



**SAN DIEGO COUNTY**  
COLLEGE AND CAREER READINESS  
CONSORTIUM

# Evaluation of San Diego County College and Career Readiness Consortium's California Career Pathways Trust Program

## Final Report

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## Section 1: Introduction

We are pleased to submit this Final Report for the evaluation of the San Diego County College and Career Readiness Consortium's (Consortium) California Career Pathways Trust (CCPT) program, funded by the California Department of Education (CDE). The Consortium, with support from the San Diego County Office of Education (SDCOE) as the fiscal agent, used the CCPT grant to develop and strengthen regional pathways programs that link K–12 schools, community colleges, businesses, and other community partners to prepare students for the workforce.

Social Policy Research Associates (SPR) was contracted to conduct a two-and-a-half-year evaluation of SDCOE's CCPT grant (2015–2018). The goal of the evaluation was to document the implementation of CCPT-funded career pathways programs, the ways that students and consortium members benefited from the grant, and changes in the consortium's capacity to offer robust career pathways programs across the region.

SPR has produced three reports for this evaluation: [Annual Report #1 \(September 29, 2016\)](#); [Mid-Project Report \(June 15, 2017\)](#); and [Annual Report #2 \(December 12, 2017\)](#). These reports relied on data from telephone interviews with representatives from school districts, community colleges, and community partners involved in the CCPT grant. They also drew on data from Student Momentum Points (SMP) to summarize enrollment in career pathways programs. This Final Report draws primarily on data collected from site visits to six high schools that received CCPT grant funds to develop or strengthen their career pathways programs. It highlights the characteristics of new and/or enhanced pathways, work-based learning (WBL) opportunities, professional development efforts, and partnerships at these six schools. We highlight key practices, analyze challenges, and explore factors that affected the progress that the high schools achieved over the course of the grant.

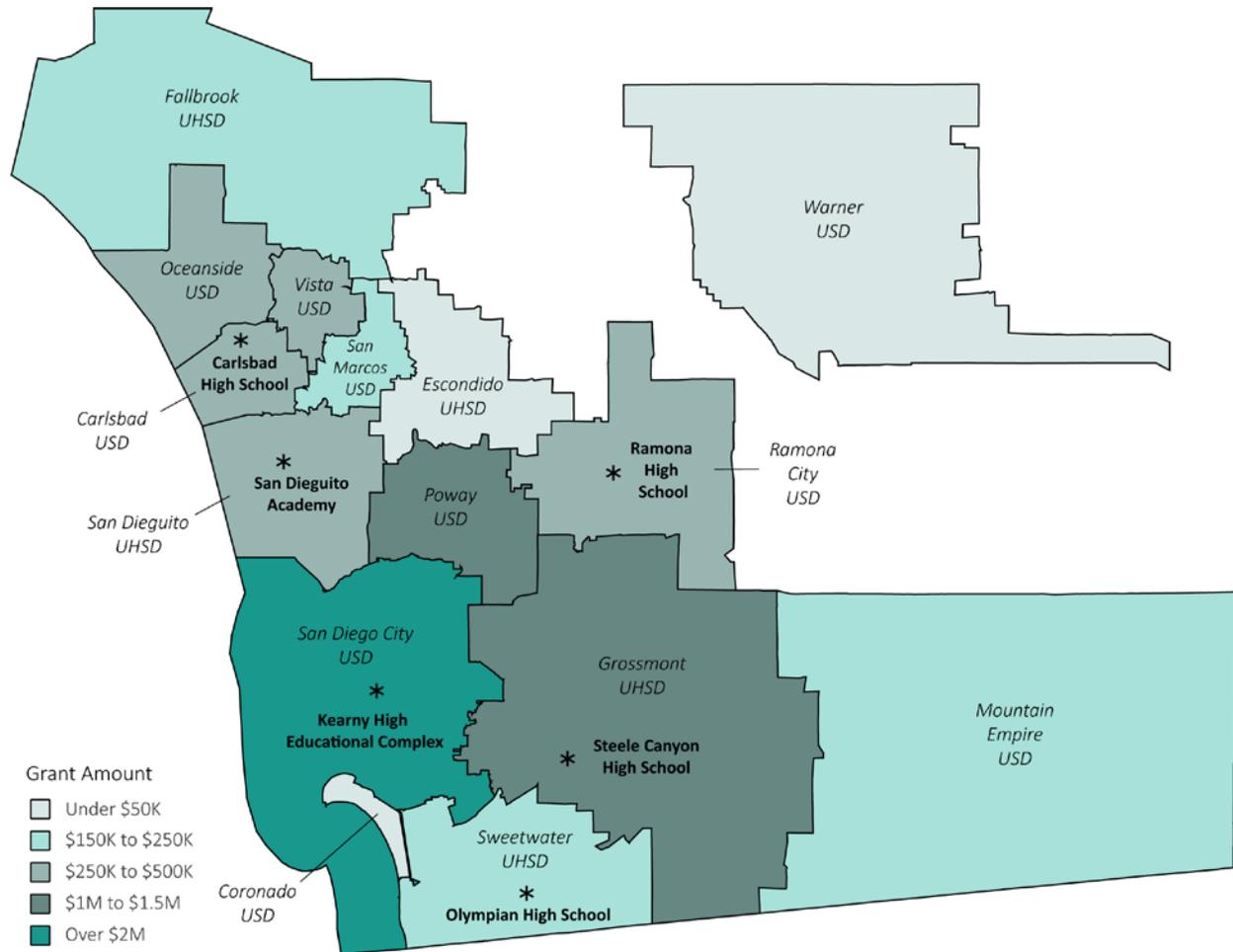
### Overview of the CCPT Grant

The CCPT grant engaged a diverse group of partners in San Diego County to develop career pathways in advanced manufacturing, clean energy, and information and communication technology (ICT). The consortium included SDCOE, 15 school districts, a charter high school, SDCOE's Juvenile Court and Community Schools, eight community colleges, and numerous employer partners. Other core partners on the grant included the United Way of San Diego, Junior Achievement, San Diego Workforce Partnership, Cleantech San Diego, San Diego Regional Economic Development Corporation, and East County Economic Development Council.

Due to the size of San Diego County, districts ranged from rural districts with few schools, such as Warner Unified School District, to urban districts with many schools, such as San Diego City Unified School District. Similarly, schools within the districts varied significantly in the degree to which they had well-developed pathways prior to grant implementation. The grants varied in size from \$30,000 to \$2.3 million, depending on projected enrollment in the targeted pathways within each member district. In all, \$267,358 in CCPT funds was earmarked for community colleges to pilot

projects that coordinate and/or align their career pathways with local high schools. Exhibit 1-A provides a picture of the 17 grant-funded districts, the approximate size of the grant provided to each district, and the locations of the six schools SPR visited as part of this final phase of data collection.

**Exhibit 1-A: CCPT-Funded Districts, Grant Sizes, and Site Visit Schools**



The grant was overseen by an Executive Committee made up of K-12 district superintendents, a community college president, a vice chancellor, and executive leadership from workforce development, United Way and Junior Achievement, as well as a Steering Committee made up of education, business and representatives from all consortium members. Both committees met monthly over the grant period. The role of the Executive Committee was to promote the vision of building a sustainable regional countywide infrastructure for quality career pathways. The role of the Steering Committee was to ensure the successful implementation of the CCPT grant, build regional infrastructure to support pathways development, and identify promising practices. A series of subcommittees that worked on topics of interest—such as data and accountability,

pathways development, and WBL—was formed to help the Steering Committee achieve these aims. SDCOE was responsible for the fiscal management and oversight of the grant, including oversight of the workgroups, reporting of outcomes, and grant monitoring.

As articulated in SPR’s Mid-Project Report, across the 17 school districts, the CCPT grant led to the development of 18 new high school CTE pathways, mostly in information and communication technology and advanced manufacturing. The grant also enhanced 54 pre-existing pathways, through the addition of new courses, strengthened WBL, new equipment, modified curricula, and/or new staff members.

## Methods and Data Sources

Between January 30 and February 9, 2018, SPR staff conducted site visits to Carlsbad High School, Kearny High Educational Complex, Olympian High School, Ramona High School, San Dieguito Academy, and Steele Canyon High School. Half of these high schools were identified by district leaders as having “advanced pathways,” while the other half were identified as “emerging.” The schools were also selected to represent geographic diversity, with half from North County and half from South County. Through interviews and focus groups, we spoke with 64 individuals:

- 38 students across six student focus groups
- 10 individual career technical education (CTE) teachers
- 6 CTE managers, WBL coordinators, and school counselors
- 10 principals and other school administrators

The conversations focused on the development of the CCPT programs, key features of the CTE pathways, and the successes and challenges that school stakeholders experienced in program design and implementation. The opportunity to hear from students about what they perceived as the unique value of CTE coursework at their high schools was particularly valuable.

In addition to the on-site interviews outlined above, SPR staff conducted eight phone interviews: five with employer partners to better understand the value that they found in collaborating with schools and providing WBL opportunities to students, and three with SDCOE staff members to get their perspective on overall grant implementation and key lessons at the county level. Furthermore, this review also highlights Student Momentum Points (SMP) data from 2015-16 and 2016-17 that was discussed in Annual Report #2.

This Final Report explores the key practices and lessons learned from implementing the CCPT grant. Key questions that guided our assessment are summarized below.

## EVALUATION QUESTIONS FOR FINAL REPORT

- What pathways have been developed, expanded, or enhanced using grant funds?
- What is the nature of work-based learning opportunities in each district or school? How do students access these opportunities? To what extent are schools and districts using the ePortal system to identify WBL opportunities and connect students to them?
- What regional, district, or schoolwide professional development efforts have been provided for CTE staff to implement career pathways? What are schools and districts' top priorities for providing professional development in CCPT-funded career pathways? To what extent are schools and districts leveraging other resources to provide professional development on career pathways?
- What have been the major successes and challenges in coordinating with partners involved with the CCPT grant?
- What outcomes have resulted from the grant?
- What plans are in place to sustain the efforts supported by the CCPT grant?

## Remainder of the Report

The remainder of this report presents key findings on CCPT outcomes, drawing on our in-depth site visits and county-level interviews.

**Section 2: Career Pathways Structure** features new and enhanced career pathways at the visited high schools, processes for student enrollment in pathways, fit of the pathways within the larger school context, and student perspectives on the overall content and quality of pathways.

**Section 3: Work-Based Learning and Employer Partners** describes the types of WBL opportunities, engagement with employer partnerships, use of the ePortal system, and student perspectives on the value of WBL opportunities available through their programs of study.

**Section 4: Connections to Postsecondary Education** summarizes the incorporation of postsecondary education preparatory work into career pathways, engagement with colleges on pathways design, and student perspectives on the link between CTE and postsecondary goals.

**Section 5: Professional Development** describes the professional development (PD) opportunities available to support the CCPT grant-funded pathways at the school level, the use of teaching teams and shared planning time, and teachers' perspectives of the value and quality of PD.

**Section 6: Challenges and Lessons Learned** summarizes the challenges and lessons learned in developing quality career pathways, as well as plans for sustainability.

**Appendix: Individual School Profiles** provides an overview of career pathways development, WBL, postsecondary connections, and grant challenges, as well as lessons learned for each of the six schools that we visited.

## Section 2: Career Pathways Structure and Design

The CCPT grant supported career pathways in advanced manufacturing, clean energy, and information and communications technology (ICT)—three of five industry sectors highlighted by the Workforce Investment Board (WIB) as growth areas for the local economy. In this section, we provide an overview of enhanced and new pathways implemented by the six schools we visited, highlight processes for recruiting or placing students into pathways, and describe student experiences with pathways programs.

Before diving into the details associated with each pathway, we share a framework developed by ConnectEd that has been utilized by districts (SDUSD), to illustrate the key dimensions of well-developed career pathways.

Exhibit 2-A: Career Pathways Continuum

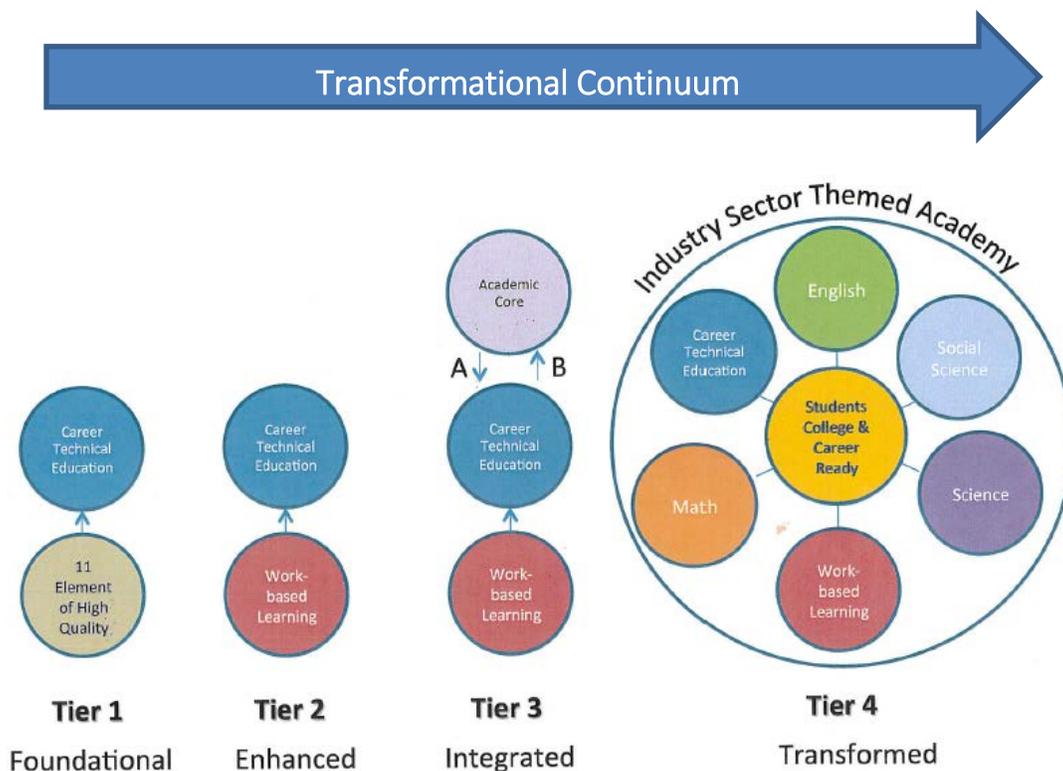


Exhibit 2-A illustrates a career pathways continuum from the foundational Tier 1 CTE programs,<sup>1</sup> which have the [11 elements of quality CTE coursework](#)<sup>2</sup>, to those that integrate WBL opportunities (Tier 2) and align with academic core standards (Tier 3). The highest level of CTE model (Tier 4) integrates CTE coursework with all core academic classes *and* WBL in an industry sector themed academy.

As suggested by the framework, the further one moves toward a fully integrated CTE model, the deeper the opportunities for project-based learning, academic integration, WBL, and authentic “real world” assessments (e.g., exhibitions, panel reviews, or portfolios). For example, each of Kearny’s three industry themed schools<sup>3</sup> provide a good example of a Tier 4 pathway: Students have opportunities to interface with industry partners and work with employers (who serve as their “clients”) to produce real-world products. Interviewees reported that academic and work skills integration is not only valuable for students, but also for teachers, who get the opportunity to design interdisciplinary projects and share planning time.



*There has to be accountability for integration. The integration piece is the part that folks think, they think it’s optional....But we would make more movement and faster movement if we had a systemic expectation that integration...would be measured in this funding source by school sites.*

– *District Leader, San Diego City Unified School District*

## CCPT Pathways Development

Regardless of where pathways were on the integration continuum, the CCPT grant provided vital resources to expand and deepen them. They provided schools with the opportunity to expand the number of classes in each sequence, revise curricula, get CTE classes A–G approved<sup>4</sup>, modernize their equipment, and enhance and deepen the WBL opportunities available to students. Exhibit 2-B summarizes the new and enhanced pathways at the six schools that we visited; it is followed by a discussion of key findings.

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<sup>1</sup> “CTE” and “career pathways” are related but distinct terms used throughout this report. A career pathway is a sequence of related CTE courses and is therefore a subset of CTE.

<sup>2</sup> The elements of quality career pathways are (1) engagement of leadership at all levels, (2) high-quality curriculum and instruction, (3) career exploration and guidance, (4) student support and leadership, (5) industry partnerships, (6) system alignment, (7) effective organizational design, (8) system responsiveness to changing organizational demands, (9) skilled faculty and professional development, (10) evaluation, accountability and continuous improvement, and (11) promotion, outreach, marketing and communication.

<sup>3</sup> The Kearny Educational Complex has four small schools, three of which have their own industry theme. These include Digital Media and Design; Engineering, Innovation and Design; and Science, Connections and Technology. The fourth school, College Connections, has a broad focus on college readiness.

<sup>4</sup> A-G subject and course requirements for entry to the University of California and California State University systems.

Exhibit 2-B: New and Enhanced Pathways at Site Visit Schools<sup>6</sup>

School	New and Enhanced Pathways with CCPT	New or Enhanced	Add courses to pathway	Strengthen pathways structure	Purchase or modernize equipment	Enhance or deepen WBL opportunities <sup>5</sup>	Develop or modify curriculum	Hire or develop staff
Carlsbad High School	Graphic Production Technology (Film Academy) Industry: Advanced Manufacturing	Enhanced						
Kearny High School	Engineering, Innovation and Design Industry: Advanced Manufacturing	Enhanced						
Educational Complex	Digital Media and Design Industry: ICT	Enhanced						
Olympian High School	Computer Science Industry: ICT	New						
Ramona High School	System Diagnostics, Service & Repair Industry: Clean Energy	Enhanced						
	Engineering Design Industry: Advanced Manufacturing	New						
San Dieguito High School	Software & Systems Development Industry: ICT	New						
	Engineering Design Industry: Advanced Manufacturing	Enhanced						
	System Diagnostics, Service & Repair Design Industry: Clean Energy	Enhanced						
Steele Canyon High School	Arts/Multimedia Industry: ICT	Enhanced						
	Jewelry Metalsmithing Industry: Advanced Manufacturing	New						

<sup>5</sup> Lighter shaded bulls-eyes show schools where WBL was comparatively “light touch.” This will be discussed further in the WBL section of this report.

<sup>6</sup> Exhibit 2-B highlights only the pathways that SPR collected detailed data on. Two schools had grant-funded pathways that were excluded from our analysis (and, subsequently, from Exhibit 2-B): One was very early in its implementation, and one was almost entirely funded by a different grant.

## Key Findings on Career Pathways

- **The CCPT grant brought increased visibility to pathways development at each of the high schools.** Several CTE teachers said that the influx of resources and attention was badly needed given broader educational trends to value college over career readiness. CTE teachers we interviewed were invigorated by the influx of resources for their classes, which also provided an opportunity for them to better market their pathways to students, parents, and employers.
- **The development or hiring of staff was one of the most common ways that schools strengthened pathways.** For instance, Carlsbad used the grant to pay for a Film Academy guidance counselor who met with students to ensure they understood the Film Academy course progression and had a four-year plan that was aligned to their future goals. There were also examples of staff who were hired at the district level. At San Dieguito, for example, 40 percent of grant funding was used to fund a full-time WBL counselor for the district. This individual helped to reach out to employers to strengthen WBL opportunities for students and raise awareness about pathways.
- **Pathways were developed by adding new courses, aligning curricula to state standards, and developing or modifying curricula.** Consistent with findings from previous reports from this evaluation involving a larger pool of schools, the site visit schools used grant funds to formalize course sequences into career pathways and to integrate new equipment, software, and curricula to make the content relevant to practices in the labor market. For instance, at Steele Canyon, the jewelry metalsmithing pathway was modernized through the incorporation of computer-aided design (CAD). Thanks to the CCPT grant, the pathway was extended to include three sequential courses, the classes were A–G approved, and pathway students were provided with the opportunity to earn industry-recognized credentials.

**Student Pathway Completion:** The SMP data shows an uptick in the number of students completing career pathways: 2,666 students completed a pathway in the 2015-16 school year and 3,798 students completed a pathway in the 2016-17 school year.



*I'm a certified Diamond Council of America instructor....I did hundreds of hours of training to make that happen....When [students] take my course, they can also get the Diamond Council of America certifications.... There's four certifications [students] can get through....When they get those certifications or that certification, it also puts them into their national database for hiring.*

– *Teacher, Steele Canyon High School*

## Steele Canyon High School: Industry-Recognized Certifications

The jewelry metalsmithing pathway at Steele Canyon High School began as a traditional jewelry-making course. The CCPT grant allowed them to expand it into a three-course pathway that offered direct industry certification with the Diamond Council of America (DCA). Specifically, the CCPT grant allowed for the following resources:

- Computers, software, and 3D printers needed to do CAD;
- Teacher professional development to become certified by the DCA; and
- Teacher professional development to become certified in 3DESIGN CAD software for jewelry creation.

With these inputs, the pathway prepared students to take DCA certification tests in the following four areas: (1) Beginning Jewelry Sales; (2) Advanced Jewelry Sales; (3) Colored Gemstone Course; and (4) Diamond Course. Each student who received a certificate was automatically entered into the DCA's national database, which exposes students to thousands of jewelry industry businesses.

- **Consistent with findings from previous reports, approximately half the schools used grant funds to purchase or update equipment.** Having updated and/or new equipment was essential to ensuring that pathways offerings were up to date and relevant to industry standards. For instance, at Ramona High School, the grant paid for new equipment focused on clean energy, including data scanners that work with hybrid cars, digital voltmeters, and materials to build an electric car. At Olympian, the grant funded new headphones, textbooks, printers, tablets, and software as well as a Finch Robot for the new computer science pathway. **Although all schools made some progress enhancing WBL opportunities for students, this remained a challenging area for most schools.** As discussed further in the next section of this report, the schools with relatively well-developed WBL opportunities had deep ties to industry prior to the grant. Schools seeking to build these relationships for the first time faced a variety of different practical and logistical challenges, resulting in relatively light-touch WBL opportunities (such as guest speakers).

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*[For their capstone project], students are going to be creating a commercial that has to please a client. This will be an authentic audience....They won't get paid for it, obviously, but...[it] won't be me, the teacher, saying, "Oh, good job. Do this now." Instead, [students are] going to have to please someone who may not know what they want or may not be speaking the same language, but they have to turn around what [the client] is asking them to do, into an actual finished product. I'm really excited to see how it's going to work.*

– *Teacher, Carlsbad High School*

- **CTE instructors structured their courses to simulate work settings.** Many had years of experience in industry and a strong sense of their pathways' work environments. This

allowed them to prepare students by designing courses in a way that matched work environments.

- **CTE courses aligned curricula to industry standards and provided opportunities for industry certification.** Steele Canyon High School had a certification program through its jewelry metalsmithing pathway. Students who completed the three-course pathway could take an exam to receive up to four certificates and subsequently be entered into a national industry database.
- **Capstone projects, portfolios, and demonstration of learning activities were highlights of many of the pathways.** Students and teachers talked about the value of “authentic” and “holistic” assessment strategies that broaden the notion of student success and are more clearly rooted in enhanced work skills.
- **Most pathways were in the early stages of development.** Seven of the 12 pathways were working on getting core pathway courses in place and/or working to integrate WBL. Schools were also looking to attend to the California Department of Education’s [11 elements of high quality CTE coursework](#). As would be expected, schools with more developed models had a long history of CTE and a structure that supported higher levels of integration.

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*In our senior year, you're not presenting to just your teacher, you're presenting to students, underclassmen. You're presenting to your actual clients, real work connections, where they'll invite people from the community to watch your presentations. This is where you have to be able to defend what you've learned and be able to present yourself....A lot of adults that I kind of interact with still struggle with [that]. They don't know how to present [their work] in a way that their community can understand it and see the true value of it.*

– *Student, Kearny DMD High School*

## Student Enrollment into Pathways

Procedures for student enrollment into particular pathways varied significantly across schools, based on the structure of the pathway. Below are some key findings.

### Student Enrollment in CTE Pathways:

According to the SMP data, CTE pathways enrollment during the 2015-16 school year was 11,943 students. This number increased by 2,195 students in 2016-17 to 14,138 students.

- **Students almost always got their first choice of pathway, though certain high demand pathways or classes were oversubscribed.** Most students said that they were able to enroll in their desired classes. Limited teaching staff, however, sometimes led to a shortage of classes. At San Dieguito Academy, for example, students sometimes had difficulty enrolling in metals classes, which are prerequisites for several pathways. Likewise, Olympian High School had only one computer science instructor, and the addition of a cyber security course to the pathway sequence meant fewer sections of Computer Science Principles (a more introductory course). At Ramona High School, class sizes in both the automotive and engineering programs had grown to 25 to 39 students, making it difficult to give students individual attention.

■ ■  
*It's never been an issue in recruiting and putting kids in [to pathways]. The heartbreaking part is not having enough instructors, facilities, computers. And, we almost always have to take kids out to get it to the right numbers. [Our pathways] are very well established, we have amazing teachers, kids want to keep taking them. It's that our classes get full.*

– *Support Staff, Olympian High School*

### Ramona and Olympian High Schools: Recruiting Females into STEM Pathways

The engineering pathway instructor at Ramona High School took proactive steps to recruit more females into the pathway. She applied for an opportunity to pilot San Diego State University's Femineers program, an afterschool program for middle and high school girls interested in engineering. The goal of this program is to provide an environment for girls to learn basic circuitry, programming, and electronics, and to inspire them to pursue engineering and other STEM careers.

Similarly, given the gender disparity in the computer science pathway at Olympian High School, the instructor took steps to recruit female students. He sponsored the Girls Who Code club to encourage extra participation and offered extra credit to any student who recruited a female student into one of his computer science courses.

- **Course availability was influenced by the school schedule and the availability of teaching staff.** The number of courses in a sequence and their availability was influenced heavily by the master schedule of the school, whether the school was on a quarter or semester system, and—as described in the previous bullet—the availability and status of CTE instructors. At several schools we visited, the CTE teachers were part-time or contracted staff, and thus were limited both in their level of integration at the school site and in the number of classes they could teach.

- The schools had very different models for when students selected their pathways, and the schools fell on a spectrum in terms of the degree to which they allowed students to move between pathways. They also placed differing levels of emphasis on pathway completion. These different models depended to a great degree on the structure of the school.
  - In some cases, students made the decision as they transitioned from middle school. At Kearny, students communicated a preference for a specific pathway as they were transitioning out of the middle school level and stayed in that pathway throughout high school. In the 2018–2019 school year, Steele Canyon students will also select one of four pathways as they come out of middle school.
  - At Carlsbad, students elected to enroll in the CCPT-funded pathway at the start of tenth or eleventh grade. Students who enrolled in tenth grade were expected to complete six pathway courses, while students who enrolled in eleventh grade were expected to complete three. While students could exit the pathway at any time, there was a clear expectation that students who entered the pathway would complete it. This was reinforced through the cohort structure and the clearly communicated sequencing of courses. Similarly, at Olympian, students selected a pathway in ninth or tenth grade, and had the option to switch pathways.
  - At Ramona, students signed up for pathways courses as they would non-pathways electives. When eighth-grade students signed up for courses, representatives from the pathways gave presentations and explained how the pathways were structured. Students were also free to enroll in pathways courses beyond the ninth grade.
  - Students at San Dieguito were not required to pick a pathway at a particular point in their schooling trajectory. Though students were encouraged to complete a full sequence of CTE courses in a given industry area, school administrators also felt it was important that they be able to switch pathways at any time in order to explore different career choices.
- Schools varied in how they described pathways completers, though all required at least two courses. At Kearny, students took multiple courses within their pathways, over multiple grades, before being considered completers. At Ramona, Carlsbad, and Steele Canyon, students needed to complete three courses in their particular pathways to be considered completers, whereas at San Dieguito and Olympian, students needed just two.
- The cohort model appeared particularly helpful for supporting academic integration. Of the schools visited, only Kearny and Carlsbad used a cohort model, in which students

**Student Enrollment by Industry Sector:**

The 2016-17 SMP data shows that the following sectors had the largest percentage of student enrollment across all districts:

1. Manufacturing & Product Development (29%)
2. Information & Communications Technology (25%)
3. Engineering & Architecture (23%)

progressed through the pathways courses at the same pace as their peers. The cohort structure at these schools was accompanied by greater levels of integration between academic and CTE coursework, in part because teachers had time to plan joint activities.

## Student Experiences

Students were eager to talk about their pathways experiences. Below are some of the common themes across our focus group discussions.

- **Across the schools, students talked very positively about the pathways.** They particularly appreciated the hands-on nature of classes and the level of autonomy they were given to work on projects and solve problems. Some students were passionate about pursuing careers in the industry related to their CTE coursework, while others just enjoyed the opportunity to learn practical skills. A student at Ramona described how “each class builds on the previous one....All of the courses offer something to look forward to.”
- **CTE classes were perceived as rigorous and challenging.** Students in the computer science pathway at Olympian, for instance, said their classes exposed them to a variety of different programming languages (Scratch, Java, Python, HTML, etc.). They also remarked that the project-based learning aspect of most CTE courses was motivating.
- **At the two schools with cohort structures, Kearny and Carlsbad, classes felt like a “close-knit family.”** The cohort structure allowed students to form tighter relationships with one another and allowed teachers to get to know the students in a different way. Because teachers had shared planning time with colleagues who were teaching the same students, they could problem solve about how best to meet the needs of individual students. Students experienced this as an increased sense of care about them as individuals.

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*Because it's such a small population in each small school, your teachers actually get to know you and get to know what your strengths are, what your weaknesses are, what you want to do in your future....Our freshman teachers still talk to us now [that we are seniors]. They know what we wanted to do and they've seen us grow....They all smile at you when you walk past in the hallway. They all know your name. That makes you feel like you're relevant to the school and that you're not just a student attending there.*

– *Student, Kearny DMD High School*

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*But, with [our teacher]...he's an actual artist....It's really impressive, what he does, because he creates his own comic books. He has this professional background that he's doing while he's still teaching us, too. He has his own studio and everything. So, we really are learning how to be artists from an actual artist, so it helps. Plus, he's really fun. He runs his classroom like a business, because he's trying to prepare [you] for that environment. As long as you focus and get your work done, you can have normal conversations with him and hang out with him.*

– *Student, Steele Canyon High School*

- **CTE classes were structured to be more collaborative than core academic courses.** Students consistently said that they were encouraged to collaborate with and ask questions of their peers. A computer science teacher at Olympian had a “three before me” rule that was raised several times by focus group participants. This meant that students needed to ask three of their peers a question before asking the instructor—something that helped create a culture in which peer learning and collaboration were encouraged.
- **Students praised their CTE teachers’ dedication, industry experience, and approachability.** There was substantial praise for CTE teachers, particularly those with significant industry experience. These instructors often shared anecdotes from industry and could give examples of their own work, which gave them credibility with students. Several students described how their CTE teachers went beyond the call of duty to help them complete projects.



*Learning through the movies helps me. I see history as a story....This pathway is the perfect way for me to learn.*

– *Student, Carlsbad High School*



*I think the thing that helped us the most [in] learning engineering was probably the design process. Accepting failure and then coming back from it is probably the most important thing you need to learn.*

– *Student, Ramona High School*

- **Students recognized the value of academic and CTE integration, because it both supported their learning and deepened teachers’ understanding of their strengths and weaknesses.** At Kearny and Carlsbad, students talked about the value of having CTE integrated into their core academic classes. Students felt that it was motivating to see the connection between the content they were learning and “the real world.” Students at Kearny also noticed how teacher collaboration time provided teachers with an opportunity to talk about individual student performance and, in so doing, to get to know better how their students performed in other classes.
- **Students valued opportunities to reflect on what they were learning.** At Kearny, students said that their school encouraged them to be reflective about their work. After the end of every project, students completed a reflection exercise to help them process lessons learned and how they might improve in the future. Students felt that this greatly enhanced their learning experience.

- **Students generally felt that classes were preparing them for careers, even if they did not plan to go into the specific industry tied to their pathway.** Students at Ramona High School felt that the engineering courses were providing them with a “head start into college....It gives you an advantage by showing colleges that you’re seriously interested in a profession.” Students who did not want to go into the CTE-related industry also felt that the classes helped them identify what careers they did not want to pursue and provided opportunities to learn numerous transferable skills that would be useful in their careers of choice.
- **Integrating CTE courses with academic content enhanced student engagement.** Students whose CTE courses were integrated with core content reported a higher level of interest and engagement with core course materials. For example, Kearny tenth-grade students used the skills developed in their persuasive writing unit to develop a video for the Scripps Institute of Oceanography designed to persuade the audience to care more about the ocean’s health.

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*I was creating an architectural design for a building at the time. We had to incorporate our math to find out how exactly our dimensions would work out for this building. The English portion would help us develop the technical documents of what we wanted to do, and just overall present our ideas to actual big-time engineers.*

–*Student, Kearny DMD High School*

## Section 3: Work-Based Learning

As stated in the CCPT project narrative, CTE pathways are meant to incorporate “work-based experiences to allow students to learn *through* work and also to learn *for* work.” WBL experiences are an integral part of CTE pathways because they help students gain industry-relevant skills that prepare them for future careers.

CCPT funds were used to strengthen employer partnerships and improve teacher capacity to incorporate WBL into their curricula. The ePortal—a web-based platform designed to formalize connections between industry and schools—and partnerships with Junior Achievement and San Diego Workforce Partnership were intended to help facilitate WBL opportunities. As shown in the Annual Report #2, at the secondary level, the number of students participating in WBL increased from Year 1 to Year 2.

In this section, we provide an overview of the types of WBL offered at the site visit schools, a description of how these schools have utilized the ePortal, and an outline of WBL benefits and challenges from the perspective of employers and students.

### Types of Work-Based Learning

Qualitative data from site visits reflected the trends reported in the Mid-Project Report regarding student participation in WBL opportunities. The most common and easily organized WBL opportunities were guest speakers and field trips. These opportunities are described below.

- **Site visit schools invited guest speakers from industries aligned to pathways careers.** Several CTE teachers reached out to personal industry connections, parents of students, and alumni to visit their classrooms. Guest speakers exposed students to careers associated with pathways industries. For example, the Olympian High School ICT pathway instructor invited a female employee from Google to speak to the school’s Girls Who Code club to help garner support for increasing the participation of females in computer science.
- **CTE teachers and coordinators arranged field trips to industry sites aligned to pathway careers.** Such excursions provided students with first-hand views of work settings and job responsibilities related to their pathways. CTE instructors used field trips to both deepen students’ understanding of careers in their pathways and complement the content taught in the classroom. Notably,



*We have students who say, “Oh wow! I never knew that if I just like to build things, I could be working in the film industry. I like to work with my hands. I like to build props.”...Anything you do in real life has to be done in film as well.*

– *Teacher, Carlsbad High School*

Carlsbad High School’s Film Academy pathway took students on an annual field trip to Warner Bros. Studios and Sony Studios. These field trips allowed students to observe the breadth of career opportunities associated with the film industry.

The Mid-Project Report showed that mentoring was another common type of WBL opportunity. This finding was also reflected in the qualitative site visit data.

- **Mentorship occurred through assisting CTE students with academics-based competitions.** As an extracurricular activity, several students in CTE programs participated in academics-based competitions in areas such as robotics or through programs such as SkillsUSA.<sup>7</sup> In preparation for competition, CTE instructors reached out to industry partners (often alumni) to work with students. These interactions built students’ skills relevant to their pathways and opened opportunities for future internships or careers at the industry partners’ sites.
- **Student-led capstone projects also provided opportunities for mentorship.** In addition to competitions, some pathways offered opportunities for students to showcase their work to industry partners. For example, Kearny’s engineering pathway hosted a “Senior Gala” in which senior CTE students presented their final projects to a panel that included industry partners who provided feedback and spoke with students about opportunities at their work sites.
- **Off-campus opportunities such as internships and job shadowing require more coordination and resources than the previously mentioned opportunities.** WBL coordinators helped to streamline partnership processes and remove the additional coordination work often required of CTE instructors. However, not all schools had WBL coordinators or the capacity to support a robust internship or job shadowing program. Therefore, consistent with findings in the Mid-Project Report, off-campus internship and job shadowing opportunities were rare at schools other than Kearny.
- **Service learning and social enterprises with industry and community-based partners provided hands-on WBL experiences.** Partnerships of this nature were observed at Kearny’s Digital Media and Design School. Specifically, students in Grades 9–11 worked with clients—primarily community-based partners—all year to produce specific projects. For example, during the 2017–2018 academic year, ninth graders worked with Social Advocates for Youth, San Diego’s alcohol and drug prevention program, to create a media campaign that included a public service announcement, flyer/infographic, social media GIF,



*SkillsUSA is the main competition because we have to go to the opening ceremonies and we have to do a job interview. And we have to dress up and be professional. So I think, especially the job interview, that sense of professionalism is a good example of getting out there and meeting people.*

– *Student, Ramona High School*

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<sup>7</sup> SkillsUSA is a nationwide CTE organization that hosts local, state, and national competitions where CTE students in various fields showcase their ability to perform particular jobs and skills.

and sticker shock campaign. Additionally, students at Carlsbad High School volunteered at local film festivals, which exposed them to the logistics of putting on a film festival and opened the door to potential industry opportunities in the future.

- **Paid and unpaid internships were rare but did provide students with valuable WBL experiences.** At a few schools, students had internship opportunities. Specific to Kearny's Digital Media and Design School, every student had to complete an internship before they graduated; this internship was woven into their capstone client projects. At Steele Canyon, jewelry metalsmithing students who showed interest and promise were invited to intern with a local jewelry business. Internships were largely unpaid; however, at Kearny, employers compensated their interns when they had funds to do so.
- **Job shadowing exposed Kearny students to different career opportunities.** The only observed examples of formal job shadowing occurred at Kearny. The Kearny WBL coordinator reached out to several industry partners and established opportunities for Kearny students to shadow employees on the job. This type of WBL was challenging to provide because it required pulling out individual students during the school day and providing them with transportation to and from specific sites.

#### **Kearny High Educational Complex and San Dieguito Academy: WBL Coordinators**

The CCPT grant funded WBL coordinators at Kearny and San Dieguito Academy (serving all of San Dieguito Union High School District). At Kearny, the WBL coordinator position dovetailed with the opening of the school's Education to Employment Lab. The WBL coordinator ran the lab and, in addition to working with employers, conducted career inventory assessments, resumé workshops, and job skills workshops for students.

At both schools, the WBL coordinator role afforded the following benefits:

- Allowed teachers more time to focus on lesson planning and other classroom-related tasks by reducing their role in finding and creating industry partnership opportunities.
- Streamlined processes for industry partners to connect with schools.
- Provided students with a point person regarding WBL resources and opportunities.
- Sustained and grew relationships with industry partners.

## ePortal Utilization

The ePortal—created with support from the CCPT grant—is a web-based platform that aims to connect students to WBL opportunities. It was designed to act as a centralized infrastructure that formalizes connections between industry and schools, helping to streamline the process of matching students to WBL opportunities. Teachers and school staff can browse WBL opportunities and contact industry partners through the ePortal interface. In keeping with findings highlighted in the Mid-Project Report, interviews with teachers and school staff indicated that, although the ePortal has great potential, improvements need to be made for it to be utilized as intended.

### *ePortal Progress*

- **District staff were very willing and available to provide teachers and staff with ePortal training.** School staff did not have a problem learning how to use the system and did not report any issues with knowing how to use it after they had been trained. At the time of the site visits, some teachers and administrators had not been trained to use the ePortal; however, it was mentioned that the district was willing and available to provide that training.
- **Industry partners can use the ePortal to manage requests from teachers.** CTE coordinators explained that the ePortal centralized teacher requests to help industry partners more efficiently respond to inquiries.
- **The ePortal connected teachers with field trip opportunities relevant to CTE course curricula and career opportunities.** For example, the Kearny engineering pathway instructor used the ePortal to arrange a field trip to see a water reclamation plant where students learned how the skills they were developing in their CTE course translated to real-world jobs.



*The ePortal is a tool that will require staffing. So, there is a question of how ongoing staffing needs can be met to scrub requests when they're put in. They're put in in a way that needs to be further clarified on both ends.*

– *District Leader, Kearny High School*

### *ePortal Opportunities for Improvement*

- **ePortal opportunities were not relevant for some CTE pathways, particularly digital media and design.** Several CTE teachers working in digital media and design pathways noted the lack of options on the ePortal that were relevant to their courses. These teachers recommended expanding ePortal options to include media-relevant opportunities.
- **The length of time between a teacher request and a field trip visit was often too long for course timelines.** While teachers successfully used the ePortal, the time it took to book field trips presented some challenges. One school reported that it took six to eight weeks to get a field trip visit date. At schools that were on the quarter system, each course is only three months, so by the time instructors were able to book a field trip, the course was almost over.

- **Geographic challenges often prevented ePortal utilization.** Consistent with Mid-Project Report findings, schools noted that ePortal opportunities were concentrated in the southern part of the county. Schools that were not geographically close to South County were less likely to take advantage of the system.
- **Schools with existing industry relationships were protective of those contacts and therefore reluctant to share them with other schools through the ePortal.** Some schools had worked very hard to create relationships with industry partners. They identified these relationships as critical components of their CTE programs, and they remained exclusive to students at their school. There was concern that if schools were to add these pre-existing relationships to the ePortal, their students would be crowded out of the opportunities school staff had worked so hard to establish.



*When I got involved with [the ePortal], the problem was I think the quarterly internships they had were for manufacturing, health, and IT technology, which we didn't do. So, most of the things on the portal didn't pertain to us.*

– *Teacher, Steele Canyon High School*

## Employer Experiences and Perspectives

Employers have worked with CTE students as supervisors, mentors, collaborators, and site hosts. They were therefore able to provide an important perspective into WBL experiences. Key takeaways from interviews with employers are described below.

- **Employers felt that their participation with student capstone projects not only exposed students to potential internships and jobs, but also exposed employers to the skills that students could bring.** For example, students in engineering pathways learned and used the same software that is used in industry; employer participation in student capstone projects allowed them to see how students have used these skills and how these skills may apply to careers in their workplaces.
- **Student interns completed valuable work that contributed to employers' organizations.** For example, several students at Kearny's Digital Media and Design School partnered with a community-based organization to create a new logo, pamphlets, a website, and promotional materials. In turn, the employer said the experience taught students time management, accountability, and project management skills.

- **Employer mentors assisted students with career development in formal and informal ways.** Mentorship opportunities typically occurred during employer participation in student projects. While the mentors provided formal expertise to students, the informal nature of the relationships also brought about a unique set of benefits. For example, an employer working with San Dieguito Academy noted that students he mentored discovered and developed their passions through conversations and exposure to the mentor’s line of work. He has also connected several students to co-workers to learn more about a specific career path.
- **Employer partners were very positive about their interactions with CTE students.** Moving forward, employers saw opportunities for enhanced partnerships by doing more class visits and providing more input on course projects and curricula.



*Employers see what kind of skills these kids are coming out of high school with, which may prompt them to open up internship opportunities, or scholarship opportunities, or things like that.*

– *Employer, Kearny EID High School*

## Student Experiences

WBL opportunities are designed to help connect students to industry; therefore, the student perspective on what has and has not been beneficial provides valuable insights for understanding WBL opportunities.

### *WBL Benefits for Students*

- **Through WBL, students were exposed to industry.** Students saw a lot of value in the field trips they attended and in the industry employers’ visits to their schools. For instance, one student described a visit to a construction site that helped her understand the different components of building a structure and how her own coursework contributed to that understanding: “We were able to walk around a construction site. It was dirt and steel beams, and it had the little bungalows where you stand. I’m like, ‘This is going to be a research lab in the future?’.... There’s so many people working together to create that just one building. It’s magical to see.”



*[Employers] come in and teach us both practical skills and also the concepts behind those practical skills. So, because of that, I learned some networking and I’m trying to learn more about databases. And so I’ve been thinking about becoming a system administrator by using both of those two people’s information.*

– *Student, Olympian High School*

- **Employer partners helped inform students’ career interests.** For example, one guest speaker spoke directly about professions that combine business and computer science, which helped students understand the connections between their ICT coursework and their more traditional courses.

- **Students received prizes and scholarships because of partnerships with employers on competition projects.** For example, Ramona High School students regularly won SkillsUSA state competitions where they were required to showcase their ability to perform jobs and skills as well as dress and present themselves professionally. Additionally, they earned prizes and scholarships to the Universal Technical Institute from these experiences.
- **Students received letters of recommendation and career connections through employer mentors.** While students may not have received pay or course credit for much of the work they did for employer partners, they benefited in other meaningful and significant ways. For instance, students at Ramona High School used their alumni mentors to successfully find jobs in the auto mechanics industry.



*There were actual mentors who walked side-by-side with you as you built your project, whether it be building a building or constructing this robot out of practically nothing. There's people from the professional field who come in most of the time, just to chat with you and help you grow as that person that you want to grow into.*

– *Student, Kearny EID High School*

### *Obstacles to Student Engagement in WBL*

- **Some students struggled to find transportation to WBL opportunities.** Students often found it challenging to get to and from potential employer sites. This was especially true for students who attended schools in geographically remote areas.



*Pursuing art as a career, in that environment and what not, it's extremely competitive...especially since you have such great artists. It's hard for you to kind of try and squeeze yourself in there. And there's always going to be someone better. So, I feel like it would almost be kind of hard to provide internships and jobs.*

–*Student, Steele Canyon High School*

- **Students explained that internships could be very competitive.** Obtaining an internship as a high school student can be challenging due to limited supply and high demand; students found that employers often preferred college students.
- **Students thought that their age often restricted them from engaging in certain WBL opportunities.** In certain CTE industries, such as auto mechanics, having a minor in the workplace can be a liability for employers. As one Ramona automotive student explained, “I think on the automotive side, it would be a little bit easier to get internship or something, except being a minor it is tough for liability insurance and all that.”
- **Some students had limited access to CTE-related resources and materials outside of school.** The software and supplies needed for CTE school projects and competitions was often difficult to obtain outside of school. Therefore, students found it was sometimes hard to continue developing their industry-specific skills. One Kearny DMD student explained, “I have to find other ways at home, like knock-off brands, or do some things to get the software. And usually they're outdated. They're not the best. It feels like I'm constrained.”

## Next Steps for WBL

When available, WBL has been beneficial for students. Moving forward, schools hope to continue strengthening their WBL partnerships. Improvements to the ePortal may help with this process. Some schools addressed this challenge by developing an advisory board to help build WBL efforts. While schools are at different levels of CTE integration, WBL was identified as a priority for continued pathways development. Specifically, the San Diego County superintendent of schools committed to WBL through continuing to fund staffing for the ePortal. Similarly, SDCOE's Board's identified their #1 goal as connecting "educational experiences to the world of work to guarantee all students graduate prepared for college, career and beyond."



*The kids are doing things that would directly allow them to jump right in to work that we're doing [at our employment site]. They would have to have some training, but they're a long way ahead.*

– *Employer, Kearny EID High School*

## Section 4: Connection to Postsecondary Education

A primary objective of career pathways is to prepare students for meaningful careers; for many students, postsecondary education (PSE) is another important step. Well-developed career pathways offer students multiple “exit points,” preparing them for a menu of occupational choices requiring different levels of education, including a high school degree only, a certificate or license, or a college degree.

CTE staff at the six schools we visited described their efforts to engage with college faculty on pathway alignment, and to increase student awareness and preparation for PSE. Pathways students also provided their perspective on how their participation in CTE pathways affected their outlook on PSE.

### Engagement with Colleges and College Faculty

CTE staff described the degree to which they coordinated with college faculty and how they integrated PSE preparation into their pathways. The ways in which CTE teachers and staff engaged with colleges and college faculty are described below.

- **CTE teachers at several schools described regular and meaningful collaboration with PSE representatives to align curricula.** These relationships typically began when the schools or districts started pursuing articulation agreements (discussed later under “Enhanced PSE Opportunities”), as alignment is a precondition for these agreements.
- **CTE teachers coordinated with colleges and PSE programs to organize college tours and guest speakers.** For example, teachers in Carlsbad High School’s Film Academy hosted an assembly for college representatives and organized field trips to Chapman University and MiraCosta College, which both have strong film programs. Through these experiences, Film Academy students learned what it is like to study film at the college level and what film students typically do after college graduation. Furthermore, touring two very different programs (a private, four-year college and a community college) exposed students to different options. At Steele Canyon High School, the multimedia pathway instructor regularly invited college representatives to talk with students about pursuing art in college—something that many students had not previously considered.

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*We had an assembly of film schools from MiraCosta to Chapman. We got to ask them questions. MiraCosta has a great film program. It was cool to see that, as long as you put in the work, it doesn’t matter where you go.*

—*Student, Carlsbad High School*

### Carlsbad High School: Advisory Board

The Film Academy teachers at Carlsbad High School included a social studies teacher and two English teachers who were passionate about film. As such, the teachers focused their PD on learning about CTE and the film industry. In addition, they formed an advisory board to provide guidance and ensure the pathway was aligned with industry, postsecondary, and community needs. The advisory board included industry professionals, professors of film and filmmaking, community members, and parents. In addition to providing valuable, complementary perspectives and advising on the curriculum, the advisory board helped support the pathway's development through fundraising.

## Enhanced PSE Opportunities

Interview respondents at the six schools described ways in which pathway students get a head start towards college through opportunities such as dual enrollment and articulation agreements. The ways in which pathways students can earn college credit in high school are described below.

- **The most common way CTE pathways engaged with PSE was through articulation agreements with community colleges.** All six schools either had articulation agreements in place or were actively pursuing them for their CCPT-funded pathways. Not only have these agreements provided students with a head start towards college, but, as mentioned above, securing an articulation agreement is often the first step in creating a meaningful relationship between CTE staff and postsecondary institutions. A few interviewees who had yet to secure these agreements described a lack of responsiveness from community college representatives.
- **Students in pathways using Project Lead the Way (PLTW) curricula can earn college credit by exam or preferred admission at several local colleges.** For example, El Camino College (a “feeder school” for California State Polytechnic University, Pomona) awards full credit for engineering courses to students who earn a “Proficient” or “Advanced” score on their PLTW standardized exams. In addition, PLTW students receive preferred admissions at San Diego State University. The engineering teachers at Ramona and Kearny High Schools regularly promoted these opportunities to students.
- **Only Kearny offered dual enrollment courses aligned to CTE pathways.** Kearny had a very established relationship with Mesa College, and students who academically qualified (with a minimum GPA and course credits) could participate in Mesa’s Fast Track

**Student Engagement with PSE Opportunities:** In the 2016-17 school year, the SMP data showed that 73 students (from Carlsbad USD and San Marcos USD) enrolled in dual credit/enrollment courses. Furthermore, about 5,000 students across nine districts participated in articulation/credit-by-exam CTE courses.

program, which allowed them to take courses for both college and high school credit during the school day. Students in Fast Track therefore completed one semester of college while still in high school. Only qualifying students were allowed to enroll in Fast Track, but any student could participate in dual enrollment courses, where Mesa instructors taught courses at Kearny.

- **Other opportunities included Advanced Placement (AP) credit and preparation for a military entrance exam.** Some pathways included an AP course, which confers college credit to students who earn a high enough score on the end-of-course exam. At Ramona High School, automotive students could learn about and take the Armed Services Vocational Aptitude Battery (ASVAB), which is required to enlist in the military.

## Student Experiences

Interviewed students spoke extensively about the ways in which their pathways provided guidance and preparation for PSE. Their feedback is described below.

- **Students received guidance from their teachers on postsecondary options aligned with their career goals.** Students explained how their pathways teachers contributed to the evolution of their postsecondary plans by inviting college guest speakers, planning field trips, and assigning class projects, as well as through informal conversations. For example, at Ramona High School, the automotive teacher regularly discussed the PSE options that pathway alumni had pursued and introduced students to scholarship opportunities. In the engineering pathway, students were assigned a project for which they selected a type of engineering they were interested in and researched and reported on the best PSE options for that field. Students at Steele Canyon explained how having representatives from arts programs come and speak to them helped shape their postsecondary goals, when previously they did not think of art as a viable option in PSE. Students at several schools explained how participating in pathways helped them decide whether or not to continue on the same path in college.



*I see a lot of the same [colleges] throughout the years, but each year, my interest changed. I could see how I evolved, too, with it. But, it's also always good to see options because I guess that most of the time, you don't really focus on art colleges because you want to get in, like, a normal college. And then it, I don't know, it just opens things up [and] gives you new ideas of things you could do.*

– **Student**, Steele Canyon High School

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*This program that we do, it really gives us an advantage because it shows the [colleges] that we're really interested in that profession.*

– *Student, Ramona High School*

- **Students felt that participating in their pathways would give them an advantage in PSE.** For example, students described how having a pathway on their transcript or having a portfolio of work would impress colleges and improve their chances of admission. Other students focused on the advantages they would experience once they enrolled in their PSE programs, having already studied their chosen major or focus area in high school.

## Next Steps for PSE Connections

Many CTE staff were proactively seeking ways to strengthen relationships with PSE institutions to prepare students to achieve their postsecondary goals. Moving forward, schools were hoping to formalize their ties to PSE institutions through articulation agreements and to engage those partners more in pathways alignment. In addition, pathways teachers were finding formal and informal methods to teach students about different postsecondary options, and to help them find the best fit for their career goals; this type of exposure is essential to ensure that pathways students experience future success.

## Section 5: Professional Development

Professional development (PD) and collaboration time are essential for the development of high-quality pathways; teachers must learn new curricula, align them to their target industries, and design integrated pathways. Some schools and districts used CCPT funds to support PD, while others leveraged district funds to support these opportunities. This section provides an overview of the types of PD teachers and staff engaged in, and how teachers made use of teams and shared planning time to collaborate.

### Pathways-Aligned PD Opportunities

We asked teachers and school leaders about the types of PD they participated in during the grant period. Most districts and schools worked with teachers to find PD opportunities aligned to their needs and areas for growth. The different types of PD that teachers utilized and their experiences are described below.

- **Curriculum training was especially helpful for schools or districts for creating new pathways or “jumpstarting” existing pathways.** Several CTE teachers attended training at the early stages of pathway development in order to learn a specific curriculum. Project Lead the Way (PLTW) is a common example of such training. The two-week PLTW training helped a teacher at Ramona, for instance, develop a valuable network of fellow engineering teachers, and she continued to rely on this network for support and idea sharing. Curriculum training was also useful for teachers in existing pathways. The jewelry metalsmithing teacher at Steele Canyon attended training to become a certified DCA instructor, which helped to formalize the pathway.
- **Externships and industry-focused conferences helped teachers align pathways content with industry needs.** While many pathways teachers previously worked in their pathways’ target industries, some either never did so or wanted to ensure their industry knowledge stayed up to date. For example, Film Academy instructors at Carlsbad attended two screenwriting conferences in Los Angeles, and the ICT instructor at Olympian attended a conference on cyber and computer science topics. Teachers at Kearny and San Dieguito completed externships to gain relevant experience in the field. These opportunities allowed teachers to ensure their course content was aligned with industry norms and standards and to network with industry professionals.
- **PD focused on CTE pathways development helped teachers navigate the world of CTE and improve their pathways structures.** Examples of this type of PD include Linked Learning conferences, sessions focused on topics like CTE credentialing and how to structure a high-quality career pathway, and tours of model schools. These opportunities were especially useful for new CTE teachers and pathways teachers who were not CTE certified.



*When there's a training, we try to include her [the assistant principal] in it, not just sending teachers, so that we're having conversations, and they're not always feeling like they're swimming upstream by themselves.*

*-Administrator, Ramona High School*

- **PD opportunities for non-teaching staff were also important for enhancing career pathways development.**

For example, one of the counselors at Carlsbad worked exclusively with Film Academy pathway students, and the district leveraged CCPT funds to provide her with career- and college-readiness software training. At Ramona, the assistant principal used CCPT funds to join the Leadership Development Institute, a training program for new and aspiring CTE leaders that meets monthly in Sacramento. This provided her with the opportunity to

quickly learn the CTE landscape in California. She shared her learnings with fellow administrators and pathway teachers so that the knowledge became institutionalized, and ensure that, according to another administrator, “even if she leaves, the knowledge doesn’t leave with her.”

Across all types of PD opportunities, teachers and staff described how valuable the opportunities were, not only for filling gaps in knowledge but also for networking. For many, these networks of fellow CTE professionals provided access to new ideas and best practices, connections to new opportunities, and a sense of community.

## Teacher Collaboration

Providing time for collaboration with fellow pathways teachers and academic content teachers was another key component of CCPT integrated pathways development. Additionally, providing space for teacher collaboration across schools expedited the spread of best practices. Teachers described their experiences with different forms of collaboration, detailed below.

- **Schools with multiple teachers within a pathway found collaboration time highly valuable.** While most schools only had one teacher per pathway, a few pathways included multiple teachers. For example, Carlsbad’s Film Academy teachers collaborated year-round to ensure that all pathway courses provided complementary and logically-sequenced content; they attributed the pathway’s success to this time spent together.



*I'll be honest, the best professional development that we've had is just the ability to spend time together in conversation.*

*– Teacher, Carlsbad High School*

- **Most schools provided time for CTE teachers across pathways to collaborate, but feelings were mixed on the value of these efforts.** Many schools dedicated time for teacher collaboration by department. Some CTE departments used this time to create shared rubrics for work-based skills assignments like student presentations and resumé writing. One principal believed CTE

teachers could use more time to collaborate on finding WBL opportunities, while others thought time spent with teachers of other career pathways had limited usefulness.

- **Truly integrated pathways require shared planning time for CTE and core academic teachers, but most schools struggled to find the time to support this type of collaboration.** Many CTE teachers expressed a desire for more collaboration with academic teachers but did not have shared planning time, creating a major barrier to this type of collaboration. This is in contrast to the structure at Kearny, where core content teachers and CTE teachers had common planning time, which facilitated academic integration. Kearny also leveraged CCPT grant money to pay for a two-week summer institute, during which both core content and CTE teachers had dedicated time to plan the year's curriculum with the other teachers in their grade.
- **Some districts built in time for pathways teachers to collaborate with same-subject teachers at other schools.** At many schools, the CTE teacher was the only teacher in that subject area, hindering his or her ability to share lesson plan ideas or discuss content-specific challenges. Several teachers described this as an isolating experience. Computer science teachers at Olympian and San Dieguito had time built in to meet with their counterparts at neighboring high schools to compare curricular approaches and discuss lesson ideas.



*All of our ninth-grade teachers have a common prep. We meet once a week, not just for planning, but also for understanding and sharing student supports. I might discover that a student is really struggling with his design projects...because he's having difficulty with fractions, and the math teacher can support him further in that way.*

– *Teacher, Kearny EID High School*

### Carlsbad and Kearny High Schools: Shared Planning Time

The Film Academy teachers at Carlsbad High School worked together during shared planning time, before and after school, and throughout the summer to create a strong pathway with course content that was vertically and horizontally aligned. This involved developing a shared framework and vocabulary to teach similar topics, eliminating unnecessary repetition, and creating a schedule of projects where each contributed to the next throughout the entire pathway. Students took notice of the organized, complementary, and sequential nature of the pathway, and the fact that their teachers worked to continuously improve it.

At Kearny, teachers across all subjects had time set aside during the summer and regular school year for collaboration. Teachers of the same grade level always had shared planning time, which allowed them to increase the depth of subject-matter integration in their lesson plans. In addition, all Kearny teachers attended a two-week professional development summer institute that was paid for by the CCPT grant. During these two weeks, both core content and CTE teachers had dedicated time to plan the year's curriculum with all the other teachers in their grade.

## Next Steps for PD

CTE teachers need a broad range of skills to excel in their work. In addition to the pedagogy skills and course content knowledge required of all teachers, CTE teachers have other unique responsibilities and challenges. To design career pathways that prepare students with the skills needed for future careers, CTE teachers must maintain connections to industry and track emerging trends. In addition, CTE teachers must connect curricula to create logically-sequenced and complementary pathways courses as well as find time to collaborate with academic teachers to integrate academic content. Lastly, most CTE teachers are the only teachers of their respective subject matter in the school, making it harder to collaborate on lesson plans or content-specific issues.

For the reasons listed above, it is especially important that CTE teachers have access to PD opportunities aligned with their needs and have time and space to collaborate with their peers. Most of the schools we visited recognized the long-lasting value of providing PD and planned to continue to support PD opportunities for their CTE pathways teachers and staff. However, structural issues continued to inhibit productive collaboration time, particularly for CTE instructors. To create transformational pathways, schools and districts will need to intentionally restructure their schedules and set aside time for CTE pathways teachers to collaborate with core academic teachers and with same-subject teachers at other schools.



*When you invest, as we have in the professional learning of these instructors and the program, it's really hard to peel it back.*

– *Administrator, Ramona High School*

## Section 6: Challenges and Lessons Learned

As shown in this and prior evaluation reports, the CCPT grant expanded CTE opportunities for students in San Diego County. This concluding section highlights the challenges and lessons learned from this expansion, as surfaced through qualitative data from site visits to six schools and as supported by findings from past reports and interviews.

### Challenges with Enhancing and Expanding Pathways

At the grant's conclusion, distinct challenges remain for the six visited schools and districts for enhancing and expanding their CTE pathways. Some of these challenges were raised in the Mid-Project Report but have persisted.

- **Many schools continued to struggle with staffing CTE instructor positions.** Finding individuals with the necessary credentials, experience, and interest in teaching CTE courses has been an enduring challenge. This may be due, in part, to lower salaries. (While CTE teachers can take online courses to move up the pay scale, these courses can be expensive.) The short supply of CTE teachers has meant that classes are often overenrolled. Furthermore, workloads quickly become unsustainable for CTE teachers, and this limits the time they can spend developing relationships with industry partners and collaborating with other teachers.

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*[The challenge is] just time, not having time to be able to work with other teachers as much as I would like to. We have all these plans—“It would be great to do this; I know exactly where we could put them in.” The problem is finding the time to be able to sit down with those teachers and work it in.*

– *Teacher, Ramona High School*

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*I think the biggest concern I have going forward is, I have a 1960s building. We're trying to do 21<sup>st</sup>-century work, and the bones of the classroom and just the feel, really—none of it's been upgraded. So, I have this really awesome equipment in this room where we've got green felt on the wall.*

–*Administrator, Kearny DMD High School*

- **Some schools were still in need of CTE-related facilities improvements.** While the CCPT grant provided funds to upgrade facilities and purchase equipment, some schools were hoping for larger facility improvement projects, such as a film studio at Carlsbad High School. Other schools, such as Kearny, were in need of basic furniture including student desks and chairs. Additionally, schools like Steele Canyon needed to adjust their current facilities to appropriately accommodate new equipment.
- **Female participation in STEM-related CTE pathways was relatively low.** Schools have struggled to recruit female students for the engineering and ICT pathways. They have recognized this gender imbalance and have taken

steps to recruit more girls. Ramona High School launched a pilot afterschool program, the Femineers, to try to increase interest in engineering; the Olympian ICT instructor provided extra credit to any student who recruited a female student into the course. While these initiatives have been helpful, a gender imbalance remains in engineering and ICT pathways.

- **The ePortal will need additional staff support after the grant ends.** The challenges that some teachers identified with the ePortal suggest that ongoing staff support is needed to operate the system and make improvements to enhance its functionality and efficiency. Because several teachers struggled with the rollout of the ePortal or were just not exposed to it, they could use ongoing technical support to increase utilization and buy-in for the system.

## Challenges with Integrating Pathways

As highlighted in Section 2, schools transforming from Tier 1 to Tier 4 along the pathways continuum require integration with WBL opportunities and academic core courses. However, creating the school conditions and partnerships needed to achieve this integration was a challenge for several schools.



*It's not for the lack of willingness on our part. I did computer-aided design in my class, and we use axis and planes, which go hand in hand with the graphing in math classes, and so on. But trying to get together with [the core subject teachers] to create an actual lesson between those two, maybe not so easy to do.*

—*Teacher, Steele Canyon High School*

- **Some schools have had difficulty creating a master schedule aligned to CTE pathways progressions.** Schools sought to design pathways with deliberate sequences of courses. However, due to scheduling issues with AP courses and other electives, these sequences were compromised at some schools. Because students took courses out of sequence, some CTE instructors were teaching students with varied levels of experience in the pathways and they struggled with modifying curricula to meet the class composition.

## School-Level Lessons Learned and Recommendations

During site visit interviews, CTE staff and teachers shared insightful lessons learned, and these carry over into future CTE pathways development. The following points summarize the key takeaways gleaned over the course of the CCPT grant.

- **When developing CTE pathways, it was valuable for some schools to have staff dedicated to CTE enhancement.** A developed CTE pathway has several moving parts. Therefore, some schools needed a CTE coordinator to manage WBL, CTE teacher PD, academic integration, and student

**Academic Integration:** In the 2016-17 school year, the SMP data illustrated that 44% of pathways included both CTE and academic classes. Furthermore, 44% of pathways had cross-disciplinary projects or assignments linking academic and CTE classes or content.

recruitment. Having dedicated CTE staff can improve a pathway's progress toward developing into a Tier 4 system.

- **CTE instructors required sufficient PD opportunities to integrate curricula with core content and to develop WBL.** For example, the summer institute attended by Kearny instructors provided them with the time they needed to fully integrate CTE course projects with the standards taught in core courses. CTE teachers have also made fruitful WBL connections at PD events, as well as developed their understanding of how WBL fits into their courses.

### Recommendations

Site visit interviews at the six schools surfaced recommendations for enhancing CTE pathways in the future. Key recommendations were as follows:

1. **Start pathways recruitment at the middle school level.** Some schools recommended that CTE pathway courses and opportunities begin at the middle school level to: (1) give students the chance to explore potential pathways before committing to a single pathway in the ninth grade; and (2) recruit girls into STEM-related pathways at an earlier age.
2. **Emphasize academic integration as a necessary component of pathway development.** Some CTE staff commented that academic integration is critical for developing CTE pathways, and the county may want to continue to emphasize this point as they provide ongoing support for pathway development. This integration does not need to go “from zero to 100” in a single year; rather, teachers can take steps gradually by partnering with one core content teacher for one semester and then build from there.
3. **Structure CTE school “peer exchange” at the regional level.** Schools that are in the early stages of developing CTE pathways expressed an interest in learning from their more advanced peers. Due to the geographic expansiveness of San Diego County, this peer exchange could be coordinated at a regional level. For example, a “sister city” model could be set up in which established school districts mentor districts that are still in CTE pathways development.

## Consortium-Level and County-Level Lessons Learned

Interviews with grant and county-level administrators surfaced the following lessons learned:

- **The Steering Committee governance structure shifted toward more one-on-one and district-specific support.** The Steering Committee was intended to provide support for schools as they developed their CTE pathways. However, because full-time school staff have limited time to travel to and attend meetings, attendance at meetings was low. Furthermore, the meetings often resulted in one-way conversations that did not address the needs of smaller, rural

districts. Thus, the Steering Committee structure shifted to focus on communities of practice and meetings with individual school sites.

- **Establishing productive relationships with community colleges required early and frequent engagement with multiple stakeholders.** The consortium noted that community college partnerships have gotten stronger over time due to increased efforts to establish contacts within community colleges. The consortium looks forward to continuing to grow this partnership as pathways are expanded and developed.

## Conclusion

A theme heard across all interviews was that CTE pathways benefited students in a variety of ways. They helped students explore career interests, gain tangible real-world skills, connect with career opportunities, and participate in experiences that supported their transitions from college to career. While CTE pathways development may present some challenges for schools, staff and teachers recognize the benefits for students and are therefore dedicated to continuing this effort in the years to come.

While some schools expressed concerns about sustainability, teachers and administrators communicated that they are invested in the development of their CTE pathways so that the programs continue to thrive beyond the grant. At several schools, the CCPT grant provided equipment, software upgrades, and improved facilities. Yet, this equipment will need to be maintained and the software will need ongoing upgrades. However, CTE staff and teachers feel committed to their pathways' development. Therefore, site visit schools believe that after the sunset of the CCPT grant, they will find ways to sustain and grow their pathways programs; this sentiment was echoed at the district level. Moving forward, those at the regional consortium level are in a unique position to continue discussing sustainability of CTE pathways.



*You get to actually construct your sketches and we see our building come to life. I figured out that that's what I want to do in my life. I want to be a part of a team that's helping design, collaborate, and create these buildings for people. That's why I feel like I've excelled so much at the idea is because I'm passionate about what I'm doing.*

*—Student, Kearny EID High School*



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## Appendix: Individual School Profiles

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# Carlsbad High School

Carlsbad High School, located in Carlsbad, California, is one of two high schools in the Carlsbad Unified School District (CUSD). The school's demographic and academic characteristics, as of the 2016–2017 school year, are detailed below.

Student population: 2,255 students in Grades 9–12.

Student demographics:

- 56% white, 31% Hispanic, 6% Asian Pacific Islander, 1% African American, <1% American Indian or Alaska Native, 6% Two or more Races
- 17% economically disadvantaged
- 4% English-language learners

Academic performance (11<sup>th</sup>-grade CAASP scores):

- ELA: 72% of students met or exceeded state standards (vs. 49% statewide)
- Math: 45% of students met or exceeded state standards (vs. 38% statewide)

Dropout rate: 4.2%

The district as a whole was focused on making learning more relevant at all ages, and saw CTE as an important piece of this strategy; in fact, the school board had stated it would like to see 100% of high school students participate in career pathways.

## Career Pathways<sup>8</sup>

### Graphic Production

#### Technology:

#### Film Academy

- The Film Academy pathway was **enhanced** by the CCPT grant.
- The pathway included both **core academic classes with a focus on film** and **applied film classes**. The academic classes included Film Academy English 2, English 3, World History, and U.S. History. The applied film classes included Filmmaking and Director's Studio.
- This pathway earned the highest level of **Linked Learning** certification.
- Students progressed through the pathway as a **cohort**, and there was significant **interdisciplinary collaboration** between the teachers. The pathway also had its own **advisory board** for curriculum review and fundraising.
- The CCPT grant paid for a dedicated **Film Academy guidance counselor** who met with students to help them understand the Film Academy course progression and postsecondary opportunities. It also paid for professional development and industry standard film **equipment and technology**.

<sup>8</sup> The CCPT grant officially supports an additional pathway (software and systems development), but CCPT funding almost exclusively goes to the graphic production technology pathway. Thus, the information in this profile focuses on the graphic production technology pathway.

### Connection to Postsecondary Education

The Carlsbad Film Academy went on field trips to and hosted guest speakers from the film programs at **Chapman University** and **Mira Costa College**. As of spring 2018, students were able to enroll in a MiraCosta College film class taught at Sage Creek High School for free, but the Carlsbad Film Academy courses did not articulate. The Film Academy teachers, together with district leaders, were **in pursuit of an articulation agreement** with MiraCosta College.

### Work-Based Learning

- Field trips
- Guest speakers (including program alumni)
- Internship prep course
- Capstone project where students created short films or advertisements for local businesses
- Film festival volunteer work

### Challenges and Lessons Learned

- **Distance from industry partners:** Teachers and district leaders said they would like to see more engagement with the film industry, particularly around WBL opportunities, but have felt constrained by their distance from Los Angeles.
- **Challenges with ePortal:** Some teachers did not receive responses to their ePortal requests, and have been less inclined to use it since that experience. A district representative said it seemed the majority of opportunities offered in ePortal were located in the southern part of the county, whereas Carlsbad is located in the north, and few opportunities were aligned to film.

As of spring 2018, CUSD leaders anticipated **more LCAP funding would be allocated toward college and career pathways** in future academic years, sufficient to **sustain and even expand pathways**. The Film Academy has also benefited from private fundraising from the parent booster club. Therefore, the investments made by the CCPT grant and the work done to make the Film Academy a strong pathway will likely be sustained.



# Kearny High Educational Complex

## School Context

The Kearny High Educational Complex is part of the San Diego Unified School District located in San Diego, California. The school opened in 1941 and was transformed during the 2004–2005 school year from a traditional high school to four separate small schools: (1) the Stanley E. Foster School of Engineering, Innovation and Design (EID); (2) the School of Digital Media and Design (DMD); (3) the School of College Connections; and (4) the School of Science, Connections and Technology. The CCPT grant was used to support pathways at EID and DMD. The schools' demographic and academic characteristics as of the 2016–2017 school year are detailed below.

### EID

Student population: 336 students in Grades 9-12

Student demographics:

- 59% Hispanic/Latino, 15% Asian Pacific Islander, 11% White, 6.5% African American, <1% American Indian or Alaska Native, 8% Two or more Races
- 76.5% economically disadvantaged
- 12% English language learners

Academic performance (11<sup>th</sup>-grade CAASP scores):

- ELA: 74% of students met or exceeded state standards (vs. 49% statewide)
- Math: 39% of students met or exceeded state standards (vs. 38% statewide)

Dropout rate: 1.4%

### DMD

Student population: 406 students in Grades 9-12

Student demographics:

- 51% Hispanic/Latino, 18% Asian Pacific Islander, 11% African American, 11% White, <1% American Indian or Alaska Native, 7% Two or more Races
- 76.3% economically disadvantaged
- 13% English language learners

Academic performance (11<sup>th</sup>-grade CAASP scores):

- ELA: 84% of students met or exceeded state standards (vs. 49% statewide)
- Math: 36% of students met or exceeded state standards (vs. 38% statewide)

Dropout rate: 2.9%

Both EID and DMD have received **Linked Learning certifications**. The schools operate on a 4x4 block schedule with a cohort structure in which the same group moves through four subjects each semester. All students take a sequence of four CTE courses that integrate with their core academic courses.

## Career Pathways

### Engineering

#### Design:

Engineering, Innovation and Design (EID)

- CCPT funds were used to **enhance** and support the existing pathway.
- The EID pathway is focused on **engineering** and **architecture**.
- The CCPT grant was used to fund 3D printing materials, a laser cutter, wood for prototyping, bolts, other engineering supplies, and transportation to and from field trip sites.

### Graphic Production

#### Technology:

Digital Media and Design (DMD)

- CCPT funds were used to **enhance** and support the existing pathway.
- The DMD pathway is focused on **digital mixed media** and **video production**.
- The CCPT grant was used to purchase new equipment and provide transportation to and from field trips.

### Connection to Postsecondary Education

Kearny had a very **established relationship with Mesa College**. Academically qualified students were able to participate in Mesa's Fast Track program that allowed them to take courses for both college and high school credit during the school day, and complete one semester of college while still in high school. All students could enroll in dual enrollment courses taught by Mesa instructors at Kearny. Specific to EID, because the engineering curriculum was from Project Lead the Way, students received **preferred admissions and college credit at San Diego State University**.

### Work-Based Learning

Kearny recently created a **full-time WBL coordinator position**. Initially, the coordinator worked exclusively with DMD students; however, in 2017, she expanded to EID. Both EID and DMD offer **internships, job shadowing, field trips, and guest speakers** as part of their pathways. In addition, EID offers **mentorship programs** with industry partners.

### Professional Development

- CCPT grant money directly paid for a **two-week professional development summer institute** for all EID and DMD teachers. During these two weeks, both core content and CTE teachers had dedicated time to plan the year's curricula with all other teachers in their grade.
- **Teachers completed paid externships**. Specifically, during the summer, teachers could work in an aligned field that they were interested in and receive payment through the CCPT grant.

### Challenges and Lessons Learned

- **Inadequate facilities:** Kearny's structures are from the 1960s and are in need of upgrades. The CCPT grant was able to pay for some upgrades to the buildings; however, teachers were still in need of new tables, chairs, and air conditioning.
- **Recruiting and retaining CTE teachers:** Kearny was able to attract CTE teachers, many of whom were alumni, but their pay was dramatically less than what they would receive in industry. CTE teachers could take online courses to move up the pay scale, but such courses are expensive.
- **Recruiting female students into the EID pathway:** Students in EID were approximately 70% male and 30% female. Outreach at the middle school level was designed to encourage female students into EID, but more work needs to be done in this area.
- **Student costs for projects:** The projects students worked on often required outside materials, which could be expensive. Students expressed they would appreciate specific funds to purchase materials for school projects, so they did not have to ask their parents for resources.
- **Software availability for students:** Some students were able to afford expensive software on their home computers, allowing them to work on projects outside of school hours. Students who did not have access to this software at home felt that they might have been at a disadvantage because they did not have as much time to work on their projects as their peers.
- **Lack of integration between pathways:** The pathway structure created student silos such that students in DMD have not felt welcomed in EID and vice versa.

Regarding lessons learned, the school principals stressed the fact that **having a WBL coordinator was critical**. Given the amount of coordination that must happen between employers, students, teachers, and parents, having one dedicated person to streamline this process is essential. Furthermore, the district CTE coordinator emphasized that **academic integration is the key for a successful CTE program**.



# Olympian High School

## School Context

Olympian High School is located in the Sweetwater School District in Chula Vista, California. The school's demographic and academic characteristics, as of the 2016–2017 school year, are detailed below.

Student population: 2,610 students in Grades 9–12

Student demographics:

- 53.5% Hispanic/Latino, 24% Asian Pacific Islander, 7.5% White, 6.5% African American, <1% American Indian or Alaska Native, 9% Two or more Races
- 24.1% economically disadvantaged
- 6% English language learners

Academic performance (11<sup>th</sup>-grade CAASP scores):

- ELA: 89% of students met or exceeded state standards (vs. 49% statewide)
- Math: 44% of students met or exceeded state standards (vs. 38% statewide)

Dropout rate: 3.5%

While CTE was not necessarily new at Olympian High School, the principal and CTE coordinators noted that there was still substantial room for growth. The CCPT grant was a welcome source of funding to assist with this effort.

## Career Pathways

### Software & Systems

Development:  
Information and Communication Technology (ICT)

- The ICT pathway was a **new** pathway.
- Course offerings included Introduction to Computer Science Principles and AP Computer Science. Beginning in the 2018–2019 school year, the pathway will expand to include a third course focused on cyber security.
- The CCPT grant provided the training, software, and computers needed to start the pathway. Additionally, the grant funded new headphones, a Finch Robot, textbooks, and printers.

## Connection to Postsecondary Education

Olympian High School is most closely aligned with **Southwestern Community College**; however, Southwestern did not have a formal ICT pathway. The Olympian CTE coordinators have therefore considered reaching out to other community colleges to create connections between the Olympian ICT pathway and postsecondary coursework.

## Work-Based Learning

The Olympian ICT pathway hosted **nine guest speaker opportunities**.

## Professional Development

- The Olympian **ICT pathway used the Project Lead the Way** curriculum hosted by San Diego State University.
- The ICT instructor was able to use CCPT funds to **attend the Educators Conference** in San Jose, California. This conference specifically focused on cyber/computer science topics.

- CTE teachers met every Wednesday for shared planning time.

### Challenges and Lessons Learned

- **Integration of CTE instructors with the rest of the school:** The ICT teacher was paid hourly and only worked part time. This structure seemed to create a set of challenges for integrating the pathway into the rest of the school. Specifically, the ICT instructor had limited time to collaborate with core-content instructors and was unable to take on additional sections.
- **Course demand was higher than capacity:** When the cyber security course is offered, the ICT instructor will not be able to teach as many sections of Computer Science Principles. The demand for ICT pathway courses has been very high; thus, reducing section availability will further limit the number of students able to complete the pathway.
- **Problems with the Project Lead the Way ICT curriculum:** The ICT teacher reported that the computer science Project Lead the Way curriculum worked very well at the introductory level. However, he believed the curriculum was not as strong at the advanced level. He found it difficult to brainstorm alternatives since he had a limited amount of planning time.
- **Recruiting females into the ICT pathway:** The CTE coordinators believed that outreach to female students must begin at the middle school level; however, they were not able to focus on middle schools through the CCPT grant. The ICT instructor was aware of the lack of girls in his courses, and therefore sponsored a Girls Who Code club to get extra participation. He also offered extra credit to any student who recruited a female student into one of his computer science courses.
- **Lack of opportunity to learn from developed CTE programs:** At the district level, CTE coordinators reported challenges with learning from other sites. They did not feel the CCPT grant meetings were conducive to peer learning. The CTE coordinators benefited from visiting Kearny during a recent Steering Committee meeting and wished there were more opportunities of this nature.
- **Understanding the expectations of the grant:** The CTE coordinators reported challenges with understanding the duration of the grant. Olympian was under the impression that they needed to spend all of their grant funds within two years; but in reality, they learned they could have stretched it out across three years.

With regards to lessons learned, the CTE coordinators felt that they were very successful at strategically starting the ICT pathway at Olympian. They had staff and administrative support, and as a result, were optimistic about the growth of this pathway. However, the CTE coordinators said that if they could go back and do things differently, they would have worked more closely with the finance team and asked for more clarity from the county around the expectations of the grant.



# Ramona High School

## School Context

Ramona High School, located in Ramona, California, is one of four high schools in the Ramona Unified School District (RUSD). Compared to other districts in San Diego County, RUSD is further inland and more rural. One interviewee explained that the community was small, close-knit, and very supportive of CTE. The school’s demographic and academic characteristics, as of the 2016–2017 school year, are detailed below.

Student population: 1,574 students in Grades 9–12

Student demographics:

- 55% white, 38% Hispanic/Latino, 2% Asian Pacific Islander, 1% American Indian or Alaska Native, 4% Two or more Races
- 33% economically disadvantaged
- 5.5% English-language learners

Academic performance (11<sup>th</sup>-grade CAASP scores):

- ELA: 67% of students met or exceeded state standards (vs. 49% statewide)
- Math: 31% of students met or exceeded state standards (vs. 38% statewide)

Dropout rate: 4.6%

Ramona has a long history of a strong automotive program, but has only recently expanded its CTE department to include other pathways.

## Career Pathways

<b>Systems Diagnostics, Service, &amp; Repair:</b> Automotive	<ul style="list-style-type: none"> <li>• The automotive pathway was <b>enhanced</b> by the CCPT grant.</li> <li>• The target industry for this pathway was <b>clean energy</b>.</li> <li>• Course offerings included Power Mechanics/Motorcycle Technology; General Services Technician; Auto Technology: Maintenance and Light Repair Level 2; and Auto Technology: Maintenance and Light Repair Level 3.</li> <li>• The CCPT grant was used to purchase new equipment that focuses on clean energy including data scanners that can work with hybrid cars, digital voltmeters, and the materials to build an electric car.</li> </ul>
<b>Engineering Design:</b> Engineering	<ul style="list-style-type: none"> <li>• The engineering pathway was a <b>new</b> pathway.</li> <li>• The target industry for this pathway was <b>advanced manufacturing</b>.</li> <li>• Course offerings included Introduction to Engineering Design; Principles of Engineering; Aerospace Engineering; and Engineering Design &amp; Development (the capstone course).</li> <li>• The CCPT grant was used to support professional development—specifically, PLTW training and CTE-focused sessions—and to purchase equipment and materials.</li> </ul>

## Connection to Postsecondary Education

The automotive program had articulation agreements with **Miramar Community College**, **Cuyamaca Community College**, and **Universal Technical Institute (UTI)**. Representatives from the three schools advised on curriculum, hosted visits for small groups of Ramona students, and recruited Ramona students for their respective programs. The automotive teacher also prepared advanced students for the Armed Services Vocational Aptitude Battery (ASVAB), an aptitude test for the military. Students in the engineering pathway who earned a “Proficient” or “Advanced” score on their PLTW assessments could earn **college credit and preferred admission** at schools such as **El Camino College** and **San Diego State University**. The engineering teacher also hosted postsecondary representatives as guest speakers.

## Work-Based Learning

### Automotive:

- Guest speakers (frequently program alumni)
- SkillsUSA competitions
- Career fair
- Field trips
- Working with real customers (e.g., teachers; other students) and filling out work orders

### Engineering:

- Guest speakers
- Field trips
- Afterschool engraving business run by students

## Challenges and Lessons Learned

- **Distance from industry partners:** Ramona is a fairly rural community, and it has been difficult to develop and sustain relationships with businesses that are up to an hour’s drive away.
- **Limited staff capacity:** Popularity of the two pathways has grown steadily over the past few years, but total enrollment at Ramona has declined, preventing the school from hiring new CTE staff. The growing enrollment in the pathways has created an unsustainable workload for the teachers. Both teachers expressed that time constraints limited their ability to pursue things like enhanced partnerships or stronger academic integration.
- **Wide range of student ability levels:** Some students enrolled in these pathways because they were passionate about the subject matter and wanted to pursue it after high school, while others were just filling up their schedules. It was difficult for instructors to attend to the needs of the high performers while also trying to teach basic skills to disengaged students.
- **High administrative turnover:** Throughout the grant period, administrative turnover created challenges for grant administration. The new CTE lead had to learn all of the CTE spending and reporting requirements, including those for CCPT.

As a result of the CCPT grant, Ramona enhanced its capacity to expand pathways, which they believe will lead to more CTE funding from the district. Ramona will also be able to draw on other funding sources such as Perkins and CTIG grants. Therefore, Ramona administrators feel confident that **the CCPT-funded pathways will be financially sustained** beyond the life of the grant.



# San Dieguito High School Academy

## School Context

San Dieguito High School Academy (SDA) is located in Encinitas, California, and is one of five high schools in the San Dieguito Union High School District. Students are automatically enrolled in their neighborhood high schools unless they apply to SDA. The school is often over-subscribed and **students are selected by lottery**. Despite this structure, it is not technically a magnet or charter school. The school's demographic and academic characteristics, as of the 2016–2017 school year, are detailed below.

Student population: 1,834 students in Grades 9–12

Student demographics:

- 72% white, 20% Hispanic/Latino, 6% Asian Pacific Islander, <1% American Indian or Alaska Native, <1% African American, 3% Two or more Races
- 9% economically disadvantaged
- 2% English-language learners

Academic performance (11<sup>th</sup>-grade CAASP scores):

- ELA: 87% of students met or exceeded state standards (vs. 49% statewide)
- Math: 65% of students met or exceeded state standards (vs. 38% statewide)

Dropout rate: 0.3%

There has been **strong community support** for CTE at SDA from parents and the business community, both of whom have made private donations to specific CTE programs and projects.

## Career Pathways

**Software & Systems Development:**  
Computer Science

- The computer science pathway was a **new** pathway.
- The pathway consisted of two introductory courses (Computer Game Design and Exploring Computer Science), a concentration course (AP Computer Science Principles), and a capstone course (AP Computer Science A).
- The CCPT grant was used to hire a **full-time computer science teacher** and pay for supplies and equipment.

**Engineering Design:**  
Engineering

- The engineering pathway was **enhanced** by the CCPT grant.
- The pathway consisted of one introductory course (Metals I), one concentration course (Robotics & Engineering Technology), a capstone course (Advanced Engineering & Technology), and an enrichment course (Architectural Design).
- The curriculum included preparation for a certification assessment, the **Certified SolidWorks Associate exam**, which is recognized by industry and many postsecondary institutions.
- The CCPT grant was used to purchase new equipment.

<p><b>System</b></p> <p><b>Diagnostics, Service, &amp; Repair Design:</b></p> <p>Automotive</p>	<ul style="list-style-type: none"> <li>• The automotive pathway was <b>enhanced</b> by the CCPT grant.</li> <li>• The pathway consisted of three courses: an introductory course (Introduction to Technology), a concentrator course (Auto Tech), and a capstone course (Auto Engine Performance).</li> </ul>
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### Connection to Postsecondary Education

SDA had articulation agreements with **MiraCosta College** and **Palomar College** for several CTE pathways, including the CCPT-funded automotive pathway. Students were able to earn up to two credits at MiraCosta College for completing the Auto Tech course, and up to four credits for completing the Auto Engine Performance course and passing an exam. There was also an articulation agreement for the enrichment course in the engineering pathway (Architectural Design). The engineering teacher has taken students on field trips to the technology center at MiraCosta College.

As of spring 2018, there were no articulation agreements for the computer science pathway. However, one week before our site visit, the computer science teacher met with representatives at MiraCosta College to work on curricular alignment and to discuss the possibility of dual enrollment, certification, and an articulation agreement.

### Work-Based Learning

A large portion of the grand funding (about 40%) was used to fund a full-time **WBL counselor** for the district. In addition, the SDA pathways offered guest speakers, field trips, and class projects for local startup companies.

### Challenges and Lessons Learned

The challenges expressed by SDA interviewees were common challenges associated with CTE. For example:

- **Cost of equipment and consumables:** The district wanted to ensure that its CTE classes had up-to-date, high-quality equipment used by industry, but wear and tear and the frequency with which industry updates equipment means they must always be in search of new grant opportunities. In addition, the engineering and automotive classes use “consumables” (supplies that get used up by students), which they must constantly resupply. Luckily, San Dieguito Union High School District has been able to secure a lot of new funding for CTE in the past few years. However, some at the school felt the influx of new funding for CTE compared to funding for other programs was unequitable.
- **Finding CTE teachers:** Finding candidates with industry experience who want to teach has been challenging, given the higher salaries they could earn in industry.
- **CTE teachers working in silos:** The new computer science teacher described feeling isolated as the only teacher of his subject, but noted that the district was very supportive and had connected him with other computer science teachers in the district.

One interviewee expressed desire for **more transparency** on the county’s part, particularly in how the funds were allocated across districts. However, they believed the meetings and opportunities to collaborate with other districts were very helpful, and overall felt that the ePortal was a useful tool.



# Steele Canyon High School

## School Context

Steele Canyon High School is a charter school in Spring Valley, California. It opened as a traditional public high school in 2000 with a vocational focus and an intention to link the business world with teachers and students. In 2007, Steele Canyon became a charter school and, while some of the original career emphasis was retained, the curriculum largely shifted away from its original vocational emphasis. The school’s demographic and academic characteristics, as of the 2016–2017 school year, are detailed below.

Student population: 2,163 students in Grades 9–12

Student demographics:

- 42% White, 39% Hispanic/Latino, 6.5% African American, 3% Asian Pacific Islander, <1% American Indian or Alaska Native, 8.5% Two or more Races
- 33% economically disadvantaged
- 7% English language learners

Academic performance (11<sup>th</sup>-grade CAASP scores):

- ELA: 75% of students met or exceeded state standards (vs. 49% statewide)
- Math: 43% of students met or exceeded state standards (vs. 38% statewide)

The current principal stated that the school is focused on making sure that every student graduates with the ability to go to college, but recognizes that not every student will want to do so. The CCPT grant was therefore appreciated for its support of career pathway options.

## Career Pathways

<b>Graphic Production Technology:</b> Arts/Multimedia	<ul style="list-style-type: none"> <li>• The arts/multimedia pathway was <b>enhanced</b> by the CCPT grant.</li> <li>• This pathway includes a four-course sequence: Art 1 (9<sup>th</sup> grade), Graphic Design (10<sup>th</sup> grade), Multimedia Production (11<sup>th</sup> Grade), and Computer 3D Animation (12<sup>th</sup> Grade).</li> <li>• With CCPT grant funding, the multimedia courses were provided with <b>new computers</b> and <b>Adobe software</b>.</li> </ul>
Jewelry Metalsmithing	<ul style="list-style-type: none"> <li>• The jewelry metalsmithing pathway was <b>enhanced</b> by the CCPT grant.</li> <li>• This pathway consists of a three-course sequence: Jewelry Metalsmithing 1, 2, and 3.</li> <li>• Through the CCPT grant, the instructor incorporated <b>computer-aided design (CAD)</b> and certification eligibility through the <b>Diamond Council of America</b>.</li> </ul>
Journalism & Broadcasting	<ul style="list-style-type: none"> <li>• This pathway was in its first year as of the 2017–2018 school year; remaining CCPT grant funding will be used to <b>enhance</b> this pathway.</li> </ul>

## Connection to Postsecondary Education

Cuyamaca Community College is Steele Canyon's closest postsecondary partner. However, there **have not been courses that directly articulate** from Steele Canyon's CTE courses into any community college. Steele Canyon's administrators were actively pursuing articulation opportunities, but there were challenges due to staffing changes at the community colleges and concerns with alignment. In the arts/multimedia pathway, courses did not directly articulate to a postsecondary institution, but the instructor **consistently hosted college representatives** to give guest presentations to his students. Additionally, some colleges completed projects with the arts/multimedia students.

## Work-Based Learning

### Arts/Multimedia:

- Guest speakers (including representatives from the Army and Navy)

### Jewelry Metalsmithing:

- Courses articulated to the Diamond Council of America
- Students could receive up to four certificates: Beginning Jewelry Sales, Advanced Jewelry Sales, Colored Gemstone Course, and Diamond Course
- Internships

## Challenges and Lessons Learned

- **Turnover in grant management:** The original grant manager was very focused on developing a computer science pathway; however, this never materialized and it diverted resources from the other pathways.
- **Difficulty understanding expectations of the grant:** Because of early management turnover, the arts/multimedia and jewelry metalsmithing instructors did not have a clear understanding of what they could do with the grant or what could be purchased. The vice principal believed that new staff was one of the most pressing needs for developing the CTE pathways, but because the grant was "one-time money," the school has not been able to hire new staff via grant funds.
- **Sustainability:** Teachers and staff have been concerned about sustainability issues. In particular, the software and equipment will need to be upgraded in the future. Furthermore, the costs associated with the Diamond Council of America certificate (\$35 per student) have so far been covered by the grant, but the school will need to cover these costs from other sources in the future.
- **Limited capacity:** Because Steele Canyon's CTE program is still developing, the grant manager recognized that a lot of time must be spent to plan for the courses and work with teachers. Often, it has been hard for the grant manager to find time to get everything done.
- **Geographical limitations for developing WBL:** Steele Canyon's rural setting presented a challenge for WBL. In particular, it was difficult to provide transportation for students to complete internships during the school day because the internship sites were often far away.
- **Limited student access to CTE course software:** Students noted that they had limited time to work with CTE course software and, once they left the class and/or graduated, they no longer had access and therefore could not continue developing their skills.

Steele Canyon was committed to investing resources and time into the program's future development, and plans to use the remaining CCPT funds to develop the Broadcasting pathway.

