¹⁸
- the **Classified School Employee Teacher Credentialing program** (\$170 million), which provides grants to LEAs to support classified staff to earn a bachelor's degree and teaching credential, providing up to \$4,800 per year for up to 5 years (\$24,000 total) to subsidize their teacher training costs, as well as offering academic guidance and individualized supports;¹⁹
- **Integrated Undergraduate Teacher Preparation grants** (\$30 million), which provide competitive grants to institutions of higher education (IHEs) to develop or expand undergraduate TPPs so that candidates can earn their bachelor's degrees and teaching credentials in 4 years, in contrast to the more widespread 5-year, postbaccalaureate pathway to a credential in California;²⁰
- **Teacher Credential and Assessment fee waivers** (\$44 million), which cover the cost of teacher credential, examination, and assessment fees for teacher candidates;²¹ and
- **Local Solutions to the Shortage of Special Education Teachers grant** (\$50 million), which funded flexible grants to LEAs to support special education teacher recruitment and retention.²²

Taken together, these investments total more than \$1.4 billion since 2016 and reflect a substantial increase in education funding statewide.²³ As previously noted, a large portion of this investment is geared toward expanding teacher residencies throughout the state. Residency programs—in which prospective teachers apprentice alongside experienced teachers while taking associated teacher preparation coursework—were created to solve teacher shortages by enabling a high-quality and financially subsidized preparation option targeting hard-to-staff districts or subject areas.²⁴ Studies on residency programs in California and elsewhere indicate that residency programs typically recruit more prospective teachers of color than traditional student teaching programs, and teachers completing residency programs often have higher retention rates than other preparation pathways.²⁵

California's investments in teacher recruitment and preparation total more than \$1.4 billion since 2016 and reflect a substantial increase in education funding statewide.

This Study

Given these policy changes and financial investments, what is the state of teacher preparation in California? Based on survey responses from almost 60,000 completers of TPPs across California from 2016–17 to 2020–21, this report describes changes in the pool of newly credentialed teachers over this period of time, how well prepared completers of TPPs feel in different domains of practice, what kind of learning opportunities they encountered, what aspects of preparation explain how prepared completers feel to enter the profession, and how access to preparation experiences varies among different groups of teachers. This analysis also examines the extent to which perceptions of TPP completers align with survey responses from more than 5,000 cooperating teachers working with student teachers and more than 1,500 employers hiring these new teachers.

In this report, we begin by describing the landscape of teacher preparation in California. We then explain the data and methods used in this report and outline how the composition of the pool of newly credentialed teachers has changed between 2016–17 and 2020–21. We then detail the findings from the analysis of CTC surveys. These findings are organized into three sections: (1) overall perceptions of preparation effectiveness, (2) differences in perceptions of effectiveness by characteristics of preparation, and (3) differential access to highly rated preparation. We conclude with policy considerations for California and implications for other states.

The California Teacher Preparation Landscape

In California, there are three primary routes available to people who want to become teachers:²⁶

1. Completing a preservice teacher preparation program (TPP) with supervised student teaching or residency under the guidance of a cooperating or mentor teacher *before* serving as a teacher of record.
2. Participating in an internship program in which candidates who have already demonstrated subject matter competency complete their preparation program *while* serving as a teacher of record.
3. Entering teaching with an emergency-style permit, authorized by the California Commission on Teacher Credentialing (CTC) if a district cannot fill the vacancy with a fully credentialed teacher,²⁷ and subsequently enrolling in a TPP to earn a credential. Often this teaching experience, which may or may not be supported and supervised, is counted in lieu of student teaching.

To earn a preliminary credential, teachers must complete a TPP within California or apply with an out-of-state teaching credential. California currently offers preliminary credentials for **multiple subject teachers** (i.e., teaching multiple subjects, typically within elementary or middle schools), **single subject teachers** (i.e., teaching specific subjects, typically in middle or high schools), and **education specialists** (i.e., teaching students with disabilities at any grade level).

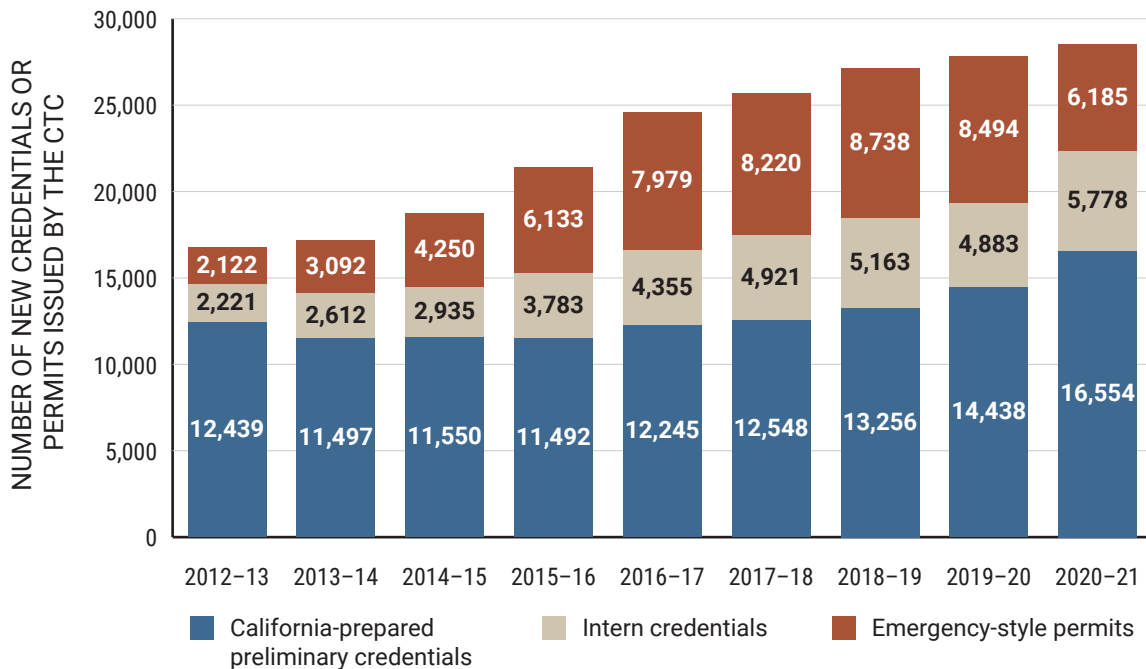
The distinction between California's three pathways (i.e., preservice student teaching/residency, internship program, emergency-style permits) largely reflects a broader distinction between "traditional" and "alternative" routes to teacher licensure. About three quarters of teacher candidates nationally still attend traditional preservice programs in which teacher candidates take courses within an institution of higher education (IHE) and then participate in student teaching in a cooperating or mentor teacher's classroom.²⁸ There are numerous other alternative routes in which teacher candidates engage in accelerated training,²⁹ training based outside of IHEs, or training concurrent with serving as a teacher of record in their own classroom.³⁰ Although there are different ways of categorizing preparation program types in research and policy, numerous studies have found that alternatively certified teachers have higher turnover rates than traditionally certified teachers.³¹ A recent analysis of statewide data in California finds that teachers who enter the profession through emergency-style permits or intern credentials are more likely to leave the workforce by the end of their third year of teaching (42% and 25% attrition rates, respectively) compared with those who enter through traditional programs (20% attrition rate).³²

As of 2022, the CTC oversees the approval of TPPs at more than 100 institutions statewide. These include approximately 80 IHEs, including public universities that are part of the California State University (CSU) and University of California (UC) systems as well as private/independent universities. There are also approximately 25 local education agencies that run their own preparation programs, including county offices of education, school districts, and charter school organizations.

Although California issues more than 10,000 preliminary credentials each year for new teachers completing TPPs within the state, this number is inadequate to meet the demand for qualified teachers. As a result, the CTC issued more than 6,000 emergency-style permits and 5,000 intern credentials in 2020–21, authorizing individuals who have not yet completed preparation for teaching to serve as teachers of record in California classrooms.³³

Figure 1 shows the total number of new preliminary credentials issued to California-prepared teachers and the number of intern credentials and emergency-style permits issued each year by the CTC between 2012–13 and 2020–21.³⁴ As teacher shortages grew, the number of emergency-style permits issued annually increased steadily and substantially from 2012–13 until 2018–19, as did the number of intern credentials, while the supply of fully prepared teachers was largely static until it began to tick up slightly in 2016–17. In the 2 academic years after 2018–19, the number of preliminary credentials granted to fully prepared teachers increased by about 3,300 (25%), sharply increasing the supply of qualified teachers, while the number of emergency-type permits decreased by about 2,500 (a nearly 30% drop). These shifts noticeably altered the qualifications of the entering workforce by 2020–21. It is worth noting that requirements for prospective teachers seeking a California credential did change during the COVID-19 pandemic. California—like many other states—temporarily suspended certain assessment requirements for teacher candidates applying for their preliminary credentials starting in March 2020.

Figure 1
New Teaching Credentials and Permits Issued in California by Year



Note: This figure includes all preliminary credentials for California-prepared teachers issued annually by the Commission on Teacher Credentialing as well as the number of intern credentials and emergency-style permits issued annually by the CTC. Emergency-style permits include short-term staff permits, provisional intern permits, limited assignment teaching permits, and waivers.

Sources: For 2016-17 to 2020-21 data: California Commission on Teacher Credentialing. (2022). *California educator supply*. <https://www.ctc.ca.gov/commission/reports/data/edu-supl-landing>. For 2012-13 to 2015-16 data: California Commission on Teacher Credentialing. (2017). *Teacher supply in California: A report to the Legislature, Annual Report 2015-2016*. https://www.ctc.ca.gov/docs/default-source/commission/reports/ts-2015-2016-annualrpt.pdf?sfvrsn=84d346b1_6

Study Description

Since 2016, the CTC has surveyed completers of California TPPs who are applying for each type of preliminary teaching credential. The survey was designed to capture the perceptions of completers about their level of preparedness across teaching performance expectations (TPEs) aligned with the six teaching domains in the California Standards for the Teaching Profession:

1. Engaging and supporting all students in learning
2. Creating and maintaining effective environments for student learning
3. Understanding and organizing subject matter for student learning
4. Planning instruction and designing learning experiences for all students
5. Assessing students for learning
6. Developing as a professional educator

The survey asked all completers about the nature of their field experiences, including questions in which they self-reported their clinical pathways (student teaching/residency, internship, teaching on an emergency-style permit while taking preparation courses³⁵) as well as questions about the amount of clinical support provided by their preparation programs, student teaching hours, and supportive behaviors of their cooperating or mentor teachers. Multiple subject and education specialist completers were asked to report how much opportunity they had to learn about teaching in certain content areas, such as reading, writing, and math. Completers were also asked to identify their gender identity, race, and ethnicity.

Who Takes the Surveys?

In California, program completers must be recommended for their preliminary teaching credentials by their teacher preparation programs (TPPs) after they complete their programs and fulfill all the credential requirements. Program completers are asked to complete their credential paperwork—including the program completer survey—within 90 days of this recommendation. As such, the survey sample includes only teacher candidates who have completed their preparation in California and applied for their preliminary teaching credential in California. It excludes California TPP completers who never applied for a preliminary teaching credential in California and beginning California teachers who completed their preparation in other states. Given California's Title II data on TPP completers for 2019–20, we can roughly estimate that over 90% of California's TPP completers applied for a preliminary credential in that year. Approximately 14% of new teaching credentials in 2020–21 were issued to candidates who were prepared out of state or out of country. These credential holders were not asked to complete the CTC program completer survey.

Candidates who are completing student teaching or residency programs are likely completing this survey before they begin as teachers of record or very early into their teaching positions. Those completing an internship program or who have completed their TPPs while working on emergency-style permits are likely completing this survey after serving as teachers of record for some period of time. In all cases, the survey respondents have completed their TPPs but may have different amounts of experience actually serving as classroom teachers before responding to the survey. Such experience may influence how they rate their preparation and TPP effectiveness, but the survey does not ask respondents about teaching experience, so it cannot be included in this analysis.

Between 2016–17 and 2020–21, 59,140 completers from 107 different California TPPs responded to the survey. Since the survey is embedded into the online process of applying for a preliminary teaching credential, the survey responses across all years are high. The estimated annual response rates are 84–90%, with slightly lower response rates from completers in the California State University (CSU) system. This lower response rate for CSU completers reflects a difference in

survey administration, in which CSU completers are redirected to a CSU-specific completer survey (including the CTC questions), while all other completers take a survey embedded in the CTC's online application for the preliminary credential. This report focuses on these 59,140 preliminary teacher credential applicants who responded to at least one question on the CTC program completer survey over 5 years between September 1, 2016, and August 31, 2021. CSU's data system does not track survey respondents and nonrespondents, so survey response rates for the CSU system must be estimated based on the number of new credentials issued to CSU completers as reported by the CTC. For all TPPs outside of the CSU system, survey response rates can be directly calculated. Estimated annual response rates for the CSU system ranged from 70% to 85%, while annual response rates from all other completers ranged from 93% to 96%.

This report also includes an analysis of the cooperating teacher and employer surveys. Since 2019, the CTC has fielded surveys for cooperating teachers who work with student teachers in California institutions of higher education as well as for administrators in all public schools who may hire new teachers in their schools or districts. In both surveys, respondents are asked to rate the preparation of candidates from a given institution for specific teaching performance expectations as well as to rate the overall effectiveness of the TPP. Across the 3 years of survey responses (2018–19 to 2020–21), there were survey responses from 5,348 cooperating teachers (reporting on 78 TPPs that have student teachers) and 1,619 employers (reporting on 96 TPPs). All cooperating teacher and employer responses can be connected to institutions but cannot be connected to individual completers or specific programs within institutions. Because of how the cooperating teacher and employer surveys were administered, it is not possible to calculate a response rate for either group, and respondents are not necessarily representative of all cooperating teachers and employers across the state, nor do they represent all TPPs. Given the low number of respondents, especially for the employer survey, we interpret these survey results with caution.

Sources: California Commission on Teacher Credentialing. (2022). *Complete your recommendation*. <https://www.ctc.ca.gov/credentials/complete-recommend>; California Commission on Teacher Credentialing. (2022). *State trends*. <https://www.ctc.ca.gov/commission/reports/data/state-trends>; California Commission on Teacher Credentialing. (2022). *Teacher supply in California 2020–21: A report to the Legislature*. https://www.ctc.ca.gov/docs/default-source/commission/reports/ts-2020-2021-annualrpt.pdf?sfvrsn=ee227b1_6

The primary objective of this analysis is to explore patterns in the survey responses of TPP completers across the 5 years of survey data. The initial analysis examined overall patterns as well as differences in responses across years and across completer and institutional characteristics for each survey question. Then the analysis explored whether and how responses varied across and within institutions and examined the relationship between how completers, cooperating teachers, and mentors rate the effectiveness of preparation. The final step of analysis identified predictors of overall

perceptions of preparation using a set of regression models that accounted for completer and institutional characteristics as well as self-reported clinical experiences. Appendix B describes the survey questions and analysis methods in greater detail.

California is not alone in its use of completer surveys to assess teacher preparation experiences and TPP quality. As of 2015, 33 states reported using these surveys as part of their assessment processes for at least some TPPs.³⁶ Surveys can also be used internally by TPPs or states to support program improvement. Research using completer surveys has found that completers' reported experiences in certain aspects of their preparation can predict their effectiveness as educators.³⁷ For example, one study of statewide completer surveys in North Carolina found that certain survey measures—capturing perceptions of TPP quality and preparation to create effective learning environments—were predictive of candidates' later evaluation ratings, effectiveness in promoting student learning gains, and retention in their first few years of teaching.³⁸

California's Newly Credentialed Teachers Over Time

According to the CTC's California Educator Supply dashboard, the number of completers from California TPPs applying for a new teaching credential increased by 35% from 2016–17 to 2020–21, from 12,245 completers to 16,554 completers.³⁹ These data include everyone who applied for a credential and not just those represented in the program completer survey. Table 1 includes the CTC-reported numbers of newly credentialed teachers by institution type and credential type. Notably, the largest increases were among teachers receiving a multiple subject credential (i.e., those preparing to teach elementary students) and those from private IHEs.

This increase in completers represents a break from prior trends, in which the number of newly credentialed teachers in California had been dropping for more than a decade.⁴⁰ Nationally, the number of individuals completing TPPs decreased by 22% between 2012–13 and 2018–19, and California is one of only eight states that saw increases in the number of TPP completers during this period.⁴¹ California's increase in the number of completers coincides with increased state investment in the teacher pipeline and preparation programs.⁴²

The remainder of the report focuses on the program completer survey respondents (an estimated 84–90% of all California TPP completers who applied for their preliminary credential). Table A1, located in Appendix A, shows how the enrollment patterns, clinical pathways, and demographic composition of responding completers vary between 2016–17 and 2020–21. The patterns in the CTC's educator supply dashboard (see Table 1) mirror those found using the program completer survey respondents (see Table A1). Across the 5 years, the number of TPP completers in the survey data increased by 37%, from 10,200 completers in 2016–17 to 13,943 completers in 2020–21.⁴³ Figure 2 illustrates the change in the number of

completers by clinical pathway, as self-reported on the CTC completer survey. Between 2016–17 and 2020–21, the number of TPP completers who reported participating in student teaching/residency increased from 6,162 to 9,419 (a 53% increase).

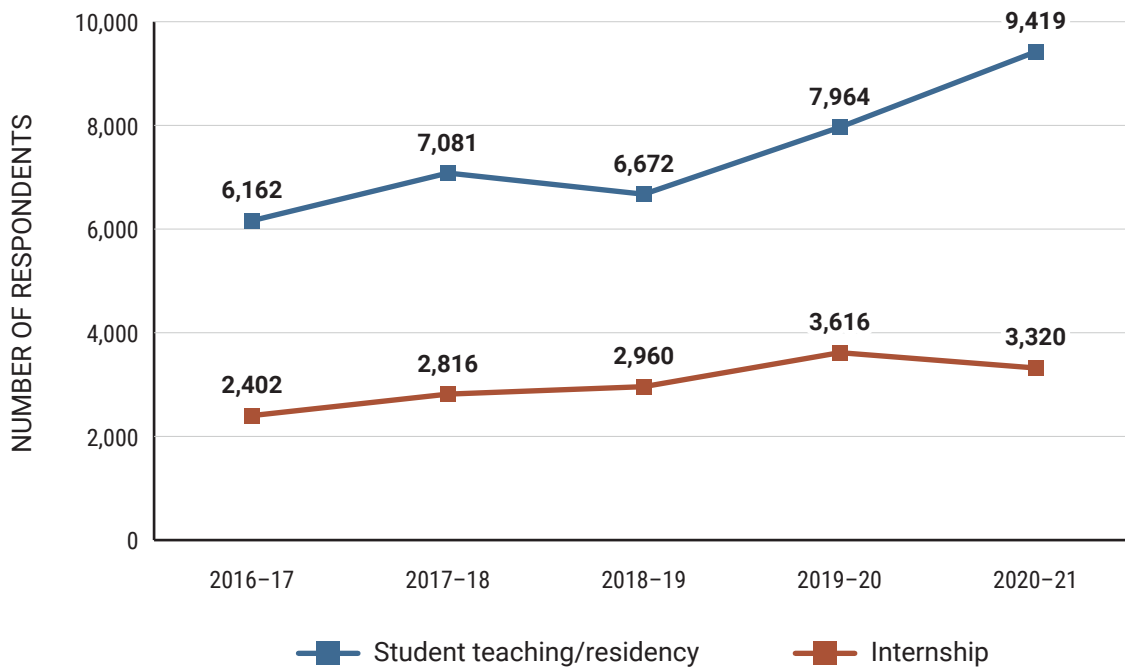
Table 1
New Preliminary Teaching Credentials Issued in California by Year

Subgroup	2016–17	2017–18	2018–19	2019–20	2020–21	5-year change, 2016–17 to 2020–21
California-prepared	12,245	12,548	13,256	14,438	16,554	35%
Out-of-state/out-of-country prepared	3,950	3,732	3,498	3,151	2,691	-32%
By institution type						
California State University (CSUs)	5,754	5,936	5,961	6,289	7,431	29%
University of California (UCs)	872	629	893	793	826	-5%
Private institutions of higher education (IHEs)	5,049	5,575	5,850	6,870	7,563	50%
Local education agencies (LEAs)	570	408	552	486	734	29%
By credential type						
Multiple Subject	6,932	7,129	7,150	7,828	8,994	30%
Single Subject	6,494	6,405	6,851	6,721	6,821	5%
Education Specialist	3,311	3,225	3,226	3,490	3,821	15%

Note: These numbers are higher than those reported in the rest of the report because these data include all new preliminary teaching credentials rather than only those who responded to the program completer survey.

Source: California Commission on Teacher Credentialing. (2022). *California educator supply dashboard*.

Figure 2
Clinical Pathway of California’s Teacher Preparation Program Completer Survey Respondents by Year



Note: This figure includes completers who responded to the Commission on Teacher Credentialing survey questions about clinical pathway. Between 2016-17 and 2020-21, 11% of completers in the CTC survey respondent sample are missing clinical pathway information.

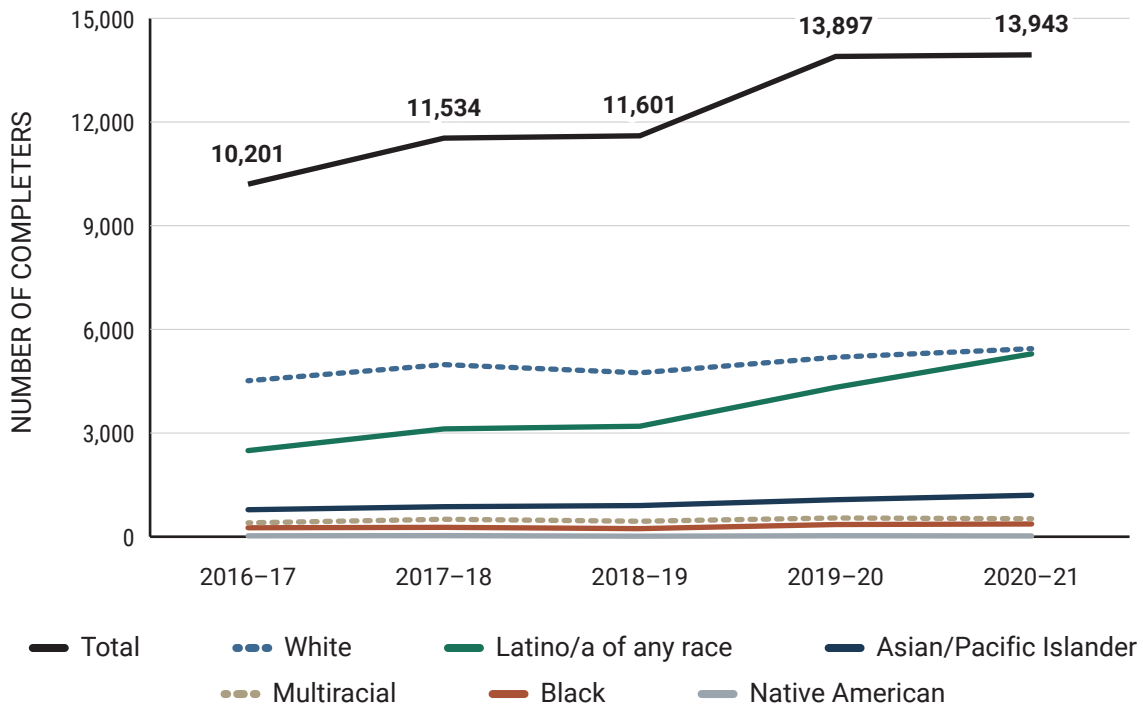
Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Most California TPPs saw an increase in their number of completers applying for their preliminary credentials between 2016-17 and 2020-21, with the notable exception of programs in the UC system. As shown in Table 1 and Table A1, there was a net decrease in the number of completers from UC campuses, while all other institution types saw overall increases in completers applying for their credentials. Across these 5 years, 48% of program completer survey respondents attended teacher preparation programs at private IHEs, 41% attended programs within the CSU system, 6% attended programs within the UC system, and 5% attended programs affiliated with local education agencies. There was a relatively larger increase in the number of completers from private, for-profit IHEs (a 94% increase from 2016-17 to 2020-21), although it is important to note that these institutions prepare only a small proportion of all candidates (less than 3% overall).

In addition to this overall increase in the number of completers, there also have been demographic shifts in this group, with a growing share of survey respondents identifying as people of color (see Figure 3). The percent identifying as people of color increased from 39% in 2016-17 to 53% in 2020-21, with the largest increases among Latino/a completers. In 2020-21, 38% of TPP completers in the CTC survey

sample identified as Latino/a, 9% identified as Asian/Pacific Islander, 4% identified as multiracial, 3% identified as Black, less than 1% identified as Native American, and 39% of TPP completers identified as white. California's recent TPP completers are much more racially and ethnically diverse than those in the national teacher pipeline, in which just 27% of recent completers identified as people of color.⁴⁴

Figure 3
Race/Ethnicity of California's Teacher Preparation Program Completer Survey Respondents by Year



Note: This analysis includes completers in the Commission on Teacher Credentialing program completer survey file who reported their race/ethnicity. Between 2016-17 and 2020-21, 15% of completers in the CTC survey respondent sample are missing race/ethnicity information. A small number of completers identified as Native American (fewer than 35 completers per year or approximately 0.2% of all completers).

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Since 2016-17, there has been an especially large and statistically significant increase in the number of completers who identify as Latino/a (a 112% increase from 2,492 Latino/a completers in 2016-17 to 5,292 Latino/a completers in 2020-21). Meanwhile, the proportion of completers who are white has decreased, and the proportions for all other racial/ethnic groups have remained stable. These changes in racial/ethnic composition occurred in each clinical pathway, with a substantial increase in the number of student teachers/residents and interns who identify as Latino/a. These trends across time align with the changes in the overall racial/ethnic composition of enrolled teacher candidates reported in California's Title II data and certified teachers in California schools as reported by the California Department of Education.⁴⁵

Perceptions of Preparation Effectiveness

The completer surveys asked respondents to rate the overall effectiveness of their teacher preparation programs (TPPs). In addition to this overall rating, completers were asked to rate how well their TPPs prepared them to engage in specific teaching performance expectations (TPEs) aligned with the California Standards for the Teaching Profession, such as “engage students in cooperative group work as well as independent learning” and “give productive feedback to students to guide their learning.” These ratings offer an important perspective about how completers perceive their preparation. Most completers were asked to rate the effectiveness of their preparation programs as they were beginning their first full-time teaching position (or, in the case of interns or teachers working on an emergency-style permit, as they were completing their preparation while working as teachers). It could be the case that completers overestimated their level of preparation because they had not yet faced all the responsibilities and challenges often associated with being a beginning teacher.

There is limited research on how TPP completers’ perceptions of their preparation change over time, how these perceptions relate to the perceptions of cooperating teachers or employers, or how they relate to later evidence of teaching effectiveness. A study in North Carolina found that TPP completers’ perceptions of their preparation were highly correlated with their later teacher evaluations, value-added effectiveness ratings, and retention.⁴⁶ A study in Chicago found that cooperating teachers’ perceptions of their student teachers’ preparation were more predictive of those students’ observation ratings as first-year teachers than student teachers’ own perceptions of their preparation.⁴⁷ In that study, self-perceptions of preparedness by student teachers had little association with their cooperating teachers’ perceptions of their preparedness.

To better explore overall perceptions of teacher preparation, this analysis examined the extent to which completers’ perceptions aligned with the perceptions of cooperating teachers working with student teachers and employers who hired these recent completers. Since 2019, the Commission on Teacher Credentialing (CTC) has surveyed cooperating teachers who have worked with student teachers from California TPPs based in institutions of higher education (IHEs) and employers who hired new completers in their schools (i.e., school and district leaders who are responsible for hiring new teachers). Both cooperating teachers and employers were asked to evaluate the extent to which completers from a given program were prepared across a subset of the TPEs. Because these respondents were not asked about specific teacher candidates, and because they are a smaller sample from a nonrepresentative set of programs, the relationship of their ratings to those of completers does not reflect a one-to-one correspondence.

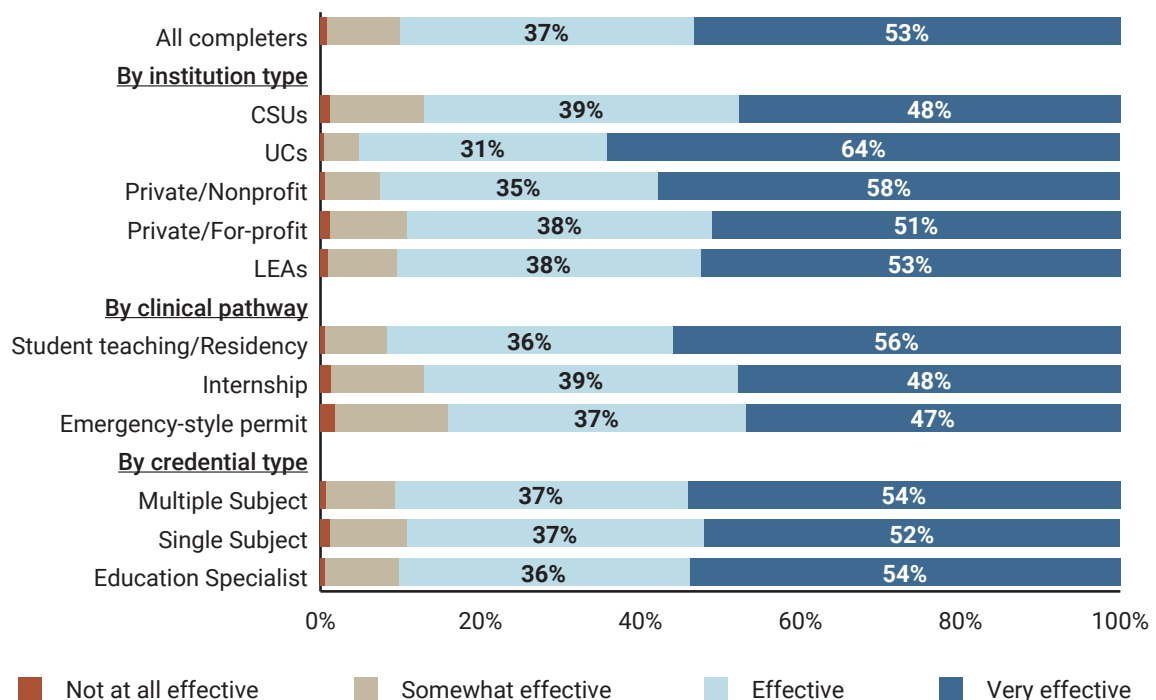
As explored in this section, perceptions of California TPPs were largely positive, and most completers reported feeling well prepared. Perceptions did vary somewhat among completers, cooperating teachers, and employers, although these three groups typically agreed about areas of teaching in which completers are more or less prepared.

Overall Perceptions of Graduates, Cooperating Teachers, and Employers

Across all 5 years of surveys, 9 in 10 responding completers rated their TPP as effective or very effective. As shown in Figure 4, overall perceptions of effectiveness were very similar across credential type but varied somewhat across institution type and clinical pathway. Table A2 in Appendix A illustrates how ratings of program effectiveness and other perceptions of preparedness vary by credential type, institution type, and clinical pathway. Across self-reported clinical pathways, completers who identified as student teachers or residents were more likely to rate their program as effective or very effective. Specifically, 56% of student teachers/residents rated their programs as very effective compared to 48% of interns and 47% of those completing their TPPs while working on an emergency-style permit. Completers who attended TPPs in the University of California (UC) system were more likely to rate their program as effective or very effective compared to completers who attended the California State University (CSU) system, private IHEs, or TPPs run by local education agencies (LEAs).

Figure 4
Program Effectiveness Ratings by Completers

Overall, how effective was your teacher preparation program at developing the skills or tools you needed to become a teacher?



Note: This analysis includes all completers who answered the question on program effectiveness (N = 52,279). Approximately 15% of completers did not respond to this question.

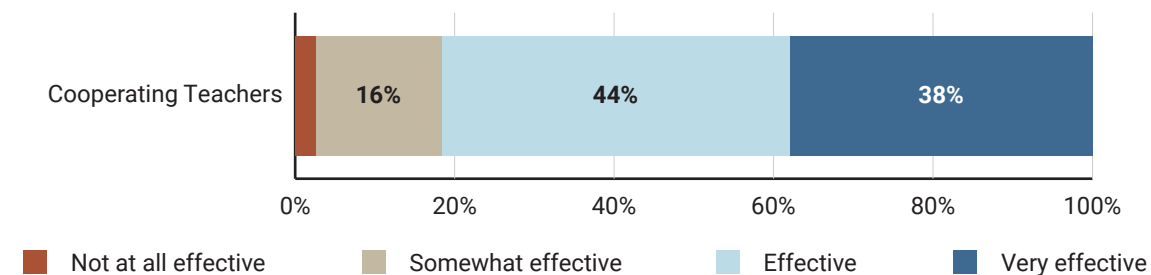
Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

These overall perceptions of program effectiveness among completers of California TPPs are similar to completer perceptions from other states. The statewide average for all California completers when asked to rate overall program effectiveness was a 3.4 on a 4-point scale. In North Carolina, first-year teachers are asked to assess their preparation experiences on the annual North Carolina New Teacher Preparation Survey. For the period between 2014 and 2016, the average rating of program quality for all North Carolina TPPs was 4.0 on a 5-point scale.⁴⁸ Similarly, Ohio surveys all preservice teacher candidates during their student teaching about their preparation experience. In 2021, the statewide average across all questions ranged from 3.0 to 3.8 on a 4-point scale.⁴⁹

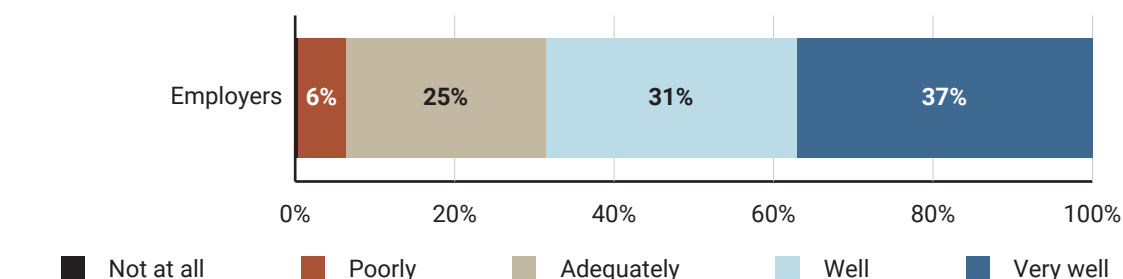
Employers and cooperating teachers who responded to the surveys administered between 2018–19 and 2020–21 also had largely positive perceptions of TPPs. As illustrated in Figure 5, more than two thirds of responding cooperating teachers and employers rated preparation programs positively. Among cooperating teachers who work with IHE-based TPPs and responded to the CTC survey, 82% rated the TPP that they worked with as “effective” or “very effective.” Across all types of TPPs, 68% of responding employers replied that a given TPP prepared their completers “well” or “very well.”

Figure 5
Program Effectiveness Ratings by Cooperating Teachers and Employers

Overall, how effective was the teacher preparation program at developing the skills and tools your student teachers needed to be an effective teacher?



Overall, how well-prepared do you think this program's completers are as teachers?



Note: This analysis includes 3 years of data (2018–19 to 2020–21). There are cooperating teacher responses (N = 5,165) from 78 teacher preparation programs (only IHEs) and employer responses (N = 1,614) from 96 TPPs. Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Perceptions of Preparation Across Teaching Domains

At least 70% of completers reported being well or very well prepared across all TPEs on the completer survey. Table 2 shows the extent to which completers felt prepared across these TPEs, and Table A2 illustrates how perceptions varied across credential type, clinical pathway, and institution type. Of all the TPEs, the highest percentage of completers reported being well or very well prepared in dimensions of teaching related to creating and maintaining an effective learning environment for students.

Table 2
Completer Perceptions of Preparedness by Teaching Performance Expectations

Teaching performance expectations domain	% completers well or very well prepared
Standard 1: Engaging and supporting all students in learning	
Use knowledge of students' strengths and prior experiences to engage them in learning	87%
Engage students in inquiry, problem-solving, and reflection to promote their critical thinking	85%
Connect classroom learning to the real world	85%
Meet instructional needs of English learners	81%
Identify and address special learning needs with appropriate teaching strategies	80%
Standard 2: Creating and maintaining effective environments for student learning	
Establish and maintain a safe and respectful learning environment for all students	90%
Create a productive learning environment with high expectations for all students	88%
Engage students in cooperative group work as well as independent learning	86%
Standard 3: Understanding and organizing subject matter for student learning	
Use effective instructional strategies to teach specific subject matter and skills	85%
Select, adapt, and develop materials, resources, and technologies to make subject matter accessible to all students	83%
Develop curriculum to teach content standards effectively	82%

Teaching performance expectations domain	% completers well or very well prepared
Standard 4: Planning instruction and designing learning experiences for all students	
Plan instruction based on students' prior knowledge, academic readiness, language proficiency, cultural background, and individual development	86%
Plan and adapt instruction that incorporates appropriate strategies, resources, and technologies to meet the learning needs of all students	86%
Standard 5: Assessing students for learning	
Give productive feedback to students to guide their learning	84%
Develop and use assessment data from a variety of sources to establish learning goals and to plan, differentiate, and modify instruction	82%
Involve all students in self-assessment, goal setting, and monitoring progress	79%
Standard 6: Developing as a professional educator	
Evaluate the effects of your actions on student learning and modify plans accordingly	84%
Work with colleagues to improve instruction	82%
Work with families to better understand students and to support their learning	72%

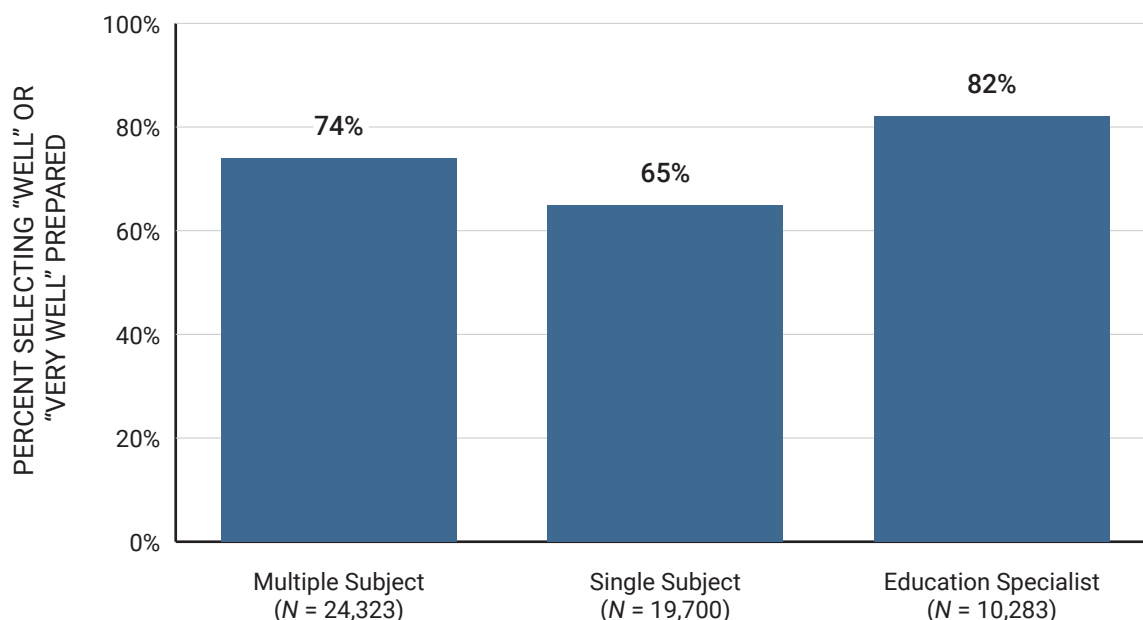
Note: These percentages represent the percent of respondents for each question who rated themselves as being “well” or “very well” prepared in each teaching performance expectation, excluding those who are missing a response for that question. Between 5% and 11% of the sample are missing responses to individual survey questions, so the number of respondents represented in this table ranges from $N = 58,334$ to $N = 54,278$.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

As shown in Table 2, 72% of completers rated themselves as well or very well prepared to work with families, and this was the lowest-rated TPE among completers. Unlike the other TPEs, the reported level of preparedness for working with families also varied across credential type. As shown in Figure 6, two thirds of completers receiving their single subject credential (i.e., newly prepared secondary teachers) felt well or very well prepared to work with families, compared to three quarters of completers receiving their multiple subject credential (i.e., newly prepared elementary teachers) and more than 80% of completers receiving their education specialist credential (i.e., newly prepared special education teachers).

Figure 6
Preparedness for Working With Families by Preliminary Credential Type

How well did your teacher preparation program prepare you to work with families to better understand students and to support their learning?



Note: These percentages represent the percent of respondents of each credential type who rated themselves as being “well” or “very well” prepared to “work with families to better understand students and to support their learning,” excluding those who did not respond to that question.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Cooperating teachers and employers were asked to rate new teachers’ preparation on a subset of TPEs, and this TPE about working with families was not included in those surveys. Table A3 in Appendix A shows the percentage of all three respondent types (completers, cooperating teachers, and employers) who rated completers as “well” or “very well” prepared for each TPE included in all three surveys. Cooperating teachers and employers reported relatively lower average ratings of preparedness than completers. These somewhat less positive ratings could be a function of the differences in the sample of survey respondents, since fewer programs were represented by these respondents, or an indicator that completers may overestimate their actual readiness. While cooperating teachers were asked only about the preparation of their student teachers, employers were asked to rate the preparedness of all completers hired from a given institution, which can include completers finishing student teaching or an intern program as well as those completing preparation while working on an emergency-style permit. Given differences in the ratings of preparation across clinical pathways (discussed in the next section), employer ratings may be lower than those of cooperating teachers in part because they were rating the preparedness

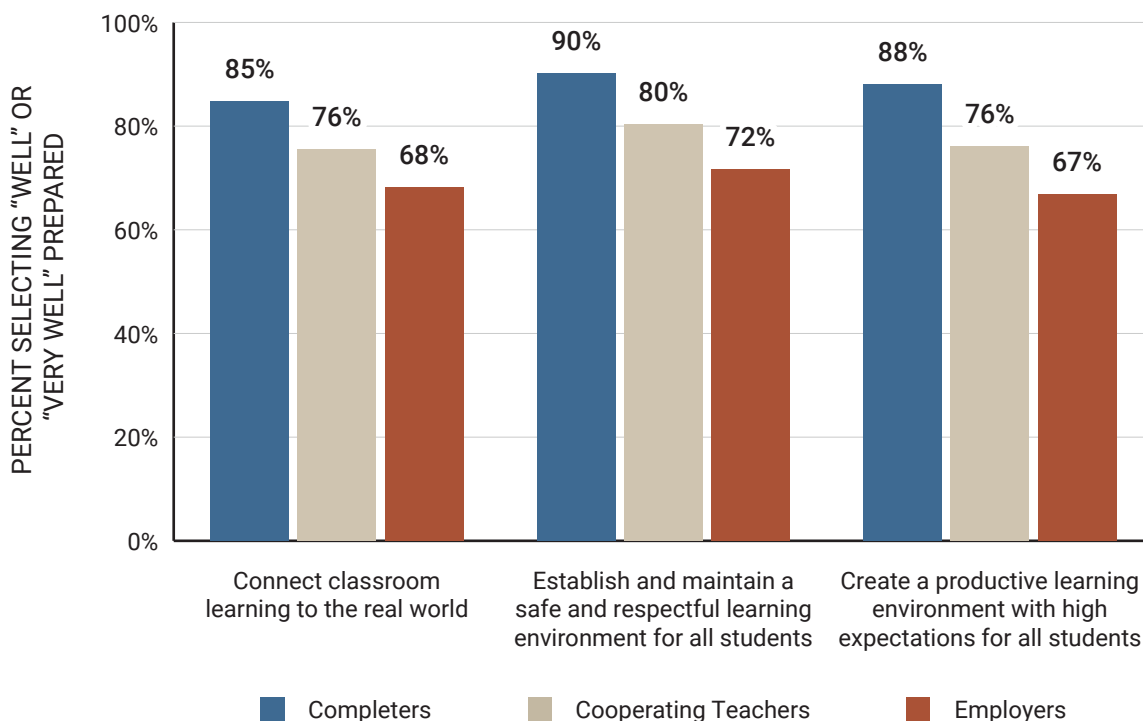
of completers from all clinical pathways. Even so, more than half of employers and cooperating teachers rated TPP completers as “well” or “very well” prepared across every TPE on the surveys.

There are some notable similarities in how completers, cooperating teachers, and employers rated preparedness in specific TPEs. For the group of TPEs included on all three surveys, all three groups rated the same set of TPEs relatively higher and lower (see Table A3). These patterns suggest that all three groups were similarly noting relative strengths and weaknesses in preparation in specific areas of teaching. These similarities also provided important evidence of the surveys’ validity and strengthen our confidence that survey results from all three groups were picking up meaningful differences about completers’ preparation. All three groups rated preparation related to three TPEs particularly highly:

1. Connect classroom learning to the real world
2. Establish and maintain a safe and respectful learning environment for all students
3. Create a productive learning environment with high expectations for all students

Figure 7 shows the ratings by all responding completers, cooperating teachers, and employers for these three top-rated TPEs. Two of these TPEs fit under the second standard of the California Standards for the Teaching Profession, creating and maintaining effective environments for student learning. Notably, prior research in North Carolina found that completers’ perceptions about how well their TPP prepared them to create supportive learning environments was associated with their performance as teachers (as measured by value-added scores and evaluation ratings).⁵⁰

Figure 7
Teaching Performance Expectations With Higher Preparedness Ratings From Completers, Cooperating Teachers, and Employers



Note: This analysis includes 3 years of data (2018–19 to 2020–21) and a restricted sample of teacher preparation programs in which at least five completers have responded and at least five cooperating teachers or five employers have responded ($N = 78$ TPPs). Completers were asked, “How well did your teacher preparation program prepare you to do each of the following as a teacher?” Cooperating teachers were asked, “How well-prepared was your student teacher to do each of the following?” Employers were asked, “Compared to other beginning teachers with whom you have worked, how well-prepared are program completers to do each of the following as a beginning teacher?”

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

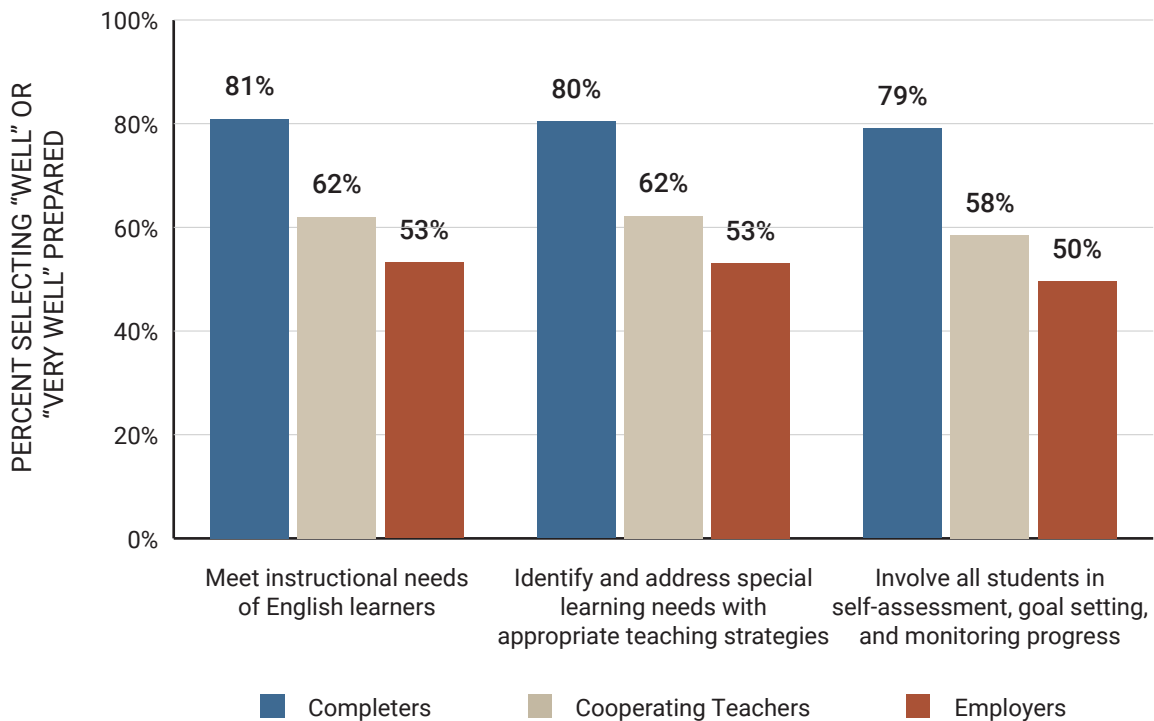
When identifying areas where completers were less prepared, completers, cooperating teachers, and employers rated the same three areas less highly:⁵¹

1. Meet instructional needs of English learners
2. Identify and address special learning needs with appropriate teaching strategies
3. Involve all students in self-assessment, goal setting, and monitoring progress

These three lowest-rated TPEs, and the percent of completers, cooperating teachers, and employers who rated teachers as well or very well prepared in each TPE, are highlighted in Figure 8. These three TPEs also had some of the largest gaps in average ratings between completers and employers and between student teachers and cooperating teachers. About 8 in 10 responding completers reported being

well prepared in these areas, while about 6 in 10 cooperating teachers and half of employers felt completers were well prepared. While California teachers reported feeling better prepared for meeting the instructional needs of English learners and students with disabilities than those surveyed in many other states, this pattern could suggest that completers may be overestimating their preparation for meeting the needs of these students, which requires a sophisticated set of skills generally sharpened with experience and coaching.

Figure 8
Teaching Performance Expectations With Lower Preparedness Ratings From Completers, Cooperating Teachers, and Employers



Note: This analysis includes 3 years of data (2018–19 to 2020–21) and a restricted sample of teacher preparation programs in which at least five completers have responded and at least five cooperating teachers or five employers have responded ($N = 78$ TPPs). Completers were asked, “How well did your teacher preparation program prepare you to do each of the following as a teacher?” Cooperating teachers were asked, “How well-prepared was your student teacher to do each of the following?” Employers were asked, “Compared to other beginning teachers with whom you have worked, how well-prepared are program completers to do each of the following as a beginning teacher?”

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

What Explains Differences in Perceptions of Preparedness?

Although completers were largely positive about their preparation experiences, there were differences in their perceptions of both how well prepared they were and what kinds of learning opportunities they received. In this section, we explore how these perceptions of preparedness varied based on program characteristics and the preparation experiences reported by completers. This analysis first explored descriptive differences in survey responses by preparation characteristics and experiences (e.g., institution type and clinical pathway), and then estimated these relationships in a series of regression models predicting the average level of preparedness reported by completers across all the teaching performance expectations (TPEs).

Overall, completers who participated in student teaching or residencies had more positive perceptions of their preparation than interns or those completing their preparation while teaching on an emergency-style permit. When examining all 5 years of data (see Table A2 in Appendix A), 56% of student teachers and residents rated their teacher preparation programs (TPPs) as very effective compared to 48% and 47% of completers who participated in internships or completed their preparation on an emergency-style permit. Across almost all TPEs, student teachers/residents were more likely to rate themselves as prepared or very well prepared. As explored later in this section, the 2020–21 data allowed us to disaggregate the perceptions of residents compared to other clinical pathways. For completers in 2020–21, residents were slightly more likely than student teachers to rate their preparation programs as very effective (54% compared to 53%), and they reported more intensive clinical supports.

Prior research on TPPs highlights the importance of the clinical experience in preparing effective teachers, especially sustained field experiences that allow for practical application of TPP coursework and field support from effective educators.⁵² This analysis also found many consistent and positive associations between aspects of completers' clinical experiences and average perceptions of preparedness. In Appendix A, Table A4 highlights descriptive differences in completers' overall perceptions of their preparation based on program characteristics and preparation experiences. Table A5 shows the results from regression analyses that predict the average level of preparedness for all completers.

As discussed in more detail on the following page (see *How Do Clinical Experiences Vary by Pathway?*), the duration and type of clinical experiences often vary considerably for teacher candidates in programs with student teaching requirements versus those in internship programs. As a result, this analysis examined differences between clinical experiences and overall perceptions of preparedness within and across clinical pathways. Regardless of clinical pathway, more clinical support was related to more positive perceptions of preparation.

How Do Clinical Experiences Vary by Pathway?

As described earlier, teacher candidates in California can receive a preliminary credential through two primary clinical pathways: (1) preservice teacher preparation programs that require student teaching or a residency with a cooperating teacher, or (2) internship programs in which they serve as teachers of record while completing their preparation coursework. As shown in Table A1 in Appendix A, 61% of completers reported participating in student teaching or residency programs, 25% reported participating in internship programs, and 4% reported only teaching on an emergency-style permit while taking their courses without any other clinical experience. The remaining 11% did not report their type of clinical pathway on the survey. A small percentage of completers (6%) reported participating in more than one clinical pathway (see Appendix B for more details on how we categorized completers).

Coursework and clinical experiences are structured differently for student teachers, residents, and interns. Clinical experiences for student teachers occur prior to completion of their preparation and before they become teachers of record (i.e., preservice). These may include practicum experiences attached to courses as well as a period of student teaching ranging from a few weeks to a full year of supervised work in the classroom of a cooperating teacher. Residency programs in California require that teacher candidates complete their credential coursework while spending a full year in the classroom with a mentor teacher (White et al., 2020). In contrast, internship programs require a shorter period of preparation before entering the classroom as a teacher of record (120 clock hours of foundational preparation coursework), and, while there are different practices across programs, much of the preparation experience typically occurs while program participants are already working as teachers in California schools.

The CTC requires that candidates, regardless of pathway, complete at least 600 hours of clinical practice over the course of their program. As part of their overall student teaching requirements, student teachers are expected to engage in at least 4 weeks of solo or co-teaching in a cooperating teacher's classroom. Depending on the program, student teachers may co-teach for an entire year or observe and assist for a period of time before they take on more responsibility. Interns should participate in early field experience in their mentor teachers' classrooms, and, as part of the 600 required hours of supervised clinical practice, internship programs must provide at least 144 hours of general support and supervision and 45 hours of support for teaching English learners. Their supports can include coaching, modeling, and assistance with course planning and problem-solving (California Commission on Teacher Credentialing, 2017). To count toward the requirements for supervised clinical practices, these hours can be combined with some independent teaching hours only when those were preceded by co-planning and followed by co-reflection with the supervisor or mentor.

Sources: California Commission on Teacher Credentialing. (2020). *Preliminary multiple subject and single subject credential program standards*. https://www.ctc.ca.gov/docs/default-source/educator-prep/standards/prelimsstandard-pdf.pdf?sfvrsn=a35b06c_12; White, M. E., Takahashi, S., Hirschboeck, K., Honigsberg, L., Perry, R., Reade, F., & Ambroso, E. (2020). *Early learning from formative evaluation of California's Teacher Residency Grant Program*. WestEd. https://www.wested.org/wp-content/uploads/2020/04/WestEd_Early_Learning_from_Formative_Evaluation_of_California%E2%80%99s_Teacher_Residency_Grant_Program_FINAL.pdf

Importance of Clinical Support Provided by Teacher Preparation Programs

Overall, perceptions of preparation were strongly related to the extent and frequency of classroom observation, instructional feedback, and communication about practice from program faculty and staff. Table 3 shows the percent of completers reporting each amount of clinical support. The CTC's program standards indicate that program supervisors should be observing and evaluating candidates at least 4 times per quarter or 6 times per semester.⁵³

Despite this guidance, there was considerable variation in the amount of clinical support reported by completers. For example, one fifth of completers reported that they received feedback from the preparation program faculty or supervisors five times or fewer during their clinical practice. In contrast, one fifth of completers reported receiving feedback more than 15 times during their clinical practice. The responses about the amount of feedback and observations were highly correlated, such that respondents who reported high levels of feedback also reported high levels of observation. In the remaining analyses, we focus on program feedback, recognizing that the patterns were the same for program observation.

Completers who reported more communication about teaching, more observations, or more instructional feedback were more likely to rate their programs as effective or very effective, and these completers were more likely to describe themselves as very well prepared across the TPEs. Table A4 shows the descriptive differences in the perceptions of preparation by how frequently completers reported these three types of support. The regression model in Table A5 shows differences in average level of preparedness reported by completers (as measured by the average of all TPE survey questions) while controlling for completer demographics and other preparation characteristics.

Completers who reported receiving communication about their teaching from TPP faculty more than once per week rated their average level of preparedness significantly higher (by the equivalent of a full standard deviation) than completers who reported receiving communication less than once per month, while controlling for completer demographics and other preparation characteristics (see Table A5). Program feedback was also a significant, positive predictor of average level of preparedness for all completers, although the estimated differences were smaller in magnitude. To visually display the descriptive differences, Figure 9 shows how ratings of program effectiveness varied based on the amount of instructional feedback that completers reported receiving from their TPPs. It shows, for example, that 69% of

Overall, perceptions of preparation were strongly related to the extent and frequency of classroom observation, instructional feedback, and communication about practice from program faculty and staff.

those who received feedback on their classroom instruction more than 20 times rated their programs as highly effective, as compared to only 29% of those who received feedback once or twice. This result held for both student teachers and interns, and the pattern was similar to the association between amount of clinical feedback and average rating of preparedness when controlling for completer demographics and when looking at differences within institutions (see Table A5).

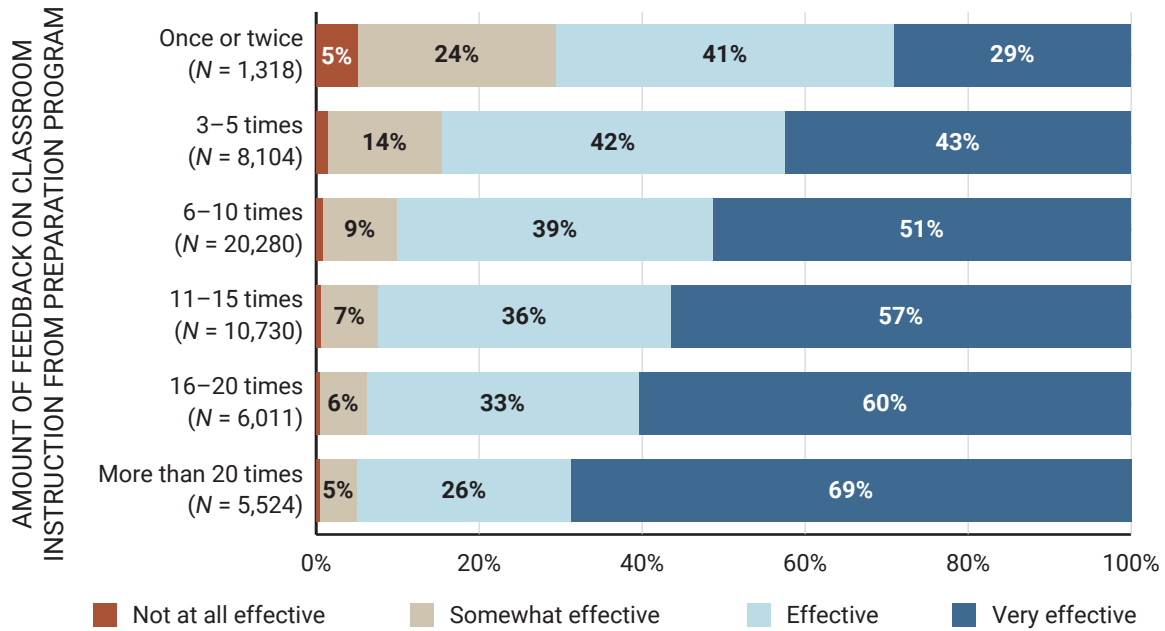
Table 3
Teacher Preparation Program Clinical Support Reported by All Completers

Question	Answer choices	Percent of respondents
Program communication: How often did preparation program faculty or staff communicate with you in person or by other means about your teaching practice?	Less than once per month	3%
	Once per month	9%
	Twice per month	19%
	Once per week	34%
	2–3 times per week	28%
	Daily	8%
Program observation: How often did preparation program faculty or supervisors observe your classroom instruction?	Once or twice	3%
	3–5 times	17%
	6–10 times	41%
	11–15 times	21%
	16–20 times	11%
	More than 20 times	9%
Program feedback: How often did preparation program faculty or supervisors provide feedback during your clinical practice?	Once or twice	3%
	3–5 times	16%
	6–10 times	39%
	11–15 times	21%
	16–20 times	11%
	More than 20 times	11%

Note: These percentages represent the percent of responding completers for each question. Between 11% and 12% of the sample are missing responses to individual survey questions, so the number of respondents represented in this table ranges from $N = 54,049$ to $N = 54,439$.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Figure 9
Program Effectiveness Ratings by Amount of Clinical Feedback



Note: This analysis includes all completers who responded to questions about program feedback and program effectiveness (N = 51,967).

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

While calculating these program-level survey results, we also examined which questions had the most variation across TPPs. Notably, there was greater variation across TPPs in completer responses about the amount of program observation and feedback received during clinical practice than any other survey item (see Appendix B for more discussion of these program-level results). This suggests that TPPs may be taking different approaches to organizing clinical supports that result in completers reporting relatively more or less observation and feedback during their clinical experiences. Employers and cooperating teachers also tended to have higher average ratings of TPPs in which completers reported having more clinical support. Table A6 in Appendix A illustrates how employers and cooperating teachers tended to give less positive ratings to TPPs in which student teachers or interns reported lower levels of clinical hours or clinical support.

These patterns mirror other research on the importance of clinical support.⁵⁴ For example, one study in Chicago Public Schools found that the frequency of feedback reported by student teachers was predictive of their feelings of preparedness across numerous domains of teaching.⁵⁵ Another study using national data found that the duration of student teaching and whether teachers received formal feedback on their teaching during their preparation were both associated with staying in the profession, after controlling for both teacher and school characteristics.⁵⁶ Importantly, the quality—and not just the quantity—of clinical support may also be important to ensure that teacher candidates feel prepared.

Importance of Cooperating/Mentor Teacher Behaviors

Supportive behaviors of cooperating or mentor teachers were also associated with completers' overall perceptions of preparation. Recent work that links characteristics of cooperating teachers and the eventual performance of their student teachers indicates that completers feel better prepared or exhibit more instructional effectiveness when they are paired with more effective cooperating teachers.⁵⁷ The CTC's survey asked completers to report whether their cooperating and mentor teachers engaged in certain supportive behaviors, such as frequently observing their teaching and providing feedback, offering useful strategies and advice about teaching, and helping them plan and organize curriculum materials. Table 4 shows the percent of student teachers/residents and interns who report that their cooperating and/or mentor teachers showed each supportive behavior.

This type of support operates differently for completers participating in student teaching or residency versus those participating in an internship. Student teachers or residents are completing their clinical practice within the classroom of their cooperating teacher and, thus, have many more opportunities for their cooperating teacher to provide feedback or support. In contrast, interns are mostly working as teachers of record in their own classrooms, and their assigned mentor may observe their classroom or provide support more periodically. Across all categories in Table 4, interns were less likely to indicate that their cooperating/mentor teacher engaged in each supportive behavior compared to student teachers or residents (all differences are statistically significant).

Table 4
Supportive Behaviors of Cooperating/Mentor Teachers by Clinical Pathway

My cooperating teacher(s) and/or mentor teacher(s)...	Student teachers or residents	Interns
Frequently observed my teaching and met with me to offer feedback	89%	69%
Helped me plan and organize curriculum materials	83%	67%
Helped me reflect on my practice	87%	80%
Helped me to solve teaching problems	86%	75%
Modeled effective practices	89%	66%
Offered useful strategies and advice about my teaching	91%	84%
Was an excellent educator and a valuable role model	87%	75%
Was knowledgeable about and able to provide support for field-based assignments	85%	74%

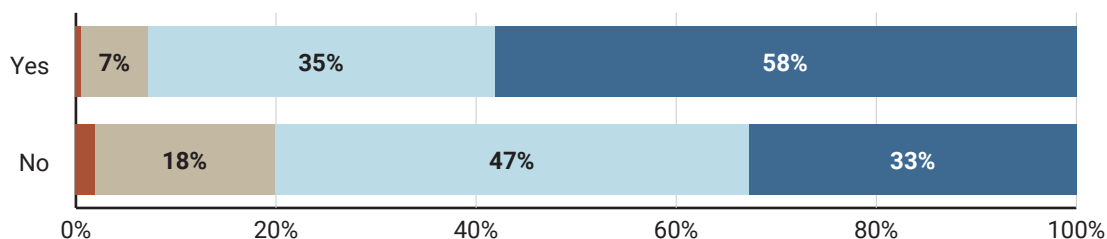
Note: This analysis includes all completers in each clinical pathway who responded to the set of questions on cooperating/mentor teacher behaviors ($N = 36,772$ for student teachers/residents and $N = 14,127$ for interns). All differences shown between student teachers/residents and interns are statistically significant based on chi-square tests.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

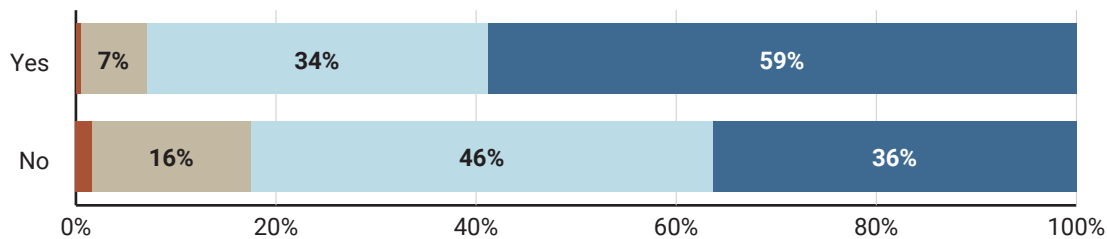
For student teachers, residents, and interns, completers who reported that their cooperating or mentoring teachers engaged in certain supportive behaviors were more likely to rate their TPPs as very effective and had more positive perceptions of their preparedness across the TPEs. Figure 10 illustrates the difference in overall rating of program effectiveness by certain cooperating/mentor teacher behaviors.⁵⁸ These patterns indicate that completers who had cooperating or mentor teachers who observed their instruction, modeled effective practices, and offered feedback or strategies were more likely to rate their TPPs as very effective and to report feeling well prepared across the TPEs.

Figure 10
Program Effectiveness Ratings by Cooperating/Mentor Teacher Behaviors

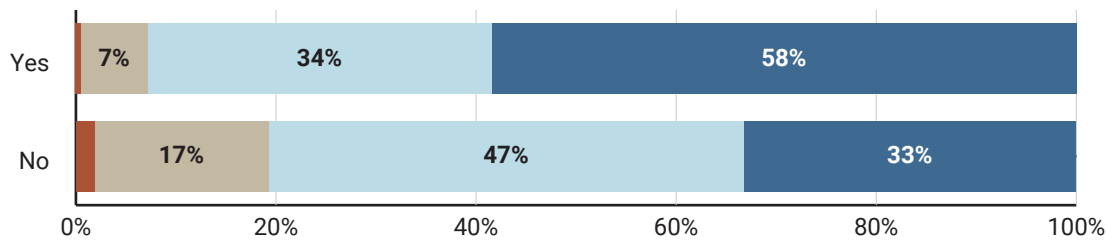
My cooperating/mentor teacher frequently observed my teaching and met with me to offer feedback.



My cooperating/mentor teacher helped me plan and organize curriculum materials.



My cooperating/mentor teacher was knowledgeable about and able to provide support for field-based assignments.



■ Not at all effective
 ■ Somewhat effective
 ■ Effective
 ■ Very effective

Note: This analysis includes all completers who responded to questions on program effectiveness and cooperating/mentor teacher behaviors (N = 50,973).

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Completers who indicated that their cooperating or mentor teachers showed a higher number of supportive behaviors were also more likely to have higher average perceptions of preparedness. While about half of all completers indicated that their cooperating or mentor teachers engaged in all of the behaviors shown in Table 4, 12% indicated that their cooperating or mentor teachers engaged in three or fewer of these behaviors. Completers rated their preparedness more highly when they also indicated that their cooperating or mentor teachers engaged in more supportive behaviors, even when controlling for other completer or program characteristics (see Table A5 in Appendix A).

How Do the Perceptions of Teacher Residents Compare to Those of Other Completers?

Since 2018, California has allocated more than \$600 million in grants for teacher residency programs. These programs, which are developed in partnership between local education agencies and institutions of higher education, typically require teacher candidates to teach alongside an experienced mentor teacher for at least 1 full year while completing preparation coursework. In 2020–21, the Commission on Teacher Credentialing survey added an option for completers to self-identify as participating in a teacher residency. Of all completers in 2020–21, about 1 in 10 identified as a resident. We examined differences in the composition and experiences of residents in this year of data.

Table A7 in Appendix A shows the difference in credential type, institution type, and demographic characteristics for residents compared to completers who report completing other clinical pathways. Of the approximately 1,200 residents identified in the 2020–21 survey data, more than two thirds were enrolled in programs affiliated with the California State University system, and just under 60% identified as people of color. Specifically, 43% of residents identified as Latino/a of any race, 35% as white, 11% as Asian/Pacific Islander, 3% as multiracial, 2% as Black, and less than 1% as Native American (with an additional 5% not reporting information on race/ethnicity). In comparison, about 55% of student teaching and internship completers responding to the survey in 2020–21 identified as people of color. The racial/ethnic composition of residents in this data set was slightly different from demographics reported in 2020 by WestEd’s initial evaluation of California’s Teacher Residency Grant Program (reporting that 74% of residents identified as people of color or multiracial), likely because that evaluation included only residents from programs receiving state grants, whereas these data include all programs in the state.

We also explored differences in residents’ perceptions of their preparation compared to completers from other clinical pathways. Table A8 in Appendix A presents differences in overall program effectiveness rating and clinical experiences by pathway. Residents’ overall perceptions of preparation were similar to those of student teachers (90% of both groups rated their teacher preparation programs as effective or very effective), but residents were more

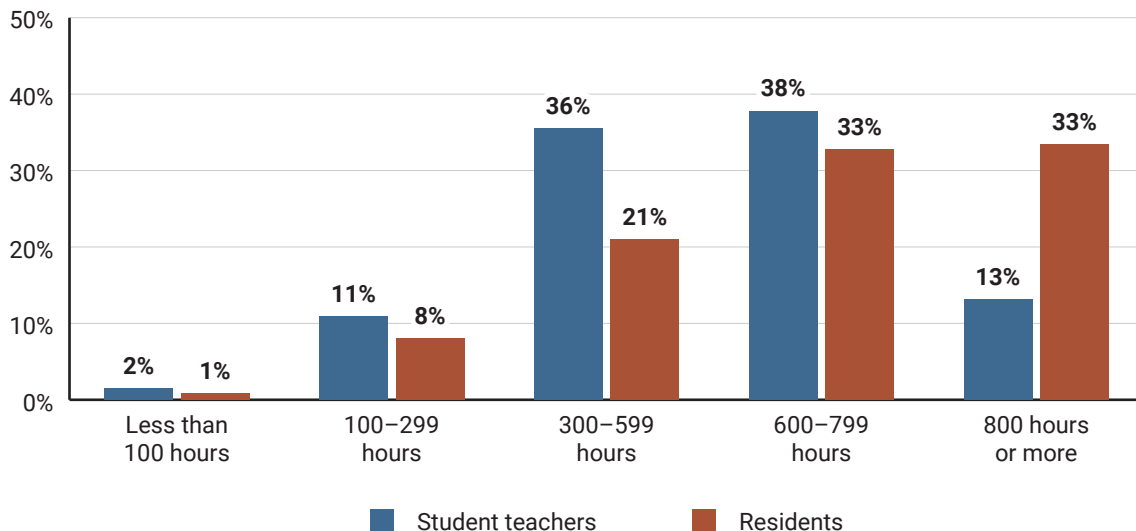
likely to report more intensive clinical experiences than student teachers. As shown in Figure 11, residents were more than twice as likely to estimate having more than 800 hours of student teaching than student teachers in traditional programs. Two thirds of residents (66%) reported at least 600 hours of student teaching, as compared to about half (51%) of student teachers.

Likely because of these increased hours, residents were more likely to report higher levels of clinical support (e.g., more observations and instructional feedback) than student teachers. Table A8 shows differences in estimated clinical support for student teachers and residents. For example, 20% of residents reported receiving high levels of program observation (i.e., being observed more than 15 times) compared to 11% of student teachers. Residents were also more likely to report receiving high levels of program feedback.

Sources: California Commission on Teacher Credentialing. (2022). *Teacher Residency Grant Program*. <https://www.ctc.ca.gov/educator-prep/grant-funded-programs/teacher-residency-grant-program>; Hirschboeck, K., White, M. E., Brannegan, A., & Reade, F. (2022). *Teacher residency programs in California: Financial sustainability challenges and opportunities*. WestEd. https://www.wested.org/wp-content/uploads/2022/01/Teacher-Residency-Programs-in-California_Brief.pdf; White, M. E., Takahashi, S., Hirschboeck, K., Honigsberg, L., Perry, R., Reade, F., & Ambroso, E. (2020). *Early learning from formative evaluation of California’s Teacher Residency Grant Program*. WestEd. https://www.wested.org/wp-content/uploads/2020/04/WestEd_Early_Learning_from_Formative_Evaluation_of_California%E2%80%99s_Teacher_Residency_Grant_Program_FINAL.pdf

Figure 11
Estimated Clinical Hours for Student Teachers and Residents, 2020–21

Approximately how much time did you spend in student teaching (in the classroom of a cooperating teacher) as part of your supervised fieldwork?



Note: This analysis is restricted to student teacher and residency completers from 2020–21 (N = 8,901). We only include residents who attended institutions that reported running residency programs in the state’s accreditation dashboard or received residency grants from the CTC.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

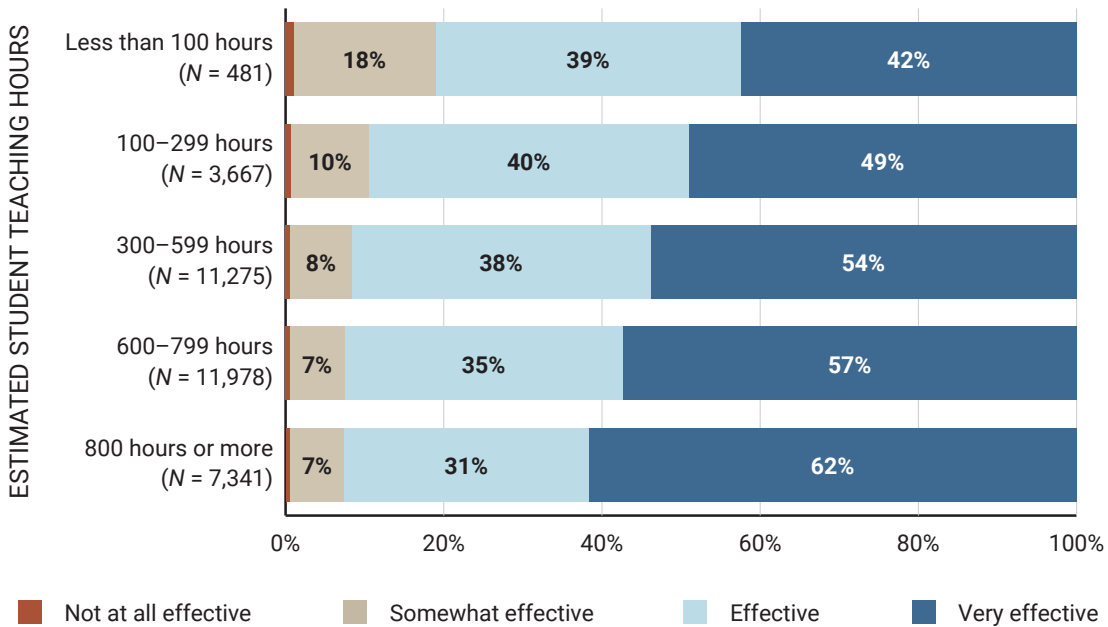
Importance of Clinical Hours for Student Teachers and Residents

In California, the CTC’s program standards require that all candidates complete at least 600 hours of clinical practice regardless of pathway. For student teachers and residents, this should primarily occur through co-teaching in a cooperating teacher’s classroom. Since interns work as teachers of record in their own classrooms, the program standards indicate they should participate in early field experiences in their mentor teachers’ classrooms and then receive support and supervision through coaching, modeling, and assistance with instructional planning. The CTC survey asked completers to estimate how much time they spent student teaching (in the classroom of a cooperating teacher) as part of their supervised fieldwork, but the survey did not ask an equivalent question for interns about how many hours of support and supervision they received.⁵⁹ Thus, we focused this section only on completers who participated in student teaching or residencies.

Student teachers and residents who reported having more hours of student teaching in the classroom of a cooperating teacher were more likely to rate their TPP as very effective, as shown in Figure 12. Student teachers with more clinical hours also reported slightly higher average levels of preparedness. These patterns held when we controlled for completer and program characteristics and also when we examined differences in perceptions within programs (see Panel A of Table A5).

Figure 12
Program Effectiveness Ratings by Student Teaching Hours

Overall, how effective was your teacher preparation program at developing the skills or tools you needed to become a teacher?



Note: This analysis includes student teachers or residents who answered questions about student teaching hours and program effectiveness (N = 34,742).

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Did Perceptions Change Amid COVID-19?

Given the many strains on the education system created by the COVID-19 pandemic, this analysis carefully examined differences across time, especially comparing the 2020–21 responses to the prior years. Overall ratings of program quality and preparation for each teaching performance expectation remain similar across every year and did not decrease during the pandemic. We also explored whether reported clinical experiences varied in 2020–21. One notable difference was the estimated hours that student teachers/residents reported spending in their supervised fieldwork. While about 25% of student teachers reported spending more than 800 hours student teaching in the classrooms of their cooperating teachers in 2016–17, 2017–18, and 2018–19, the amount dropped to 16% in 2019–20 and 2020–21. Given that many schools moved to remote instruction during the pandemic, this change in estimated hours is not surprising. This drop in student teaching hours seemed concentrated among completers with the most time-intensive placements. There was a subset of student teachers (11–12% of all responding completers) who reported spending less than 300 hours in their clinical experience across all years of the survey, and there was no noticeable shift in that proportion during the pandemic.

The CTC program completer survey questions did not change in response to the pandemic and were not designed to probe teacher candidates' or recent completers' experiences with pandemic-era preparation. Other research on the experience of teacher candidates and teachers during the pandemic has highlighted the unique challenges facing early-career teachers who completed their preparation and started teaching during the pandemic.

Sources: American Association of Colleges for Teacher Education. (2021). *Fall 2021 Member Survey: Educator preparation responds to COVID-19*. <https://aacte.org/resources/research-reports-and-briefs/fall-2021-member-survey-educator-preparation-responds-to-covid-19/>; Lachlan, L., Kimmel, L., Mizrav, E., & Holdheide, L. (2020). *Advancing quality teaching for all schools: Examining the impact of COVID-19 on the teaching workforce*. Center on Great Teachers and Leaders, American Institutes for Research. <https://gtlcenter.org/products-resources/advancing-quality-teaching-all-schools-examining-impact-covid-19-teaching>

Importance of Preparation in Reading, Writing, and Math Foundations

Training in how to teach in specific content areas—often referred to as pedagogical content knowledge—is also a critical component of teacher preparation.⁶⁰ Generally, preparation for secondary teachers has focused more on specific content areas (e.g., secondary math) and required that secondary teachers complete a certain number of credit hours or courses in their content area and how to teach it.⁶¹ In contrast, preparation for elementary teachers has often been more generalist and elementary teacher training programs have been critiqued for insufficient focus on teaching in specific content areas, especially in math, science, and early literacy.⁶²

Research on whether candidates' exposure to certain content coursework in their TPPs predicts their eventual effectiveness as teachers is mixed, but a small set of studies do suggest that certain types of coursework may be particularly important.⁶³ For example, one study of elementary TPPs in New York City found that candidate-reported opportunities to learn about specific aspects of teaching math and English language arts (ELA) predicted the achievement score gains of those candidates' eventual students, after controlling for other student, teacher, and school factors.⁶⁴ In particular, the extent to which candidates reported an opportunity for practical coursework (e.g., chances to study or analyze student math work) or for preservice opportunities to learn how to teach math (e.g., opportunities to learn how to facilitate math learning in small groups) was positively associated with the math achievement scores of their students in their first or second year of teaching. The survey items used in this study in New York City were adapted for use by the CTC in the program completer surveys.

In California, the CTC has established subject-specific pedagogical skills that beginning teachers should demonstrate at either the elementary or the secondary level, as well as subject-specific pedagogy expected of education specialists.⁶⁵ In their surveys, multiple subject and education specialist completers were asked to report on the intensity of their training in certain aspects of teaching reading, writing, and math. Table 5 displays the overall survey results for the extent to which preparation focused on specific aspects of teaching reading and writing, and Table 6 displays these results for math, with the answer choices ranging from "none" to "extensive opportunity." Table A9 in Appendix A shows the differences in candidates who report relatively more opportunities to learn each aspect of reading, writing, and math teaching across credential type, clinical placement, and institution type. Multiple subject completers were also asked how well their preparation program prepared them to teach reading and writing, math, science, and history/social studies.

Table 5
Opportunity to Learn How to Teach Reading and Writing

In your teacher preparation program, how much opportunity did you have to do each of the following?	None	Touched on it briefly	Spent time discussing or doing	Explored in some depth	Extensive opportunity
Learn how to activate students' prior knowledge	<1%	3%	14%	31%	52%
Practice what you learned about teaching reading in your field experiences	1%	4%	15%	32%	48%
Study state standards for reading/ language arts	1%	4%	16%	31%	48%
Plan and teach a guided reading lesson	2%	5%	16%	31%	47%
Listen to an individual child read aloud for the purpose of assessing reading achievement	2%	5%	17%	32%	45%
Use student reading assessment results to address student needs and improve your teaching	1%	5%	17%	34%	44%
Learn ways to build student interest and motivation to read	1%	5%	18%	36%	40%
Learn to teach students to organize their ideas prior to writing	2%	7%	19%	33%	40%
Learn ways to teach reading and writing to students at different stages or reading abilities	1%	6%	18%	35%	39%
Study, critique, or adapt reading curriculum materials	2%	7%	19%	33%	38%
Learn how to help students make predictions to improve comprehension	1%	6%	20%	36%	37%
Learn ways to teach decoding skills	2%	10%	23%	37%	28%
Learn how to support older students in learning to read	4%	12%	24%	32%	27%

Note: This analysis includes multiple subject and education specialist completers who responded to the questions on opportunity to learn elements of teaching reading and writing. Between 16% and 17% of the sample are missing responses to individual survey questions, so the number of respondents represented in this table ranges from $N = 32,514$ to $N = 32,792$.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Reading and writing

When asked for their general perceptions of preparation across subject areas, 87% of multiple subject completers reported that they felt “well” or “very well” prepared to teach reading and writing. In terms of completers’ opportunity to learn content and practical skills for teaching reading and writing during their preparation programs (see Table 5), more than 80% of all responding completers reported that their programs had at least “spent time discussing or doing” each element of teaching asked about in the survey, such as studying the state standards, learning how to teach decoding skills, learning how to teach students at different stages of reading and writing, and assessing students’ reading achievement by listening to them read aloud. More than four in five completers reported deeper opportunities to learn how to activate students’ prior knowledge and to practice what they learned about teaching reading in their field experiences. Small but noticeable numbers of candidates reported limited opportunity to learn to teach reading to older students (16%) or to teach decoding skills (12%).

Table 6
Opportunity to Learn How to Teach Mathematics

In your teacher preparation program, how much opportunity did you have to do each of the following?	None	Touched on it briefly	Spent time discussing or doing	Explored in some depth	Extensive opportunity
Practice what you learned about teaching math in your field experience	3%	6%	16%	29%	46%
Adapt math lessons for students with diverse needs and learning styles	3%	8%	18%	30%	42%
Study national or state standards for mathematics	3%	7%	18%	30%	42%
Learn how to facilitate math learning for students in small groups	3%	8%	19%	30%	40%
Study, critique, or adapt math curriculum materials	4%	9%	20%	31%	36%
Use representations (e.g., geometric representation, graphs, number lines) to show explicitly why a procedure works	6%	11%	20%	29%	34%
Review local district mathematics curriculum	8%	11%	19%	28%	33%
Prove that a solution is valid or that a method works for all similar cases	6%	11%	22%	31%	30%
Learn typical difficulties students have with place value	8%	12%	22%	30%	28%
Learn typical difficulties students have with fractions	9%	13%	21%	28%	28%

Note: This analysis includes multiple subject and education specialist completers who responded to the questions on opportunity to learn about teaching math. Between 17% and 18% of the sample are missing responses to individual survey questions, so the number of respondents represented in this table ranges from $N = 32,209$ to $N = 32,537$.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Mathematics

Overall, 83% of multiple subject completers said that they were “well” or “very well” prepared to teach math. When compared to reading and writing, multiple subject completers and especially education specialist completers reported having relatively fewer in-depth opportunities to learn about math teaching in their preparation programs. When asked about opportunities to learn specific elements of math teaching (see Table 6), more than 80% of respondents reported that their program had at least “spent time discussing or doing” most elements included in the survey, including opportunities to study national or state standards, to adapt math lessons for students with diverse needs, to teach small groups of students, to use different representations, and to prove solutions. Fewer respondents (about 77%) reported opportunities to learn about typical difficulties students have with fractions—a key area in which many students struggle.

Differences in opportunities to learn

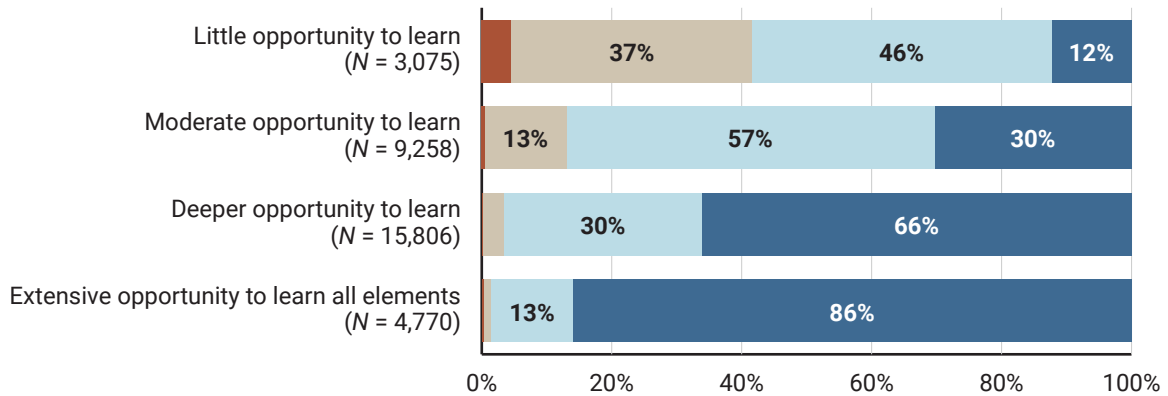
Table A9 shows the percent of completers by credential type, clinical pathway, and institution type who reported relatively more opportunity to learn each aspect of teaching reading, writing, and math (e.g., indicated that they “explored in some depth” or had an “extensive opportunity”). Multiple subject completers were more likely to report these in-depth opportunities, with larger differences in math. For example, three quarters of multiple subject completers identified having relatively more opportunity to “adapt math lessons for students with diverse needs” compared to two thirds of education specialists. Student teachers/residents were also more likely to report spending more time on each element than interns or those completing their preparation while teaching on an emergency-style permit. Relatedly, completers from intern programs based in local education agencies (LEAs) were less likely to report more opportunities to learn all aspects of reading, writing, and math teaching compared to completers from university-based programs. As discussed later in the report, education specialists were much less likely than multiple subject completers to complete a preservice teacher preparation program and much more likely to enroll in LEA-based programs than multiple subject completers.

In parallel with the analysis of clinical experiences previously described, we conducted an additional set of analyses that examined how opportunities to learn reading, writing, and math teaching were related to completers’ overall perceptions of preparation. Figure 13 illustrates the relationship between the overall reported opportunities to learn reading, writing, and math teaching and overall ratings of program effectiveness. Eighty-six percent of completers who had extensive opportunity to learn about teaching reading and writing rated their programs as very effective, as compared to only 12% of those who had little opportunity to learn about teaching reading and writing. Similarly, 85% of completers who had extensive opportunity to learn about math teaching rated their programs as very effective, as compared to 21% of those who had little opportunity to learn about math teaching. About 10% of completers were categorized in the “little opportunity to learn about teaching reading and writing,” and 18% of completers were categorized in the “little opportunity to learn about math teaching” categories.

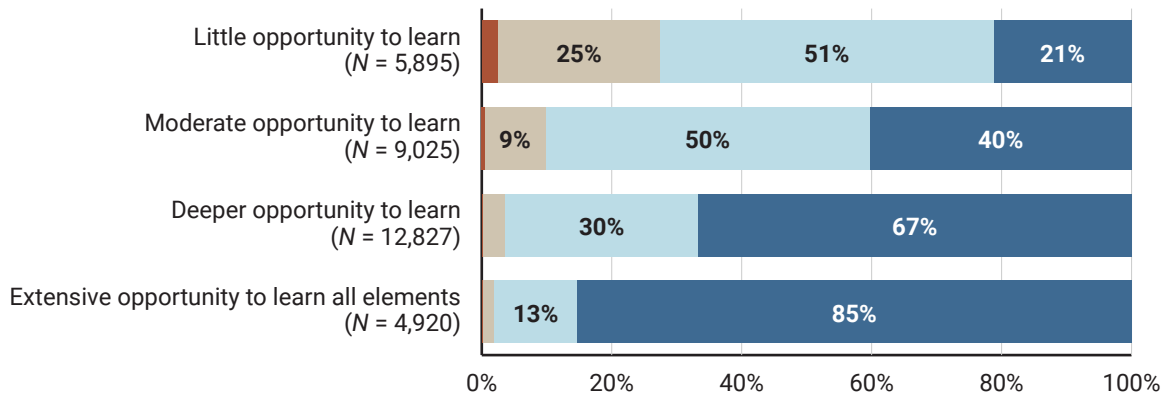
Figure 13 Program Effectiveness Ratings by Opportunities to Learn About Reading, Writing, and Math Teaching

Overall, how effective was your teacher preparation program at developing the skills or tools you needed to become a teacher?

Opportunity to learn about teaching reading and writing



Opportunity to learn about teaching mathematics



■ Not at all effective
 ■ Somewhat effective
 ■ Effective
 ■ Very effective

Note: This analysis includes completers receiving their multiple subject and education specialist credentials. For each subject area, completers were asked about their opportunity to learn aspects of teaching each subject on a 1–5 scale (ranging from “none” to “extensive opportunity”). For each subject area, completers are categorized based on their average response across the 13 reading and writing items and the 10 math items. Completers who reported, on average, less than a 3 on the 1–5 scale are categorized as “little opportunity to learn content” (3 is the equivalent of “spent time discussing and doing” on the survey scale, with 1 = “none” and 2 = “touched on it briefly”). Completers who averaged between 3 and 4 are classified as “moderate opportunity to learn” (4 is the equivalent of “explored in some depth” on the survey scale). Completers who averaged between 4 and 5 are classified as “deeper opportunity to learn.” Completers who reported all 5’s on each scale are classified as “extensive opportunity to learn all content.”

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

In addition to this descriptive analysis, we also explored associations between opportunity to learn reading, writing, and math teaching and average level of preparedness across the TPEs using a set of regression models (see Table A10 in Appendix A). Given that prior research has found that certain aspects of preparation (e.g., opportunities for practical application of coursework, opportunities to learn specific curriculum) are more strongly related to teaching effectiveness,⁶⁶ we first categorized the “opportunity to learn” questions into three categories for each subject area: (1) opportunity to learn content and pedagogy, (2) opportunity for practice, and (3) opportunity to engage standards and curriculum materials.⁶⁷ We then examined the association between each of these groupings and completers’ average level of preparedness in regression models shown in Table A10.

For each subject, completers who reported more opportunity to learn content and pedagogy, practice these skills, and engage standards and curriculum materials also rated themselves as more prepared. For example, moving from “touched on it briefly” to “spent time discussing and doing” on opportunities to practice how to teach reading and writing (e.g., listening to an individual child read aloud for the purpose of assessing their reading, plan and teach a guided reading lesson) is associated with a 0.35 point increase on the 5-point average preparedness scale (an equivalent of 0.5 standard deviations).

Finally, TPPs’ average ratings by cooperating teachers and employers were also moderately related to completers’ reported opportunities to learn about teaching reading and writing (see Table A6 in Appendix A). Cooperating teachers and employers tended to have lower ratings of TPP effectiveness for programs in which more student teachers/residents reported limited opportunities to learn about teaching reading and writing. There was also a negative relationship between these average ratings and limited opportunity to learn about math teaching, but those relationships were weaker.

Unequal Access to Highly Rated Preparation

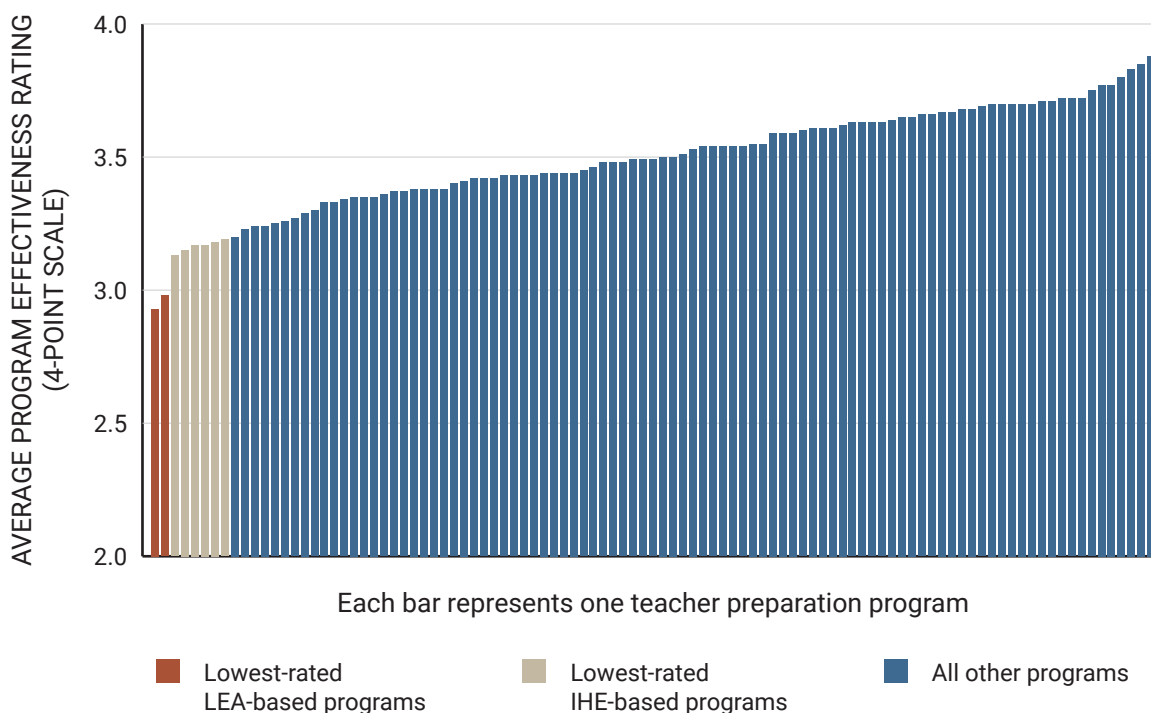
Preparation experiences—in terms of duration of clinical experiences, clinical support provided by teacher preparation programs (TPPs) and cooperating/mentoring teachers, and opportunity to learn reading, writing, and math foundations—varied across TPP completers. As noted earlier, these aspects of preparation were associated with completers' program effectiveness ratings and perceptions of their preparedness. In some cases, they were also associated with employers' program effectiveness ratings. In this section, we examine the extent to which different types of teacher candidates in California had differential access to these highly rated preparation experiences. We first assessed the extent to which perception of preparedness varied across TPPs and highlight a small number of TPPs in which completers had much lower ratings. We then examined how access varies by credential type and completer demographic background.

California's Lowest-Rated Teacher Preparation Programs

One of the roles of TPP effectiveness data—such as the Commission on Teacher Credentialing (CTC) program completer surveys—is to flag as part of the accreditation process areas in which some TPPs may struggle and to provide additional assistance to those programs to support improvement. Thus, we explored variation in survey responses across programs and identified programs that had relatively lower completer ratings. We created average ratings from each TPP based on the survey responses by completers and, in some cases, employers and cooperating teachers.⁶⁸ We then identified a small number of institutions that had considerably lower average ratings than the norm and looked descriptively at how they differed from other, more highly rated programs.⁶⁹ Figure 14 illustrates the average rating of program effectiveness across the 101 TPPs included in this analysis. (TPPs had to have at least five completer survey respondents across the 5 years of surveys to be included.)

As shown in Figure 14, the two lowest-rated programs had distinctly lower ratings than all other programs (more than 2.5 standard deviations below the mean program rating for all TPPs). Both programs, highlighted in red in Figure 14, were intern programs based in local education agencies (LEAs).⁷⁰ We also examined an additional group of six programs that had substantially lower completer ratings of overall effectiveness (with average ratings of 1.5–2 standard deviations below the mean program rating for all TPPs). These were all programs based in institutions of higher education (IHEs), including four universities in the California State University (CSU) system and two private/independent universities. About 8% of all completers in the survey analysis graduated from these eight TPPs (a little more than 5,000 completers across 5 years). These programs were also rated relatively lower by cooperating teachers and/or employers.⁷¹ In Table A11 in Appendix A, we present descriptive statistics for these two groups of lowest-rated TPPs compared to all other TPPs in this analysis.

Figure 14
Average Program Effectiveness Rating by Teacher Preparation Program



Note: This analysis includes programs that had at least five completers respond to the program completer survey between 2016–17 and 2020–21 ($N = 101$ TPPs). Each bar shows the program-level average to the question, “Overall, how effective was your teacher preparation program at developing the skills or tools you needed to become a teacher?”

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

As shown in Table A11, the two lowest-rated programs had substantially different characteristics from other programs, and completers reported significantly different perceptions of program effectiveness and preparation experiences (e.g., the amount of clinical support offered by programs and opportunities to learn about teaching reading, writing, and math) compared to other TPPs. Completers in these two LEA-based intern programs reported substantially less intensive clinical support and fewer opportunities to learn about teaching reading, writing, and math. Notably, one third of completers from these two programs reported little or no opportunity to learn how to teach reading and writing, and 45% reported little or no opportunity to learn about math teaching. (This compares to 9% in ELA and 18% in math for completers from the 93 programs not identified as lower rated).⁷² Survey results for the next set of lowest-rated programs, the six IHE-based programs, also indicate that these completers reported, on average, less intensive clinical supports, but the differences were less striking and, in most cases, not statistically significant.

Differential Access for Education Specialists

There have been concerns about shortages of education specialists (i.e., special education teachers) both nationally and in California.⁷³ Preparation experiences for special education teachers can influence both their effectiveness and their retention in the classroom.⁷⁴ For example, one study using national data found that special education teachers who participated in longer preservice clinical experiences were more likely to remain in the profession.⁷⁵ It is for this reason that education specialists were a targeted subject matter area group for initial residency funding in California.

In this analysis, we found that education specialist completers were more than twice as likely as other completers to have participated in internship programs or completed their preparation while working under an emergency-style permit. In Appendix A, Table A12 shows differences in institution type and clinical experiences by credential type and Table A3 shows how overall perceptions of preparation varied across credential type. Figure 15 shows the differences in clinical pathway and institution type by credential type. Approximately half of

Education specialist completers (i.e., special education teachers) were more than twice as likely as other completers to have participated in internship programs or completed their preparation while working under an emergency-style permit.

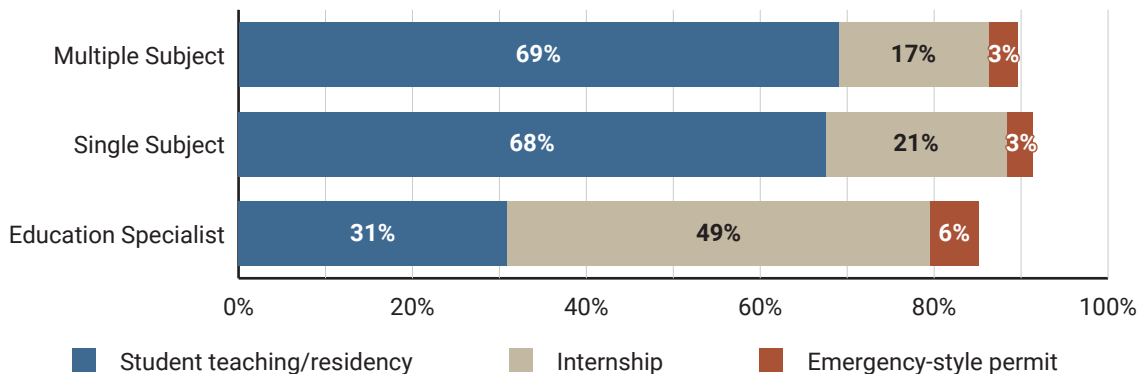
education specialist completers reported participating in internships, compared to less than one fifth of multiple subject (i.e., elementary) and single subject (i.e., secondary) completers. In terms of institution type, about half of multiple subject and single subject completers were prepared in the state's public university systems, while only one third of education specialist completers were prepared in the public university system (and only 1% were prepared in the University of California, or UC, system). Additionally, 12% of education specialist completers were prepared in LEA-based intern programs compared to just 3% of multiple subject or single subject completers.

For those participating in student teaching/residencies, education specialist completers were more likely than multiple subject or single subject completers to estimate spending under 600 hours in their student teaching placement (see Table A12). For student teachers/residents receiving their multiple subject and single subject credentials, about 1 in 10 responding completers estimated that they spent less than 300 hours student teaching in the classrooms of their cooperating teachers. In contrast, about twice as many education specialist completers estimated less than 300 hours of student teaching. The CTC's new program standards for education specialist programs, which were adopted in 2018 for full implementation by 2022, now require a minimum of 600 hours of clinical practice over the course of their TPP, including at least 400 hours in "final student teaching."⁷⁶ Education specialists were also slightly more likely to indicate that they received low levels of clinical support

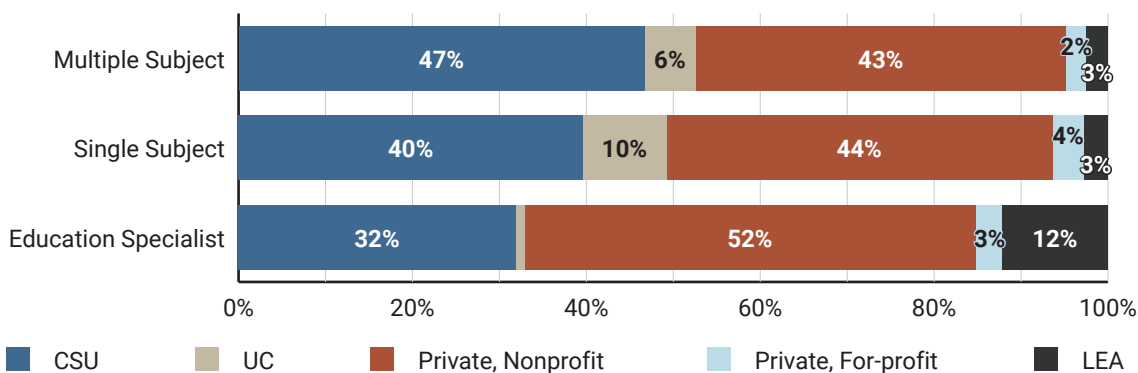
(being observed or receiving instructional feedback five times or fewer). Twenty-five percent of education specialist completers reported receiving program feedback five times or fewer during their clinical practice compared to 16% of multiple subject and single subject completers.

Figure 15
Clinical Pathway and Institution Type by Preliminary Credential Type

Clinical Pathway



Institution Type



Note: Percentages for self-reported clinical pathways do not add up to 100% because not all completers answered that survey question. Clinical pathway is missing for 10% of multiple subject completers, 9% of single subject completers, and 15% of education specialist completers.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

California’s recent state investments in teacher residencies have specifically targeted funding for programs serving education specialists. Using the 2020–21 completer data (the only survey year in which completers could self-identify as participating in a residency), we specifically examined comparisons across credential types for completers from residency programs. Of those completing residencies in 2020–21, 15% were getting their education specialist credential. Residents were more likely than student teachers to report spending more hours in the classroom of a cooperating teacher as part of their supervised fieldwork. Among education specialist completers

from 2020–21, 64% of residency completers reported spending more than 600 hours in their cooperating teachers' classrooms, as compared to 43% of education specialist completers in student teaching programs.

The preparation experiences reported by multiple subject and single subject completers were more similar. Nearly 70% reported participating in student teaching or residencies (see Figure 15). Just over half reported that they spent at least 600 hours in their student teaching placement, while one tenth of these completers reported that they spent less than 100 hours in student teaching.

Differential Access by Teacher Race/Ethnicity

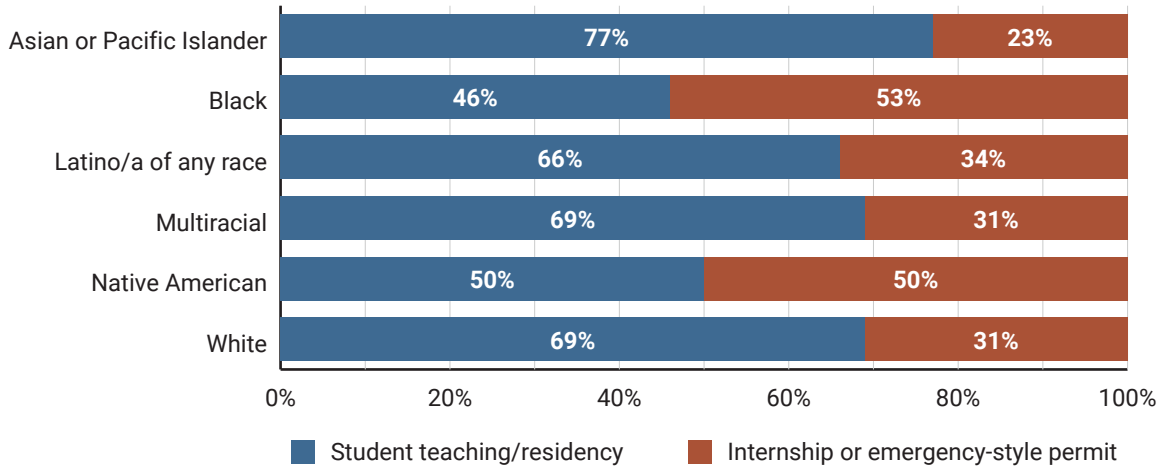
Building a well-prepared and racially diverse teaching workforce benefits all students, especially students of color.⁷⁷ As noted previously, the demographic composition of completers in California has shifted as more Latino/a teacher candidates are completing TPPs within the state. This analysis examined whether overall perceptions of preparation varied by racial/ethnic and gender identity as well as how preparation experiences varied across these groups.⁷⁸ Table A13 in Appendix A shows descriptive differences in completers' overall perceptions of their preparation based on various completer characteristics, including racial/ethnic and gender identity. Asian/Pacific Islander completers have slightly less positive perceptions of their preparation than other racial/ethnic groups across most survey questions. Female completers have slightly more positive perceptions than male completers, and nonbinary completers report less positive perceptions than either male or female completers. Across all demographic groups, completers who identified as student teachers or residents had more positive overall perceptions of their preparation.

Nationally, teacher candidates of color are more likely than white candidates to attend "alternative" teacher preparation programs (i.e., TPPs located outside of IHEs and programs in which participants work as teachers of record while completing their preparation).⁷⁹ An analysis of beginning teachers in California found that Black teachers are more than twice as likely as white teachers to enter the profession while teaching on an emergency-style permit.⁸⁰ National data have demonstrated that these trends are associated with the financial limitations and higher education debt burdens that many candidates of color carry.⁸¹

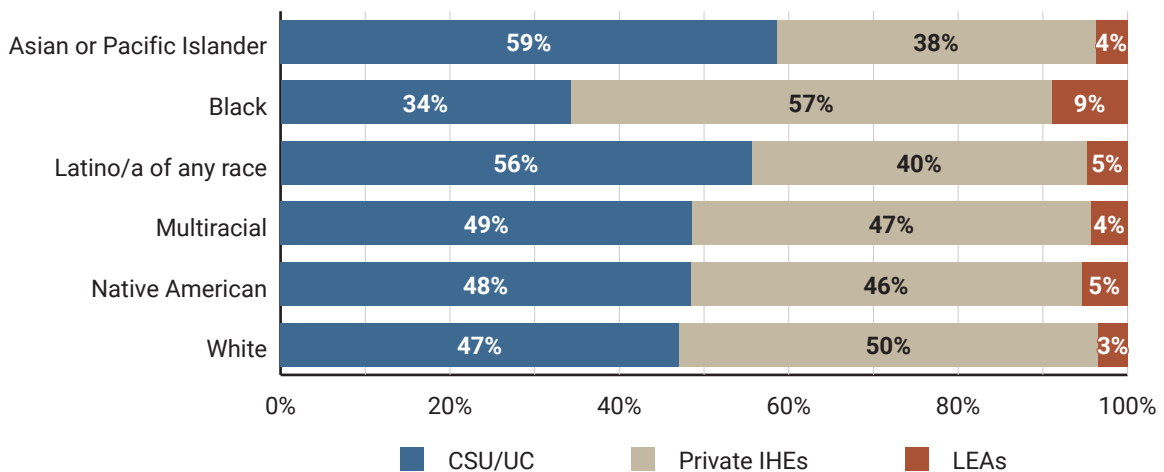
Given these differences, we examined how preparation experiences varied across racial/ethnic groups for completers in California, as reflected in the institutions attended by completers and their self-reported clinical pathways. Table A13 shows differences in institution type and clinical experiences by race/ethnicity, while differences in clinical pathway and institutional type are shown in Figure 16. Most notably, only 46% of Black completers and 50% of Native American completers reported that they participated in student teaching or residencies, as compared to 66% to 77% of completers from other racial/ethnic groups. Within each clinical pathway, completers of all racial/ethnic backgrounds reported similar numbers of clinical hours, levels of clinical support, and supportive practices by cooperating/mentor teachers.

Figure 16
Clinical Pathway and Institution Type by Completer Race/Ethnicity

Clinical Pathway



Institution Type



Note: Race/ethnicity is self-reported on the Commission on Teacher Credentialing’s completer survey, so only completers who self-identified their race/ethnicity are included in these figures. Multiple categories had to be collapsed because of data suppression rules for small sample sizes. See Table A13 in Appendix A for a more detailed breakdown of completion patterns by race/ethnicity. Across the 5 years of data, 15% of completers did not report race/ethnicity.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

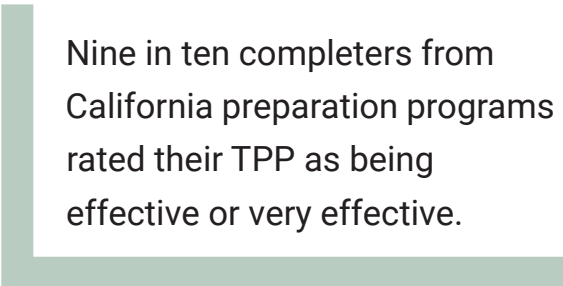
In terms of institution types, Black completers had different enrollment patterns than all other racial/ethnic groups. Only one third of Black completers attended TPPs in the public university systems compared to about half of all other racial/ethnic groups. Black completers had relatively higher enrollment in private universities and LEA-based programs.

Summary and Recommendations

Over the past decade, California has enacted numerous statewide policy changes to recruit more potential teacher candidates and to strengthen the preparedness of beginning teachers. These changes to preparation included updating the performance expectations for beginning teachers and revising the accreditation framework for teacher preparation programs (TPPs). The Commission on Teacher Credentialing (CTC) program completer survey was introduced as part of the new accreditation framework. This report summarizes patterns from the first 5 years of these survey results as well as 3 years of results from surveys asking cooperating teachers and employers hiring beginning teachers to rate the quality of preparation.

California's number of TPP completers applying for their preliminary credentials increased by 35% between 2016–17 and 2020–21, and there were notable increases in completers from both traditional, preservice programs and internship programs. Since 2018–19, the number of emergency-style permits has decreased, reversing a trend of annual increases. National TPP completion rates fell by 22% between 2012–13 and 2018–19, and California was one of only eight states with increasing numbers of completers during this time.⁸² The compositional shift in the race/ethnicity of completers—with the number of Latino/a completers more than doubling between 2016–17 and 2020–21—represented important progress toward increasing teacher diversity in the state.⁸³ This analysis examined how this growing and increasingly diverse group of TPP completers felt about their preparation experiences.

Overall, those completing TPPs in California rated their preparation positively. Nine in ten completers from California preparation programs rated their TPP as being effective or very effective. When asked about 19 specific teaching performance expectations (TPEs) aligned with the California Standards for the Teaching Profession, more than 80% of completers reported feeling well or very well prepared in all but two TPEs: 72% felt well prepared to work with families and 79% felt well prepared to support students' self-assessment. Surveys of employers (i.e., school and district leaders hiring new teachers) and cooperating teachers (i.e., classroom teachers supervising student teachers) from a smaller sample of programs largely corroborated the positive perceptions of completers, although both groups were slightly less positive about the effectiveness of preparation. All three groups were particularly positive about completers' preparation to create and maintain effective learning environments.



Nine in ten completers from California preparation programs rated their TPP as being effective or very effective.

Among the TPEs included on completer, cooperating teacher, and employer surveys, all three groups rated preparation relatively lower than most other areas for addressing the learning needs of English learners and students with disabilities.

Although 80% of completers felt well prepared in these areas, about 60% of cooperating teachers and about half of employers thought the programs they reviewed prepared teachers well or very well for these tasks. In California, 18% of students are identified as English learners,⁸⁴ 40% live in families where a language other than English is spoken at home, and approximately 12% of students receive special education services.⁸⁵ Given the importance of creating an inclusive classroom, these results indicate that some TPPs across the state may need to do more to ensure that all teacher candidates are prepared to work with English learners and students with disabilities.

Completers receiving teaching credentials to teach elementary students (i.e., multiple subject credentials) or students with disabilities (i.e., education specialists) reported having substantial preparation to teach English language arts (ELA) and math. More than 75% of completers reported that their program had “spent time discussing or doing” each element of teaching reading, writing, and math. Completers receiving education specialist credentials, especially those in intern programs or completing their preparation while teaching on an emergency-style permit, were the least likely to report more extensive opportunities to learn about teaching reading, writing, and math. Importantly, these opportunities to learn about teaching reading, writing, and math were significantly associated with overall perceptions of preparedness.

Overall, completers participating in student teaching or residencies had higher ratings, on average, of their TPP and level of preparedness than those completing intern programs or completing their preparation while working on an emergency-style permit. The analysis of residency completers—using the 2020–21 data—also indicated that residents were more likely to report intensive clinical experiences and support than student teachers. Clinical experiences varied considerably across the state, and certain aspects of completers’ clinical experiences—especially the amount of clinical support—were also strongly related to completers’ and employers’ perceptions of preparation. Although the CTC requires that TPPs offer at least 600 hours of supervised clinical practice, a subset of student teachers/residents (about 43%) reported spending less than that during their student teaching placements. (The survey questions did not ask interns to estimate their hours of supervised clinical practice.)

Completers who reported having more communication about teaching from their TPP, more classroom observations, or more feedback from TPP staff were also much more likely to rate their preparation highly. Completers also had more positive perceptions of their preparation when they indicated that their cooperating/mentor teacher engaged in certain supportive behaviors, such as frequently observing their teaching, offering useful strategies and advice about teaching, and modeling effective practices. Finally, student teachers/residents who estimated spending more time in their clinical experience were also more likely to rate their preparation highly. These survey findings are aligned with decades of research emphasizing the importance of clinical experiences in effective teacher preparation.⁸⁶

However, not all completers reported having access to sustained and supportive preparation experiences associated with overall ratings of program effectiveness and feelings of preparedness. Access to certain types of preparation experiences varied by institution, credential type, and completer demographics. First, there was a subset of institutions with much lower ratings of preparation and more completers reporting limited clinical hours or less opportunity to learn about teaching reading, writing, and math. Second, participation in student teaching/residencies varied considerably by completer race/ethnicity, with Native American and Black completers much less likely to report participating in student teaching or residencies. Third, completers receiving an education specialist (i.e., special education) credential were much less likely to report participating in student teaching/residency compared to completers receiving multiple subject (i.e., elementary education) or single subject (i.e., secondary education) credentials. Even when education specialist completers did report participating in student teaching, they were more likely to report spending limited time in the classrooms of their cooperating teachers during supervised fieldwork.

Policy Considerations

The findings from this analysis of 5 years of teacher preparation program completer data suggest that California's recent policy changes to strengthen teacher preparation and increase the supply of well-prepared teachers may be paying off. An increasing number of new teachers are completing TPPs in California. These recent completers are increasing the racial/ethnic diversity of the state's teacher workforce and feel well prepared to enter the classroom. At the same time, the survey results suggest four steps that California policymakers and practitioners can take to further strengthen teacher preparation in the state.

1. Continue to expand and improve access to high-quality preparation experiences and pathways, especially for education specialists and for historically underserved candidates of color.

This study finds that the number of annual completers from California TPPs has been increasing since 2016–17, with a notable increase in the proportion of completers who identify as Latino/a. During this same time frame, the proportion of Asian/Pacific Islander completers slightly increased, while the proportion of Black and Native American completers stayed the same. These data suggest that recent state investments to address the teacher shortage—more than \$1.4 billion since 2016, including Golden State Teacher Grants, teacher residency grants, and the Classified School Employee Teacher Credentialing Program—are positively impacting the number and diversity of candidates entering and completing TPPs in the state.

However, despite these investments, not all completers reported having access to sustained and supportive clinical experiences. Participation in preservice clinical experiences (i.e., student teaching or residencies) varied widely by credential type,

with education specialist candidates more than twice as likely as other completers to have participated in internship programs or completed their preparation while working under an emergency-style permit. Participation in student teaching/residency also varied considerably by completer race/ethnicity. Prior research in California and nationally has found that teachers who engaged in preservice student teaching—rather than working as teacher of record while learning to teach—are more likely to stay in the profession.⁸⁷ Yet while two thirds of responding Latino/a and white completers and three quarters of Asian/Pacific Islander completers reported participating in student teaching/residencies, less than half (46%) of Black completers and 50% of Native American completers did so. This inequitable access to sustained and supportive clinical experiences suggests that additional action is required, particularly to provide access to preservice preparation for education specialists as well as historically underserved candidates of color.

- **Improve implementation of current state recruitment initiatives.**

One important barrier to many underserved candidates of color is the cost of preparation. For example, research on student debt finds that Black candidates borrow more than white candidates to pay for their higher education and, along with other candidates of color, are more likely to report that debt burdens impacted their educational choices.⁸⁸ Thus, a major state focus should be on **supporting strong implementation of the state’s recent investments that offset the cost of teacher preparation** for teacher candidates who commit to teaching in high-need schools—including Golden State Teacher Grants, teacher residency programs, and subsidies for classified staff to become teachers—which are diversifying and strengthening the teacher workforce.

For example, the California Student Aid Commission, working closely with the CTC and the California Department of Education (CDE) as well as higher education institutions, could increase efforts to encourage teacher candidates to apply for Golden State Teacher Grants and TPPs to support their candidates in accessing these scholarship funds. Along with TPPs, local education agencies (LEAs), and teacher associations, the CTC can continue to support strong uptake and implementation of teacher residencies—which provide stipends to residents—including through the launch of the newly funded statewide technical assistance center.

As it works to expand and improve access to high-quality preparation, California will want to keep an eye on the coherence of these different strategies so they complement, rather than compete with, each other. The state may also want to consider **a more robust recruitment and communication strategy** so that potential teacher candidates understand the full array of financial supports available to them as well as the different pathways into teaching and can afford to choose the pathway that is right for them.

- **Expand supports for teacher candidates and minority-serving institutions.** Additionally, California might consider **providing additional support to financially needy teacher candidates**—for example, by increasing the amount of the Golden State Teacher Grant available to financially needy teacher candidates above the current \$20,000 maximum, or by extending the existing Cal Grant extension for teacher candidates to include candidates who do not immediately enter teacher preparation after completing their undergraduate education.⁸⁹ Such additions would maintain the policy goal of preparing more teachers for California’s high-need schools while also making the profession more accessible to a wider range of people.

Although Proposition 209, the 2006 California ballot measure that prohibits state governmental institutions from considering race or ethnicity in public education, poses a barrier to affirmative action to increase the recruitment and retention of Black and Native American candidates, as well as other candidates of color, into TPPs, residencies and financial supports are aiding diversity in the workforce. State policymakers may want to consider the recommendations of the CDE’s Educator Diversity Advisory Group, which include developing a public awareness campaign for recruiting teachers of color and having CDE support a community of practice for LEAs to build their capacity to recruit, support, and retain teachers of color.⁹⁰ Additionally, California might consider **leveraging new federal funding under the Higher Education Act to expand teacher preparation programs at minority-serving institutions.** This includes the recently funded Augustus F. Hawkins Centers of Excellence Program, which is designed to support educator preparation at historically Black colleges and universities, Tribal colleges and universities, and other minority-serving institutions. Research indicates that these institutions are among the most important sources for preparing new teachers of color nationally.⁹¹

- **Expand access to residencies and other preservice programs for education specialists.** Differential access to sustained clinical preparation experiences is also a major concern for education specialist candidates. As noted above, completers receiving an education specialist (i.e., special education) credential were about half as likely to report participating in student teaching compared to completers receiving multiple subject (i.e., elementary education) or single subject (i.e., secondary education) credentials. Even when education specialist completers did report participating in student teaching, they were more likely to estimate that they spent limited time in the classroom of their cooperating teacher. About one fifth of education specialist completers who were student teachers estimated that they spent less than 300 hours in the classrooms of their cooperating teachers (compared to one tenth of multiple subject and single subject completers). Education specialist completers were also much less likely to have completed a TPP within the

public university system, with just one third of education specialist completers attending a TPP in the California State University (CSU) or University of California (UC) systems, compared to about half of all other completers.

One positive trend is that residencies appear to be making a difference in the entry pathways for education specialist candidates. In residency programs, LEAs and TPPs work in partnership to provide candidates the opportunity to work for the full school year under the guidance of an accomplished mentor while taking coursework integrated with their clinical practice and receiving financial supports during the residency. Data from the first 2 years of implementation of the residency grant program show that about half of new grant-funded residency programs were in special education, and that approximately 40% of residency program participants were enrolled in an education specialist program.⁹² In this study, survey results from 2020–21 indicated that education specialists who completed a residency were more likely to have intensive clinical experiences compared to those in traditional student teaching programs. For example, close to two thirds of education specialists completing residencies in 2020–21 reported spending more than 600 hours in their supervised fieldwork, compared to 43% of education specialists completing student teaching programs. These findings point to the importance of recent state policies to strengthen clinical practice opportunities, including the state’s \$670 million investment in teacher and school counselor residencies, and the importance of continued investment in residencies for education specialist completers.

- **Launch apprenticeships into teaching that support clinical training costs.** Finally, California might consider launching high-quality apprenticeships into teaching, particularly as a strategy to make teacher preparation more accessible to education specialists, candidates of color, and those from low-income families. When carefully structured, registered teacher apprenticeship programs can allow candidates to earn while they learn, receiving pay while they gain teaching skills under the supervision of a cooperating or mentor teacher and take coursework to earn their teaching credential—a model that is similar to a teacher residency.⁹³ Several states, including Tennessee, have recently leveraged both federal recovery funds and funds under the Workforce Innovation Opportunity Act to invest in teacher apprenticeship programs and expand the state’s Grow Your Own pathways into teaching. California already has successful apprenticeship models into early childhood education.⁹⁴ Both federal funds and state apprenticeship dollars could be used to also build apprenticeships into PreK–12 teaching in California.⁹⁵

2. Increase opportunities for teacher candidates to learn how to work with families and support the needs of English learners (ELs) and students with disabilities (SWDs) by deepening coursework and clinical learning opportunities, supporting TPPs in redesigning their programs, and expanding access to dual

credential programs. While those completing TPPs in California rate their preparation positively overall, survey results from completers, employers, and cooperating teachers highlighted that completers feel relatively less prepared to meet the instructional needs of English learners and students with disabilities. In California, English learners and students with disabilities also face some of the largest disparities in outcomes, as measured by state test scores and graduation rates.⁹⁶ In addition, completers—especially those preparing to teach in secondary schools—also rated themselves as relatively less prepared to work with families.

To address this gap, the state might consider providing grants to TPPs to redesign and better integrate their coursework and clinical experience so that their programs better prepare candidates to work with families and to serve the needs of ELs and SWDs. This is particularly important given the state’s revised teacher standards’ emphasis on creating inclusive educational environments and ensuring that multiple subject, single subject, and education specialist candidates all receive a “common trunk” of preparation. The CTC and teacher education networks can encourage the exchange of information and exemplars.

The state might also incentivize the creation or expansion of dual credential programs, in which candidates earn a dual credential or endorsement that provides additional, specialized preparation to meet the needs of ELs and/or SWDs (e.g., a multiple subject and education specialist credential; a single subject credential with a bilingual authorization).⁹⁷ Given the relatively low proportion of education specialists prepared in the CSU and UC systems, particular attention may be needed in growing dual credential programs within the public higher education system.

For example, the state could provide additional funding for the Integrated Teacher Education Program and create a priority for the creation or expansion of dual credential programs to support the growth of programs that lead to a Bachelor of Arts degree and teaching credential in 4 years. The state might also consider a similar grant program for the creation of post-BA dual credential programs. California has some successful models of dual credential programs on which to build, such as California State University, Long Beach’s Urban Dual Credential program, which prepares candidates to teach both in the elementary general education classroom and in the elementary/middle school special education setting in either an undergraduate or a post-BA program.⁹⁸ Other states, like Tennessee, have explicitly incentivized the creation of dual credential programs by requiring that new Grow Your Own and apprenticeship programs offer a dual credential in order to be eligible for state grant funding.

Finally, while beyond the scope of this report, additional efforts may be needed to continue to build the knowledge and skills of teachers to work with families and serve English learners and students with disabilities *after* they graduate from their TPP and earn a preliminary credential. This might be done through teacher

induction programs for novice teachers, professional learning opportunities, and the National Board Certification Incentive Program, which offers certification in the areas of English as a New Language or Exceptional Needs.

- 3. Strengthen access to high-quality preparation by improving the quality of all pathways through implementation and enforcement of the CTC's new accreditation framework.** As described in the introduction, the CTC recently adopted a new accreditation framework along with new program standards for TPPs. TPPs had until 2017–18 to fully implement the new program standards for multiple and single subject completers, while new standards for education specialists were still in the process of being implemented during the last year of the survey data analyzed here. (Standards were adopted in 2018, but programs had until summer 2022 to implement them.) This report has identified a number of areas in which completers report uneven preparation experiences, suggesting that TPPs may not be consistently implementing all program standards.

A key finding of this study is that aspects of completers' clinical experiences vary substantially and are strongly related to their overall perceptions of their preparation, but not all completers reported sustained and supported clinical experiences. There are two specific aspects of clinical practice included in the program standards that survey results indicate may not be fully and consistently implemented by all TPPs. First, the CTC requires that all completers complete at least 600 hours of clinical practice over the course of their TPP. However, there is a subset of completers (about 11% of student teachers/residents per year) who estimate spending less than 300 hours in their student teaching placement, making it unlikely that these completers are receiving the full 600 hours of clinical practice. Notably, this proportion of completers did not change over the 5 years of the survey data, although programs for multiple subject and single subject completers were asked to fully implement the new program standards by the 2017–18 year.

Second, the CTC program standards indicate that programs' clinical supervisors should be observing and evaluating candidates at least four times per quarter or six times per semester. In the survey, about one fifth of completers reported that TPP faculty or supervisors observed their classroom or provided feedback on their classroom instruction five times or fewer over the course of their preparation. This lack of clinical support was more common at the lowest-rated TPPs. Differences in survey responses about clinical support across TPPs indicate that structural differences in how TPPs organize clinical support may mean that completers at some TPPs are systemically receiving less sustained clinical practice and less frequent support. Program-level decisions, such as the hiring, training, and assigning the caseload of clinical supervisors, may influence the quantity and quality of support provided to teacher candidates.

Another key finding of this report is that opportunities to learn English language arts (ELA) and math foundations were strongly associated with overall perceptions of preparation for both multiple subject completers (i.e., elementary teachers) and education specialist completers (i.e., special education teachers). There was a subset of completers who reported little opportunity to learn about teaching reading and writing (about 12% of all completers) and math teaching (about 18% of all completers), and these completers had much lower average perceptions of their preparation. Interns and education specialist completers were more likely to report this limited opportunity. This was especially true at the two lowest-rated programs—which were LEA-based intern programs—where a substantially higher percentage of completers reported limited access to ELA and math foundations. The CTC’s newly adopted literacy standards may provide additional guidance for TPPs in how to organize coursework and clinical practice related to teaching reading and writing. Existing TPPs must implement these new standards by the 2024–25 school year.

These findings overall suggest a need for continued efforts to strengthen implementation and enforcement of the CTC’s new accreditation framework. In cases when institution-level survey results show that a substantial proportion of completers are reporting limited clinical hours or support, that institution could be flagged for further review, including potentially a more intensive and/or off-cycle site visit, and receive support to improve their clinical experiences. If they do not improve, their accreditation status could be reconsidered. Similarly, when overall program ratings by completers, cooperating teachers, or employers are much lower than state averages, that program could be flagged for further review.

Differential access to high-quality clinical experiences for education specialist candidates suggests a need for continued support for education specialist programs in aligning to the new program standards, teaching performance expectations, and accreditation framework, particularly given that new program standards and teaching expectations for the education specialist credential were not approved until 2018 and did not take effect until the summer/fall of 2022.⁹⁹ Future years of program completer survey data will be extremely useful for tracking whether education specialists report improved access to sustained clinical experiences and greater opportunities to learn ELA and math foundations in years following full implementation of the new standards.

- 4. Support TPPs in using their survey data for continuous improvement.** As this study shows, much can be learned from statewide and institution-level completer, employer, and cooperating teacher survey data. These data—along with other metrics of program effectiveness—can be used to support decision-making and continuous improvement efforts in TPPs. Findings from this study show key differences in access to high-quality clinical practice opportunities, as well as to opportunities to learn about teaching reading, writing, and math.

As noted above in Recommendation 3, survey data can be better used as part of the program accreditation process to identify struggling programs, which is likely to affect a small subset of TPPs. Through this study, at the request of the CTC, we have made institution-level data files available to CTC staff that highlight programs lagging behind in certain indicators (e.g., limited clinical hours or low clinical support). However, survey data are also a key tool that *all* TPPs can use at the program and institution levels to support continuous improvement. The CTC currently provides all programs with at least 10 responding completers with their annual survey results as part of the accreditation dashboard.

Programs should be encouraged and supported to reflect on and use these data to guide improvements, including, where needed, changes to course sequences, syllabi, instruction, supervision and feedback, and clinical experiences. Because data literacy at TPPs varies considerably, many TPPs may need some support to use these data well. The CTC can provide some of this support through the agency's technical assistance offerings. Other institutions may be better positioned to offer technical assistance in using survey and other data to support improvement because they do not have an enforcement role as the CTC does. These include the CSU system, UC Office of the President, Association of Independent California Colleges and Universities, California Council on Teacher Education, and others. CSU has a long history of using survey data to inform programmatic improvement through its Educator Quality (EdQ) Center.¹⁰⁰ EdQ's DataView Dashboard—which is accessible to faculty and staff at CSU TPPs—offers a valuable example of how data tools can be used to visualize and analyze internal data to support improvement.¹⁰¹ These dashboards include completer and employer survey data along with other key metrics, like employment and retention measures, completion trends, and candidate demographics.

At the local level, there are also strong models of regional partnerships between districts and institutions of higher education (IHEs) that are focused on using data to support improvement, including more granular district- and program-level data shared through memoranda of understanding. For example, since 2010, the L.A. Compact Institutions of Higher Education Collaborative and Los Angeles Unified School District (LAUSD) have come together in the Los Angeles Educator Pathways Partnership to use data to better prepare and retain effective educators in LAUSD.¹⁰² In the past, philanthropy has been key to spurring these kinds of continuous improvement efforts and could play an important role in helping programs use their survey data effectively. Such external support may be particularly useful to help smaller IHE- and LEA-based programs use these data—and other metrics of program effectiveness—to guide continuous improvement efforts.

Implications for Other States

California's recent efforts to strengthen its teacher preparation systems offer a valuable example of an aligned and strategic set of policy changes designed to better prepare future teachers to meet the needs of California's nearly 6 million students. Key changes included:

- revising program standards and teaching performance expectations so that candidates are more explicitly prepared to teach the whole child—standards that, unlike in some states, apply equally to student teaching and internship programs;
- updating its teaching performance assessment to align with the new standards;
- revising its accreditation processes to be more performance-oriented;
- implementing candidate, employer, and cooperating teacher surveys; and
- making substantial investments in the teacher pipeline to address significant teacher shortages—including through service scholarships, teacher residencies, and a Grow Your Own classified staff teacher training program.

California's development of program completer surveys, in particular, may be useful to other states seeking to integrate survey data into their TPP approval processes. As of 2015, 33 states reported that they used surveys of program completers to evaluate at least some of the state's TPPs.¹⁰³ Both national TPP accreditors—the Council for the Accreditation of Educator Preparation (CAEP) and the Association for Advancing Quality in Educator Preparation (AAQEP)—suggest using surveys from multiple groups (i.e., program completers, cooperating teacher, employers) as one method to gauge program effectiveness.¹⁰⁴ Surveys can offer a flexible and relatively low-cost way to track perceptions about the quality of teacher preparation. California's approach offers specific lessons for states that are looking to implement or update statewide survey systems to capture perceptions of TPP completers, cooperating teachers, or employers:

- **Integrating completer surveys into the state's teacher licensure process:** The program completer surveys have been administered as part of a program completer's application to receive their preliminary credential. Because the survey has been built into this online application process, survey response rates have been high across all years of data collection. These high response rates help ensure that survey respondents are more representative of all completers in the state and of the completers for individual TPPs. Both national accreditors have recognized the logistical challenges facing individual TPPs in administering completer surveys and the importance of representative survey samples for using survey data to inform accreditation and program improvement.¹⁰⁵ California's approach offers a valuable model for how to administer the survey in a way that increases survey response rates and representativeness.

- **Aligning surveys to statewide standards for teaching:** The CTC surveys ask that completers, cooperating teachers, and employers gauge completers' preparation on aspects of teaching practice aligned with statewide teaching standards. The survey questions were directly developed from California's teaching performance expectations, which outline the knowledge, skills, and abilities that beginning teachers should have the opportunity to learn during their preparation programs. TPEs are aligned to teaching performance assessments that teacher candidates must pass to get their preliminary credentials, as well as the California Standards for the Teaching Profession. This alignment between surveys, performance assessments, TPP standards, and statewide standards for teacher preparation and teaching help focus conversations about accreditation and program improvement by providing a common language and shared expectations about teaching.¹⁰⁶
- **Administering surveys to all completers in both "traditional" and "alternative" programs:** Unlike those in many states, California's program standards for teacher preparation are the same for both traditional preservice programs and alternative internship programs. Many states have different program approval standards and processes for traditional and alternative preparation programs, and states are less likely to collect performance- or outcomes-based measures of program effectiveness (like completer or employer surveys) for alternative programs.¹⁰⁷ Since the CTC surveys are administered to all program completers, survey results can be disaggregated by clinical pathway. As shown in this analysis, such disaggregation creates a clearer picture of who has access to different clinical pathways and how preparation experiences vary across pathways.
- **Building statewide capacity for data use by offering results in multiple forms:** State agencies are particularly well positioned to administer surveys about TPP effectiveness. In comparison to individual TPPs, state agencies often have more robust systems to identify who should be surveyed (e.g., licensure databases that include program completers being recommended for licensure, internal databases tracking school or district leaders who would hire beginning teachers), develop survey questions aligned with teacher preparation standards, administer surveys on a broad scale, and develop systems to analyze and display survey results.¹⁰⁸ The CTC's public-facing dashboard shows statewide survey results for all completer surveys, and its internal accreditation database includes program-specific results that are available to agency staff and TPP faculty and staff. These investments in data infrastructure make it more possible for survey data to be useful for both accreditation and continuous improvement purposes. California's model offers a clear and coherent approach to integrating surveys into statewide teacher preparation systems.

Conclusion

High-quality teacher preparation is a cornerstone for building a stable and effective teacher workforce. California's historic investments in building its teacher pipeline and strengthening teacher preparation, totaling more than \$1.4 billion since 2016, appear to be paying off. The number of TPP completers has been increasing statewide, and the majority of completers, cooperating teachers working with student teachers, and employers hiring beginning teachers rated preparation positively. These perceptions of preparedness are related to aspects of completers' clinical experiences, especially the amount of clinical support, observations, and instructional feedback reported by completers. However, access to sustained and supported clinical experiences varies across the state, with certain types of completers and completers in certain TPPs reporting much less access. These findings highlight how California can continue to invest in high-leverage policies and programs to increase access to high-quality preparation and offer an example for other states of how to integrate statewide surveys into their approach to assessing and strengthening teacher preparation programs.

Appendix A: Survey Data

Table A1. Descriptive Statistics of Teacher Preparation Program Completer Survey Sample by Year

Completer characteristic	All years		2016–17		2017–18		2018–19		2019–20		2020–21		% change 2016–17 to 2020–21
	N	%	N	%	N	%	N	%	N	%	N	%	%
All completers	61,175	100%	10,200	100%	11,534	100%	11,601	100%	13,897	100%	13,943	100%	37%
By credential type													
Preliminary Multiple Subject	27,293	45%	4,338	43%	5,168	45%	5,158	44%	6,325	46%	6,304	45%	45%
Preliminary Single Subject	21,843	36%	3,802	37%	4,271	37%	4,269	37%	4,708	34%	4,793	34%	26%
Preliminary Education Specialist	12,039	20%	2,060	20%	2,095	18%	2,174	19%	2,864	21%	2,846	20%	38%
By institution type													
California State University system (CSU)	25,192	41%	4,045	40%	4,804	42%	4,720	41%	5,366	39%	6,257	45%	55%
Local education agencies (LEA)	2,760	5%	430	4%	440	4%	541	5%	698	5%	651	5%	51%
Private, nonprofit IHEs	27,558	45%	4,646	46%	5,205	45%	5,298	46%	6,545	47%	5,864	42%	26%
Private, for-profit IHEs	1,770	3%	233	2%	318	3%	311	3%	456	3%	452	3%	94%
University of California system (UC)	3,809	6%	846	8%	767	7%	731	6%	780	6%	685	5%	-19%
By completer demographics													
Female	37,974	62%	6,186	61%	7,192	62%	6,993	60%	8,281	60%	9,322	67%	51%
Male	13,605	22%	2,243	22%	2,554	22%	2,456	21%	3,099	22%	3,253	23%	45%
Nonbinary	260	<1%	N/A	N/A	N/A	N/A	116	1%	54	<1%	90	1%	–
Missing gender identity	9,336	15%	1,771	17%	1,788	16%	2,036	18%	2,463	18%	1,278	9%	-28%
Asian or Pacific Islander	4,823	8%	781	8%	869	8%	902	8%	1,071	8%	1,200	9%	54%
Black	1,486	2%	259	3%	271	2%	234	2%	353	3%	369	3%	42%
Latino/a of any race	18,423	30%	2,492	24%	3,120	27%	3,197	28%	4,322	31%	5,292	38%	112%
Multiracial	2,416	4%	401	4%	505	4%	448	4%	542	4%	520	4%	30%
Native American	128	<1%	27	<1%	33	<1%	16	<1%	29	<1%	23	<1%	-15%
White	24,871	41%	4,513	44%	4,980	43%	4,743	41%	5,194	37%	5,441	39%	21%
Missing racial/ethnic identity	9,028	15%	1,727	17%	1,756	15%	2,061	18%	2,386	17%	1,098	8%	-36%

Completer characteristic	All years		2016–17		2017–18		2018–19		2019–20		2020–21		% change 2016–17 to 2020–21
	N	%	N	%	N	%	N	%	N	%	N	%	%
By clinical pathway (self-reported)													
Student teaching/residency	37,298	61%	6,162	60%	7,081	61%	6,672	58%	7,964	57%	9,419	68%	53%
Internship	15,114	25%	2,402	24%	2,816	24%	2,960	26%	3,616	26%	3,320	24%	38%
Emergency-style permit only	2,239	4%	321	3%	407	4%	418	4%	496	4%	597	4%	86%
Missing clinical pathway	6,524	11%	1,315	13%	1,230	11%	1,551	13%	1,821	13%	607	4%	-54%
By student teaching hours (self-reported)													
For student teachers/residents only: <i>“Approximately how much time did you spend in student teaching (in the classroom of a cooperating teacher) as part of your supervised fieldwork?”</i>													
Less than 100 hours	502	1%	77	1%	88	1%	101	2%	106	1%	130	1%	69%
100–299 hours	3,819	10%	656	11%	688	10%	684	10%	832	10%	959	10%	46%
300–599 hours	11,709	31%	1,996	32%	2,128	30%	2,010	30%	2,506	31%	3,069	33%	54%
600–799 hours	12,428	33%	1,697	28%	2,251	32%	2,110	32%	2,961	37%	3,409	36%	101%
800 hours or more	7,644	20%	1,599	26%	1,760	25%	1,508	23%	1,299	16%	1,478	16%	-8%
Does not apply	415	1%	56	1%	71	1%	74	1%	75	1%	139	1%	148%
Missing hours	781	2%	81	1%	95	1%	185	3%	185	2%	235	2%	190%

Note: This table only includes program completers in the Commission on Teacher Credentialing program completer survey sample. The CTC surveys updated the gender categories on the survey in 2018–19 to add nonbinary as an option. N/A is used in the years prior to this change. Student teaching hours are reported only for completers who self-identified as participating in student teaching or a residency program.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A2. Overall Perception of Program Effectiveness by Credential, Clinical Pathway, and Institution Type

Survey question and responses	All	Credential type			Clinical pathway			Institution type				
		Multi. Subject	Single Subject	Educ. Specialist	Student teacher or resident	Intern	Emer. style permit	CSU	LEA	Private/nonprofit	Private/for-profit	UC
Overall, how effective was your teacher preparation program at developing the skills or tools you needed to become a teacher?												
Not at all effective	1%	1%	1%	1%	1%	1%	2%	1%	1%	1%	1%	0%
Somewhat effective	9%	9%	10%	9%	8%	12%	14%	12%	9%	7%	10%	4%
Effective	37%	37%	37%	36%	36%	39%	37%	39%	38%	35%	38%	31%
Very effective	53%	54%	52%	54%	56%	48%	47%	48%	53%	58%	51%	64%
Teaching performance expectations (TPEs): Percent of completers reporting they were “well” or “very well” prepared for each TPE												
Standard 1: Engaging and supporting all students in learning												
Use knowledge of students’ strengths and prior experiences to engage them in learning	87%	89%	84%	87%	89%	84%	82%	85%	86%	89%	82%	93%
Engage students in inquiry, problem-solving, and reflection to promote their critical thinking	85%	87%	83%	83%	87%	82%	79%	81%	84%	88%	83%	93%
Connect classroom learning to the real world	85%	87%	82%	85%	87%	82%	79%	82%	84%	87%	82%	90%
Meet instructional needs of English learners	81%	83%	78%	81%	82%	80%	77%	76%	84%	85%	83%	85%
Identify and address special learning needs with appropriate teaching strategies	80%	79%	78%	89%	80%	82%	78%	74%	86%	85%	82%	81%
Standard 2: Creating and maintaining effective environments for student learning												
Establish and maintain a safe and respectful learning environment for all students	90%	92%	88%	90%	92%	88%	84%	88%	90%	92%	87%	94%
Create a productive learning environment with high expectations for all students	88%	90%	86%	88%	90%	86%	83%	85%	88%	91%	85%	94%
Engage students in cooperative group work as well as independent learning	86%	88%	85%	86%	89%	83%	80%	83%	86%	89%	84%	92%

Survey question and responses	All	Credential type			Clinical pathway			Institution type				
		Multi. Subject	Single Subject	Educ. Specialist	Student teacher or resident	Intern	Emer. style permit	CSU	LEA	Private/nonprofit	Private/for-profit	UC
Standard 3: Understanding and organizing subject matter for student learning												
Use effective instructional strategies to teach specific subject matter and skills	85%	87%	83%	84%	88%	81%	79%	83%	83%	87%	83%	91%
Select, adapt, and develop materials/resources/tech to make subject matter accessible to all	83%	84%	81%	84%	85%	80%	79%	79%	83%	87%	82%	89%
Develop curriculum to teach content standards effectively	82%	84%	80%	79%	84%	77%	75%	80%	78%	83%	80%	85%
Standard 4: Planning instruction and designing learning experiences for all students												
Plan instruction based on students' prior knowledge/language/culture/development	86%	88%	83%	86%	88%	83%	81%	84%	85%	88%	83%	90%
Plan/adapt instruction with appropriate strategies/resources/tech to meet the learning needs of all	86%	88%	84%	86%	88%	83%	80%	84%	85%	88%	84%	90%
Standard 5: Assessing students for learning												
Give productive feedback to students to guide their learning	84%	85%	82%	84%	85%	80%	78%	81%	82%	86%	82%	87%
Develop/use assessment data to establish learning goals and to plan/modify instruction	82%	82%	79%	84%	83%	80%	77%	77%	83%	85%	83%	86%
Involve all students in self-assessment, goal setting, and monitoring progress	79%	80%	77%	81%	80%	77%	76%	76%	78%	82%	79%	79%
Standard 6: Developing as a professional educator												
Evaluate the effects of your actions on student learning and modify plans accordingly	84%	85%	83%	86%	86%	82%	78%	80%	85%	88%	83%	90%
Work with families to better understand students and to support their learning	72%	74%	65%	82%	71%	74%	71%	67%	79%	77%	72%	70%
Work with colleagues to improve instruction	82%	82%	79%	85%	83%	80%	77%	78%	85%	85%	80%	87%

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A3. Comparing Completer, Cooperating Teacher, and Employer Perceptions of Preparation in Teaching Performance Expectations (2018–19 to 2020–21 only)

Percent selecting “well” or “very well” for each teaching performance expectation	All completers	Student teachers only	Cooperating teachers	Employers
Standard 1: Engaging and supporting all students in learning				
Connect classroom learning to the real world	85%	87%	76%	68%
Engage students in inquiry, problem-solving, and reflection to promote their critical thinking	85%	87%	72%	63%
Meet instructional needs of English learners	81%	82%	62%	53%
Identify and address special learning needs with appropriate teaching strategies	81%	80%	62%	53%
Standard 2: Creating and maintaining effective environments for student learning				
Establish and maintain a safe and respectful learning environment for all students	90%	92%	80%	71%
Create a productive learning environment with high expectations for all students	88%	90%	76%	67%
Standard 3: Understanding and organizing subject matter for student learning				
Use effective instructional strategies to teach specific subject matter and skills	85%	88%	74%	66%
Select, adapt, and develop materials/resources/tech to make subject matter accessible to all	84%	85%	73%	66%
Standard 4: Planning instruction and designing learning experiences for all students				
Plan instruction based on students’ prior knowledge/language/culture/development	86%	88%	68%	58%
Plan/adapt instruction with appropriate strategies/resources/tech to meet the learning needs of all	86%	88%	70%	61%
Standard 5: Assessing students for learning				
Involve all students in self-assessment, goal setting, and monitoring progress	80%	81%	58%	49%
Give productive feedback to students to guide their learning	84%	86%	67%	54%
Standard 6: Developing as a professional educator				
Evaluate the effects of your actions on student learning and modify plans accordingly	84%	86%	69%	58%
Work with colleagues to improve instruction	82%	83%	78%	72%

Note: Completers were asked, “How well did your teacher preparation program prepare you to do each of the following as a teacher?” Cooperating teachers were asked, “How well-prepared was your student teacher to do each of the following?” Employers were asked, “Compared to other beginning teachers with whom you have worked, how well-prepared are program completers to do each of the following as a beginning teacher?” We present results for all completers and for only those who self-report participating in student teaching because the cooperating teacher sample includes only IHEs with traditional programs that require student teaching (and does not include mentor teachers working with interns). Employers were asked to report on the preparation of all completers.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A4. Perceptions of Preparation by Program and Completer Characteristics

Completer characteristic	Panel A: Overall effectiveness	Panel B: Teaching performance expectations
	Overall, how effective was your teacher preparation program at developing the skills or tools you needed to become a teacher? % selecting effective/very effective	How well did your teacher preparation program prepare you to do each of the following as a teacher? Mean of all questions, 1–5 scale
All completers	90%	4.3
By credential type		
Preliminary Multiple Subject	91%	4.3
Preliminary Single Subject	89%	4.2
Preliminary Education Specialist	90%	4.3
By institution type		
California State University system (CSU)	87%	4.2
University of California system (UC)	95%	4.4
Private, nonprofit IHEs	93%	4.4
Private, for-profit IHEs	89%	4.3
Local education agencies (LEA)	90%	4.3
By completer demographics		
Female	91%	4.3
Male	89%	4.3
Nonbinary	76%	4.0
Missing gender identity	76%	4.2
Asian or Pacific Islander	89%	4.2
Black	90%	4.3
Latino/a of any race	92%	4.4
Multiracial	89%	4.3
Native American	89%	4.3
White	90%	4.3
Missing race/ethnicity	78%	4.2
By clinical pathway (self-reported)		
Student teaching/residency	92%	4.4
Internship	87%	4.3
Emergency-style permit only	84%	4.2
Missing clinical pathway	91%	4.2
By student teaching hours: Approximately how much time did you spend in student teaching (in the classroom of a cooperating teacher) as part of your supervised fieldwork?		
Less than 100 hours	81%	4.1
100–299 hours	89%	4.3
300–599 hours	92%	4.3
600–799 hours	93%	4.4
800 hours or more	93%	4.4

Completer characteristic	Panel A: Overall effectiveness	Panel B: Teaching performance expectations
	Overall, how effective was your teacher preparation program at developing the skills or tools you needed to become a teacher? <i>% selecting effective/very effective</i>	How well did your teacher preparation program prepare you to do each of the following as a teacher? <i>Mean of all questions, 1–5 scale</i>
By program communication: How often did preparation program faculty or staff communicate with you in person or by other means about your teaching practice?		
Less than once per month	56%	3.6
Once per month	79%	4.0
Twice per month	87%	4.2
Once per week	92%	4.3
2–3 times per week	96%	4.5
Daily	96%	4.6
By program feedback: How often did preparation program faculty or supervisors provide feedback during your clinical practice?		
Once or twice	71%	3.9
3–5 times	85%	4.1
6–10 times	90%	4.3
11–15 times	92%	4.4
16–20 times	94%	4.4
More than 20 times	95%	4.5
By program observation: How often did preparation program faculty or supervisors observe your classroom?		
Once or twice	74%	4.0
3–5 times	86%	4.2
6–10 times	90%	4.3
11–15 times	92%	4.4
16–20 times	94%	4.4
More than 20 times	95%	4.5

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A5. Regression Models Predicting Overall Feelings of Preparedness

Outcome: TPE scale (5-point scale)	Panel A: Student teachers/residents			Panel B: Interns			Panel C: All completers		
Predictor	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Program faculty communication (compared to <1 month)									
Once per month	0.29***	0.29***	0.29***	0.39***	0.38***	0.36***	0.32***	0.32***	0.31***
	(0.03)	(0.03)	(0.03)	(0.05)	(0.05)	(0.04)	(0.02)	(0.02)	(0.02)
Twice per month	0.40***	0.40***	0.38***	0.52***	0.50***	0.47***	0.44***	0.43***	0.41***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.05)	(0.02)	(0.02)	(0.03)
Once per week	0.51***	0.51***	0.48***	0.66***	0.63***	0.60***	0.56***	0.55***	0.52***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.02)	(0.02)	(0.03)
2–3 times per week	0.66***	0.66***	0.62***	0.81***	0.78***	0.75***	0.71***	0.70***	0.66***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.02)	(0.02)	(0.03)
Daily	0.70***	0.70***	0.65***	0.85***	0.82***	0.77***	0.75***	0.74***	0.69***
	(0.03)	(0.03)	(0.03)	(0.05)	(0.05)	(0.04)	(0.02)	(0.02)	(0.03)
Program faculty feedback (compared to once or twice)									
3–5 times	0.06*	0.07*	0.07*	0.15***	0.14***	0.17***	0.10***	0.10***	0.11***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)
6–10 times	0.13***	0.15***	0.14***	0.15***	0.16***	0.20***	0.15***	0.17***	0.18***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)	(0.02)	(0.02)	(0.03)
11–15 times	0.16***	0.17***	0.19***	0.18***	0.21***	0.25***	0.19***	0.21***	0.23***
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)	(0.02)	(0.02)	(0.03)
16–20 times	0.22***	0.22***	0.24***	0.20***	0.23***	0.28***	0.24***	0.25***	0.27***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.02)	(0.02)	(0.03)
More than 20 times	0.26***	0.26***	0.27***	0.26***	0.29***	0.35***	0.29***	0.30***	0.32***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.02)	(0.02)	(0.03)

Outcome: TPE scale (5-point scale)	Panel A: Student teachers/residents			Panel B: Interns			Panel C: All completers		
Predictor	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Cooperating/mentor teacher characteristics									
Number of supportive behaviors (Count, 0–8)	0.07***	0.07***	0.06***	0.06***	0.06***	0.06***	0.06***	0.06***	0.06***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Student teaching hours (compared to <100 hours)									
100–299 hours	0.05	0.06	0.05						
	(0.03)	(0.03)	(0.03)						
300–599 hours	0.09**	0.10**	0.08**						
	(0.03)	(0.03)	(0.03)						
600–799 hours	0.11***	0.12***	0.10**						
	(0.03)	(0.03)	(0.03)						
800 hours or more	0.13***	0.14***	0.14***						
	(0.03)	(0.03)	(0.03)						
Interns' assigned mentor observation (compared to 1–2)									
3–5 times				0.09**	0.09**	0.08*			
				(0.03)	(0.03)	(0.03)			
6–10 times				0.10***	0.09**	0.07**			
				(0.03)	(0.03)	(0.02)			
11–15 times				0.13***	0.12***	0.10***			
				(0.03)	(0.03)	(0.03)			
16–20 times				0.16***	0.15***	0.14***			
				(0.03)	(0.03)	(0.03)			
More than 20 times				0.15***	0.14***	0.11***			
				(0.03)	(0.03)	(0.03)			

Outcome: TPE scale (5-point scale)	Panel A: Student teachers/residents			Panel B: Interns			Panel C: All completers		
Predictor	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Credential type (compared to Multiple Subjects)									
Single Subject		-0.04*** (0.01)	-0.04** (0.01)		-0.09*** (0.01)	-0.09*** (0.02)		-0.05*** (0.01)	-0.05*** (0.01)
Education Specialist		0.08*** (0.01)	0.07*** (0.02)		0.07*** (0.01)	0.05*** (0.01)		0.08*** (0.01)	0.07*** (0.01)
Gender identity (compared to male/non-binary)									
Female		0.07*** (0.01)	0.07*** (0.01)		0.06*** (0.01)	0.06*** (0.01)		0.07*** (0.01)	0.07*** (0.01)
Race/ethnicity (compared to white)									
Asian or Pacific Islander		-0.06*** (0.01)	-0.04** (0.01)		-0.04 (0.02)	-0.02 (0.03)		-0.05*** (0.01)	-0.04** (0.01)
Black		0.04 (0.02)	0.04 (0.03)		0.04 (0.02)	0.06* (0.02)		0.04* (0.02)	0.04* (0.02)
Latino/a of any race		0.05*** (0.01)	0.06*** (0.01)		0.09*** (0.01)	0.10*** (0.01)		0.06*** (0.01)	0.08*** (0.01)
Multiracial		-0.00 (0.02)	0.00 (0.02)		-0.04 (0.03)	-0.03 (0.03)		-0.02 (0.01)	-0.01 (0.01)
Native American		0.03 (0.08)	0.03 (0.06)		0.06 (0.08)	0.07 (0.08)		0.06 (0.05)	0.07 (0.04)
Missing race/ethnicity		-0.13*** (0.03)	-0.09** (0.03)		-0.18** (0.07)	-0.16** (0.06)		-0.15*** (0.03)	-0.11*** (0.03)
Clinical pathway (compared to student teachers/residents)									
Interns								-0.04*** (0.01)	-0.05*** (0.01)
Emergency credential only								-0.05*** (0.02)	-0.06* (0.02)

Outcome: TPE scale (5-point scale)	Panel A: Student teachers/residents			Panel B: Interns			Panel C: All completers		
Predictor	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Year (compared to 2016–17)									
2018	-0.02 (0.01)	-0.02* (0.01)	-0.02 (0.01)	-0.03 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.02** (0.01)	-0.02** (0.01)	-0.02 (0.01)
2019	-0.06*** (0.01)	-0.07*** (0.01)	-0.06*** (0.02)	-0.05** (0.02)	-0.05** (0.02)	-0.04 (0.02)	-0.06*** (0.01)	-0.06*** (0.01)	-0.06** (0.02)
2020	-0.03** (0.01)	-0.04*** (0.01)	-0.03* (0.01)	-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.03*** (0.01)	-0.04*** (0.01)	-0.03* (0.01)
2021	-0.01 (0.01)	-0.02* (0.01)	-0.02 (0.02)	-0.02 (0.02)	-0.04* (0.02)	-0.02 (0.02)	-0.02* (0.01)	-0.03*** (0.01)	-0.02 (0.02)
Features of clinical preparation	X	X	X	X	X	X	X	X	X
Completer characteristics		X	X		X	X		X	X
Program fixed effects			X			X			X
Constant	3.16*** (0.05)	3.09*** (0.05)	3.13*** (0.05)	3.04*** (0.05)	2.99*** (0.05)	3.00*** (0.04)	3.21*** (0.03)	3.16*** (0.03)	3.18*** (0.04)
N	34,614	34,614	34,577	13,465	13,465	13,446	51,328	51,328	51,269
R-squared	0.141	0.151	0.140	0.186	0.204	0.191	0.159	0.171	0.159

Note: The outcome variable is an overall preparation measure that averages completers' responses to all teaching performance expectations questions on a 5-point scale (1 = Not at all; 5 = Very well). The mean for this measure is 4.35 for student teachers ($SD = 0.64$) and 4.25 for interns ($SD = 0.71$). All models include features of preparation and year indicators, Model 2 introduces completer demographics, and Model 3 includes institutional fixed effects to compare within institutions (institution-level covariates are no longer estimated in these models). All models use robust standard errors. The r-squared value represents the proportion of variance of the outcome variable explained by all predictors in the model.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A6. Correlations Between Employer Ratings, Cooperating Teacher Ratings, and Completer Preparation Experiences (Institutional Means)

Survey response	Correlation between employer ratings and student teacher clinical experiences		Correlation between employer ratings and intern clinical experiences		Correlation between cooperating teacher ratings and student teacher clinical experiences	
	Rho	N	Rho	N	Rho	N
Clinical experience metrics						
Student teachers with limited student teaching hours (percent of student teachers in each institution who estimated they spent less than 600 hours in clinical experience)	-0.21	61	N/A	N/A	-0.05	69
Completers with low program feedback (percent of student teachers/interns in each institution who estimated they received instruction feedback from their program five times or fewer)	-0.46*	61	-0.22	52	-0.36*	69
Opportunity to learn about teaching reading, writing, and math						
Little opportunity to learn about teaching reading and writing (percent of student teachers/interns in each institution who estimated they received little to no opportunity to learn about teaching reading and writing)	-0.30*	61	-0.12	51	-0.48*	69
Little opportunity to learn about teaching math (percent of student teachers/interns in each institution who estimated they received little to no opportunity to learn about teaching math)	-0.16	61	-0.06	51	-0.25*	69

Note: This analysis created institution-level averages based on perceptions of cooperating teachers and employers about overall program quality and then calculated the percent of student teachers or interns in each institution that indicated that they had limited clinical hours, low levels of program feedback, or little to no opportunity to learn about teaching reading, writing, and math. The correlations (Rho) were calculated across these institutional averages. Institutional averages are calculated across 3 years of data (2018–19 to 2020–21) and the sample for each correlation is restricted to institutions with at least five respondents of each type, and the number of institutions included in each correlation is indicated in the “N” column. Asterisks (*) indicate that the correlation was significantly different from 0 at the $p < 0.05$ level.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A7. Comparing Composition of Teacher Residents to Other Clinical Pathways (2020–21 Only)

Completer characteristic	Residency		Student teaching		Intern	
	N	%	N	%	N	%
All completers	1,226	100%	8,024	100%	3,320	100%
By credential type						
Preliminary Multiple Subject	641	52%	4,147	52%	952	29%
Preliminary Single Subject	401	33%	3,048	38%	929	28%
Preliminary Education Specialist	184	15%	829	10%	1,439	43%
By institution type						
CSU	886	72%	4,028	50%	964	29%
UC	12	1%	548	7%	<10	<1%
Private, nonprofit	289	24%	3,197	40%	1,665	50%
Private, for-profit	<10	<1%	201	3%	184	6%
LEA	38	3%	32	<1%	490	15%
By demographics						
Female	846	69%	5,691	73%	2,279	70%
Male	277	23%	1,899	24%	850	26%
Nonbinary	14	1%	48	1%	22	1%
Asian or Pacific Islander	136	11%	791	10%	207	6%
Black	30	2%	143	2%	161	5%
Latino/a of any race	524	43%	3,093	39%	1,332	40%
Multiracial	39	3%	326	4%	124	4%
Native American	<10	<1%	<10	<1%	13	<1%
White	434	35%	3,361	42%	1,368	41%

Note: This analysis only includes completers from 2020–21. Completers self-identified their clinical pathway and only the 2020–21 survey included “Resident for a full year of co-teaching with a residency mentor teacher while taking aligned coursework” as an option. Completers’ self-identification was compared to institutional-level data on program types, and this analysis only includes residents at institutions that reported a residency on the Commission on Teacher Credentialing accreditation dashboard or that received a residency grant as part of the Teacher Residency Grant Program. All percentages are column percentages, but not all categories add to 100% due to missing data.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A8. Overall Perceptions of Teacher Residents Compared to Other Pathways (2020–21 Only)

Survey question and responses	Residency		Student teaching		Intern	
	N	%	N	%	N	%
Overall, how effective was your teacher preparation program at developing the skills or tools you needed to become a teacher?						
Not at all effective	<10	1%	55	1%	29	1%
Somewhat effective	94	9%	651	9%	347	11%
Effective	405	37%	2,896	38%	1,254	39%
Very effective	594	54%	4,029	53%	1,588	49%
How often did preparation program faculty or staff communicate with you in person or by other means about your teaching practice?						
Less than once per month	37	3%	211	3%	96	3%
Once per month	104	9%	594	7%	295	9%
Twice per month	198	17%	1,395	18%	643	19%
Once per week	330	28%	2,888	36%	1,049	32%
2–3 times per week	355	30%	2,157	27%	1,068	32%
Daily	143	12%	726	9%	157	5%
How often did preparation program faculty or supervisors observe your classroom instruction?						
Once or twice	22	2%	196	2%	76	2%
3–5 times	124	11%	1,101	14%	456	14%
6–10 times	461	40%	3,992	51%	987	30%
11–15 times	308	27%	1,694	21%	736	23%
16–20 times	117	10%	570	7%	531	16%
More than 20 times	116	10%	331	4%	484	15%
How often did preparation program faculty or supervisors provide feedback during your clinical practice?						
Once or twice	27	2%	193	2%	74	2%
3–5 times	113	10%	1,045	13%	401	12%
6–10 times	414	36%	3,700	47%	946	29%
11–15 times	309	27%	1,726	22%	705	21%
16–20 times	150	13%	668	8%	574	17%
More than 20 times	144	12%	591	7%	586	18%
My cooperating teacher(s) and/or mentor teacher(s)...						
Frequently observed my teaching and met with me to offer feedback	1,101	92%	7,303	92%	2,413	76%
Helped me plan and organize curriculum materials	1,017	85%	6,777	86%	2,322	73%
Helped me reflect on my practice	1,052	87%	7,060	89%	2,686	84%
Helped me to solve teaching problems	1,024	85%	6,916	87%	2,548	80%
Modeled effective practices	1,057	88%	7,144	90%	2,292	72%
Offered useful strategies and advice about my teaching	1,105	92%	7,335	93%	2,778	87%
Was an excellent educator and a valuable role model	1,053	88%	7,107	90%	2,607	82%
Was knowledgeable about and able to provide support for field-based assignments	1,033	86%	7,022	89%	2,566	81%

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A9. Deeper Opportunities to Learn About Teaching Reading, Writing, and Math by Credential Type, Clinical Pathway, and Institution Type

Survey response	By credential type		By clinical pathway		By institution type				
	Multiple Subject	Educ. Specialist	Student teaching or residency	Intern or emer. style permit	CSU	UC	Private, nonprofit	Private, for-profit	LEA
Reading and writing: Percent of completers who indicated that they had “explored in some depth” or had an “extensive opportunity” to do each of the following									
Learn how to activate students’ prior knowledge	85%	78%	86%	78%	83%	90%	84%	81%	76%
Study state standards for reading/language arts	82%	72%	82%	74%	79%	86%	80%	77%	73%
Practice what you learned about teaching reading in your field experiences	81%	75%	81%	75%	79%	81%	79%	80%	73%
Plan and teach a guided reading lesson	79%	73%	80%	71%	79%	77%	77%	73%	68%
Listen to an individual child read aloud for the purpose of assessing his/her reading achievement	79%	71%	80%	70%	81%	75%	75%	71%	65%
Use student reading assessment results to address student needs and improve your teaching	79%	74%	79%	74%	78%	78%	77%	77%	70%
Learn ways to build student interest and motivation to read	77%	73%	78%	71%	76%	79%	76%	72%	71%
Learn ways to teach reading and writing to students at different stages or reading abilities	76%	72%	77%	70%	74%	78%	75%	73%	70%
Learn how to help students make predictions to improve comprehension	75%	68%	76%	67%	75%	74%	73%	69%	65%
Learn to teach students to organize their ideas prior to writing	75%	66%	76%	66%	74%	75%	71%	73%	63%
Study, critique, or adapt reading curriculum materials	73%	69%	74%	68%	71%	74%	73%	73%	67%
Learn ways to teach decoding skills	64%	65%	66%	62%	67%	63%	62%	58%	63%
Learn how to support older students in learning to read	59%	60%	60%	58%	61%	55%	59%	58%	57%

Survey response	By credential type		By clinical pathway		By institution type				
	Multiple Subject	Educ. Specialist	Student teaching or residency	Intern or emer. style permit	CSU	UC	Private, nonprofit	Private, for-profit	LEA
Mathematics: Percent of completers who indicated that they had “explored in some depth” or had an “extensive opportunity” to do each of the following									
Practice what you learned about teaching math in your field experience	79%	66%	79%	67%	77%	83%	74%	76%	64%
Study national or state standards for mathematics	76%	62%	76%	65%	73%	83%	72%	74%	64%
Adapt math lessons for students with diverse needs and learning styles	74%	67%	75%	66%	73%	80%	71%	75%	63%
Learn how to facilitate math learning for students in small groups	72%	63%	74%	62%	72%	77%	68%	72%	59%
Study, critique, or adapt math curriculum materials	70%	59%	71%	59%	68%	76%	65%	68%	57%
Use representations (e.g., geometric representation, graphs, number lines) to show explicitly why a procedure works	67%	53%	68%	53%	69%	75%	58%	61%	49%
Prove that a solution is valid or that a method works for all similar cases	65%	51%	66%	52%	66%	70%	57%	60%	48%
Review local district mathematics curriculum	64%	54%	64%	56%	61%	66%	61%	65%	55%
Learn typical difficulties students have with place value	61%	52%	62%	51%	62%	65%	56%	58%	48%
Learn typical difficulties students have with fractions	59%	49%	60%	49%	61%	66%	52%	54%	44%

Note: This analysis includes multiple subject and education specialist completers. Completers were asked, “In your teacher preparation program, how much opportunity did you have to do each of the following?” This table shows the percentages across subgroups who selected “in some depth” or “extensive opportunity.”

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A10. Regression Models Predicting Overall Feelings of Preparedness for Multiple Subject and Education Specialists

Predictor	Panel A: Reading and writing			Panel B: Math		
	Content	Practice	Standards	Content	Practice	Standards
Opportunity to learn scales						
Opportunity to learn reading/writing content and pedagogy	0.41***					
	(0.00)					
Opportunity to practice reading/writing teaching skills		0.35***				
		(0.00)				
Opportunity to study reading/writing standards and curriculum			0.33***			
			(0.00)			
Opportunity to learn math content and pedagogy				0.22***		
				(0.00)		
Opportunity to practice math teaching skills					0.28***	
					(0.00)	
Opportunity to study math standards and curriculum						0.24***
						(0.00)
Features of clinical preparation	X	X	X	X	X	X
Completer characteristics	X	X	X	X	X	X
Year indicators	X	X	X	X	X	X
Constant	2.02***	2.11***	2.21***	2.63***	2.40***	2.54***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
N	31,626	31,604	31,582	31,441	31,532	31,488
R-squared	0.401	0.356	0.363	0.293	0.340	0.321

Notes: This model only includes multiple subject and education specialist completers who responded to questions about their opportunity to learn about reading, writing, and math teaching. The outcome variable is an overall preparation measure that averages completers' responses to all teaching performance experiences questions on a 5-point scale (1 = Not at all; 5 = Very well). The predictor variables (English language arts and math teaching/content exposure scales) average completers' responses to the following questions asking about their opportunities to learn during their teacher preparation program. We created six scales based on a factor analysis described in the technical appendix. These scales include the following questions:

Learn ELA Content/Pedagogy: (1) Learn ways to teach decoding skills; (2) Learn ways to build student interest and motivation to read; (3) Learn how to help students make predictions to improve comprehension; (4) Learn how to support older students in learning to read; (5) Learn ways to teach reading and writing to students at different stages or reading levels; (6) Learn how to activate students' prior knowledge; (7) Learn to teach students to organize their ideas prior to writing

Practice ELA Teaching Skills: (1) Listen to an individual child read aloud for the purpose of assessing his/her reading; (2) Plan and teach a guided reading lesson; (3) Use student reading assessment results to address student needs and improve your teaching; (4) Practice what you learned about teaching reading in your field experiences

Study ELA Standards/Curriculum: (1) Study state standards for reading/language arts; (2) Study, critique, or adapt reading curriculum materials

Learn Math Content/Pedagogy: (1) Learn typical difficulties students have with place value; (2) Learn typical difficulties students have with fractions; (3) Use representations (e.g., geometric representation, graphs, number lines) to show explicitly why a procedure works; (4) Prove that a solution is valid or that a method works for all similar cases

Practice Math Teaching Skills: (1) Study, critique, or adapt math curriculum materials; (2) Learn how to facilitate math learning for students in small groups; (3) Adapt math lessons for students with diverse needs and learning styles; (4) Practice what you learned about teaching math in your field experience

Study Math Standards/Curriculum: (1) Study national or state standards for mathematics; (2) Review local district mathematics curriculum

All predictors are measured on a five-point scale. All models include features of clinical preparation, year indicators, and completer demographics (the equivalent of Model 2 in Panel C of Table A5). All models use robust standard errors. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A11. Comparing Lowest-Rated Programs to All Other Teacher Preparation Programs

Characteristic	Two lowest-rated programs	Difference is statistically significant	Next six lowest-rated programs	Difference is statistically significant	All other programs
Perceptions of Program Effectiveness					
Overall, how effective was your teacher preparation program at developing the skills or tools you needed to become a teacher?					
Percent rating "Not at all effective"	3%	*	3%	*	0%
Percent rating "Somewhat effective"	29%	*	17%	*	6%
Percent rating "Effective"	38%		42%	*	33%
Percent rating "Very effective"	30%	*	38%	*	60%
Average overall effectiveness rating (4-point scale)	3.0	*	3.2	*	3.5
Average TPE preparation rating (5-point scale)	3.9	*	4.1	*	4.4
Program characteristics					
Percent CSU	0%	*	67%		20%
Percent UC	0%	*	0%		10%
Percent private, nonprofit	0%	*	33%		49%
Percent private, for-profit	0%	*	0%		5%
Percent LEA	100%	*	0%		15%
Average number of completers per year	41		185		137
Percent of completers who self-identified as student teachers or residents	18%	*	60%		69%
Percent of completers who self-identified as interns	71%	*	34%		27%

Characteristic	Two lowest-rated programs	Difference is statistically significant	Next six lowest-rated programs	Difference is statistically significant	All other programs
Program Preparation Experiences					
Limited program communication (% of completers reporting TPP communication about their teaching practice once per month or less)	17%	*	19%	*	8%
Low program observation (% of completers reporting five observations or fewer from TPP faculty/supervisors)	18%		23%		15%
Low program feedback (% of completers reporting TPP faculty/supervisors providing feedback five times or fewer)	16%		24%		14%
Supportive traits of cooperating/mentor teacher (Average number of supportive traits identified by completers)	3.8	*	5.5		5.7
Little opportunity to learn about reading and writing (% of completers reporting little opportunity to learn about teaching reading and writing)	29%	*	12%		9%
Little opportunity to learn about math teaching (% of completers reporting little opportunity to learn about math teaching)	45%	*	18%		18%
Number of programs	2		6		93

Notes: Lowest-rated programs are identified based on the average rating of the program by completers across all survey years responding to the following question: “Overall, how effective was your teacher preparation program at developing the skills or tools you needed to become a teacher?” The two lowest-rated programs had ratings that are more than 2.5 standard deviations below the mean program rating for all teacher preparation programs (TPPs), while the next six lowest-rated TPPs had ratings that were 1.5–2 standard deviations below the mean program rating for all TPPs. TPPs were included in this analysis only if they had at least five completers respond to the Commission on Teacher Credentialing survey. The asterisks indicate the difference between that group of lowest-rated programs and all other programs is statistically significant. Two-sample t-tests and chi-square tests were used to determine whether there was a statistically significant difference between each lowest-rated group and all other programs.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A12. Preparation Experiences by Preliminary Credential Type

Preparation experience	Multiple Subject Completers (N = 27,293)		Single Subject Completers (N = 21,843)		Education Specialist (N = 12,039)	
	N	%	N	%	N	%
By institution type						
CSU	12,724	47%	8,638	40%	3,830	32%
UC	1,602	6%	2,087	10%	120	1%
Private, nonprofit	11,625	43%	9,695	44%	6,238	52%
Private, for-profit	625	2%	782	4%	363	3%
LEA	683	3%	610	3%	1,467	12%
By clinical pathway (self-reported)						
Student teaching/residency	18,830	69%	14,748	68%	3,720	31%
Internship	4,714	17%	4,546	21%	5,854	49%
Emergency-style permit only	915	3%	651	3%	673	6%
Missing clinical pathway	2,834	10%	1,898	9%	1,792	15%
By student teaching hours (self-reported)						
Less than 100 hours	222	1%	167	1%	113	3%
100–299 hours	1,611	9%	1,629	11%	579	16%
300–599 hours	5,804	31%	4,663	32%	1,242	33%
600–799 hours	6,667	35%	4,908	33%	853	23%
800 hours or more	3,953	21%	3,023	20%	668	18%
By program feedback: How often did preparation program faculty or supervisors provide feedback during your clinical practice?						
Once or twice	572	2%	426	2%	388	4%
3–5 times	3,498	14%	2,864	14%	2,150	21%
6–10 times	9,269	38%	8,642	44%	3,222	32%
11–15 times	5,204	22%	4,136	21%	1,816	18%
16–20 times	3,051	13%	1,970	10%	1,200	12%
More than 20 times	2,587	11%	1,764	9%	1,364	13%

Note: All percentages are column percentages but not all categories add to 100% due to missing data.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Table A13. Preparation Experiences by Race/Ethnicity

Preparation experience	Asian or Pacific Islander		Black		Latino/a of any race		Multiracial		Native American		White	
	N	%	N	%	N	%	N	%	N	%	N	%
By institution type												
CSU	2,271	47%	463	31%	9,181	50%	985	41%	58	45%	10,386	42%
UC	554	11%	44	3%	1,051	6%	188	8%	<10	**	1,291	5%
Private, nonprofit	1,712	36%	741	50%	6,898	37%	1,066	44%	56	44%	11,518	46%
Private, for-profit	98	2%	101	7%	383	2%	70	3%	<10	**	782	3%
LEA	184	4%	132	9%	889	5%	105	4%	<10	**	864	3%
By clinical pathway (self-reported)												
Student teaching/residency	3,712	77%	690	46%	12,212	66%	1,662	69%	64	50%	17,194	69%
Internship	956	20%	687	46%	5,308	29%	668	28%	57	45%	6,720	27%
Emergency-style permit	147	3%	108	7%	877	5%	83	3%	<10	**	918	4%
By student teaching hours (self-reported)												
Less than 100 hours	70	2%	12	2%	190	2%	47	1%	<10	**	484	1%
100–299 hours	469	13%	87	13%	1,380	11%	171	10%	<10	**	1,746	9%
300–599 hours	1,165	31%	207	30%	3,871	32%	547	32%	15	23%	5,679	32%
600–799 hours	1,222	33%	201	29%	4,012	33%	549	32%	20	31%	6,134	35%
800 hours or more	719	19%	156	23%	2,424	20%	418	23%	18	28%	4,087	21%
By program feedback: How often did preparation program faculty or supervisors provide feedback during your clinical practice?												
Once or twice	132	3%	51	3%	499	3%	57	2%	<10	**	566	2%
3–5 times	841	18%	244	17%	2,885	16%	323	13%	21	17%	3,727	15%
6–10 times	1,937	40%	502	34%	6,976	38%	955	40%	39	31%	9,854	40%

Preparation experience	Asian or Pacific Islander		Black		Latino/a of any race		Multiracial		Native American		White	
	N	%	N	%	N	%	N	%	N	%	N	%
11–15 times	957	20%	255	17%	3,702	20%	490	20%	22	17%	5,309	21%
16–20 times	467	10%	199	13%	2,092	11%	294	12%	22	17%	2,905	12%
More than 20 times	460	10%	225	15%	2,120	12%	285	12%	17	13%	2,394	10%

Notes: Race/ethnicity is self-reported on the Commission on Teacher Credentialing completer survey, so only completers who self-identified their race/ethnicity are included in this table. Across the 5 years of data, 15% of completers did not report race/ethnicity. Not all categories add to 100% due to missing data.

** Subgroup percentage suppressed due to small cell size.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Appendix B: Technical Analysis

Educator Supply Data

Although this analysis primarily focused on the program completer survey data (described in the following sections), we also included an analysis of the educator supply data published by the California Commission on Teacher Credentialing (CTC). These data include all new credentials and permits issued by the CTC annually and are not limited to those completing the program completer surveys. Table 1 shows the number of new preliminary teaching credentials issued annually by the CTC as reported by the annual educator supply dashboard.¹⁰⁹ Figure 1 shows the number of new preliminary teaching credentials issued annually to new teachers completing teacher preparation programs (TPPs) in California, along with the number of intern permits and emergency-style permits issued annually. Emergency-style permits include short-term staff permits, provisional intern permits, limited assignment teaching permits, and waivers. For credentials and permits issued from 2016–17 to 2020–21, we used data from the CTC’s annual educator supply dashboard. For 2012–13 to 2015–16, we used data published in the CTC’s annual teacher supply report from 2015–16.¹¹⁰

TPP Completer Survey Data and Response Rates

Since 2016, the CTC has surveyed completers of California teacher preparation programs who have been recommended for each type of preliminary teaching credential. California has three types of preliminary teaching credentials: (1) **multiple subject teachers** who are teaching multiple subjects, typically within elementary or middle schools, (2) **single subject teachers** who are teaching specific subjects, typically in middle or high schools, and (3) **education specialists** who are teaching students with disabilities at any grade level. Each type of preliminary credential had a slightly different survey, although most of the questions appeared on all three surveys.

The survey was designed to capture the perceptions of completers about their level of preparedness for teaching performance expectations (TPEs) aligned with the California Standards for the Teaching Profession. Multiple subject and education specialist completers were also asked the extent to which their programs focused on certain aspects of teaching English language arts and math. The survey asked all completers about their clinical experiences, including questions in which they self-reported the type of clinical pathway they had (student teaching, internship, taking coursework while teaching on an emergency-style permit) as well as questions about the frequency of communication, feedback, and observation from their preparation programs, their total number of student teaching hours, and their feedback on their cooperating or mentor teachers. Completers were also asked to self-identify their gender identity and racial/ethnic identity. Individual survey responses are connected to the institution that the completer attended, allowing us to explore variation across and within institutions.

The administration of the annual survey differs for completers from the California State University (CSU) system. For all other completers, the survey is embedded in the CTC

system for applying for their preliminary credential and completers must at least click on the survey to be able to complete their application for their preliminary credential. The CTC’s data system includes both those who answered survey questions (i.e., respondents) and those who applied for their preliminary credential but did not answer any survey questions (i.e., nonrespondents). Since CSU administers its own completer survey (which includes the CTC’s questions), CSU completers are redirected to the CSU survey, and the CSU’s data system does not track respondents and nonrespondents.

Across the 5 years of data collection (2016–17 to 2020–21), 59,140 completers from California’s TPPs responded to the survey. There are responses from completers from 107 different TPP programs. As previously noted, the survey administration varied for CSU completers versus completers from other institutions. This influences the ability to calculate response rates. For both sets of completers, completers are able to leave survey questions blank, so respondents are identified as any completer who responded to at least one nondemographic question. For all campuses outside of the CSU system, survey response rates can be directly calculated. We estimated the response rates for CSU completers based on the number of survey respondents and the number of new preliminary credentials issued to CSU completers as reported by the CTC’s Annual Teacher Supply report.

Table B1 includes the estimated and calculated response rates by institution type and year. Estimated annual response rates for the CSU system ranged from 70% to 85%, while annual response rates for all other completers ranged from 93% to 97%. Combining across all institutions, the estimated annual response rate was 84–90% overall. An estimated 75% of all completers finished all nondemographic survey questions. Among the non-CSU respondents, the response rates for individual survey questions vary from 84% to 95%. Field experience and demographic questions appear at the end of the survey and have relatively higher rates of missingness. These data limitations make it difficult to compare respondents to nonrespondents overall or for individual questions.

Table B1. Completer Survey Response Rates by Institution Type and Year

Institution type	2016–17	2017–18	2018–19	2019–20	2020–21
California State University system ^a	70%	81%	79%	85%	84%
Local education agencies	94%	93%	93%	97%	94%
Private, nonprofit IHEs	96%	96%	93%	95%	95%
Private, for-profit IHEs	97%	98%	95%	95%	95%
University of California system	97%	96%	91%	96%	94%

^a Response rates for CSU completers must be estimated based on the number of survey respondents and the number of new preliminary credentials issued to CSU completers as reported by the Commission on Teacher Credentialing’s Annual Teacher Supply report. Response rates for all other institutions are directly calculated. Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Cooperating Teacher and Employer Survey Data and Response Rates

Survey responses from cooperating teacher and employers are also included in this analysis. Since 2018–19, the CTC has fielded surveys for cooperating teachers who work with student teachers in California institutions of higher education (IHEs). The CTC requests that IHE-based TPPs send the annual survey to the program’s cooperating teachers. Across the 3 years (2018–19 to 2020–21), there are survey responses from 5,348 cooperating teachers reporting on 78 TPPs that have student teachers. Cooperating teachers are asked to report on all completers from a specific program that they have worked with during the past 5 years. Due to the survey collection approach, there are limited options to gauge the representativeness of this survey. On the cooperating teacher survey, 47% of responding cooperating teachers indicated that they worked with one student teacher over the past 5 years, 20% with two student teachers, 11% with three student teachers, 7% with four student teachers, and 14% with five or more student teachers. Given these numbers, we can roughly estimate that only about one fourth of cooperating teachers are represented in this analysis.

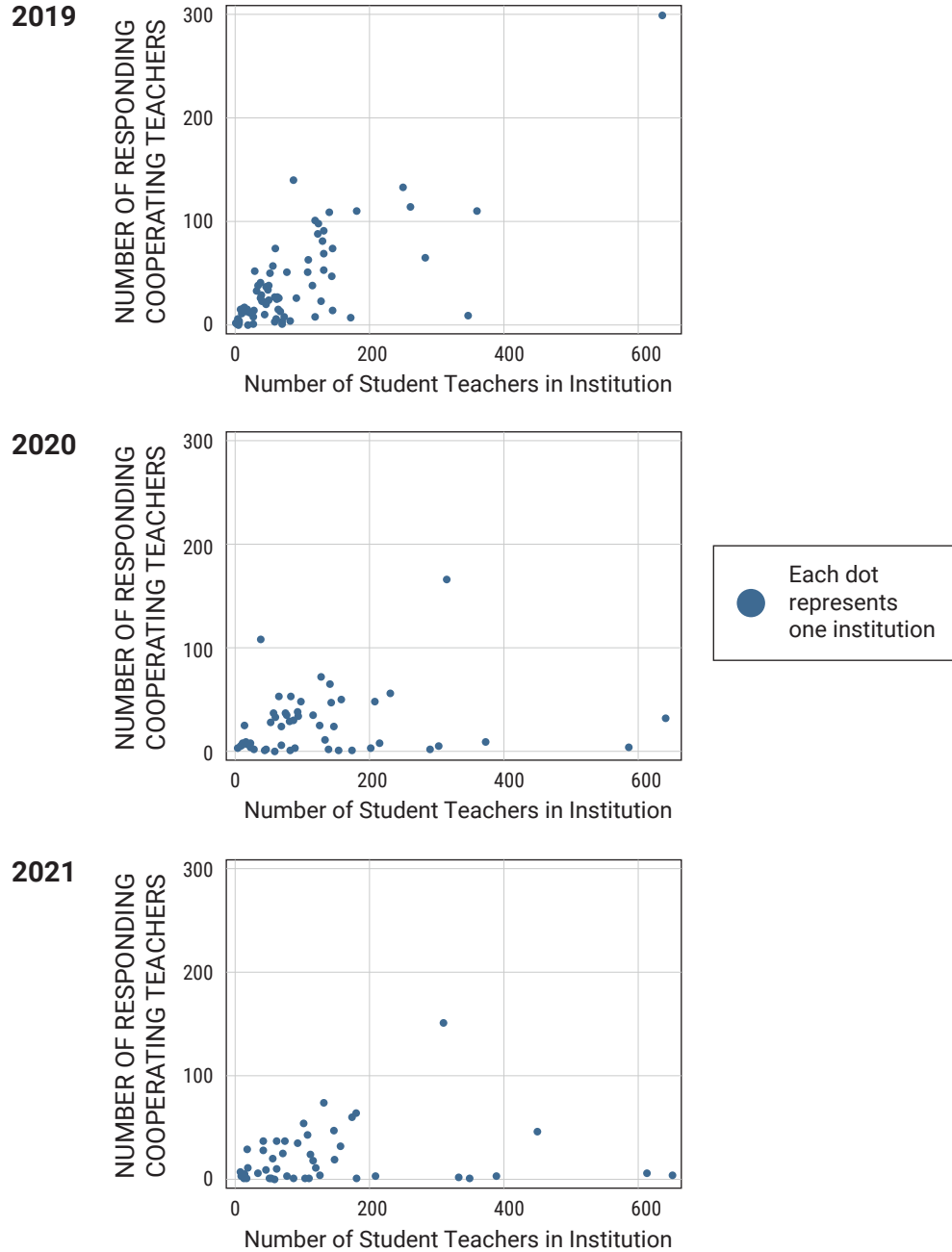
At the institution level, the number of student teachers and the number of responding cooperating teachers are only weakly correlated. Most notably, some large programs had only a small number of cooperating teachers complete surveys, especially in 2020 and 2021. Thus, the cooperating teacher responses for these large programs may not be representative. See Figure B1 for an illustration of these patterns. The number of respondents dropped in both 2020 and 2021, and these analyses combine responses across the 3 years.

Employer surveys are sent out annually to all school and district leaders in California public schools. Employers are asked to report on TPPs from which they hired at least two new teachers over the past 3–5 years. Between 2019 and 2021, 1,619 employers responded to the survey (reporting on 96 TPPs). Of these respondents, 75% identify as working in traditional public schools, 13% identify as working in charter schools, and 9% identify as working in district offices. Of the school-based respondents, 84% identify as principals. Response rates cannot be calculated for the employer survey because of the survey administration method used by the CTC. There were 27,631 administrators reported in California’s public schools for the 2018–19 school year, according to the California Department of Education’s staffing data, but it is difficult to estimate how many administrators fit the criteria for responding to the survey (i.e., having hired at least two new teachers from the same TPP within the past 3–5 years). It is likely that response rates are low, and respondents are likely not representatives of all potential employers. We encourage readers to interpret these findings with caution.

All cooperating teacher and employer responses can be connected to institutions but cannot be connected to individual completers or specific programs within institutions. Not all TPPs have cooperating teacher and/or employer responses. For certain analyses, we restrict our analysis only to institutions in which at least five completers, cooperating teachers, and/or employers have responded to the surveys. Of the 85 IHE-based institutions, there are 69 institutions with at least five completer and five cooperating teacher responses. Of all 107 TPPs, there are 65 institutions with at least five completer and at least five employer responses.

Figure B1. Comparing the Number of Responding Cooperating Teachers and Student Teachers

Relationship Between Number of Responding Student Teachers and Cooperating Teachers



Note: This figure is one way to examine representativeness of the cooperating teacher sample. If every cooperating teacher responded, we would expect a very high correlation (approaching 1) between the number of student teachers and the number of cooperating teacher respondents at the institution level. The correlation between these numbers is 0.77 for the 2019 data, but only 0.13 and 0.12 for the 2020 and 2021 data. It appears that cooperating teachers from large programs are particularly underrepresented in the 2020 and 2021 data.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Analytic Approach

The primary objective of this analysis is to explore the survey responses of TPP completers across the 5 years of survey data. For every survey question, we examined overall patterns as well as differences in responses across years and across completer and institutional characteristics. We also examined how responses varied across and within institutions as well as how completers' perceptions compared to the perceptions of cooperating teachers and employers. Finally, we examined predictors of overall perceptions of preparation using a set of regression models that accounted for completer and institutional characteristics as well as self-reported clinical experiences. In the following sections, we briefly describe how we created particular metrics from the survey questions to capture perceptions of preparation, completer characteristics, and institutional characteristics.

Perceptions of preparation

The CTC survey asks completers numerous questions to gauge their overall perceptions of their preparation, including a question asking them to rate overall program effectiveness (on a four-point scale) and their preparedness for specific TPEs (on a five-point scale). We sometimes collapsed responses to capture the percentage of completers who rated their program as “effective” or “very effective” or rated their level of preparation in each TPE as “well” or “very well.” We also used factor analysis to explore relationships among the TPEs asked about on the survey, and the factors largely follow the six domains of the California Standards for the Teaching Profession. The overall effectiveness rating and the perceptions of preparedness for TPEs are moderately to strongly correlated (correlations range from 0.51 to 0.79). Because of these high correlations, we often report on descriptive differences based on the “program effectiveness” question for simplicity. For certain analyses, we created a measure that averages completers' responses across all TPE questions.

Cooperating teachers and employers were also asked their perceptions of preparation. In terms of overall effectiveness, cooperating teachers were asked, “Overall, how effective do you believe the teacher preparation program was in assisting your student teacher to develop the skills and tools to be an effective teacher?” Employers were asked, “Overall, how well-prepared do you think this program's completers are as teachers?” Both cooperating teachers and employers were asked to rate preparation for the same set of 14 TPEs (completers were asked about 19 TPEs, so there were a few TPEs not included on the cooperating teacher and employer surveys). The wording of these TPE questions differed slightly for the three stakeholder groups. Completers were asked, “How well did your teacher preparation program prepare you to do each of the following as a teacher?” Cooperating teachers were asked, “How well-prepared was your student teacher to do each of the following?” Employers were asked, “Compared to other beginning teachers with whom you have worked, how well-prepared are program completers to do each of the following as a beginning teacher?”

Clinical pathway

Completers were asked to self-report their clinical pathway and could select more than one experience. For the first 4 years of the survey, completers could select from the following responses to describe their experiences: (1) “student teaching with a cooperating teacher,” (2) “teaching fellow or intern in a program where I served as teacher of record while taking courses for my credential,” and (3) “teaching on an emergency credential [PIP/ STP] while taking courses for my credential.” In 2021, the CTC added a response: “resident for a full year of co-teaching with a residency mentor teacher while taking aligned coursework.” For most of the analysis we created three categories: (1) student teaching or residency, (2) internship, and (3) only emergency-style permit.¹¹¹ Anyone who selected student teaching and/or residency was placed into the first category even if they also reported participating in an internship or working on an emergency-style permit (about 5% of completers selecting student teaching/resident also indicated that they had participated in an internship or worked on an emergency-style permit while completing their preparation). If a completer did not report student teaching or residency but did report serving as an intern, they were placed in the second category (about 13% of completers selecting internship also indicated that they had worked on an emergency-style permit while completing their preparation). Only completers who identified working on an emergency-style permit but did not select student teaching, internship, or residency were included in the final category. We did an additional analysis of just the 2020–21 data examining differences between student teaching and residencies. Overall, 11% of completers were missing clinical pathway either because they did not complete the survey or they skipped this particular question on the survey.

Since clinical pathway was self-reported, we also compared self-reported clinical pathway information to the institution-level information collected by the CTC. Not all TPPs offer internship programs, and the CTC maintains an annual list of programs approved to offer internship programs.¹¹² LEA-based programs are approved only to offer internships, but a small number of completers from those programs self-reported participating in student teaching or residency (about 8% of completers from LEA-based programs). Of the 14,979 respondents classified as interns, 99% attended TPPs with approved internship programs. For student teaching and internships, we used completers’ self-reported pathways and recognize that a small number of completers may have inaccurately reported their pathways.

Residency programs are relatively new, and the CTC does not approve residencies specifically, as it does with internship programs. For the 2020–21 survey data (the only year that completers could self-identify as a resident), we compared self-reported residency information to accreditation dashboard data provided by the CTC (in which TPPs can self-identify if they offer a residency) and the list of TPPs who have received residency grants.¹¹³ Of the 1,395 completers who self-identified as residents in 2020–21 data, 88% attended programs that reported offering a residency in the CTC accreditation dashboard or that received a residency grant. For analyses comparing residents to other clinical pathways in the 2020–21 data, we limited the analysis to this subset of residents ($N = 1,226$).

Clinical support

Completers were asked other questions about their clinical experiences, which were included in our analyses. First, completers were asked to estimate how many hours they spent in student teaching (in the classroom of a cooperating teacher) or as a teacher of record in their internship program. They also were asked to report the amount of communication about teaching, classroom observation, and instructional feedback offered by their preparation program. Interns were asked how many times their assigned mentor observed their classroom instruction and provided feedback. Finally, completers were asked whether their cooperating or mentor teachers engaged in certain supportive behaviors or had certain characteristics. When reporting on questions specific to student teachers/residents or interns, we restricted the analysis to just those completers who self-identified as participating in that clinical pathway (the survey asked every question to every completer, with a “Does not apply” answer choice).

Opportunities to learn about teaching reading, writing, and math

Multiple subject completers (i.e., elementary teachers) and education specialist completers (i.e., special education teachers) were asked the extent to which they had opportunities to learn content and pedagogy related to teaching reading, writing, and math. Program completers were asked, “In your teacher preparation program, how much opportunity did you have to do each of the following?” about a series of items related to reading, writing, and math (see Table B2 for individual survey items). These questions were adapted from a prior study of teacher preparation in New York City that found a relationship between certain opportunities and early career effectiveness.¹¹⁴

We created two distinct measures using these questions. The first approach created an overall measure for each subject area by averaging all responses (on a five-point scale, from “none” to “extensive opportunity”). Completers were categorized based on their average response across the 13 reading and writing items and the 10 math items. Completers who reported, on average, less than a 3 on the 1–5 scale were categorized as “little opportunity to learn content” (3 is the equivalent of “spent time discussing and doing” on the survey scale). Completers who averaged between 3 and 4 were classified as “moderate opportunity to learn” (4 is the equivalent of “explored in some depth” on the survey scale). Completers who averaged between 4 and 5 were classified as “deeper opportunity to learn.” Completers who reported all 5’s on each scale were classified as “extensive opportunity to learn all content.”

The second approach used factor analysis to identify specific elements of preparation in teaching reading, writing, and math. For each subject area, we created three separate measures that averaged the items that loaded onto each factor: (1) learning content and pedagogy, (2) practicing teaching skills, and (3) studying standards/curriculum. See Table B2 for the three factors for each subject area and the factor loadings for each individual survey item.

Table B2. Factor Analysis of Opportunities to Learn About Reading, Writing, and Math

Panel A: Reading and writing	Factor 1: Opportunity to learn content and pedagogy Eigenvalue = 6.97	Factor 2: Opportunity to practice teaching skills Eigenvalue = 6.92	Factor 3: Opportunity to study standards and curriculum Eigenvalue = 6.27
Learn ways to teach decoding skills	0.56		
Learn ways to build student interest and motivation to read	0.63		
Learn how to help students make predictions to improve comprehension	0.67		
Learn how to support older students in learning to read	0.68		
Learn ways to teach reading and writing to students at different stages or reading abilities	0.57		
Learn how to activate students' prior knowledge	0.34		
Learn to teach students to organize their ideas prior to writing		0.45	
Listen to an individual child read aloud for the purpose of assessing his/her reading achievement		0.63	
Plan and teach a guided reading lesson		0.63	
Use student reading assessment results to address student needs and improve your teaching		0.54	
Practice what you learned about teaching reading in your field experiences		0.40	
Study state standards for reading/language arts			0.64
Study, critique, or adapt reading curriculum materials			0.60

Panel B: Mathematics	Factor 1: Opportunity to learn content and pedagogy Eigenvalue = 5.99	Factor 2: Opportunity to practice teaching skills Eigenvalue = 5.83	Factor 3: Opportunity to study standards and curriculum Eigenvalue = 4.57
Learn typical difficulties students have with place value	0.73		
Learn typical difficulties students have with fractions	0.83		
Use representations (e.g., geometric representation, graphs, number lines) to show explicitly why a procedure works	0.74		
Prove that a solution is valid or that a method works for all similar cases	0.67		
Study, critique, or adapt math curriculum materials		0.49	
Learn how to facilitate math learning for students in small groups		0.78	

Panel B: Mathematics	Factor 1: Opportunity to learn content and pedagogy Eigenvalue = 5.99	Factor 2: Opportunity to practice teaching skills Eigenvalue = 5.83	Factor 3: Opportunity to study standards and curriculum Eigenvalue = 4.57
Adapt math lessons for students with diverse needs and learning styles		0.82	
Practice what you learned about teaching math in your field experience		0.62	
Study national or state standards for mathematics			0.45
Review local district mathematics curriculum			0.46

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Completer demographics

Completers were asked to self-report their gender identity and their racial/ethnic identity on the survey. For gender identity, completers could select female, male, or “decline to state” during the first 3 years of the survey. A nonbinary category was added in 2018–19. Overall, 15% of completers are missing gender identity because they did not complete the survey or they skipped this question on the survey. Across all years of the data, the same set of ethnicity and racial categories were used. Completers were asked whether they are Latino/Hispanic and then asked to select all that apply from a listing of 18 racial categories. We use these responses to create six racial/ethnic categories: (1) Asian or Pacific Islander, (2) Black, (3) Latino/a of any race, (4) multiracial, (5) Native American, and (6) white. Overall, 15% of completers are missing race/ethnicity because they did not complete the survey or they skipped these questions on the survey.

Institutional characteristics and averages

We categorize institutions into five types: (1) public universities belonging to the California State University system, (2) public universities belonging to the University of California system, (3) private/independent universities that are nonprofit, (4) private/independent universities that are for-profit, and (5) programs run by local education agencies (i.e., school districts, county offices of education, or charter management organizations). For certain analyses, we collapse the nonprofit and for-profit private/independent universities into one category.

We also examined institution-level results by averaging survey responses at the institution level as well as the institution-by-year, institution-by-credential, and institution-by-clinical-pathway levels. These averages helped us identify institutions that had lower ratings as well as examine survey questions with greater variation across institutions (see Figure 14 and Table A11). In these analyses, we restricted the sample to institutions that had at least five responding completers.

Predicting perceptions of preparation

As part of our analysis, we used a series of regression models to explore associations between many of the characteristics previously described and completers' overall perceptions of their preparedness. For this analysis, the outcome measure is an average of completers' perceptions about their level of preparation for every TPE asked about on the survey (measured on a 1–5 scale). Results are similar when we examine completers' responses to the overall effectiveness question. These regression models include the following types of predictors:

- estimated student teaching hours (student teachers only);
- frequency of preparation program communication and feedback on teaching;
- characteristics of cooperating or mentor teacher;
- frequency of mentor teacher observation (interns only); and
- opportunities to learn about reading, writing, and math teaching (multiple subject and education specialist completers only).

Our main models are presented in Table A5. These models include all credential types. We estimated separate regression models for teachers who completed student teaching or residency programs (Panel A) and those who completed an internship program (Panel B). We also included a combined model (Panel C) that includes clinical pathway as a predictor. Model 1 in each panel includes only preparation characteristics, Model 2 introduces completer characteristics (i.e., completer race/ethnicity and gender identity), and Model 3 includes institutional fixed effects to compare differences within an institution. All models include year indicators and use robust standard errors.

For multiple subject and education specialist completers, we estimate a separate set of models (in Table A10) that also include predictors capturing completers' opportunity to learn about teaching reading, writing, and math using six measures displayed in Table B2. Since these measures are moderately to strongly correlated ($r = 0.59$ to 0.85), we estimate the relationship between each measure and overall perceptions of preparedness using a separate model. All models include features of clinical preparation, year indicators, and completer demographics (the equivalent of Model 2 in Panel C of Table A6). All models use robust standard errors.

Comparing completer, cooperating teacher, and employer perceptions

We examined the extent to which completers' perceptions aligned with the perceptions of cooperating teachers and employers. We restricted this analysis to 2018–19, 2019–20, and 2020–21 survey results, since those were the 3 years the CTC administered the cooperating teacher and employer surveys. All results were aggregated across the 3 years. We first descriptively compared the patterns for the TPE questions asked on all three surveys (see Table A3 and Figures 7–8). For these analyses, we restricted the sample to TPPs in which there were at least five completer respondents and at least five cooperating teacher and/or employer respondents, but also re-ran the analysis with all respondents from each group. The patterns remain the same although the exact values change a small amount (the largest change is 1 percentage point).

Since the perceptions of completers, cooperating teachers, and employers can be tied to specific institutions, we also examined whether institutions were being rated similarly by each group. We first created institutional averages for each question for completers, cooperating teachers, and employers connected to that institution (restricted to institutions that had at least five respondents for each group), and then examined relationships at the institution level. These correlations are presented in Table B3. We also examined relationships between certain aspects of preparation and average ratings by cooperating teachers and employers (see Table A6).

Table B3. Correlations Between Completer, Cooperating Teacher, and Employer Perceptions (Institutional Means)

Institutional means for all teaching performance expectations survey items	Correlation between completer and cooperating teacher		Correlation between completer and employer		Correlation between cooperating teacher and employer	
	Rho	N	Rho	N	Rho	N
Overall scale (averaging all the items below)	0.51	64	0.51	65	0.48	54
Individual survey questions:						
Engaging and supporting all students in learning						
Connect classroom learning to the real world	0.37	64	0.41	65	0.40	54
Engage students in inquiry, problem-solving, and reflection to promote their critical thinking	0.50	64	0.50	65	0.51	54
Meet instructional needs of English learners	0.48	64	0.33	65	0.34	54
Identify and address special learning needs with appropriate teaching strategies	0.42	64	0.37	65	0.40	54
Creating and maintaining effective environments for student learning						
Establish and maintain a safe and respectful learning environment for all students	0.52	64	0.48	65	0.38	54
Create a productive learning environment with high expectations for all students	0.48	64	0.53	65	0.37	54
Understanding and organizing subject matter for student learning						
Use effective instructional strategies to teach specific subject matter and skills	0.51	64	0.49	65	0.45	54
Select, adapt, and develop materials/resources/tech to make subject matter accessible to all	0.36	64	0.46	65	0.37	54
Planning instruction and designing learning experiences for all students						
Plan instruction based on students' prior knowledge/language/culture/development	0.48	64	0.46	65	0.28	54
Plan/adapt instruction with appropriate strategies/resources/tech to meet the learning needs of all	0.40	64	0.48	65	0.34	54

Institutional means for all teaching performance expectations survey items	Correlation between completer and cooperating teacher		Correlation between completer and employer		Correlation between cooperating teacher and employer	
	Rho	N	Rho	N	Rho	N
Assessing students for learning						
Involve all students in self-assessment, goal setting, and monitoring progress	0.47	64	0.49	65	0.39	54
Give productive feedback to students to guide their learning	0.45	64	0.55	65	0.38	54
Developing as a professional educator						
Evaluate the effects of your actions on student learning and modify plans accordingly	0.41	64	0.53	65	0.44	54
Work with colleagues to improve instruction	0.37	64	0.43	65	0.34	54

Note: This analysis created institution-level averages based on perceptions of completers, cooperating teachers, and employers and then calculated correlations (Rho) across these institutional averages. Institutional averages are calculated across 3 years of data, and the sample for each correlation is restricted to institutions with at least five respondents of each type. The number of institutions included in each correlation is indicated in the *N* column.

Source: Learning Policy Institute analysis of Commission on Teacher Credentialing Program Completer Survey data (2023).

Endnotes

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66. Boyd, D. J., Grossman, P. L., Lankford, H., Loeb, S., & Wyckoff, J. (2009). Teacher preparation and student achievement. *Educational Evaluation and Policy Analysis*, 31(4), 416–440.
67. These categorizations were based on factor analyses of each set of items as well as prior research using a similar set of survey items. The factor analysis is described in more detail in Appendix B.
68. When creating program-level averages across survey items, we restricted the analysis to programs that had at least five survey respondents across the 5 years of data collection (2016–17 to 2020–21). As a result, a different number of programs had program averages for specific survey items.
69. We used a number of approaches to identify relatively lower-rated programs. In Table A11, we present the results for all programs that were at least 1.5 standard deviations below the average 4-point rating by all completers answering the question, “Overall, how effective was your teacher preparation program at developing the skills or tools you needed to become a teacher?” See the Appendix B for more details on our approach in identifying these programs.
70. In California, LEA-based programs are only approved to run internship programs. However, in both of the lowest-rated programs, there are some completers who report participating in student teaching/residencies (14%) or completing their preparation while working on an emergency-style permit (9%). Many of the completers categorized as student teaching/residency indicated that they had participated in student teaching/residency as well as participated in an internship, so these completers may have transferred into the internship program from another TPP or may be incorrectly categorizing their clinical experience.
71. Of the eight lowest-rated programs, five programs had at least five employer and cooperating teacher responses. These five programs were in the bottom quintile of all programs rated by at least five employers and/or in the bottom quintile of all programs rated by at least five cooperating teachers.
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