

Impacts of the Community Partnerships for Teacher Pipeline Program on Community College Students

A Quasi-Experimental Study

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Executive Summary

The Center for Collaborative Education (CCE) developed the Community Partnerships for Teacher Pipeline (CPTP) program in partnership with three community colleges in Southern California to promote teaching as a career option to community college students, particularly those of color, and to provide support for those students to aid in their academic progress. CPTP operated at these three community colleges from October 1, 2020, through September 30, 2023, with funding from a Supporting Effective Educator Development (SEED) Program grant awarded to CCE by the U.S. Department of Education’s Office of Effective Educator Development Programs.

WestEd evaluated CPTP using a quasi-experimental design (QED) with a matched group of comparison students. The study examined the impact of participating in CPTP on the course completion rate, persistence in college, credit accumulation, grade point average (GPA), and transfer rate of community college students. The study addressed research questions regarding the extent of the students’ participation in CPTP, the impact for the full sample (which included students from all three colleges), and the impact at each of the three colleges.

Overview of the Community Partnerships for Teacher Pipeline Program

To promote student interest in teaching as a career and to aid student academic progress, CPTP provided multiple interventions to community college students—specifically a semesterly stipend, informal learning activities on various topics relevant to teacher preparation and education (e.g., requirements for different types of teacher credentials and current education-related issues), a mentor who was an early childhood or preK–14 educator, a Success Coach to check in on students and refer them to needed campus supports, and a broader Teacher Mentoring Network that facilitated students’ engagement with educators within and outside of CPTP. CPTP required students to participate in informal learning activities and mentoring conversations, together referred to as Enhanced Advisory Mentoring (EAM), for a minimum of 30 hours each semester. EAM aimed to provide CPTP students with academic and interpersonal support and information about education and teaching as a career. Students who completed this minimum number of hours of EAM participation were eligible for the stipend. Students did not receive any additional course credit for participating in CPTP.

Overview of the Current Study

The current study used a QED with a matched group of comparison students to examine the impact of CPTP on the student outcomes of interest. WestEd collected extant data from the three participating colleges¹ and CCE, used a multivariate matching algorithm to identify comparison students, and used regression models to estimate the impact of CPTP. WestEd followed the guidelines outlined by the What Works Clearinghouse (2022) for conducting rigorous QEDs. Conducting the study in this way allowed for strong causal conclusions to be drawn regarding the impact of CPTP on the participating students. The study addressed three research questions regarding the extent of the students' participation in CPTP, the impact for the full sample (which included students from all three colleges), and the impact at each of the three colleges.

Extent of Student Participation in Community Partnerships for Teacher Pipeline

Across the three colleges, 19 percent of the CPTP students participated in the program for three semesters, 28 percent participated for two semesters, and just over half participated for one semester. At two of the colleges, 55 percent of students participated for two or three semesters. In contrast, 71 percent of students at the other college participated in CPTP for only one semester. The CPTP students across the three colleges completed an average of 26.5 EAM hours during their first semester of CPTP participation. The students who participated in two or more semesters of CPTP completed an average of 29.8 EAM hours in their second semester of participation, and the students who participated in three or more semesters of CPTP completed an average of 31.6 EAM hours in their third semester of participation. Disaggregating the average number of hours of CPTP participation by semester and the number of semesters of participation showed that students completed fewer hours in their last semester of participation before they dropped out of the program. The pattern of findings for the analyses that examined the average number of hours per semester was similar across the three colleges.

Impact of Community Partnerships for Teacher Pipeline Participation on Student Outcomes

Overall, the findings from the QED that compared outcomes for CPTP participants and matched comparison students showed that CPTP participation had positive and statistically significant impacts on the students' course completion rate, credit accumulation, and GPA in the first semester of CPTP participation. The impact of CPTP on the students' credit accumulation remained statistically significant in the second semester after enrolling in CPTP. For course

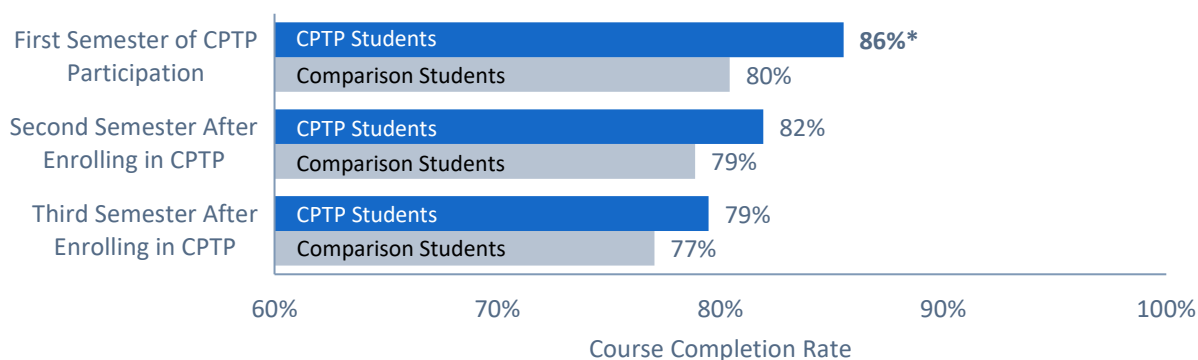
¹ To protect the privacy of the study participants and the three colleges, the report does not name the colleges and instead identifies them as College 1, College 2, and College 3.

completion rates and GPA, the impacts in the second and third semesters after enrolling in CPTP did not reach statistical significance but generally remained positive. In addition, the persistence rates in the second and third semesters after enrolling in CPTP and the transfer rates to 4-year colleges were higher for the CPTP students and were statistically significant.

Course Completion Rate

Course completion was defined as successfully passing the courses the student enrolled in (i.e., credits accumulated divided by credits attempted). During the first semester of participation in CPTP, the participating students had higher course completion rates (mean = 85.52%) than the comparison students (mean = 80.42%; see Figure E1). This difference, which was statistically significant and equivalent to an effect size of 0.16, showed that CPTP had a small positive impact on students' success passing the classes they were enrolled in. During the second and third semesters after enrolling in the program, CPTP students had higher course completion rates, but the differences were smaller and not statistically significant.

Figure E1. Impact of CPTP on Course Completion Rate by Semester



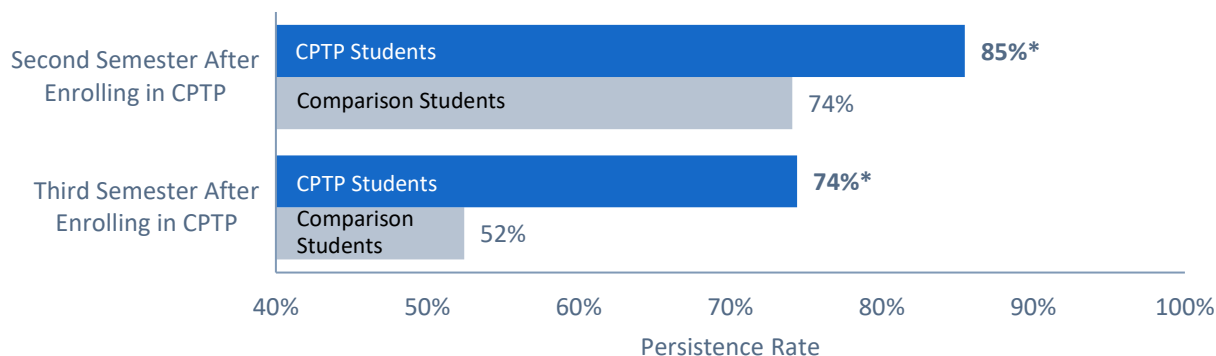
Note. The course completion rate for CPTP students that is marked with an asterisk (*) and bolded is significantly different ($p < .05$) from the course completion rate for the comparison students. See Appendix B for a [full description of Figure E1](#).

Persistence in College

Persistence in community college (also referred to as persistence in college) is defined as students reenrolling in college the following semester (excluding the summer and winter semesters) by attempting at least one credit. As shown in Figure E2, persistence in college for CPTP students in the second semester after enrolling in CPTP was 11 percentage points higher than the persistence rate for the comparison students. In other words, a greater percentage of CPTP students remained enrolled at their college in the semester after they started CPTP. This difference was statistically significant and equivalent to an effect size of 0.44, which was a medium-sized impact according to the standards for educational research. In the third semester after enrolling in CPTP, the difference between the CPTP and comparison students' persistence

in college rates was nearly 22 percentage points. This difference favoring the CPTP students was statistically significant and equivalent to an effect size of 0.59.

Figure E2. Impact of CPTP on Persistence in College by Semester

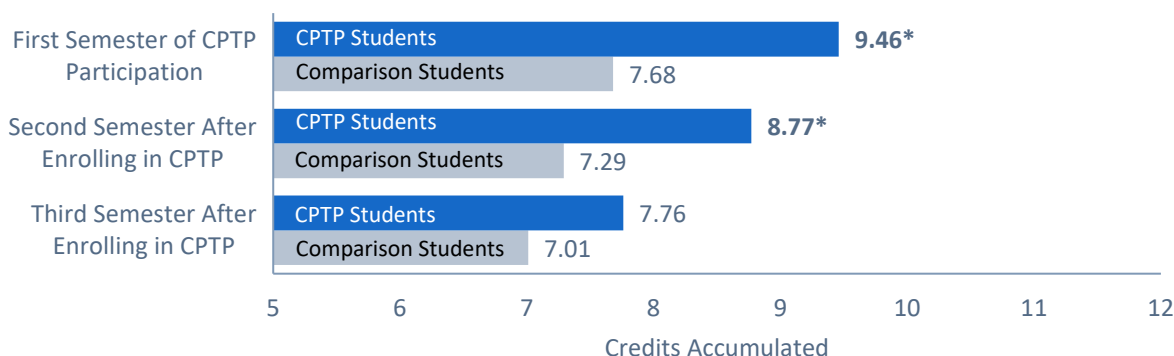


Note. The CPTP students' persistence in college rates that are marked with an asterisk (*) and bolded are significantly different ($p < .05$) from the persistence rates for the comparison students. See Appendix B for a [full description of Figure E2](#).

Credit Accumulation

Credit accumulation is defined as the number of credits students accumulated in a semester. During the first semester of CPTP participation, the CPTP students accumulated about 1.8 more credits than the comparison students (see Figure E3). This difference was statistically significant and was equivalent to a small to moderate effect size of 0.36. Similarly, the CPTP students accumulated about 1.5 more credits than the comparison students in the second semester after enrolling in CPTP, which was statistically significant and equal to an effect size of 0.31. The difference between the credits accumulated by the CPTP and comparison students was less than 1 credit in the third semester after enrolling in CPTP and did not reach statistical significance.

Figure E3. Impact of CPTP on Credit Accumulation by Semester

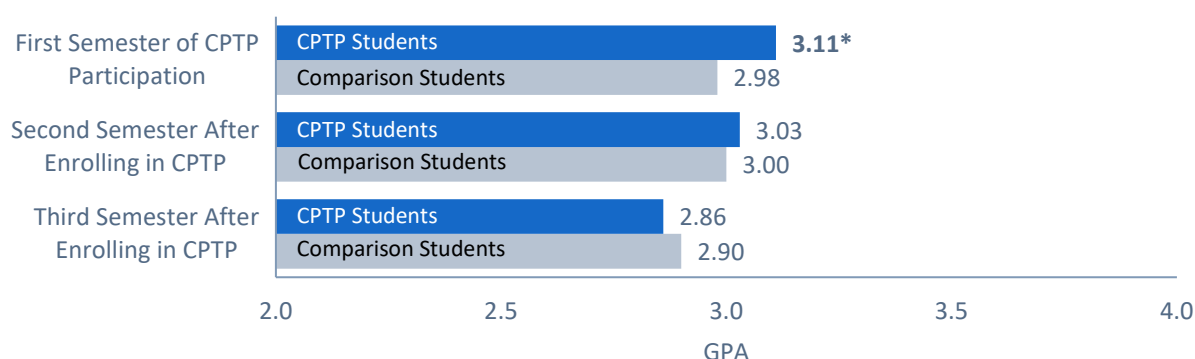


Note. Credits accumulated for CPTP students that are marked with an asterisk (*) and bolded are significantly different ($p < .05$) from the credits accumulated for the comparison students. See Appendix B for a [full description of Figure E3](#).

Grade Point Average

GPA represents students' semester GPA at their community college. As shown in Figure E4, the CPTP students (mean = 3.11) had higher GPAs than the comparison students (mean = 2.98) at the end of their first semester of CPTP participation. This difference was statistically significant, and the effect size indexing this difference was 0.12, which was a very small impact according to the standards for educational research (Hill et al., 2008). In contrast, the differences between the GPAs of the CPTP and comparison students were negligible in the second and third semesters after enrolling in CPTP and did not reach statistical significance.

Figure E4. Impact of CPTP on GPA by Semester

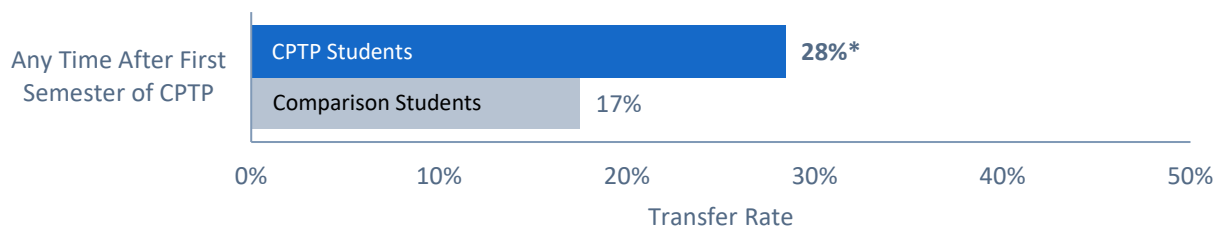


Note. The GPA for CPTP students that is marked with an asterisk (*) and bolded is significantly different ($p < .05$) from the GPA for the comparison students. See Appendix B for a [full description of Figure E4](#).

Transfer Rate

Transfer rate represents the proportion of students transferring to a 4-year college. Figure E5 displays the transfer rates for the CPTP (28.43%) and comparison students (17.49%) during any time after the first semester of CPTP. This difference of 11 percentage points, which showed that a larger percentage of CPTP students transferred to a 4-year college, was statistically significant and equivalent to a small to medium effect size of 0.38.

Figure E5. Impact of CPTP on Transfer Rate



Note. The transfer rate for CPTP students that is marked with an asterisk (*) and bolded is significantly different ($p < .05$) from the transfer rate for the comparison students. See Appendix B for a [full description of Figure E5](#).

Impact of Community Partnerships for Teacher Pipeline Participation on Student Outcomes at Each of the Three Colleges

College 1

At College 1, there were three outcomes for which the differences were statistically significant and favored the CPTP students over the comparison students. Specifically, persistence in college for the CPTP students exceeded the persistence in college for the comparison students by approximately 14 percentage points in the second semester after enrolling in CPTP and nearly 20 percentage points in the third semester. Additionally, the CPTP students accumulated 1.6 more credits than the comparison students in the first semester of CPTP participation. The CPTP students at College 1 generally showed better performance on the other outcomes, including course completion rate, GPA, and transfer rate, but the differences were not statistically significant.

College 2

There were four outcomes at College 2 for which the differences favored the CPTP students over the comparison students and were statistically significant. These outcomes included persistence in college in the third semester after enrolling in CPTP, which was 17 percentage points higher for the CPTP students than the comparison students, and the transfer rate, which was more than 11 percentage points higher for the CPTP students. In addition, the CPTP students accumulated 1.6 more credits in the first semester of CPTP participation and 2.0 more credits in the second semester after enrolling in CPTP. The CPTP students had higher course completion rates and GPAs in the first semester of CPTP participation and in the second semester after enrolling in CPTP, but these differences did not reach statistical significance.

College 3

In comparison to results for the other two colleges, the College 3 results showed the most consistent pattern of statistically significant impacts favoring the CPTP students. College 3 “bundled” CPTP with an existing teacher preparation program, and all CPTP students also participated in the existing program. For course completion rates, the differences favored the CPTP students by 8.3 percentage points in the first semester of CPTP participation and by 10.70 percentage points in the third semester after enrolling in CPTP, and both differences were statistically significant. The differences in the persistence in college rates were statistically significant and favored the CPTP students by approximately 10 percentage points in the second semester and by over 27 percentage points in the third semester after enrolling in CPTP. Across all three semesters, the CPTP students accumulated more credits than the comparison students. These differences, which ranged from 1.6 to 2.1 credits, were all statistically significant. The transfer rate was nearly 14 percentage points higher for the CPTP students, and this difference was also statistically significant.

Introduction

The Center for Collaborative Education (CCE), an organization serving as an educational intermediary and capacity builder for communities and schools, developed the Community Partnerships for Teacher Pipeline (CPTP) program in partnership with three community colleges in Southern California to promote teaching as a career option to community college students, particularly those of color, and to provide support for those students to aid in their academic progress. CPTP was designed to address the low rates at which community college students reenroll in college (e.g., from 2019 to 2020, 61% of such students nationally reenrolled or completed a degree or certificate; National Center for Education Statistics, 2022) or obtain an associate's degree (e.g., in California, 31% of community college students did so within 3 years; Public Policy Institute of California Higher Education Center, 2019). CPTP's goal was to facilitate the entry of these students into teaching to enhance the diversity of the teacher workforce and address teacher shortages, given the small number of teachers of color relative to K–12 students of color and the decline in the number of candidates enrolling in teacher preparation programs both nationally (Warner & Duncan, 2019; Partelow, 2019) and in California (The Education Trust, 2022; U.S. Department of Education, 2023) and given California's overall teacher shortage (Carver-Thomas & Darling-Hammond, 2017). CPTP operated from October 1, 2020, through September 30, 2023, at the three community colleges, with funding from a Supporting Effective Educator Development (SEED) Program grant awarded to CCE by the U.S. Department of Education's Office of Effective Educator Development Programs.

WestEd conducted an external evaluation of CPTP using a quasi-experimental design (QED) with a matched group of comparison students. The study examined the impact of CPTP on the course completion rate, persistence in college, credit accumulation, grade point average (GPA), and transfer rate of students. The study addressed three research questions regarding the extent of the students' participation in CPTP, the impacts for the full sample (which included students attending all three colleges), and the impacts at each of the three colleges.

Prior Research on Programs Promoting Academic Progress for Community College Students

A recent analysis of student-level data from randomized control trials of 39 community college interventions indicates that the impacts of such interventions on student academic progress tend to be larger when the number of intervention components is increased or when the interventions promote full-time enrollment, whether in fall and spring semesters or in summer or both (Weiss et al., 2022). The specific outcomes assessed for academic progress were the total number of course credits accumulated (a measure of progress toward a degree) during the year after students' random assignment and student enrollment (a measure of persistence in college) in the third semester after random assignment. The same analysis suggests that increased advising, tutoring, and financial support also result in larger impacts on student academic progress (Weiss et al., 2022).

The [What Works Clearinghouse \(WWC\) Practice Guide on effective advising for postsecondary students](#) recommends that practitioners implement advising that focuses on developing sustained, personalized relationships throughout students' college careers (Karp et al., 2021). The guide offers the recommendation based on the statistically significant, positive meta-analytic effect sizes that enhanced advising demonstrated in several studies assessing progression in college (i.e., college persistence). For example, Miller et al. (2020, as cited in Karp et al., 2021) found that the Accelerated Study in Associate Programs (ASAP) model, implemented with Pell Grant–eligible students in three community colleges, had a statistically significant positive effect on progressing in college. The ASAP model offered students comprehensive advising, as well as tutoring, financial support, course enrollment support, and holistic support from program staff, while requiring full-time enrollment. Patel and Valenzuela (2013, as cited in Karp et al., 2021) also reported that a community college program—the Adelante Scholarship Program, mostly serving Hispanic males who are eligible for Pell Grants—had a statistically significant positive effect on progressing in college. The Adelante program assigned an advisor to each student to provide both academic and nonacademic support throughout all semesters of participation.

The WWC Practice Guide on strategies for postsecondary students in developmental education recommends providing students an incentive to participate in enhanced advising activities (Bailey et al., 2016), based on statistically significant, positive meta-analytic effect sizes on college credit accumulation for students participating in such advising. For example, the Opening Doors program, which offered students experiencing academic difficulties at two community colleges a stipend of \$150 per semester and personalized counseling services, had a statistically significant positive effect on credit accumulation relative to a comparison group (Scrivener & Weiss, 2009, as cited in Bailey et al., 2016).

Overview of the Community Partnerships for Teacher Pipeline Program

CCE developed the CPTP program to promote teaching as a career option and to provide support for community college students. CPTP provided community college students with

- a semesterly stipend,
- informal learning activities on various topics relevant to teacher preparation and education (e.g., requirements for different types of teacher credentials and current education-related issues),
- a mentor who was an early childhood or preK–14 educator,
- a Success Coach to check in on students and refer them to needed campus supports, and
- a broader Teacher Mentoring Network that facilitated students' engagement with educators within and outside of CPTP.

CPTP incentivized students to participate in mentoring conversations and informal learning activities, together referred to as Enhanced Advisory Mentoring (EAM), by requiring a minimum of 30 hours each semester to be eligible for the stipend. EAM aimed to provide CPTP students with academic and interpersonal support and information about education and teaching as a career. Students did not receive any additional course credit for participating in CPTP and were not required to stay in the program for a particular number of semesters.

CPTP operated at three community colleges in Southern California from October 1, 2020, through September 30, 2023. Students were recruited for the program at the start of each semester for three consecutive semesters, spring 2021 (Cohort 1), fall 2021 (Cohort 2), and spring 2022 (Cohort 3). At one of the colleges, which this report refers to as College 3, students participating in CPTP simultaneously participated in another program that offered a counseling team for students interested in teaching careers in early childhood, elementary, secondary, or career technical education. This program supported these students with their educational and planning needs, including course selection, field experiences, and transfer.

Overview of the Community Partnerships for Teacher Pipeline Evaluation

CPTP contracted WestEd as the external evaluator for the SEED grant. The QED study that is the focus of this report is part of WestEd's larger multiyear evaluation of CPTP that has provided formative and summative feedback to CCE and has included assistance with the SEED grant reporting requirements. As part of the evaluation, WestEd has surveyed and conducted interviews and focus groups with CPTP participants and mentors. In addition, WestEd has interviewed CPTP staff at each college and CCE staff.

As part of the current QED study, WestEd collected extant data from the three participating colleges and CCE, identified comparison students using a multivariate matching algorithm, and employed regression models to estimate the impact of CPTP. WestEd followed the guidelines outlined by the WWC (2022) for conducting rigorous QEDs and aimed to conduct the study in a manner that would allow the findings to receive the highest rating possible for a QED (i.e., Meets WWC Standards With Reservations). Conducting the study in this way allowed for strong causal conclusions to be drawn regarding the impact of CPTP on the participating students.

Research Questions

The current study addressed the following three research questions:

- To what extent did CPTP students participate in the program?
- What was the impact of CPTP participation on the course completion rate, persistence in college, credit accumulation, GPA, and transfer rate of students?
- What was the impact of CPTP participation at each of the three colleges on these student outcomes?

Method

This section of the report outlines the methodology used for the descriptive analysis of CPTP participation and the QED that examined the impact of CPTP. This section describes the colleges and participants in the study, the measures and analytical methodologies used, and the baseline comparisons between treatment and comparison groups.

Description of the Three Community Colleges

The CCE partnered with three public community colleges in Southern California to implement CPTP. The total enrollment of each college was between 16,000 and 20,000 students in fall 2022. The three colleges were similar to each other in terms of their student demographics.² In fall 2022, more than half of students attending these community colleges identified as Hispanic/Latino, ranging from 51 percent to 77 percent across the three colleges. Between 24 percent and 40 percent of students attended the colleges as full-time students. Additionally, 42 percent to 53 percent of the students at the colleges were female, and 59 percent to 71 percent were 24 years old or younger. Moreover, a large number of students were awarded Pell Grants, ranging from 47 percent to 57 percent of the students across the three colleges (National Center for Education Statistics, n.d.).

Study Participants

Community Partnerships for Teacher Pipeline Participants

Students were recruited to participate in CPTP at the three community colleges. New students were recruited for the program at the start of each semester for three consecutive semesters. See Table 1 for the number of students joining CPTP at each college by cohort. Cohort 1 started in spring 2021, Cohort 2 started in fall 2021, and Cohort 3 started in spring 2022. College staff introduced and recruited students for CPTP in different ways at their community colleges, such as through announcements posted on their college website, emails sent out from their departments, and announcements from their instructors during class.

² Two community colleges were 2-year institutions, and the third was primarily an associate degree–granting baccalaureate institution—that is, a 4-year institution.

Table 1. Number of CPTP Participants Recruited at Each College by Cohort

Cohort	College 1	College 2	College 3	Total
Cohort 1 (starting in spring 2021)	53	45	59	157
Cohort 2 (starting in fall 2021)	58	30	39	127
Cohort 3 (starting in spring 2022)	23	29	28	80
Total	134	104	126	364

The three colleges recruited a total of 364 students to participate in CPTP. The demographics of these students are shown in Table 2. The majority of the participating students were Hispanic/Latino, first-generation college students, and eligible for Pell Grants, which was consistent with the demographics of the colleges' overall populations. The majority of the CPTP participants were female, and about a third of the students had academic majors in a field related to education. For all three colleges, the average age of the CPTP participants was 26.8 years old (SD = 9.71), and the average age ranged from 25.6 to 28.3 across the colleges. Age was calculated according to the school year students started participating in CPTP. The total analytic sample for the QED included 263 CPTP students (i.e., 72% of the total CPTP participants).

Table 2. Demographic Characteristics of All CPTP Participants

Demographic characteristic	College 1	College 2	College 3	Total
Female	79.10%	87.50%	85.71%	83.79%
Asian	6.72%	14.42%	5.56%	8.52%
Black or African American	0.75%	11.54%	5.56%	5.49%
Hispanic	88.06%	63.46%	57.14%	70.33%
White	2.24%	6.73%	12.70%	7.14%
Unknown/Other Race or Ethnicity	2.24%	3.85%	19.05%	8.52%
Eligible for Pell Grant	70.15%	87.50%	56.35%	70.33%

Demographic characteristic	College 1	College 2	College 3	Total
First-generation college student	76.87%	2.88%	63.49%	51.10%
Parent education missing data	14.93%	95.19%	16.67%	38.46%
Education major	20.15%	32.69%	45.24%	32.42%

Note. The total number of participants for College 1 ($n = 134$), College 2 ($n = 104$), and College 3 ($n = 126$) was 364 students. Gender data were missing for five students (four from College 1 and one from College 3). Education major refers to academic major at the baseline semester. Unknown academic majors (as opposed to undeclared majors) were coded as missing.

Comparison Students

The comparison students attended the same community colleges as the CPTP participants and received business-as-usual instruction and programming. The only restriction on the comparison students was that they were never CPTP participants prior to the matching. The comparison students included in the QED came from the pools of comparison students provided by each college and included a total of 18,607 students at College 1; 51,445 at College 2; and 46,099 at College 3.

Data Collection

WestEd entered into data sharing agreements with each college before the start of the QED in order to secure the student-level data necessary for the study. The three community colleges shared the requested data with WestEd using WestEd's Secure File Transfer Server. Data were collected shortly after the end of fall 2022 and included data by semester from students through the fall 2022 semester. Two colleges provided records for all enrolled students in the requested semesters, and one college provided random samples of potential comparison students enrolled in the requested semesters to limit the number of records provided. Additionally, the colleges provided different numbers of semesters of data. For example, one college provided all available semesters for students in the samples (i.e., as many historical records as the students attended) so that WestEd could calculate the cumulative GPA and course completion measures. The other two colleges provided only the requested semesters and provided cumulative GPA and course completion measures prior to the first semester requested. The colleges provided WestEd with the students' names and, depending on the college, scrambled or unscrambled student ID numbers for all CPTP students so that the demographic and outcome data could be linked to CPTP participation records. Additionally, WestEd requested scrambled student ID numbers for comparison students so that the students' records could be linked across the various files.

For each cohort of CPTP students, data for comparison students who were enrolled at the college in the baseline semester (i.e., the semester prior to the students' first semester of CPTP participation) were requested. Specifically, the students in the comparison pools for Cohort 1 needed to be enrolled at the colleges in fall 2020 and spring 2021. Additionally, the students in the comparison pools for Cohort 2 needed to be enrolled at the colleges in spring 2021 and fall 2021, and the students in the comparison pools for Cohort 3 needed to be enrolled at the colleges in fall 2021 and spring 2022.

For each semester, the following data were collected for each student: cumulative GPA, cumulative course credits, course enrollment data (including each course's ID, name, subject area, credit value, and grade), courses dropped, academic major, enrollment status (part-time or full-time), credential or certificates earned, date of credential or certificates earned if applicable, and student transfer status.

Community Partnerships for Teacher Pipeline Program Records

CCE provided WestEd with the number of EAM hours the CPTP participants completed in each semester. Students' EAM hours were recorded by their CPTP mentors throughout the semester and provided to CCE. The number of EAM hours was used to calculate the number of semesters the students participated in CPTP.

Demographic Measures

The following demographic measures were collected and used in the matching and analyses for the study: students' gender, race/ethnicity, Pell Grant eligibility, first-generation college student status, and whether their academic major was in a field related to education. Pell Grant eligibility was used as a measure of students' socioeconomic status. First-generation college student was defined as a student with neither parent having a 4-year college degree (Stephens et al., 2014). Examples of majors that WestEd counted as being from a field related to education included Bilingual Education, Child Development, Childhood Education, Educational Technology, and Elementary Teacher Education.

Outcome Measures

Course Completion Rate

WestEd used students' course completion rate as one of the student academic achievement measures. A students' course completion rate was calculated by dividing the number of credits accumulated by the number of credits attempted each semester. Number of credits accumulated refers to the number of credits for courses that the student successfully completed with a grade of D or better, "Pass" (passing grade for Pass/No Pass courses), or

“CR” (credit for Credit/No Credit courses). Number of credits attempted refers to the number of credits from courses that the student successfully completed with a passing grade in addition to any other course that was not completed and resulted in a grade of F, “W” (Withdrawn), “I” (Incomplete), “NP” (No Pass), or “NC” (No Credit).

Persistence in College

Persistence in community college (also referred to as persistence in college) was defined as the student reenrolling in their community college the following semester (excluding the summer and winter semesters) by attempting at least one credit. Students who transferred to a 4-year college were excluded, as transfer rates were analyzed separately.

Credit Accumulation

Credit accumulation was the number of credits a student accumulated in a semester. In calculating the number of credits accumulated, WestEd counted each unit that the student successfully passed and accumulated, regardless of the type of course and grading system (i.e., letter grade versus Pass/No Pass).

Grade Point Average

GPA represented students’ semester GPAs at their community college. Students’ GPAs by semester were provided by their college for two of the colleges; for the third college, WestEd researchers used the course history that was provided to calculate students’ semester GPAs. WestEd calculated students’ GPAs based on their college’s policy for GPA calculations. Grade points for grades A, B, C, D, and F were 4, 3, 2, 1, and 0, respectively. Courses with grades such as Pass/No Pass, Incomplete, or withdrawals were not included in GPA calculations. In some cases, students did not have a semester GPA even when they enrolled in a semester because they did not take any courses that resulted in a letter grade.

Transfer Rate

Transfer rate represented students transferring to a 4-year college, any time after the first semester of CPTP or the first semester of study participation for comparison students, up until and including fall 2022. Each college provided WestEd with transfer data based on the National Student Clearinghouse database.

Analytic Approach

Descriptive Analyses

To address the research question regarding the extent to which CPTP students participated in the program, WestEd conducted descriptive analyses with the CPTP program records. These analyses included calculating percentages, means, and standard deviations for the full sample and disaggregated by college. Evergreen's (2017) recommendations for data visualization were followed for developing this report's figures and tables based on the descriptive analyses.

Treatment of Missing Data

Consistent with WWC (2022) standards, WestEd used complete case analysis to address the study's missing data. Prior to conducting the matching process, WestEd researchers excluded CPTP students from the analytic sample if they were missing baseline (i.e., the fall or spring semester before they joined CPTP) cumulative GPA.³ All students with cumulative GPAs had complete data for cumulative course completion rate and number of credits. Additionally, WestEd removed students from the pool of comparison students if they were not enrolled in the college in the semesters that corresponded to the CPTP students' first semester of participation or if they transferred to a 4-year college during the first semesters of CPTP or if they were missing baseline cumulative GPA.

Prior to conducting the matching, WestEd researchers created three pools of comparison students with complete baseline and demographic data for each college. The comparison pools for Cohort 1 had complete baseline data (i.e., GPA, course completion rate, and number of credits accumulated) from fall 2020 and were enrolled in spring 2021 and did not transfer to a 4-year college in spring 2021. The comparison pools for Cohort 2 had complete baseline data from spring 2021 and were enrolled in fall 2021 and did not transfer to a 4-year college in fall 2021. The comparison pools for Cohort 3 had complete baseline data from fall 2021 and were enrolled in spring 2022 and did not transfer to a 4-year college in spring 2022. No students were dropped due to missing demographic data. When demographic data were missing, CPTP students with missing demographic data were matched to comparison students who also had missing demographic data.

Given that some of the outcome measures (i.e., persistence and transfer rates) were missing for some students by nature, CPTP and comparison students' missing outcome measures were retained for the matching process. However, one limitation of this approach was that the analytic samples varied across the outcome semesters and measures, and multiple baseline equivalence analyses were required.

³ As a result, 101 of the 364 CPTP students were excluded from the analytic sample.

Comparison Group Identification

WestEd researchers used a QED with a matched comparison group to evaluate the impact of participating in CPTP on student outcomes. As noted previously, pools of comparison students were first identified for each cohort of CPTP students at each of the three community colleges. Researchers then implemented Mahalanobis distance matching (Stuart, 2010) using Stata's "mahapick" command (Kantor, 2012) to identify comparison students separately by college (i.e., blocked by college). Given the sample size and number of covariates used, Mahalanobis distance matching was the preferred method to utilize (Zhao, 2004). To increase the statistical power of the analyses, we implemented 1:3 matching without replacement, such that no comparison student was matched with more than one student in the treatment group (Shadish et al., 2002). The matching procedure used the following variables: students' cumulative GPA; cumulative course completion rate; cumulative credits, all at baseline; academic major (i.e., education versus noneducation major); age in years; race/ethnicity; gender; Pell Grant eligibility; and first-generation college student status. The "matchon" option within the "mahapick" command was used for the categorical demographic measures (i.e., all of the measures with the exception of age) to restrict the comparison students identified as matches so that they were exact matches on these measures. Finding exact matches on all the demographic measures was not possible for some cases, so the requirement for an exact match on academic major was removed to allow the matching algorithm to identify matches.

Baseline Equivalence Analyses

WestEd conducted baseline equivalence analyses to determine the comparability of the CPTP and comparison students prior to the start of CPTP to satisfy the WWC (2022) baseline equivalence standard of differences being no greater than 0.25 standard deviations on the covariates. Hedges' g was used for the continuous measures (i.e., course completion rate, credit accumulation, GPA, and age) and the Cox Index was used for the demographic measures (WWC, 2022). The use of casewise deletion meant that the analytic samples varied across the outcome measures and semesters of participation. Consistent with WWC (2022) standards, WestEd researchers conducted the baseline equivalence analyses separately for each analytic sample. The baseline equivalence results are presented in this section for the largest analytic sample ($n = 263$ for treatment students and $n = 789$ for comparison students) that was used for the analyses for course completion rate in the first semester of participation, credits accumulated in the first semester of participation, and transfer rate. The additional baseline equivalence analyses for the other analytic samples are presented in Appendix A.

Impact Analyses

To answer the impact research questions, WestEd examined the impact of participating in CPTP at the end of the first semester of participation and at the end of each of the two subsequent semesters. For each outcome variable and semester, WestEd researchers used an ordinary least squares (OLS) regression model. The use of OLS regression for dichotomous outcomes is

consistent with WWC (2022) recommendations and allowed for the calculation of the covariate-adjusted Cox Index for the dichotomous outcomes. The key predictor in each model was a dummy coded treatment status variable that contrasted the CPTP students with the matched comparison students. This variable estimated the impact of CPTP participation on the outcomes of interest after statistically controlling for the covariates in the regression models. The regression models included two dummy coded variables (i.e., fixed effects) that controlled for the college the students were enrolled in and two dummy coded variables that controlled for the three CPTP cohorts. Additionally, the regression models included baseline measures of the three outcomes (i.e., GPA, course completion rate, and credits accumulated) that were used in the matching as covariates. Finally, the regression models included the following demographic characteristics as covariates: age, gender, race/ethnicity, Pell Grant eligibility, first-generation college student status, and whether their academic major was in a field related to education. Additional details on the regression models are included in Appendix A. After conducting the regression analyses, researchers calculated the effect sizes to benchmark the treatment effects. The analyses used Hedges' g for course completion rate, credit accumulation, and GPA and the Cox Index for the persistence and transfer rates (WWC, 2022).

WestEd used the same regression models as described above to examine the impact of CPTP separately at the three colleges. The analyses conducted separately by college had smaller sample sizes, which reduced the statistical power of the analyses and limited the ability to identify statistically significant impacts. To conduct the analyses, researchers created separate databases for each school and removed the two dummy coded variables that controlled for the colleges from the regression models. First-generation status was removed as a covariate from the analyses with College 2 because it was missing for 96 percent of the students. Additionally, WestEd calculated impact estimates for Colleges 1 and 2 using the same regression models; the findings of these calculations are presented in Appendix A. In contrast to College 3, which “bundled” (WWC, 2022) CPTP with an existing teacher preparation program, Colleges 1 and 2 implemented CPTP in isolation, so findings from these colleges provide an estimate of the impact of participating in only CPTP. The findings for College 3 provide valid impact estimates for a “package” of teacher training interventions that includes CPTP.

Baseline Comparisons Between Community Partnerships for Teacher Pipeline and Comparison Students

The largest analytic sample included a total of 1,052 students, consisting of 263 students in the treatment group and 789 in the matched comparison group. This sample was used for the analyses of course completion rate in the first semester of participation, credits accumulated in the first semester of participation, and transfer rate after the first semester of participation. As shown in Table 3, the demographic characteristics for the treatment and comparison students were matched exactly or nearly exactly, and the effect sizes indexing the differences ranged from 0.00 to 0.06.

Table 3. Demographic Characteristics of the CPTP and Matched Comparison Students

Demographic characteristic	CPTP students		Comparison students		Difference	Effect size	p value
	Percentage	n	Percentage	n			
Female	84.79%	223	84.79%	669	0.00%	0.00	1.00
Asian	9.89%	26	9.63%	76	0.26%	0.02	0.90
Black or African American	4.18%	11	4.31%	34	-0.13%	-0.02	0.93
Hispanic	69.58%	183	69.71%	550	-0.13%	0.00	0.97
White	7.98%	21	7.98%	63	0.00%	0.00	1.00
Unknown/Other Race or Ethnicity	8.37%	22	8.37%	66	0.00%	0.00	1.00
Eligible for Pell Grant	71.10%	187	71.10%	561	0.00%	0.00	1.00
First-generation student	46.01%	121	46.01%	363	0.00%	0.00	1.00
Education major	44.49%	117	42.08%	332	2.41%	0.06	0.49

Note. Effect size = Cox Index. Demographics are based on the largest analytic sample of 263 CPTP students and 789 comparison students that was used for the analyses for course completion rate in the first semester of CPTP participation, credits accumulated in the first semester of CPTP participation, and transfer rate.

The results of the comparisons on the baseline measures of the outcomes showed that the treatment and comparison students were equivalent prior to the start of CPTP for the largest analytic sample, with the differences being less than the WWC (2022) standard of 0.25 standard deviations. As shown in Table 4, the effect sizes indexing the differences for course completion, credit accumulation, and GPA ranged from 0.00 to 0.07. Additionally, the effect size indexing the difference for age was 0.07. None of the differences between the groups shown in Table 4 was statistically significant.

Table 4. Baseline Academic Measures and Age for the CPTP and Matched Comparison Students

Baseline measure	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
Cumulative course completion rate	87.53%	0.18	263	87.50%	0.18	789	0.03%	0.00	0.98
Cumulative credit accumulation	41.99	28.85	263	40.19	25.84	789	1.80	0.07	0.34
Cumulative GPA	3.17	0.72	263	3.15	0.71	789	0.02	0.02	0.75
Age	26.32	9.38	263	25.70	8.60	789	0.62	0.07	0.33

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

The results of the baseline equivalence analyses for the other analytic samples (i.e., the analytic samples with fewer students than the largest analytic sample) are shown in Table A1 in Appendix A. Consistent with the WWC standards (2022), the table includes the differences for only the baseline measures of the outcomes of interest (e.g., baseline course completion rate for the analytic samples that examined the impact on course completion rate) for the analyses that had baseline measures of the outcomes available. The persistence in college rate did not have a baseline measure available, and WestEd researchers used the baseline equivalence for GPA (which is a broad measure of academic success), Pell Grant eligibility, race/ethnicity, and age (WWC, 2022). These baseline equivalence analyses showed that the baseline academic measures were equivalent (i.e., less than 0.19 standard deviations) for the treatment and comparison students in each analytic sample. Additionally, the demographic measures were equivalent (i.e., the effect sizes all ranged from -0.10 to 0.09) for the two additional persistence samples.

The results of the baseline equivalence analyses for the largest analytic samples for each of the three colleges are shown in Tables A2 to A7 in Appendix A. These baseline equivalence analyses showed that the baseline academic measures and demographic covariates were equivalent for the CPTP and comparison students. The effect sizes indexing the differences between the two groups ranged from -0.10 to 0.10.

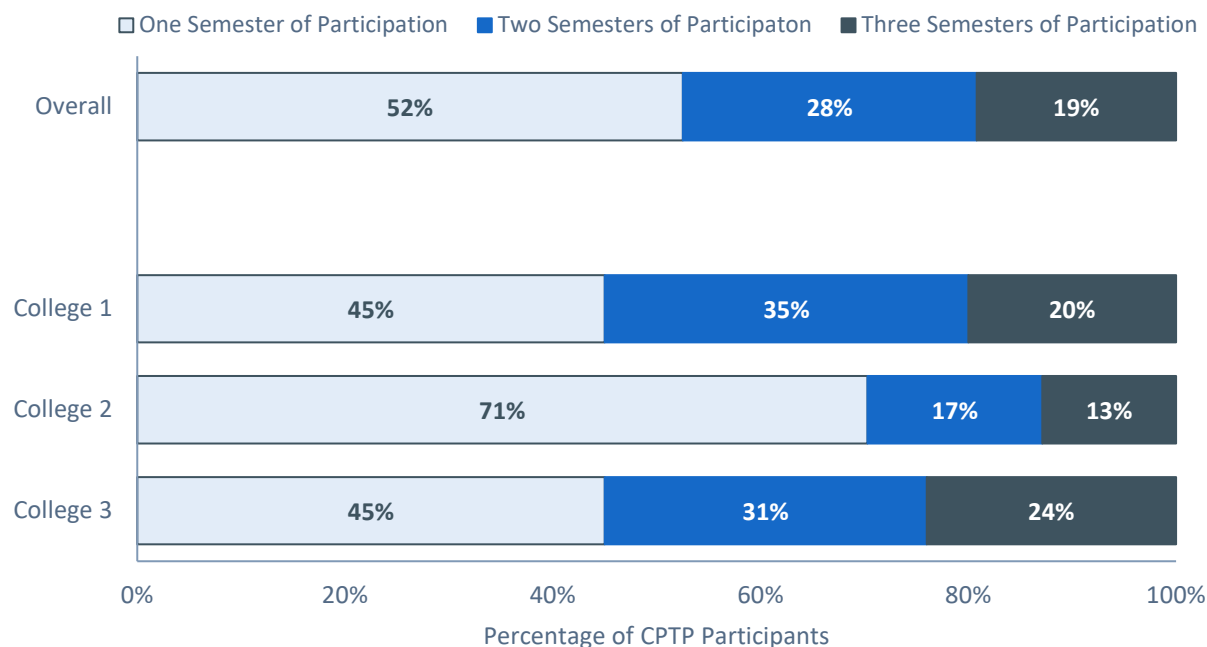
Findings

To What Extent Did Community Partnerships for Teacher Pipeline Students Participate in the Program?

Students participated in CPTP to varying degrees, and their level of participation is partially explained by low rates of reenrollment and degree completion in community college generally (e.g., nationally, from 2019 to 2020, 61% of community college students reenrolled at their institution or completed a degree/certificate [National Center for Education Statistics, 2022]; in California, 31% of students obtained an associate's degree within 3 years [Public Policy Institute of California Higher Education Center, 2019]). As shown in Figure 1, 28 percent of the CPTP students participated in the program for two semesters, and 19 percent participated for three semesters. Slightly more than half of the students across the three colleges participated in CPTP for only one semester.⁴ The students' length of participation at Colleges 1 and 3 was fairly consistent, with 55 percent of students at both colleges participating for two or three semesters. In contrast, 71 percent of students at College 2 participated in CPTP for only one semester.

⁴ Under the original design, students could participate for up to four semesters; although data on a fourth semester of participation were not available in time for the preparation of this report, the data clearly show that only a small proportion of students would likely have participated for a fourth semester.

Figure 1. Percentage of CPTP Participants by Number of Semesters of CPTP Participation (Overall and by College)



Note. Overall, $n = 263$. College 1, $n = 98$. College 2, $n = 78$. College 3, $n = 87$. Percentages may not total 100 due to rounding. See Appendix B for a [full description of Figure 1](#).

Across the three colleges, the CPTP students ($n = 263$) completed an average of 26.5 EAM hours ($SD = 12.07$) during their first semester of CPTP participation, 3.5 hours below the requisite 30 hours. In their first semester of participation, 76 percent of the students participated in 30 or more hours while 19 percent participated for less than 10 hours. The 125 CPTP students who participated in two or more semesters of CPTP completed an average of 29.8 EAM hours ($SD = 13.66$) in their second semester of participation. Nearly 85 percent of the students participated in 30 or more hours in their second semester of participation, and 12 percent participated in less than 10 hours. Additionally, the students who participated in three or more semesters of CPTP ($n = 51$) completed an average of 31.6 EAM hours ($SD = 7.69$) in their third semester of participation, and 94 percent of these students completed 30 or more hours.

Table 5 shows the average number of hours of CPTP participation by semester and college. For example, the average number of hours ranged from 25.2 to 27.3 across the three colleges in the students' first semester of participation. The same pattern that emerged for the full sample was evident at all three colleges, with the average number of hours increasing across the first, second, and third semesters as students dropped out of the program.

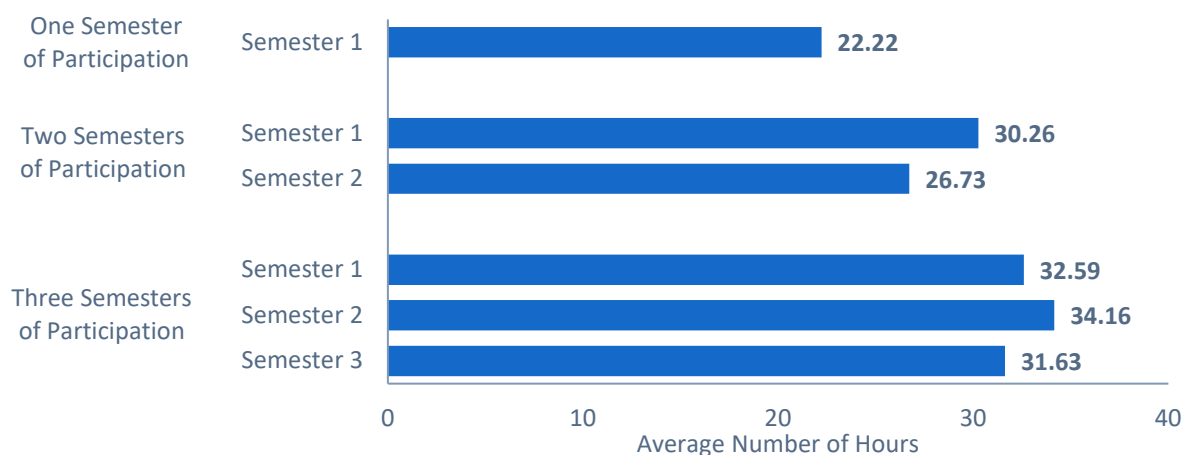
Table 5. Average Number of Enhanced Advisory Mentoring Hours Completed by Semester and College

Semester	College 1			College 2			College 3		
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>
First semester of CPTP participation	27.31	11.45	98	25.24	13.88	78	26.70	11.02	87
Second semester of CPTP participation	29.23	10.16	54	32.01	13.08	23	29.27	17.10	48
Third semester of CPTP participation	30.40	7.58	20	35.65	8.52	10	30.89	7.12	21

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants.

Figure 2 presents the average number of EAM hours separately for students who participated in CPTP for one, two, or three semesters. Students who were going to drop out of CPTP completed less time in the semester before they dropped out. For example, students who only participated in one semester of CPTP completed an average of about 22.2 EAM hours in their first and only semester of CPTP, whereas students who participated in two or more semesters of CPTP completed over 30 hours, on average, in their first semester of participation. Similarly, for students who participated in CPTP for two semesters, the average number of hours they completed in their second semester of participation declined to 26.7 from 30.3 in their first semester of participation, foreshadowing them dropping out of the program.

Figure 2. Average Number of EAM Hours by Semester and Number of Semesters of Participation



Note. One semester of participation, *n* = 138. Two semesters of participation, *n* = 74. Three semesters of participation, *n* = 51.

The average numbers of EAM hours broken down by semester, number of semesters of participation, and college are shown in Table 6. The pattern of findings for each college was consistent with the pattern for all three colleges shown in Figure 2. Students completed a smaller number of hours in their last semester of participation before they dropped out of the program. The average number of hours completed at each college ranged from 21.3 to 22.8 in the first semester of participation for students who only participated for one semester and from 26.0 to 28.0 in the second semester of participation for students who participated for two semesters. The same pattern held for two of the three colleges with students who participated for three semesters.

Table 6. Average Number of EAM Hours Completed by Semester, Number of Semesters of Participation, and College

Semester	College 1			College 2			College 3		
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>
One semester of participation: Semester 1	21.30	14.11	44	22.75	14.88	55	22.53	13.30	39
Two semesters of Participation: Semester 1	31.65	5.55	34	30.07	7.30	13	28.60	8.42	27
Two semesters of participation: Semester 2	26.85	11.98	34	27.96	15.42	13	25.97	12.12	27
Three semesters of participation: Semester 1	33.15	3.42	20	32.71	10.68	10	32.00	5.02	21
Three semesters of participation: Semester 2	33.28	3.41	20	37.28	6.84	10	33.51	21.51	21
Three semesters of participation: Semester 3	30.40	7.58	20	35.65	8.52	10	30.89	7.12	21

Note. SD = standard deviation. *n* = number of study participants.

What Was the Impact of Community Partnerships for Teacher Pipeline Participation on the Course Completion Rate, Persistence in College, Credit Accumulation, Grade Point Average, and Transfer Rate of Students?

Overall, the findings from the QED that compared outcomes for CPTP participants and matched comparison students show that CPTP participation had positive and statistically significant impacts on the students' average course completion rate, credit accumulation, and GPA in the first semesters of CPTP participation. The impact of CPTP on the students' credit accumulation remained statistically significant in the second semester after enrolling in CPTP. For course completion rates and GPA, the impacts in the second and third semesters after enrolling in CPTP did not reach statistical significance but generally remained positive. In addition, the persistence in college rates in the second and third semesters after enrolling in CPTP and the transfer rate to 4-year colleges were higher for the CPTP students and were statistically significant.

Course Completion Rate

As shown in Table 7, the CPTP students had a higher course completion rate (mean = 85.52%) than the comparison students (mean = 80.42%) during the first semester of participation in CPTP. This difference of about 5.1 percentage points was statistically significant and equivalent to an effect size of 0.16, indicating that CPTP had a small positive impact on students' course completion rates. During the second and third semesters after enrolling in CPTP, CPTP students again showed higher course completion rates. However, the differences after the second semester (3.1 percentage points) and third semester (2.4 percentage points) were small and not statistically significant. The pattern of findings suggests that the impact of CPTP on students' course completion rates may wane over time.

Table 7. Impacts of CPTP on Course Completion Rate by Semester

Semester	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
First semester of CPTP participation	85.52%	0.28	263	80.42%	0.34	789	5.09%*	0.16	0.02
Second semester after enrolling in CPTP	81.92%	0.32	210	78.86%	0.35	543	3.06%	0.09	0.23
Third semester after enrolling in CPTP	79.47%	0.35	131	77.04%	0.37	299	2.43%	0.07	0.50

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models. The difference with an asterisk (*) was statistically significant at $p < .05$.

Persistence in College

The persistence in college rate for CPTP students in the second semester after enrolling in CPTP was about 11 percentage points higher than the persistence rate for the comparison students (see Table 8). This difference was statistically significant and equivalent to an effect size of 0.44, which was a medium-sized impact according to the standards for educational research (Hill et al., 2008). In the third semester after first participating in CPTP, the difference between the CPTP and comparison students' persistence in college was 22 percentage points. This difference, which again favored the CPTP students, was statistically significant and equivalent to an effect size of 0.59.

Table 8. Impacts of CPTP on Persistence in College by Semester

Semester	CPTP students		Comparison students		Difference	Effect size	p value
	Percentage	n	Percentage	n			
Second semester after enrolling in CPTP	85.48%	247	74.08%	733	11.40%*	0.44	<0.001
Third semester after enrolling in CPTP	74.40%	170	52.43%	534	21.96%*	0.59	<0.001

Note. CPTP = Community Partnerships for Teacher Pipeline. *n* = number of study participants. Effect size = Cox Index. The percentages for the CPTP students were calculated by adding the unadjusted percentages for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Credit Accumulation

In the first semester of CPTP participation, the CPTP students accumulated 1.78 more credits on average (mean = 9.46 credits) than the comparison students (mean = 7.68 credits; see Table 9). This difference was statistically significant and equivalent to a small to moderate effect size of 0.36. Similarly, in the second semester after enrolling in CPTP, the CPTP students accumulated 1.47 more credits on average than the comparison students, which was a statistically significant difference and equal to an effect size of 0.31. Finally, the difference between the credits accumulated by the CPTP and comparison students was less than 1 credit in the third semester after enrolling in CPTP. This difference did not reach statistical significance and was smaller than the impacts in the two prior semesters.

Table 9. Impacts of CPTP on Credit Accumulation by Semester

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	9.46	4.73	263	7.68	4.93	789	1.78*	0.36	<0.001
Second semester after enrolling in CPTP	8.77	4.97	210	7.29	4.71	544	1.47*	0.31	<0.001
Third semester after enrolling in CPTP	7.76	5.12	131	7.01	4.69	299	0.75	0.16	0.11

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Grade Point Average

The difference between the CPTP students' average GPA (mean = 3.11) and comparison students' average GPA (mean = 2.98) was 0.14 points in the first semester of CPTP participation (see Table 10). This difference was statistically significant, and the effect size indexing this difference was 0.12, which was a very small impact according to the standards for educational research (Hill et al., 2008). However, in the second and third semesters after enrolling in CPTP, the differences between the groups were negligible and did not reach statistical significance.

Table 10. Impacts of CPTP on GPA by Semester

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	3.11	1.01	258	2.98	1.12	743	0.14*	0.12	0.04
Second semester after enrolling in CPTP	3.03	1.14	201	3.00	1.14	512	0.04	0.03	0.66
Third semester after enrolling in CPTP	2.86	1.31	126	2.90	1.20	280	-0.04	-0.03	0.75

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models. The difference with an asterisk (*) was statistically significant at $p < .05$.

Transfer Rate

As shown in Table 11, the transfer rate for the CPTP students (28.43%) was nearly 11 percentage points higher than the transfer rate for the comparison students (17.49%) during the time after the first semester of CPTP. This difference was statistically significant and equivalent to an effect size of 0.38, which was a small to medium impact.

Table 11. Impacts of CPTP on Transfer Rate

Semester	CPTP students		Comparison students		Difference	Effect size	p value
	Percentage	n	Percentage	n			
Any time after first semester of CPTP	28.43%	263	17.49%	789	10.94%*	0.38	<0.001

Note. CPTP = Community Partnerships for Teacher Pipeline. *n* = number of study participants. Effect size = Cox Index. The percentage for the CPTP students was calculated by adding the unadjusted percentage for the comparison group and the difference (i.e., the CPTP-comparison contrast) from the regression model. The difference with an asterisk (*) was statistically significant at $p < .05$.

What Was the Impact of Community Partnerships for Teacher Pipeline Participation at Each of the Three Colleges on the Course Completion Rate, Persistence in College, Credit Accumulation, Grade Point Average, and Transfer Rate of Students?

Overall, the results of the impact analyses that disaggregated the findings by college showed positive and statistically significant impacts on the outcomes of interest at each of the colleges. The results were most positive at College 3, where all participating students were also enrolled in an existing teacher preparation program, and the results were somewhat mixed at Colleges 1 and 2. At College 3, the impact estimates across all of the outcomes and semesters were positive, and most of the impact estimates were statistically significant. The findings were generally positive at Colleges 1 and 2. However, there were some negative impact estimates at Colleges 1 and 2, but none of these negative estimates was statistically significant.

Course Completion Rate

The results of the analyses that examined the impacts of CPTP on the students' course completion rates are presented in Tables 12a, 12b, and 12c, disaggregated by semester. Although the pattern of findings varied somewhat across the three colleges, and there were only two statistically significant differences, the CPTP students had higher course completion rates than the comparison students for seven of the nine impact estimates.

At College 1, the CPTP students had a higher course completion rate (mean = 83.98%) than the comparison students (mean = 79.13%) during the first semester of participation in CPTP. However, the effect size of 0.14 indexing the difference between the groups was very small and not statistically significant. The CPTP students had a slightly lower course completion rate on average than the comparison students during the second semester after enrolling in CPTP, and the difference between the groups in the third semester after enrolling in CPTP was less than 1 percentage point. These differences for College 1 also were not statistically significant, and neither of the effect sizes exceeded 0.10 standard deviations.

At College 2, the CPTP students had a higher course completion rate on average than the comparison students in the first semester of CPTP participation and in the second semester after enrolling in CPTP. The differences between the groups were 1.3 and 6.0 percentage points in the first and second semesters, respectively. Although neither of these differences was statistically significant, the effect size indexing the difference in the second semester after enrolling in CPTP (0.17) approached what would be considered a small positive impact. In the third semester after enrolling in CPTP, the comparison students' course completion rate was 8.6 percentage points higher on average than the rate for the CPTP students. However, the sample size for this analysis ($n = 99$) was small, and the difference did not reach statistical significance.

Table 12a. Impact of CPTP on Course Completion Rate by Semester for College 1

Semester	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
First semester of CPTP participation	83.98%	0.31	98	79.13%	0.35	294	4.85%	0.14	0.17
Second semester after enrolling in CPTP	73.72%	0.38	79	77.35%	0.36	196	-3.63%	-0.10	0.41
Third semester after enrolling in CPTP	75.49%	0.41	53	75.05%	0.39	125	0.44%	0.01	0.94

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table 12b. Impact of CPTP on Course Completion Rate by Semester for College 2

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	83.10%	0.28	78	81.80%	0.32	234	1.30%	0.04	0.73
Second semester after enrolling in CPTP	85.80%	0.31	57	79.80%	0.35	156	5.99%	0.17	0.24
Third semester after enrolling in CPTP	69.17%	0.37	30	77.71%	0.37	69	-8.54%	-0.23	0.27

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table 12c. Impact of CPTP on Course Completion Rate by Semester for College 3

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	88.99%	0.23	87	80.65%	0.34	261	8.34%*	0.26	0.02
Second semester after enrolling in CPTP	86.36%	0.25	74	79.64%	0.33	191	6.72%	0.22	0.08
Third semester after enrolling in CPTP	89.68%	0.23	48	78.98%	0.34	105	10.70%*	0.35	0.04

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

At College 3, the CPTP students had a higher course completion rate on average than the comparison students during each of the three semesters, as shown in Table 12c. The differences favored the CPTP students by 6.7 to 10.7 percentage points and were statistically significant for the first semester of CPTP participation and the third semester after enrolling in CPTP. The effect sizes for the three semesters ranged from 0.22 to 0.35, indicating a consistent pattern of small positive impacts on course completion rates at College 3.

Persistence in College

As shown in Tables 13a, 13b, and 13c, there was a consistent pattern of findings favoring the CPTP students' persistence in college across the two semesters and three colleges. The persistence rates at College 1 for the CPTP students exceeded the persistence rates for the comparison students by 14.4 and 19.8 percentage points in the second and third semesters after enrolling in CPTP, respectively. Both these differences for College 1 were statistically significant, and the effect sizes (0.56 and 0.52) were considered medium-sized positive impacts. At College 2, the persistence in college rates for the CPTP students were also higher than the persistence rates for the comparison students in the second and third semesters after enrolling in CPTP, and the difference in the third semester reached statistical significance. These differences of 9.7 and 17.4 percentage points were equivalent to small to medium effect sizes of 0.32 and 0.43. The differences at College 3 between the CPTP and comparison students favored the CPTP students by 10.1 percentage points in the second semester and by 27.6 percentage points in the third semester. These differences were statistically significant, and the effect sizes (0.44 and 0.89) indicated medium to large impacts on the students' persistence in college.

Table 13a. Impact of CPTP on Persistence in College by Semester for College 1

Semester	CPTP students		Comparison students		Difference	Effect size	p value
	Percentage	n	Percentage	n			
Second semester after enrolling in CPTP	87.22%	91	72.86%	269	14.35%*	0.56	0.01
Third semester after enrolling in CPTP	72.13%	72	52.31%	216	19.82%*	0.52	0.002

Note. CPTP = Community Partnerships for Teacher Pipeline. *n* = number of study participants. Effect size = Cox Index. The percentages for the CPTP students were calculated by adding the unadjusted percentages for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Table 13b. Impact of CPTP on Persistence in College by Semester for College 2

Semester	CPTP students		Comparison students		Difference	Effect size	p value
	Percentage	n	Percentage	n			
Second semester after enrolling in CPTP	80.90%	72	71.23%	219	9.67%	0.32	0.10
Third semester after enrolling in CPTP	62.53%	44	45.14%	144	17.39%*	0.43	0.04

Note. CPTP = Community Partnerships for Teacher Pipeline. *n* = number of study participants. Effect size = Cox Index. The percentages for the CPTP students were calculated by adding the unadjusted percentages for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Table 13c. Impact of CPTP on Persistence in College by Semester for College 3

Semester	CPTP students		Comparison students		Difference	Effect size	p value
	Percentage	n	Percentage	n			
Second semester after enrolling in CPTP	88.02%	84	77.96%	245	10.06%*	0.44	0.04
Third semester after enrolling in CPTP	86.17%	54	58.62%	174	27.55%*	0.89	<0.001

Note. CPTP = Community Partnerships for Teacher Pipeline. *n* = number of study participants. Effect size = Cox Index. The percentages for the CPTP students were calculated by adding the unadjusted percentages for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Credit Accumulation

The results of the analyses of the impacts of CPTP on the students' credit accumulation are shown in Tables 14a, 14b, and 14c, disaggregated by semester. The impact estimates varied to some extent across the semesters and colleges, but the CPTP students accumulated more credits on average than the comparison students in eight of the nine analyses. In addition, six of the impact estimates from across the three colleges were statistically significant.

In each of the three semesters, the CPTP students at College 1 accumulated more credits than the comparison students on average and the differences ranged from 0.61 to 1.54 credits,

which were equivalent to effect sizes ranging from 0.11 to 0.29. The difference in the first semester of CPTP participation was statistically significant, whereas the differences in the two later semesters did not reach statistical significance.

At College 2, the CPTP students on average accumulated 1.58 more credits in the first semester of CPTP participation and 2.01 more credits in the second semester after enrolling in CPTP. Both these differences reached statistical significance and were equivalent to small to medium effect sizes of 0.35 and 0.44, respectively. In contrast, the comparison students accumulated more credits on average than the CPTP students in the third semester after enrolling in CPTP, but this difference of -0.91 credits was not statistically significant.

Across all three semesters, the CPTP students at College 3 accumulated more credits than the comparison students on average. The differences ranged from 1.57 to 2.13 credits and were all statistically significant. The effect sizes indexing these differences range from 0.34 to 0.46 and were considered small to medium-sized impacts.

Table 14a. Impact of CPTP on Credit Accumulation by Semester for College 1

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	9.17	5.43	98	7.63	5.28	294	1.54*	0.29	0.004
Second semester after enrolling in CPTP	7.95	5.44	79	7.05	4.88	196	0.91	0.18	0.12
Third semester after enrolling in CPTP	7.98	5.71	53	7.37	5.15	125	0.61	0.11	0.42

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Table 14b. Impact of CPTP on Credit Accumulation by Semester for College 2

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	8.83	4.39	78	7.25	4.57	234	1.58*	0.35	0.004
Second semester after enrolling in CPTP	8.76	4.92	57	6.75	4.47	157	2.01*	0.44	0.004
Third semester after enrolling in CPTP	5.63	3.99	30	6.54	4.37	69	-0.91	-0.21	0.33

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Table 14c. Impact of CPTP on Credit Accumulation by Semester for College 3

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	10.27	4.03	87	8.14	4.80	261	2.13*	0.46	<0.001
Second semester after enrolling in CPTP	9.57	4.28	74	8.00	4.67	191	1.57*	0.34	0.01
Third semester after enrolling in CPTP	8.73	4.81	48	6.89	4.33	105	1.84*	0.41	0.02

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Grade Point Average

The results of the analyses of the impacts of CPTP on the students' GPAs varied across the semesters and the three colleges, as shown in Tables 15a, 15b, and 15c. Although the pattern of findings varied somewhat across the three colleges, and there were no statistically significant differences, the CPTP students had higher GPAs on average than the comparison students for seven of the nine impact estimates.

At College 1 (Table 15a), the CPTP students had higher GPAs on average than the comparison students in the first semester of CPTP participation. The difference (0.18) was equivalent to an effect size of 0.15 and, although not statistically significant, approached what would be considered a small positive impact. In contrast, the comparison students had higher GPAs on average than the CPTP students in the second semester after enrolling in CPTP. The difference between the groups (-0.19) was equivalent to an effect size of -0.15 but was also not statistically significant. In the third semester after enrolling in CPTP, the nonsignificant difference between the CPTP and comparison students' GPAs was close to zero (0.05) and equivalent to an effect size of 0.04.

At College 2 (Table 15b), the CPTP students had slightly higher GPAs on average than the comparison students in the first semester of CPTP participation and in the second semester after enrolling in CPTP, but the differences were not statistically significant. The effect sizes indexing these differences were 0.14 and 0.06, respectively. In the third semester after enrolling in CPTP, the comparison students' GPAs were higher on average than the CPTP students' GPAs, and the effect size indexing this difference was -0.33. However, the sample size for this analysis ($n = 92$) was small, and the difference did not reach statistical significance.

At College 3 (Table 15c), the CPTP students had higher GPAs on average than the comparison students during each of the three semesters, but none of the differences was statistically significant. The effect sizes for the first semester of participation and the third semester after enrolling in CPTP were both 0.07, indicating minimal differences between the groups. The difference favoring the CPTP students in the second semester after participating in the program was equivalent to a small effect size of 0.20.

Table 15a. Impact of CPTP on GPA by Semester for College 1

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	3.03	1.07	95	2.86	1.18	274	0.18	0.15	0.11
Second semester after enrolling in CPTP	2.77	1.33	72	2.96	1.21	185	-0.19	-0.15	0.19
Third semester after enrolling in CPTP	2.68	1.47	48	2.63	1.31	118	0.05	0.04	0.81

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. n = number of study participants. Effect size = Hedges' g . The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table 15b. Impact of CPTP on GPA by Semester for College 2

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	3.19	1.03	77	3.04	1.10	223	0.14	0.13	0.20
Second semester after enrolling in CPTP	3.17	1.10	56	3.11	1.05	146	0.06	0.06	0.68
Third semester after enrolling in CPTP	2.72	1.42	30	3.12	1.07	62	-0.40	-0.33	0.12

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table 15c. Impact of CPTP on GPA by Semester for College 3

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	3.11	0.93	86	3.05	1.08	246	0.07	0.07	0.54
Second semester after enrolling in CPTP	3.16	0.92	73	2.94	1.14	181	0.21	0.20	0.10
Third semester after enrolling in CPTP	3.14	1.01	48	3.07	1.07	100	0.07	0.07	0.68

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the unadjusted means for the comparison group and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Transfer Rate

At each of the three colleges, the transfer rate for the CPTP students was higher on average than the transfer rate for the comparison students, as shown in Table 16. The differences ranged from about 8 to 14 percentage points across the three colleges, and the differences for Colleges 2 and 3 were statistically significant. The effect sizes, which indicated small to medium-sized impacts, ranged from 0.27 to 0.45 across the three colleges.

Table 16. Impacts of CPTP on Transfer Rate by Semester and College

College and semester	CPTP students		Comparison students		Difference	Effect size	<i>p</i> value
	Percentage	<i>n</i>	Percentage	<i>n</i>			
College 1: Any time after first semester of CPTP	26.88%	98	19.05%	294	7.83%	0.27	0.09
College 2: Any time after first semester of CPTP	26.32%	78	14.96%	234	11.37%*	0.43	0.02
College 3: Any time after first semester of CPTP	31.71%	87	18.01%	261	13.70%*	0.45	0.003

Note. CPTP = Community Partnerships for Teacher Pipeline. *n* = number of study participants. Effect size = Cox Index. The percentages for the CPTP students were calculated by adding the unadjusted percentages for the comparison and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Conclusions

The CCE developed the CPTP program with the goal of improving educational outcomes for community college students. The results of the current study indicate that CPTP succeeded in producing better outcomes for the participating students when contrasted with the outcomes of matched comparison students enrolled in the same colleges. Many of the differences on the outcomes of interest between CPTP and comparison students were statistically significant and considered small to moderate positive impacts based on the standards for educational research (Hill et al., 2008). The CPTP students had higher course completion rates, persisted in college at higher rates, accumulated more credits, had higher GPAs, and had higher transfer rates to 4-year colleges. These findings suggest that CPTP may lead to CCE's goal of increasing the number of highly effective educators, which ultimately may help alleviate current teacher supply and staffing shortages (Sutcher et al., 2016).

The study findings are consistent with prior research on providing multiple interventions for community college students (Weiss et al., 2022), including effective advising and developmental education strategies for these students (Karp et al., 2021; Bailey et al., 2016). CPTP students likely benefited from the multiple components the program offered—namely, a semesterly stipend, informal learning activities, a mentor, a Success Coach, and a Teacher Mentoring Network. Although prior research does not show that all CPTP components have an effect on student outcomes, CPTP implementation aligns with the characteristics of interventions that demonstrate impacts on credit accumulation and persistence in college for at least three semesters—namely, intervention comprehensiveness (i.e., multiple interventions addressing a variety of needs) and increased advising and financial support. (CPTP did not offer tutoring, another intervention with demonstrated impact; however, the program Success Coaches checked in regularly with students about their academic progress and made recommendations to pursue tutoring or academic counseling as needed.) CPTP also offered the opportunity for students to develop sustained, personalized relationships via CPTP mentors, an intervention with demonstrated impact on college persistence (Karp et al., 2021). The CPTP stipend, as an incentive to participate in enhanced advising activities, is an intervention that has a demonstrated impact on credit accumulation (Bailey et al., 2016).

The CPTP students showed higher rates of persistence in college than the comparison students in the second and third semesters after enrolling in CPTP. Additionally, the advantage shown by the CPTP students over the comparison students in terms of the number of credits they

accumulated showed up in the first semester of participation in CPTP and the second semester after enrolling in CPTP. However, the CPTP students' advantage for credits accumulated was not maintained in the third semester after enrolling in CPTP. Similarly, the CPTP students had advantages for course completion rate and GPA in the first semester of CPTP participation, but these advantages were not sustained through the second and third semesters after enrolling in CPTP.

The CPTP participants completed, on average, close to 30 EAM hours in the semesters when they participated; a minority of participants completed less than 10 hours. The most noticeable area of program implementation that could be improved is the retention of students in the program for two or more semesters. Just over half of the CPTP students participated for only one semester. In general, this level of participation is partially explained by generally low rates of reenrollment and degree completion in community college—for example, nationally, from 2019 to 2020, 61 percent of such students reenrolled at their institution or completed a degree or certificate (National Center for Education Statistics, 2022); in California, 31 percent of students obtained an associate's degree within 3 years (Public Policy Institute of California Higher Education Center, 2019). The positive impact of CPTP on course completion rate, credit accumulation, and GPA may be consistently sustained for two or three semesters if more students persist in the program for longer than one semester.

Limitations

The primary limitation of the current QED evaluation is that the students self-selected into CPTP rather than being randomly assigned to participate in the program. The CPTP students were well matched with the comparison students on their prior course completion rate, number of credits accumulated, GPA, and demographic characteristics. However, the CPTP students could have differed from the comparison students on any number of unmeasured factors, such as their academic engagement, self-efficacy, or knowledge about the college application process. Consistent with the limitations of QEDs (Shadish et al., 2002), these unmeasured factors could have contributed to the positive impacts observed in the current study. In addition, the analyses estimated the impact of CPTP on all students regardless of the extent to which they participated in the program (i.e., intent-to-treat analyses; Shadish et al., 2002). It is possible that the estimated impacts on the outcomes of interest would be larger for the students who participated in the planned number of hours and for two or more semesters (i.e., treatment-on-treated impacts). Finally, the study examined relatively short-term outcomes and, given the time frame of the study, could not examine whether the CPTP participants enrolled in and completed teacher credentialing programs at 4-year colleges or went on to enter the teaching profession.

Future Directions

Given the promising findings from the current study that CPTP can improve outcomes for community college students interested in entering the teaching profession, future projects may want to expand the program to other colleges. However, CCE program staff will need to identify sources of funding for expanding the program and for sustaining the program at the three participating colleges. Creating a blueprint for the CPTP program that details the implementation challenges and mitigation strategies could help support replication and expansion of the program.

The pattern of findings with more positive impacts at College 3 where CPTP was “bundled” with another teacher preparation program suggests more research is needed to investigate how the two programs overlapped and led to improved outcomes. In addition, future research could employ random assignment, which would provide stronger evidence regarding the impact of CPTP and would substantially reduce the likelihood that unmeasured differences between CPTP and control students contributed to positive impacts. A random assignment study would require program staff to recruit twice as many students as there are spots available for CPTP and potentially provide an alternative program to the control condition that is not expected to have much impact on the outcomes (e.g., a financial literacy program; Shadish et al., 2002). A delayed treatment control condition is also possible, but given enrollment trends at community colleges, a large proportion of the control group will have left the colleges before they are able to participate in the program two or three semesters later.

Future research could contact the CPTP participants in the current study in 2 to 3 years and collect qualitative data related to their plans to enter the teaching profession and document their perceptions of the impact of CPTP. Understanding whether participation in CPTP has lasting effects on students, such as long-term economic and career outcomes, may be important in designing programs to better support community college students and prospective teachers. Finally, further research is necessary to investigate how different levels of participation in CPTP (with regard to both EAM hours and semesters completed, which the current study did not assess) may impact students’ academic progress differently. Such research would help specify the ideal duration of participation in CPTP for students.

References

- Bailey, T., Bashford, J., Boatman, A., Squires, J., Weiss, M., Doyle, W., Valentine, J. C., LaSota, R., Polanin, J. R., Spinney, E., Wilson, W., Yeide, M., & Young, S. H. (2016). *Strategies for postsecondary students in developmental education: A practice guide for college and university administrators, advisors, and faculty*. Institute of Education Sciences, What Works Clearinghouse.
- Carver-Thomas, D., & Darling-Hammond, L. (2017). *Addressing California's growing teacher shortage: 2017 update*. Learning Policy Institute.
- The Education Trust. (2022). *Educator diversity state profile: California*. <https://edtrust.org/wp-content/uploads/2014/09/Educator-Diversity-State-Profile-California-June-2022.pdf>.
- Evergreen, S. D. (2017). *Presenting data effectively: Communicating your findings for maximum impact*. Sage.
- Hill, C. J., Bloom, H. S., Black, A. R., & Lipsey, M. W. (2008). Empirical benchmarks for interpreting effect sizes in research. *Child Development Perspectives*, 2(3), 172–177. <https://doi.org/10.1111/j.1750-8606.2008.00061.x>
- Kantor, D. (2012). *MAHAPICK: Stata module to select matching observations based on a Mahalanobis distance measure*. Statistical Software components. Boston College Department of Economics. <https://econpapers.repec.org/software/bocbocode/s456703.htm>
- Karp, M., Ackerson, S., Cheng, I., Cocatre-Zilgien, E., Costelloe, S., Freeman, B., Lemire, S., Linderman, D., McFarlane, B., Moulton, S., O'Shea, J., Porowski, A., & Richburg-Hayes, L. (2021). *Effective advising for postsecondary students: A practice guide for educators* (WWC 2022003). National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. <https://ies.ed.gov/ncee/WWC/PracticeGuide/28>
- National Center for Education Statistics. (n.d.). *College navigator*. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. <https://nces.ed.gov/collegenavigator>

- National Center for Education Statistics. (2022). *Undergraduate retention and graduation rates*. Condition of education. U.S. Department of Education, Institute of Education Sciences. Retrieved November 13, 2023, from <https://nces.ed.gov/programs/coe/indicator/ctr>
- Partelow, L. (2019). *What to make of declining enrollment in teacher preparation programs*. Center for American Progress.
- Public Policy Institute of California Higher Education Center. (2019). *Improving college completion*. Public Policy Institute of California. <https://www.ppic.org/wp-content/uploads/higher-education-in-california-improving-college-completion-october-2019.pdf>
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Houghton Mifflin.
- Stephens, N. M., Hamedani, M. G., & Destin, M. (2014). Closing the social-class achievement gap: A difference-education intervention improves first-generation students' academic performance and all students' college transition. *Psychological Science*, 25(4), 943–953.
- Stuart, E. A. (2010). Matching methods for causal inference: A review and a look forward. *Statistical Science*, 25, 1–21. <https://10.1214/09-STS313>
- Sutcher, L., Darling-Hammond, L., & Carver-Thomas, D. (2016). *A coming crisis in teaching? Teacher supply, demand, and shortages in the U.S.* Learning Policy Institute.
- U.S. Department of Education. (2023). *2022 Title II Reports: National Teacher Preparation Data*. Title II. https://title2.ed.gov/Public/Report/Providers/Providers.aspx?p=4_05
- Warner, S. R., & Duncan, E. (2019). *A vision and guidance for a diverse and learner-ready teacher workforce*. Council of Chief State School Officers.
- Weiss, M. J., Bloom, H. S., & Singh, K. (2023). What 20 years of MDRC RCTs suggest about predictive relationships between intervention features and intervention impacts for community college students. *Educational Evaluation and Policy Analysis*, 45(4), 569–597. <https://doi.org/10.3102/01623737221139493>
- What Works Clearinghouse. (2022). *What Works Clearinghouse: Procedures and standards handbook, version 5.0*. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance. <https://ies.ed.gov/ncee/wwc/Handbooks>.
- Zhao, Z. (2004). Using matching to estimate treatment effects: Data requirements, matching metrics, and Monte Carlo evidence. *Review of Economics and Statistics*, 86(1), 91–107. <https://doi.org/10.1162/003465304323023705>

Appendix A. Additional Analyses and Information on the Regression Models

Detailed Description of the Regression Models

The ordinary least squares (OLS) regression models that were used for the analyses with students at all three colleges are outlined by the equation below:

$$Y_i = \beta_0 + \beta_1(\text{CPTP Status}) + \beta_2(\text{CC 1}) + \beta_3(\text{CC 2}) + \beta_4(\text{Baseline GPA}) + \beta_5(\text{Baseline Course Completion Rate}) + \beta_6(\text{Baseline Credits Accumulated}) + \beta_7(\text{Demographic Measure 1}) + \dots + \beta_Q(\text{Demographic Measure Q}) + \varepsilon$$

Y_i is the value for the outcome measure (i.e., course completion rate, persistence in college rate, credits accumulated, GPA, and transfer rate) and β_0 is the intercept in the model. Additionally, β_1 is the coefficient describing the strength and direction of the association between the intervention status (i.e., CPTP students = 1 and comparison students = 0) and the outcome. Values greater than zero for β_1 indicate that the CPTP students have higher scores on the outcome whereas values below zero indicate that the comparison students have higher scores on the outcome. β_2 and β_3 are coefficients that describe the strength and direction of the associations between dummy codes controlling for the community college attended. β_4 , β_5 , and β_6 are the coefficients that describe the strength and direction of the association between baseline GPA, course completion rate, and credits accumulated and the outcome. β_7 to β_Q are coefficients that describe the strength and direction of the associations between the continuous demographic measure (i.e., age) and dummy codes representing the other demographic variables (i.e., gender, race/ethnicity, Pell Grant eligibility, first-generation college student status, and whether the student's academic major was in a field related to education) and the outcome. Lastly, ε is the residual or error term.

Baseline Comparisons for the Analyses That Included the Three Colleges

Tables A1 to A4 present the baseline academic measures for the CPTP and comparison students for the additional samples in the analyses that included the three colleges.

Table A1. Baseline Comparisons for the Cumulative Course Completion Rate Analyses That Included the Three Colleges

Analytic sample	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
Second semester after enrolling in CPTP	88.00%	0.17	210	88.14%	0.17	543	-0.14%	-0.01	0.92
Third semester after enrolling in CPTP	86.23%	0.19	131	88.28%	0.16	299	-2.05%	-0.12	0.25

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means presented are the average cumulative coursework completion rates at baseline for the groups. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table A2. Baseline Comparisons on Cumulative GPA for the Persistence Analyses That Included the Three Colleges

Analytic sample	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
Second semester after enrolling in CPTP	3.15	0.73	247	3.13	0.72	733	0.02	0.03	0.73
Third semester after enrolling in CPTP	3.14	0.74	170	3.15	0.70	534	0.00	-0.01	0.95

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The GPAs for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Cumulative GPA was used as a broad measure of achievement for the persistence in college analyses.

Table A3. Baseline Comparisons for the Cumulative Credit Accumulation Analyses That Included the Three Colleges

Analytic sample	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
Second semester after enrolling in CPTP	41.14	28.53	210	38.23	24.75	544	2.91	0.11	0.17
Third semester after enrolling in CPTP	38.93	30.37	131	34.38	22.54	299	4.55	0.18	0.09

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means presented are the cumulative number of credits accumulated at baseline for the groups. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table A4. Baseline Comparisons for the GPA Analyses That Included the Three Colleges

Analytic sample	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
First semester of CPTP participation	3.19	0.69	258	3.17	0.70	743	0.02	0.03	0.73
Second semester after enrolling in CPTP	3.17	0.71	201	3.22	0.64	512	-0.05	-0.08	0.36
Third semester after enrolling in CPTP	3.12	0.74	126	3.24	0.62	280	-0.12	-0.18	0.09

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of study participants. Effect size = Hedges' *g*. The means presented are the cumulative GPAs at baseline for the groups. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

For the persistence in college analyses in the second semester after enrolling in CPTP, the Pell Grant eligibility (CPTP students = 71.26%; comparison students = 72.71%) and race/ethnicity (CPTP students = 9.31% Asian, 4.05% Black or African American, 70.04% Hispanic, 8.10% White, 8.50% Unknown/Other Race or Ethnicity; comparison students = 9.41% Asian, 4.64% Black or African American, 69.85% Hispanic, 7.64% White, 8.46% Unknown/Other Race or Ethnicity) were well matched. The effect sizes for these differences based on the Cox Index ranged from -0.08 to 0.04. Additionally, the ages of the CPTP (mean = 26.45; SD = 9.61) and comparison students (mean = 25.86; SD = 8.76) were well matched, and the effect size based on Hedges' *g* indexing this difference was 0.07.

For the persistence in college analyses in the third semester after enrolling in CPTP, the Pell Grant eligibility (CPTP students = 71.76%; comparison students = 73.60%) and race/ethnicity (CPTP students = 9.41% Asian, 4.12% Black or African American, 70.00% Hispanic, 8.24% White, 8.24% Unknown/Other Race or Ethnicity; comparison students = 9.93% Asian, 3.93% Black or African American, 69.48% Hispanic, 7.12% White, 9.55% Unknown/Other Race or Ethnicity) were well matched. The effect sizes for these differences based on the Cox Index ranged from -0.10 to 0.09. The ages of the CPTP (mean = 27.07; SD = 10.21) and comparison students (mean = 25.87; SD = 8.79) were also well matched, and the effect size based on Hedges' *g* indexing this difference was 0.13.

Baseline Comparisons Separately for the Three Colleges

Table A5. Demographic Characteristics of the CPTP and Matched Comparison Students at College 1

Demographic characteristic	CPTP students		Comparison students		Difference	Effect size	<i>p</i> value
	Percentage	<i>n</i>	Percentage	<i>n</i>			
Female	77.55%	76	77.55%	228	0.00%	0.00	1.00
Asian	6.12%	6	6.12%	18	0.00%	0.00	1.00
Black or African American	0.00%	0	0.00%	0	-	-	-
Hispanic	89.80%	88	89.80%	264	0.00%	0.00	1.00
White	2.04%	2	2.04%	6	0.00%	0.00	1.00
Unknown/Other Race or Ethnicity	2.04%	2	2.04%	6	0.00%	0.00	1.00
Eligible for Pell Grant	67.35%	66	67.35%	198	0.00%	0.00	1.00
First-Generation Student	71.43%	70	71.43%	210	0.00%	0.00	1.00
Education Major	27.55%	27	27.55%	81	0.00%	0.00	1.00

Note. CPTP = Community Partnerships for Teacher Pipeline. Effect size = Cox Index. *n* = number of students. Demographics are based on the largest analytic sample of 98 CPTP students and 294 comparison students that was used for the analyses for course completion rate in the first semester of CPTP participation, credits accumulated in the first semester of CPTP participation, and transfer rate.

Table A6. Baseline Academic Measures and Age for the CPTP and Matched Comparison Students at College 1

Baseline measure	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
Cumulative course completion rate	85.30%	0.21	98	85.49%	0.20	294	-0.19%	-0.01	0.94
Cumulative credit accumulation	41.53	27.19	98	39.07	24.19	294	2.46	0.10	0.40
Cumulative GPA	3.15	0.75	98	3.14	0.74	294	0.02	0.02	0.85
Age	26.19	10.23	98	25.25	9.56	294	0.95	0.10	0.41

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table A7. Demographic Characteristics of the CPTP and Matched Comparison Students at College 2

Demographic characteristic	CPTP students		Comparison students		Difference	Effect size	<i>p</i> value
	Percentage	<i>n</i>	Percentage	<i>n</i>			
Female	91.03%	71	91.03%	213	0.00%	0.00	1.00
Asian	16.67%	13	15.81%	37	0.86%	0.04	0.86
Black or African American	8.97%	7	9.40%	22	-0.43%	-0.03	0.91
Hispanic	64.10%	50	64.53%	151	-0.43%	-0.01	0.95
White	7.69%	6	7.69%	18	0.00%	0.00	1.00
Unknown/Other Race or Ethnicity	2.56%	2	2.56%	6	0.00%	0.00	1.00
Eligible for Pell Grant	88.46%	69	88.46%	207	0.00%	0.00	1.00
Education Major	42.31%	33	39.74%	93	2.57%	0.06	0.69

Note. CPTP = Community Partnerships for Teacher Pipeline. Effect size = Cox Index. *n* = number of students. Demographics are based on the largest analytic sample of 78 CPTP students and 234 comparison students that was used for the analyses for course completion rate in the first semester of CPTP participation, credits accumulated in the first semester of CPTP participation, and transfer rate. Data on first-generation status were not available for 96 percent of students at College 2, and data for this measure are not presented in this table.

Table A8. Baseline Academic Measures and Age for the CPTP and Matched Comparison Students at College 2

Baseline measure	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
Cumulative course completion rate	94.10%	0.15	78	93.73%	0.15	234	0.37%	0.03	0.85
Cumulative credit accumulation	43.62	33.06	78	40.99	26.85	234	2.63	0.09	0.48
Cumulative GPA	3.13	0.78	78	3.11	0.79	234	0.01	0.02	0.89
Age	28.33	10.11	78	27.53	8.97	234	0.80	0.09	0.51

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table A9. Demographic Characteristics of the CPTP and Matched Comparison Students at College 3

Demographic characteristic	CPTP students		Comparison students		Difference	Effect size	p value
	Percentage	n	Percentage	n			
Female	87.36%	76	87.36%	228	0.00%	0.00	1.00
Asian	8.05%	7	8.05%	21	0.00%	0.00	1.00
Black or African American	4.60%	4	4.60%	12	0.00%	0.00	1.00
Hispanic	51.72%	45	51.72%	135	0.00%	0.00	1.00
White	14.94%	13	14.94%	39	0.00%	0.00	1.00
Unknown/Other Race or Ethnicity	20.69%	18	20.69%	54	0.00%	0.00	1.00
Eligible for Pell Grant	59.77%	52	59.77%	156	0.00%	0.00	1.00
First-Generation Student	57.47%	50	57.47%	150	0.00%	0.00	1.00
Education Major	65.52%	57	60.54%	158	4.98%	0.13	0.41

Note. CPTP = Community Partnerships for Teacher Pipeline. Effect size = Cox Index. *n* = number of students. Demographics are based on the largest analytic sample of 87 CPTP students and 261 comparison students that was used for the analyses for course completion rate in the first semester of CPTP participation, credits accumulated in the first semester of CPTP participation, and transfer rate.

Table A10. Baseline Academic Measures and Age for the CPTP and Matched Comparison Students at College 3

Baseline measure	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
Cumulative course completion rate	84.14%	0.17	87	84.17%	0.16	261	-0.03%	-0.00	0.99
Cumulative credit accumulation	41.06	26.82	87	40.75	26.77	261	0.31	0.01	0.93
Cumulative GPA	3.23	0.61	87	3.21	0.58	261	0.02	0.03	0.80
Age	24.66	7.21	87	24.57	6.66	261	0.08	0.01	0.92

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Baseline Comparisons and Impact Estimates for Colleges 1 and 2

In contrast to College 3, Colleges 1 and 2 did not “bundle” CPTP with any other programs. This section of the appendix includes the baseline comparisons and impact estimates only for Colleges 1 and 2 to allow for an examination of the impact of the unbundled version of CPTP.

Table A11. Demographic Characteristics of the CPTP and Matched Comparison Students at Colleges 1 and 2

Demographic characteristic	CPTP students		Comparison students		Difference	Effect size	<i>p</i> value
	Percentage	<i>n</i>	Percentage	<i>n</i>			
Female	83.52%	147	83.52%	441	0.00%	0.00	1.00
Asian	10.80%	19	10.42%	55	0.38%	0.02	0.89
Black or African American	3.98%	7	4.17%	22	-0.19%	-0.03	0.91
Hispanic	78.41%	138	78.60%	415	-0.19%	-0.01	0.96
White	4.55%	8	4.55%	24	0.00%	0.00	1.00
Unknown/Other Race or Ethnicity	2.27%	4	2.27%	12	0.00%	0.00	1.00
Eligible for Pell Grant	76.70%	135	76.70%	405	0.00%	0.00	1.00
First-Generation Student	40.34%	71	40.34%	213	0.00%	0.00	1.00
Education Major	34.09%	60	32.95%	174	1.14%	0.03	0.78

Note. CPTP = Community Partnerships for Teacher Pipeline. Effect size = Cox Index. *n* = number of students. Demographics are based on the largest analytic sample of 176 CPTP students and 528 comparison students that was used for the analyses for course completion rate in the first semester of CPTP participation, credits accumulated in the first semester of CPTP participation, and transfer rate.

Table A12. Baseline Academic Measures and Age for the CPTP and Matched Comparison Students at Colleges 1 and 2

Baseline measure	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
Cumulative course completion rate	89.20%	0.19	176	89.14%	0.19	528	0.06%	0.00	0.97
Cumulative credit accumulation	42.45	29.87	176	39.92	25.40	528	2.54	0.10	0.27
Cumulative GPA	3.14	0.76	176	3.12	0.76	528	0.02	0.02	0.82
Age	27.14	10.21	176	26.26	9.37	528	0.88	0.09	0.29

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models. The sample included in this table was used for the analyses for course completion rate in the first semester of CPTP participation, credits accumulated in the first semester of CPTP participation, and transfer rate.

For the persistence in college analyses in the second semester after enrolling in CPTP at Colleges 1 and 2, the Pell Grant eligibility (CPTP students = 76.69%; comparison students = 78.89%) and race/ethnicity (CPTP students = 9.82% Asian, 3.68% Black or African American, 79.14% Hispanic, 4.91% White, 2.45% Unknown/Other Race or Ethnicity; comparison students = 10.25% Asian, 4.51% Black or African American, 78.69% Hispanic, 4.10% White, 2.46% Unknown/Other Race or Ethnicity) were well matched. The effect sizes for these differences based on the Cox Index ranged from -0.12 to 0.11. Additionally, the ages of the CPTP (mean = 27.30; SD = 10.52) and comparison students (mean = 26.47; SD = 9.55) were well matched, and the effect size based on Hedges' *g* indexing this difference was 0.08.

For the persistence in college analyses in the third semester after enrolling in CPTP at Colleges 1 and 2, the Pell Grant eligibility (CPTP students = 75.86%; comparison students = 73.60%) and race/ethnicity (CPTP students = 9.84% Asian, 4.31% Black or African American, 79.31% Hispanic, 5.17% White, 1.72% Unknown/Other Race or Ethnicity; comparison students = 10.56% Asian, 4.17% Black or African American, 78.33% Hispanic, 4.44% White, 2.50% Unknown/Other Race or Ethnicity) were well matched. The effect sizes for these differences based on the Cox Index ranged from -0.21 to 0.09. The ages of the CPTP (mean = 27.77; SD = 11.10) and comparison students (mean = 26.34; SD = 9.57) were also well matched, and the effect size based on Hedges' *g* indexing this difference was 0.14.

Table A13. Baseline Comparisons for the Cumulative Course Completion Rate Analyses That Included Colleges 1 and 2

Analysis sample	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
Second semester after enrolling in CPTP	89.42%	0.18	136	90.23%	0.17	352	-0.81%	-0.05	0.64
Third semester after enrolling in CPTP	87.35%	0.19	83	90.12%	0.16	194	-2.77%	-0.16	0.22

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Hedges' *g*. The means presented are the average cumulative coursework completion rates at baseline for the groups. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table A14. Baseline Comparisons on Cumulative GPA for Persistence Analyses That Included Colleges 1 and 2

Analysis sample	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
Second semester after enrolling in CPTP	3.11	0.78	163	3.10	0.78	488	0.02	0.02	0.82
Third semester after enrolling in CPTP	3.09	0.80	116	3.09	0.76	360	-0.001	0.00	0.99

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Cumulative GPA was used as a broad measure of achievement for the persistence in college analyses.

Table A15. Baseline Comparisons for the Cumulative Credit Accumulation Analyses That Included Colleges 1 and 2

Analysis sample	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
Second semester after enrolling in CPTP	40.82	29.44	136	37.93	24.31	353	2.90	0.11	0.267
Third semester after enrolling in CPTP	38.57	32.41	83	32.32	21.32	194	6.25	0.25	0.059

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Hedges' *g*. The means presented are the cumulative number of credits accumulated at baseline for the groups. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table A16. Baseline Comparisons for the GPA Analyses That Included Colleges 1 and 2

Analysis sample	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Mean	SD	<i>n</i>	Mean	SD	<i>n</i>			
First semester of CPTP participation	3.16	0.73	172	3.15	0.75	497	0.02	0.02	0.79
Second semester after enrolling in CPTP	3.10	0.77	128	3.20	0.69	331	-0.09	-0.13	0.21
Third semester after enrolling in CPTP	3.06	0.82	78	3.21	0.68	180	-0.15	-0.21	0.12

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Hedges' *g*. The means presented are the cumulative GPAs at baseline for the groups. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table A17. Impacts of CPTP on Course Completion at Colleges 1 and 2

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	83.66%	0.30	176	80.31%	0.34	528	3.35%	0.10	0.19
Second semester after enrolling in CPTP	79.13%	0.36	136	78.44%	0.36	352	0.69%	0.02	0.84
Third semester after enrolling in CPTP	73.94%	0.39	83	75.99%	0.38	194	-2.05%	-0.05	0.67

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models.

Table A18. Impacts of CPTP on Persistence in College at Colleges 1 and 2

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Percentage	SD	n	Percentage	SD	n			
Second semester after enrolling in CPTP	84.24%	-	163	72.13%	-	488	12.11%*	0.44	0.002
Third semester after enrolling in CPTP	68.73%	-	116	49.44%	-	360	19.28%*	0.49	<0.001

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Cox Index. The percentages for the CPTP students were calculated by adding the percentages for the comparison group (i.e., the unadjusted percentages) and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Table A19. Impacts of CPTP on Credit Accumulation at Colleges 1 and 2

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	9.03	4.98	176	7.46	4.98	528	1.57*	0.32	<0.001
Second semester after enrolling in CPTP	8.30	5.24	136	6.91	4.70	353	1.39*	0.29	<0.01
Third semester after enrolling in CPTP	7.20	5.19	83	7.08	4.89	194	0.13	0.03	0.83

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Table A20. Impacts of CPTP on GPA at Colleges 1 and 2

Semester	CPTP students			Comparison students			Difference	Effect size	p value
	Mean	SD	n	Mean	SD	n			
First semester of CPTP participation	3.10	1.05	172	2.94	1.14	497	0.16*	0.15	0.04
Second semester after enrolling in CPTP	2.95	1.24	128	3.03	1.14	331	-0.08	-0.06	0.46
Third semester after enrolling in CPTP	2.69	1.44	78	2.80	1.25	180	-0.11	-0.08	0.49

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Hedges' *g*. The means for the CPTP students were calculated by adding the means for the comparison group (i.e., the unadjusted means) and the differences (i.e., the CPTP-comparison contrasts) from the regression models. Differences with an asterisk (*) were statistically significant at $p < .05$.

Table A21. Impacts of CPTP on Transfer Rate at Colleges 1 and 2

Semester	CPTP students			Comparison students			Difference	Effect size	<i>p</i> value
	Percentage	SD	<i>n</i>	Percentage	SD	<i>n</i>			
Third semester after enrolling in CPTP	26.72%	-	176	17.23%	-	528	9.48%*	0.34	0.004

Note. CPTP = Community Partnerships for Teacher Pipeline. SD = standard deviation. *n* = number of students. Effect size = Cox Index. The percentage for the CPTP students was calculated by adding the percentage for the comparison group (i.e., the unadjusted percentage) and the difference (i.e., the CPTP-comparison contrast) from the regression model. The difference with an asterisk (*) was statistically significant at $p < .05$.

Appendix B. Figure Descriptions

Description of Figure E1

A color-coded bar chart is used to display the impact of CPTP on course completion rate by semester (see [Figure E1](#)).

- **First semester of CPTP participation:**
CPTP Students had a 68% Course Completion Rate. This data point is bolded and marked with an asterisk to indicate that it is significantly different (p value greater than .05) from the course completion rate for the comparison students (80%).
- **Second semester after enrolling in CPTP:**
CPTP Students 82%; Comparison students 79%.
- **Third semester after enrolling in CPTP:**
CPTP students 79%; Comparison students 77%.

Description of Figure E2

A color-coded bar chart is used to display the impact of CPTP on persistence in college by semester (see [Figure E2](#)).

- **Second semester after enrolling in CPTP:**
CPTP Students had an 85% persistence rate. This data point is bolded and marked with an asterisk to indicate that it is significantly different (p value greater than .05) from the persistence rate for the comparison students (74%).
- **Third semester after enrolling in CPTP:**
CPTP students had a 74% persistence rate. This data point is bolded and marked with an asterisk to indicate that it is significantly different (p value greater than .05) from the persistence rate for the comparison students (52%).

Description of Figure E3

A color-coded bar chart is used to display the impact of CPTP on credit accumulation by semester (see [Figure E3](#)).

- **First semester of CPTP participation:**
CPTP Students accumulated 9.46 credits. This data point is bolded and marked with an asterisk to indicate that it is significantly different (p value greater than .05) from credits accumulated by comparison students (7.68).
- **Second semester after enrolling in CPTP:**
CPTP Students accumulated 8.77 credits. This data point is bolded and marked with an asterisk to indicate that it is significantly different (p value greater than .05) from credits accumulated by comparison students (7.29).
- **Third semester after enrolling in CPTP:**
CPTP Students accumulated 7.76 credits; Comparison students accumulated 7.01 credits.

Description of Figure E4

A color-coded bar chart is used to display the impact of CPTP on GPA by semester (see [Figure E4](#)).

- **First semester of CPTP participation:**
CPTP Students had an average GPA of 3.11. This data point is bolded and marked with an asterisk to indicate that it is significantly different (p value greater than .05) from the average GPA of comparison students (2.98).
- **Second semester after enrolling in CPTP:**
CPTP Students had an average GPA of 3.03; Comparison students 3.00.
- **Third semester after enrolling in CPTP:**
CPTP Students had an average GPA of 2.86; Comparison students 2.90.

Description of Figure E5

A color-coded bar chart is used to display the impact of CPTP on transfer rate (see [Figure E5](#)).

- **Any time after first semester of CPTP:**
CPTP Students had a 28% transfer rate. This data point is bolded and marked with an asterisk to indicate that it is significantly different (p value greater than .05) from the transfer rate of comparison students (17%).

Description of Figure 1

A stacked color-coded bar chart is used to display the percentage of CPTP participants by number of semesters of CPTP participation overall and by college (see [Figure 1](#)).

Table B1. Data Represented in Figure 1

Sample	One Semester of Participation		Two Semesters of Participation		Three Semesters of Participation	
	Percentage	<i>n</i>	Percentage	<i>n</i>	Percentage	<i>n</i>
Overall	52.47%	138	28.14%	74	19.39%	51
College 1	44.90%	44	34.69%	34	20.41%	20
College 2	70.51%	55	16.67%	13	12.82%	10
College 3	44.83%	39	31.03%	27	24.14%	21

