

Scaling Career-Connected Dual Enrollment

How College and K-12 Partners Can
Strengthen Pathways and Expand Opportunity

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The Community College Research Center (CCRC), Teachers College, Columbia University, has been a leader in the field of community college research and reform for 30 years. Our work provides a foundation for innovations in policy and practice that help give every community college student the best chance of success.

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Introduction

Jobs that offer strong wages and opportunities for career advancement increasingly require education and training beyond high school, yet in the past decade college enrollment rates among high school graduates have declined. Strengthening the transition from high school to college and career opportunity is therefore a key challenge for improving social mobility and economic development across the country. This report examines how community colleges and K-12 partners are addressing this challenge through career-connected dual enrollment—the intentional integration of college coursework into existing career-focused high school programs. The goal is to ensure that more students—especially those who might not otherwise continue their education after high school—engage in postsecondary education and training that prepares them for high-opportunity careers. Career-connected dual enrollment can help break down the “college or career” divide so that every student can benefit from college *and* career acceleration.

In the pages that follow, we highlight promising practices undertaken by innovative partnerships, and we conclude with lessons for sustaining and scaling career-connected dual enrollment. The report is intended for college and K-12 leaders seeking practical approaches to strengthen the quality of existing career-focused programming—including traditional high school career and technical (CTE) programs, high school career academies, and postsecondary CTE programs—through dual enrollment coursework.

The findings and takeaways that we describe are drawn from in-depth interviews with 135 dual enrollment and CTE practitioners at colleges and high schools at 12 sites across the country (see Table 1). We selected sites where relatively high shares of high school students combine participation in career-focused programming with dual enrollment courses (see the appendix for more detail on site selection and research methodology). The report describes what we learned from these sites, including the strategies they have adopted, promising practices they are using, and leadership lessons for implementation.

The report is organized into four sections that follow. First, we provide greater background and context, including relevant research evidence, on why more career-connected dual enrollment is an imperative. Second, we discuss three strategies for scaling career-connected dual enrollment that we observed, including the key features of each one and examples of how each has been deployed. The three strategies differ primarily by the existing educational structures they build upon: traditional high school CTE pathways, high school career academies, or college-based CTE programs. Next, we describe promising practices we observed mapped to CCRC’s DEEP (Dual Enrollment Equity Pathways) framework for scaling more purposeful dual enrollment. Finally, we present guidance for college and K-12 practitioners interested in scaling career-connected dual enrollment in their own career-focused programs.

Table 1.
Main Research Sites

College, high school, or district
Amarillo College (TX)
C.E. King High School (TX)
Centinela Valley Union High School District (CA)
Eastern Iowa Community Colleges (IA)
High School District 214 (IL)
Kilgore College (TX)
Miami Dade College (FL)
Oakland Unified School District (CA)
Odessa College (TX)
Patrick & Henry Community College (VA)
Texarkana College (TX)
Tri-County Technical College (SC)

The Case for Career-Connected Dual Enrollment

Across the nation, students, families, employers, and policymakers are seeking educational programs that better prepare young people to enter high-opportunity, high-demand career paths, as most jobs offering strong wages and career advancement now require education and training beyond high school (Strohl et al., 2024). While individuals without a postsecondary credential face limited access to stable employment, family-supporting wages, good benefits, and long-term career growth (Schudde & Bernell, 2019), young adults who do complete a degree, apprenticeship, or other substantive postsecondary training by age 26 are more likely to secure high-quality jobs by age 30 (Carnevale et al., 2023).

As evidence mounts on the importance of postsecondary education and training for high-quality job entry and long-term career success, the field of career and technical education (CTE) has increasingly embraced a broader vision of college and career readiness. Rather than viewing high school CTE as preparation solely for immediate employment after graduation, national organizations such as Advance CTE and the Association for Career and Technical Education (ACTE) emphasize preparing high school students for a full range of high-value postsecondary opportunities, including certificate, apprenticeship, associate degree, and bachelor's degree programs.¹ This vision of high-quality CTE emphasizes coherent pathways that intentionally connect high school CTE coursework to related postsecondary programs through dual enrollment (in which high school students take college courses for both high school and college credit), work-based learning, industry-recognized credentials, and coordinated advising. Together, these aligned programs and supports are designed to help students build the technical skills, professional networks, and academic momentum needed to continue their education and advance into rewarding careers.

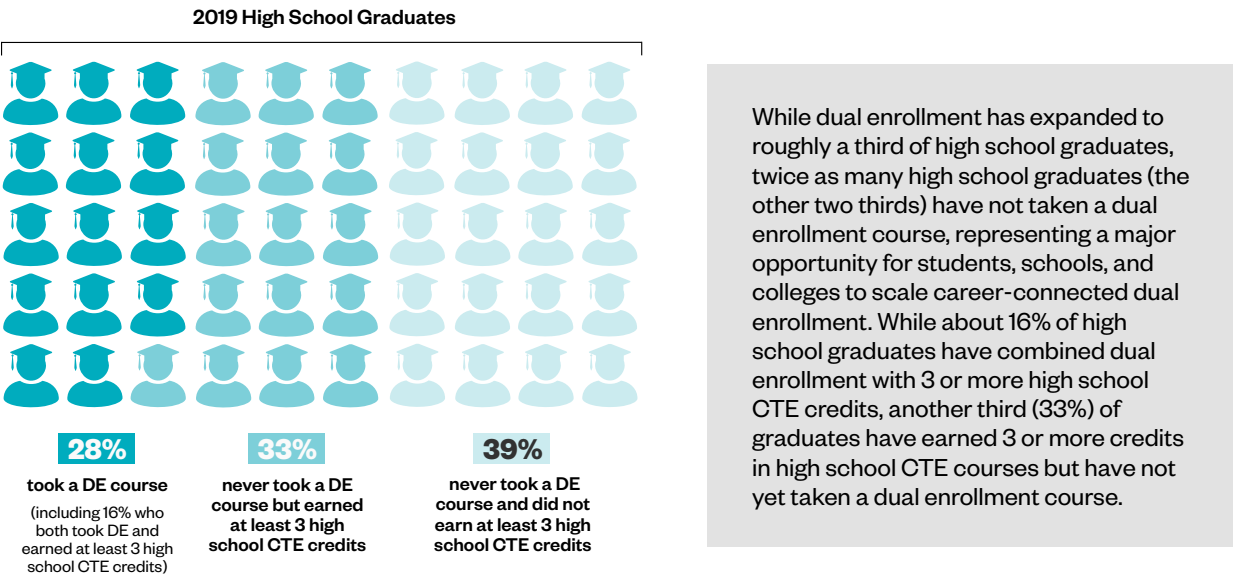
A growing body of recent research has examined the effectiveness of high school CTE in improving students' educational and career outcomes. A systematic review by Lindsay et al. (2024) of rigorous causal studies found consistent evidence that participation in CTE improves high school outcomes, employment after high school, and enrollment in community colleges. The review did not, however, establish a connection between high school CTE participation and college degree completion or subsequent wages. And the authors highlighted a need for further research to better understand which types of CTE programs work best, noting that program design and implementation vary substantially.

While there is limited evidence about which high school CTE models, such as those including work-based learning or dual enrollment, are associated with stronger outcomes, results from a recent study of Texas high school students suggest that combining high school CTE with dual enrollment may be particularly beneficial for postsecondary completion and earnings. Velasco et al. (2025) found that students with a CTE focus who also took dual enrollment coursework were, after high school, more likely to enroll in college and complete a degree than students with a CTE focus who took no dual enrollment.² By age 24, those who combined a high school CTE focus with dual enrollment earned 16% more than those with a high school CTE focus alone.³

Nevertheless, according to a national assessment of high school graduates in 2019 (National Center for Education Statistics [NCES], 2022), dual enrollment has been underutilized among high school CTE students. While nearly a third (28%) of 2019 graduates took at least one dual enrollment course, another third (33%) of graduates earned 3 or more high school CTE

credits—the equivalent of three full-year courses—but took no dual enrollment coursework.⁴ Extrapolating to the 3.8 million graduates each year, this means that over a million students with 3 or more high school CTE credits graduate annually without ever taking a dual enrollment course.

Figure 1.
Dual Enrollment and High School CTE: Many More Students Could Be Combining Them



Note. Authors' calculations of data from the 2019 NAEP High School Transcript Study (NCES, 2022), a nationally representative survey of 2019 high school graduates.

The recent evidence from Velasco et al. (2025) suggesting that integrating dual enrollment into high-quality CTE programming may improve students' postsecondary attainment and career mobility, coupled with the very large numbers of CTE and other career-focused students graduating from high school each year, points to a major opportunity to expand what is increasingly being called *career-connected dual enrollment*.⁵ We use this phrase to describe the intentional integration of college coursework into high-quality high school career programs to create stronger on-ramps to postsecondary education and training that lead to high-opportunity careers.

Federal and state policies have strengthened incentives for integrating dual enrollment into high-quality career pathways. The 2018 reauthorization of the Carl D. Perkins Career and Technical Education Act (Perkins V) shifted federal CTE policy away from preparing students solely for immediate employment and toward helping them transition to postsecondary education and credentials through aligned programs of study, expanded support for dual enrollment and other early college opportunities, and accountability measures that reward postsecondary credit and credential attainment (Advance CTE, n.d.). Consistent with this shift, 42 states now include dual enrollment participation or success as an indicator in at least one accountability system (Every Student Succeeds Act, Perkins V, or a state accountability system) (Falcone et al., 2025).

National organizations have likewise called on state and federal policymakers to move “from fragmented to focused” early postsecondary opportunities by intentionally integrating dual enrollment into coherent career pathways rather than treating it as a

standalone opportunity for college acceleration (College in High School Alliance et al., 2024). And in its recent report, the Commission on Purposeful Pathways (2026) called for a shift away from siloed, disjointed college or career preparation experiences for students, advancing a vision of purposeful pathways, including stronger integration of dual enrollment with high school career programming.

The growth of dual enrollment at community colleges, where high schoolers now account for more than one in five students (Fink, 2025), represents an unprecedented opportunity to transform existing high school and college programs into stronger on-ramps to postsecondary education and training for high-opportunity careers. Pathways in Technology Early College High Schools (P-TECHs) represent one successful approach in integrating dual enrollment into high school CTE pathways. Research suggests that participation in a P-TECH substantially increases associate degree attainment, particularly for young men (Rosen et al., 2023). However, because P-TECHs require the creation of new schools or specialized programs, they are often challenging to replicate at scale.

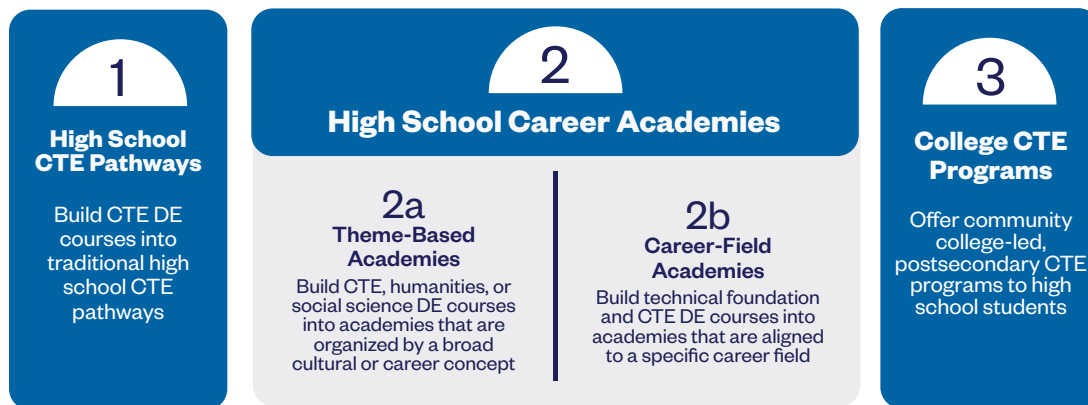
How can college and K-12 partners help more students move from career exploration in high school to postsecondary education and training that leads to high-opportunity careers—particularly when it is not feasible to create entirely new schools or programs? This report shows how college and K-12 partners are using dual enrollment to break down the false choice between college or career preparation in high school. By intentionally integrating dual enrollment into existing career-focused educational pathways, partnerships can transform programs that already serve large numbers of students into stronger on-ramps to postsecondary education and career opportunity. The remainder of this report describes three scalable strategies for accomplishing that goal, practices that make those strategies more effective, and leadership lessons for building and sustaining career-connected dual enrollment at scale.

Three Strategies for Scaling Career-Connected Dual Enrollment

We observed three broad strategies for scaling career-connected dual enrollment. As shown in Figure 2, each strategy involves integrating career-focused dual enrollment (DE) coursework, as well as guidance and other supports, into existing high school and college structures:

1. **Building DE courses into traditional high school CTE pathways.**
2. **Building DE courses into high school career academies:**
 - **Theme-based academies:** Embedding relevant DE courses into academies that are organized by a broad cultural or career concept (such as global health).
 - **Career-field academies:** Embedding technical foundation and CTE DE courses into academies that are aligned to a specific career field (such as allied health and nursing).
3. **Enrolling high school students in college CTE programs.**

Figure 2.
Three Strategies for Career-Connected Dual Enrollment



These strategies differ primarily in the existing educational structure they build on. Strategy 1 builds dual enrollment into occupation-specific high school CTE pathways. Strategy 2 builds dual enrollment into two types of career academies (that we explain in a box on p. 9). Strategy 3 enables students to begin enrollment in existing college CTE programs while still in high school. Although they differ structurally, all three strategies use dual enrollment to create stronger pathways from career exploration to postsecondary education and training that lead to high-opportunity careers.

CASE STUDIES: Three Strategies in Action

Learn from [associated case studies](#) how specific sites we visited are using these strategies:

- **Strategy 1 | Connecting High School CTE to Career Mobility at Texarkana College (TX)**
- **Strategy 2**
 - **2a | Pouring Dual Enrollment “Gravy” Onto the Academy “Biscuit” at Oakland Unified School District (CA)**
 - **2b | Exploring Careers and Expanding Opportunity at Centinela Valley Union High School District (CA)**
- **Strategy 3 | A Head Start on College Programs Aligned to High-Demand Jobs at Eastern Iowa Community Colleges (IA)**

We observed these strategies operating within broad-access, comprehensive, public high schools (i.e., serving all students in the neighborhood catchment, not selective admissions schools) in rural, suburban, and urban areas. This shows the potential of these strategies to transform the traditional high school experience so that more students—especially those who otherwise would not continue their education—will pursue postsecondary education after they graduate.

Some of the sites we visited were high schools with career academies. First established in 1969, career academies now operate in more than 7,000 schools nationwide (Clearinghouse for Labor Evaluation and Research, n.d.). They are designed to help students explore their career interests and prepare for both entry into the workforce after high school and postsecondary education.⁶ We distinguish two similar types of career academies in the accompanying box, and we discuss a variant of Strategy 2 for each type just below.

Two Types of Career Academies

Often described as a school within a school, high school career academies integrate academic and CTE coursework around either: (a) a broad cultural, interdisciplinary, or industry theme, using interdisciplinary coursework to help students explore multiple educational and career pathways; or (b) a technical career field, exposing students to multiple occupations within an industry.

Because they already organize students around coherent career pathways, career academies provide a scalable way to connect career exploration with dual enrollment. Most career academies, including those we examine in this study, create small learning communities in which groups of students explore career and educational interests and often move through a shared set of courses together as a cohort. Academy-specific staff (i.e., coordinators, teachers, counselors) work together to design the academy's curricula and provide academic support to students. Individual academies also partner with employers to help ensure that academy programming reflects workforce needs and the technical and professional skills students need for success.

Theme-Based Academies

- Organized around a variety of broad themes (e.g., global health, law and social justice, and sustainability).
- Under Strategy 2a, students take DE courses from multiple disciplines including CTE, humanities, and the social sciences while exploring a wide range of educational and career options.

Career-Field Academies

- Organized around career fields (e.g., digital arts, engineering, and information technology).
- Under Strategy 2b, students explore multiple occupations within a field and take DE courses in CTE subjects to prepare them for postsecondary education and training in that field.

We also observed that sites utilizing the three strategies frequently implemented practices aligned to CCRC's DEEP framework, which emphasizes purposeful DE through expanded outreach, course alignment, college advising, and high-quality instruction. We return to these DEEP-aligned practices later in this report.

Lastly, note that some sites combined multiple strategies; for the purposes of this report, we describe the primary strategy used by sites that leveraged more than one.

Strategy 1:

Building DE Courses Into Traditional High School CTE Pathways

Overview. High school CTE pathways already organize students around occupational programs. Embedding dual enrollment into those pathways allows students to begin postsecondary coursework while remaining in familiar programs taught largely by credentialed high school instructors. As a part of efforts to strengthen the quality of these CTE programs by better preparing students to pursue postsecondary CTE, sites using this strategy substitute upper-level high school CTE courses (i.e., those taken in grades 11 and 12) with CTE DE courses.

Example student experience. Students begin a high school CTE pathway by taking an introductory high school CTE course in a specific occupational area, such as Principles of Health Science, Introduction to Welding, Introduction to Culinary Arts, or Principles of Transportation. As students move through the pathway, the courses become more specialized. In 11th or 12th grade, one or more advanced high school CTE courses are replaced with CTE DE courses that count for both high school and college credit. These courses can be taught at the high school or college campus and by either high school teachers qualified to teach DE courses or by college faculty. By graduation, students will have earned college credits, developed occupation-specific skills, gained exposure to local employers, and in some cases completed an industry-recognized credential or even a postsecondary certificate. Through assistance with career exploration and planning supports (ideally provided by the college), students also learn about the value of continuing into postsecondary education and training that leads to careers with better wages, more responsibility, and greater advancement opportunities.

Sites Using This Strategy

Kilgore College in East Texas integrates CTE DE courses into high school CTE pathways in partnership with local independent school districts (ISDs). The college meets with CTE directors in individual ISDs to determine where CTE DE can best fit into existing high school CTE pathways. This approach has been particularly effective in expanding CTE DE at **Longview High School**, a large, comprehensive Title I high school where Kilgore CTE DE courses are now offered in 90% of the school's CTE pathways.

Texarkana College has made a major commitment to expand CTE DE courses with its ISD partners as part of a broader goal to increase postsecondary attainment in its region. To learn more about how they are pursuing this goal, see the associated [case study](#).

Strategy 2a:

Building DE Courses Into Theme-Based Academies

Overview. These high school academies use sequential career- and academic-focused coursework to help students build foundational knowledge and skills using the academy theme as an organizing structure. Under the strategy, a broad range of DE courses are integrated into the curriculum; in addition to CTE DE courses, students can take courses that align with the academy's theme in disciplines like the humanities and social sciences. The thematic structure also provides flexibility for students who want to take DE courses outside of their academy to support exploration. DE courses are taught by either qualified high school teachers or college faculty, and they can include partnerships with employers to make work-based learning and other career-related activities available for students.

Example student experience. Students spend ninth grade exploring academy options and attending academy events in which graduating seniors present their capstone projects and speak directly about what they have learned and where that is taking them. Students then select an academy that they begin in grade 10. Rather than preparing for one specific occupation or career field, students as a cohort take courses in grades 10–12 that connect academic learning to a common area of interest. These courses include theme-aligned high school electives, core academic courses, and DE courses in a range of subjects. The DE courses—such as an introductory kinesiology course for the Community Health Academy or an African American studies course for the Race, Policy, and Law Academy—are curated by school leaders to align with the academy's theme. Students engage in work-based learning and community-based projects connected to the theme, which are set up by teachers, counselors, and other staff who work together as an academy team. Each student completes a capstone project that helps them connect their interests to possible college and career pathways.

Sites Using This Strategy

Oakland Unified School District (OUSD) in Oakland, California, has adopted a districtwide, wall-to-wall academy approach in all of its 16 high schools: Every student enters a theme-based academy in grade 10 and participates in the academy through grade 12. DE courses are built into academy curricula to deepen students' learning about the academy theme. For example, as part of Oakland Technical High School's Fashion, Art, and Design Academy, students take high school courses on fashion design, history, and marketing, and DE courses in graphic arts. The [case study](#) on OUSD further describes implementation inside and outside the classroom.

C.E. King High School in Houston, Texas, offers theme-based academies focused largely on industries.⁷ They include the Future Business Leaders Academy; the Leaders in Expression, Arts, and Design Academy; and the Public Service Leaders Academy.⁸ The Leaders in Expression, Arts, and Design Academy, for example, offers students the opportunity to enroll in CTE programs focused on areas such as arts, audio/visual technology, and communications; engineering; and information technology. Some programs in this academy and others integrate CTE DE coursework in grades 11 and 12 and offer work-based learning experiences and the opportunity to earn industry certifications.

High School District 214, one of Illinois's largest suburban high school districts, also uses this strategy. Students in the district can choose from 40 career pathways organized by broad “career cluster.” Each pathway has a recommended sequence of academic and technical courses from grades 9 through 12 that students can customize with career-related electives that include Advanced Placement (AP) and DE courses in liberal arts, science, and CTE subjects. Most pathways are designed so that students participate in mentorships, internships, and other work-based learning in order to help inform students' decisions about their college and career paths.

Strategy 2b: Building DE Courses Into Career-Field Academies

Overview. These high school academies help students explore a particular career field (rather than preparing them for a single occupation, as in Strategy 1). For example, an academy focused on advanced manufacturing might expose students to engineering, industrial machinery, robotics, and other relevant careers. Students typically participate as part of a cohort in a sequence of academy courses in grades 10–12 that integrate career exploration, work-based learning, and related activities. Under the strategy, students are encouraged to pursue postsecondary education to expand their career options. We observed partnerships embedding DE (either CTE courses or technical foundations courses such as Anatomy and Physiology or Business Statistics) into academy course sequences taught by qualified high school teachers or college faculty.

Example student experience. Students in ninth grade explore academy options and select an academy for grades 10–12. As part of an academy cohort, students take a mix of academy-related high school courses (e.g., Introduction to Engineering Technology) and DE courses (e.g., Principles of Engineering, Computer Integrated Manufacturing) aligned to a career field (such as advanced manufacturing). Academy teachers, school counselors, college faculty and advisors, and employer partners help students understand the range of postsecondary paths available within the field, including through associate degree, apprenticeship, bachelor's degree, and professional degree programs. Students participate in work-based learning experiences such as job site visits, job shadows, guest speakers, or internships. By graduation from high school, students accrue college credit and gain a clearer sense of postsecondary and career options within the field.

Sites Using This Strategy

In the Texas Panhandle, partnerships like **Amarillo College** and **Amarillo ISD** are in the process of implementing DE course sequences that align directly with the college's Level 1 (short-term) certificates and associate of applied science degrees. **AmTech Career Academy** is one Amarillo ISD school working with Amarillo College to create these “academy on-ramps” so students can get on a clear path to the college in a high-demand career field after completing an academy-based program with embedded CTE DE courses.

Odessa College, located in the heart of West Texas's Permian Basin, also partners with rural high schools that use an academy strategy based on the Texas Education Agency's P-TECH model, which is scalable across these schools because of their small size. **Van Horn TECH** (Van Horn), for example, has developed STEM academies in the fields of welding, biomedical, cybersecurity, and engineering using high school models from Project Lead the Way and Blue Origin (which is based just across the border in New Mexico). Van Horn designed each pathway with Odessa College with CTE DE and technical foundation DE courses with the goal of helping students earn a certificate—or ideally an associate of applied science degree—by the time they graduate high school. In spring 2026, more than 20 seniors graduated with an associate degree in one of these career fields. **Iraan High School** has also organized its programs into three academy-like pathways (business, teaching, and welding) designed in partnership with Odessa College to help students graduate high school with an associate degree in one of these fields.

Miami Dade College (MDC) in South Florida has developed DE guided pathways building on longstanding articulation agreements with Miami-Dade County Public Schools (M-DCPS) and related career academy programming at M-DCPS high schools. MDC has worked to actively recruit high school CTE students by showing them how their high school career academy coursework can easily translate into college credit (sometimes referred to as transcribed credit) as well as by showing what DE courses best complement their career academy programming and are applicable to college certificates and degrees in their fields of interest.

In **Centinela Valley Union High School District** (CVUHSD) in Los Angeles, California, CTE DE courses from **El Camino College** are embedded in nine of the district's 10 career-field academies. For more details on how CVUHSD implements key features of this strategy—such as small learning communities and work-based learning—see the [case study](#).

Strategy 3:

Enrolling High School Students in College CTE Programs

Overview. Unlike Strategies 1 and 2, which enhance existing high school programs, Strategy 3 enables students to begin actual college CTE programs while still in high school. Under this strategy, programs are designed to allow high school students to enroll in college CTE programs, complete initial program coursework and short-term certificates during high school, and then continue after high school to more quickly finish an associate of applied science (or applied bachelor's) in the related program of study. Instruction is led by college faculty, though courses can also be taught by qualified high school teachers.

Example student experience. Having nearly met all high school requirements, high school seniors spend half of the school day taking courses through a partnering community college's CTE program. Depending on the local arrangement, they may travel to the college campus or a local career center. Students take courses and follow the sequence of existing postsecondary CTE programs, such as construction, HVAC, automotive, healthcare, or welding. Students learn from college faculty or qualified high school instructors and use college-level equipment, labs, or facilities when needed. By high school graduation, students have made substantial progress toward a certificate or an applied associate degree and can seamlessly continue in the program at the college after high school.

Sites Using This Strategy

Tri-County Technical College uses this strategy to help high school students in its three-county service area to take CTE DE courses before transitioning to the college's CTE programs post-high school.⁹ To encourage participation among their many smaller rural high school partners, Tri-County Technical College has developed agreements with districts to bus students to the college's campuses that are close to high school career centers. For schools without easy access to these campuses, college faculty travel to the high schools to teach CTE DE courses.

Patrick & Henry Community College in Virginia also follows this strategy, and similar to Tri-County, invites participating high schools to use its equipment and labs when high schools lack the facilities to deliver the college's CTE programs. Students from Patrick & Henry's partner high schools, including schools located closer to the college as well as one school located about 30 minutes away, are bused to the college to take courses in the college's welding, mechatronics, and motorsports programs during the school day. College faculty also travel to deliver CTE courses at a college satellite co-located with Patrick County High School, which is an hour away from the college (and serves adults in the evenings). Similar to Tri-County, Patrick & Henry prioritizes use of its own faculty and industry-standard facilities and equipment to serve DE students, helping it scale college CTE programs for high school students. Students in these programs earn certifications in high school but also work alongside other adults pursuing more advanced certificates and associate degrees, helping them understand the value-add of continuing postsecondary training after high school. Patrick & Henry's most recent data showed that 55% of their DE students continued at the college after high school.

Eastern Iowa Community Colleges uses several career advancement centers to deliver its CTE programs to its high school partners, including **North Scott High School**. The [case study](#) on Eastern Iowa and North Scott's partnership describes their work to establish the Regional Innovation Center, which delivers the college's CTE programs and enables students to earn certificates and earn credits toward an associate of applied science degree before high school graduation.

Promising Practices for Career-Connected Dual Enrollment

The three strategies described in the prior section of this report represent structural approaches sites are using to scale career-connected dual enrollment. In this section we discuss practices the sites are using to make these strategies more effective. We call them *career-connected DEEP practices* because they are aligned with practices that CCRC has identified through prior research on college and K-12 partnerships that have expanded access to dual enrollment and increased college-going for students (see box). These practices are not unique to any one strategy; rather, they can be adapted across multiple approaches to help students move from career exploration in high school to postsecondary education and training that leads to high-opportunity careers. Colleges and K-12 schools can use or adapt these practices to strengthen their career-focused programs.

Four DEEP Practice Areas

Drawing on prior field research into dual enrollment innovation, CCRC developed a framework—known as Dual Enrollment Equity Pathways (DEEP)—to describe how successful DE partnerships are expanding college and career opportunity by recruiting, motivating, and preparing students to pursue postsecondary education and training directly after high school. The DEEP framework includes four key practice areas (Fink et al., 2023):

1. **Outreach.** Proactively reaching out to underserved students and families to encourage them to participate in dual enrollment and removing financial and other barriers.
2. **Alignment.** Aligning dual enrollment course offerings to bachelor's degrees, transfer pathways, and workforce credentials in high-demand, high-opportunity fields.
3. **Advising.** Supporting every student with career and academic exploration, advising, and program planning.
4. **High-quality instruction.** Delivering high-quality instruction and academic support that build students' confidence as college learners.

The DEEP framework shares an emphasis with ACTE's Quality CTE Program of Study Framework on the importance of equitable access, coherent course sequences, career navigation and advising, secondary-postsecondary alignment, and rigorous instruction and academic supports.¹⁰

DEEP Practice Area 1: Outreach to Underserved Students and Schools

Many young people from lower-income families are unaware of the well-paying, high-demand jobs available in their areas and the postsecondary education these jobs require. It is therefore critical to begin career exploration early, connect it to postsecondary pathways, and normalize dual enrollment as a standard component of all high school career-connected programming.

Practice Area 1: Outreach	
Core DEEP practices (Fink et al., 2023)	• Focus outreach on underserved high schools, students, and communities. • Start outreach before high school. • Leverage community connections to build awareness. • Build trust with and educate parents and families.
Career-connected DEEP practices	• Begin career exploration early and connect it to postsecondary pathways. • Normalize dual enrollment as part of the experience in high school career-focused programs.

Begin career exploration early and connect it to postsecondary pathways.

The sites we visited introduce students and families to dual enrollment early in high school—sometimes even in middle school—and clearly explain how dual enrollment can help students explore careers and enter pathways in a field of interest. To spark students’ career interests, DE partnerships incorporate hands-on activities, embedded in school events or in DE coursework, to give students a taste of different careers. Practitioners reported that this exposure helps students understand that dual enrollment offers a head start on college while enabling them to explore options and gain momentum for longer-term career opportunities.

To help middle school students choose a career pathway for high school, Illinois’ **High School District 214** highlights how their pathways relate to careers. All students in grade 8 attend the Class of [Students’ Graduation Year] Night event, where students learn about the available career pathways and about opportunities to take college-level courses. Students watch video testimonials from high school students in different pathways, which describe how students leveraged their pathway experiences, including the taking of college-level courses, to explore their educational and career interests and guide subsequent decision-making. The district’s *Academic Programs & Pathways Guidebook* (see box on next page) provides students and families with information about all the district’s pathways. For each pathway, the guide includes required courses for graduation and recommended elective courses aligned to the pathway that include DE and other accelerated coursework. To help students consider their college and career options after high school, the guide also includes a list of potential college programs and career paths related to the pathway.

GUIDEBOOK:

Helping Students Explore Options Early at High School District 214



Source. Click for [guidebook](#).

Odessa College also exposes students to the connection between dual enrollment and careers from a young age. Through their OC Takeover event, Odessa staff visit K-5 classrooms, where they inquire about students' career interests and explain how those interests connect to relevant college pathways. For eighth grade students, Odessa hosts a career and pathways event called Ignite Your Future. Open to all eighth graders in Ector County, where the college is located, this event introduces students to high-demand CTE and academic programs and supports students in exploring different career fields. The more than 3,000 students who attend this event each year rotate through booths and activity stations hosted by college programs, including CTE programs such as welding, automation, culinary, health sciences, and teacher education. Students interact with college faculty who describe how DE course offerings in particular program areas connect to credentials and careers. Employers attend this event as well, reinforcing the labor market relevance of Odessa's programs. The event shows students the facilities, equipment, and skills tied to different career fields and expands their understanding of potential career trajectories before they start high school.

Normalize dual enrollment as part of the experience in high school career-focused programs.

As college and high school DE partnerships incorporate DE coursework into high school CTE pathways and career academies, they normalize DE coursetaking as a common high school experience. Building DE courses into the default grade 9–12 course plan can broaden access and prevent it from functioning only as an “opt-in” opportunity among students and families who seek it out. By doing so, partnerships help students who might otherwise not consider themselves as college bound take college-level courses before graduation.

High School District 214 offers DE courses as electives to help students explore their chosen career pathway for high school. Each pathway includes a recommended course sequence, and in most cases, pathways culminate with DE (or AP) courses as the capstone experience for students. In 2025, 92% of all students districtwide took college-level courses, including DE and AP courses. Expanding access to dual enrollment through their pathways, as we learned from

district leaders, plays a key role in helping students confirm their interest in their pathway and decide whether they want to continue in related postsecondary or career paths after high school.

Dual enrollment is also a common experience for students in **Centinela Valley Union High School District**, where CVUHSD leaders have always thought that career academy programs should create pathways to “college and careers” for all their students. Integrating DE classes (from their partner **El Camino College**) into academy curricula so that all students have access to dual enrollment helps the district realize this vision. One staff member at CVUHSD has observed that this approach also encourages students to continue taking college-level coursework: “When students see success while they’re in high school taking a college class, then they’re more likely to continue taking college classes. And there’s all kinds of research and data that back that up. We see that in our own kids.” For students who want to continue at El Camino, the DE courses they take in their academy programs help them make progress toward credentials like certificates and (applied) associate of science degrees.

Another example of normalizing dual enrollment as a part of career-focused programs comes from **C.E. King High School** and their partner **San Jacinto College**. C.E. King builds CTE DE courses into some of their theme-based academy programs so that DE coursetaking is the norm for academy students. For each program that C.E. King offers, it created a map, adapted from the Texas Education Agency’s (a government organization) template, that shows the DE courses built into each grade level, along with information about related postsecondary education and careers students can pursue (see box).

PROGRAM MAPS:

Building Dual Enrollment Into Career Academy Programs at C.E. King High School

Law and Public Service
The Law and Public Service career cluster focuses on planning, managing, and providing legal services, public safety, protective services, and homeland security, including professional and technical support services. The career cluster includes occupations ranging from all aspects of the military police officer and firefighter to public scientist and lawyer.

Program of Study: Legal Studies (Dual Credit Courses)
The Legal Studies program of study focuses on topics such as legal research, legal writing, rules of procedure, case management, law office technology, and legal ethics. Areas of the legal system studied include judicial system, law, criminal law, and contract law.

Courses

Grade	Courses
9 th Grade	Principles of Law, Public Safety, Corrections, and Security
10 th Grade	Business Law
11 th Grade	Court Systems and Practices Legal and Research Writing (San Jacinto College Course) Advanced Legal Skills & Professions (San Jacinto College Course)
12 th Grade	Forensic Sciences Practitioner in Law, Public Safety, Corrections, and Security OR Career Preparation for Programs of Study

Students must maintain a 2.5 GPA or higher to qualify for dual credit.

Work-Based Learning/Expanded Learning Opportunities

- Attend court hearings and other legal proceedings
- Participate in a mock trial program

Expanded Learning Opportunities

- Criminal Justice Club
- Earn dual credit hours

Example Postsecondary Opportunities

Apprenticeships

- Law Apprenticeship

Associate Degrees

- Paralegal Studies
- Court Reporting and Captioning

Bachelor's Degrees

- Legal Research
- Legal Studies

Master's, Doctoral, and Professional Degrees

- Juris Doctorate
- International and Comparative Law

Additional Stackable IB/Ce/License

- Paralegal

Example Aligned Occupations

Court Reporters
Median Wage: \$59,247
Annual Openings: 276
10-Year Growth: 11%

Paralegals and Legal Assistants
Median Wage: \$52,726
Annual Openings: 3,212
10-Year Growth: 23%

Lawyers
Median Wage: \$144,887
Annual Openings: 3,686
10-Year Growth: 19%

Hospitality and Tourism
The Hospitality and Tourism career cluster focuses on the management, marketing, and operations of restaurants, lodging, recreation, and travel-related services. The career cluster includes occupations ranging from reservation and transportation ticket agent to event planner and general manager.

Program of Study: Culinary Arts (Dual Credit Courses)
Limited Seating

Courses

Grade	Courses
9 th Grade	Introduction to Culinary Arts
10 th Grade	Culinary Arts Entrepreneurship I
11 th Grade	Advanced Culinary Arts (San Jacinto College Course)
12 th Grade	Practicum in Culinary Arts OR Career Preparation for Programs of Study

Work-Based Learning/Expanded Learning Opportunities

- Earn industry certification
- Plan a catering event or work for a catering company
- Work in a restaurant
- Work with King Catering

Expanded Learning Opportunities

- Family, Career, and Community Leaders of America
- Earn dual credit hours

Aligned Industry-Based Certifications

- ServSafe Manager

Example Postsecondary Opportunities

Associate Degrees

- Culinary Arts
- Baking and Pastry Arts

Bachelor's Degrees

- Hotel/Motel Administration/Management
- Culinary Sciences

Master's, Doctoral, and Professional Degrees

- Organizational Leadership
- Foodservice Systems Administration/Management

Additional Stackable IB/Ce/License

- Food Manager License

Example Aligned Occupations

Food Service Managers
Median Wage: \$61,748
Annual Openings: 2,341
10-Year Growth: 15%

Chefs and Head Cooks
Median Wage: \$43,557
Annual Openings: 2,389
10-Year Growth: 37%

General and Operations Managers
Median Wage: \$56,046
Annual Openings: 44,479
10-Year Growth: 23%

Source. Click for program map 1 and 2.

In Greater Depth: Oakland Unified School District Expanding Access by Normalizing Dual Enrollment as Part of the High School Experience

Although dual enrollment is reserved for the highest achieving students in some school districts, at Oakland Unified School District (OUSD) it is normalized as part of students' high school experience in order to better expose them to college and career opportunities. This message is reinforced districtwide to students, especially as they prepare to enter, in 10th grade, one of OUSD's 34 theme-based career academies. Each academy recommends a series of academic and CTE DE courses that students can take to fulfill their elective requirements; in fact, students have the option of taking DE courses in other academies if those courses interest them. Dual enrollment is framed as an expected experience for all students that will help them explore their career interests related to any academy their school offers—and connect these interests to possible postsecondary education and careers. As this approach has taken root over the past 10 years, the share of OUSD graduates who have taken a DE course has climbed from 25% to 49%.

At Oakland Technical High School (Oakland Tech), the district's largest comprehensive high school, students hear this message in ninth grade through classroom-based presentations delivered by the school's dual enrollment coordinator. The coordinator highlights the potential benefits of dual enrollment and underscores the idea that any student is capable of dual enrollment: "I don't want any kid to think that they can't take these classes because they don't feel like they can or they don't belong."

Outside the classroom, staff at Oakland Tech use other strategies to encourage dual enrollment for all and not the few. Focused outreach encourages participation among students who are typically underrepresented in dual enrollment. And to help ensure they are not reaching mostly the more affluent families in their service area, the school shifted information sessions about dual enrollment from the school building to online.

Through these efforts, Oakland Tech helps students and their families see for themselves that dual enrollment is not just reserved for the best students; it is an opportunity for all students to help discover a college and career path.

DEEP Practice Area 2: Alignment of DE Courses to College Degrees and Careers

Students are more likely to continue successfully after high school when they understand how dual enrollment connects to certificates, degrees, transfer, and careers. It is therefore important to clearly map DE offerings to postsecondary education and jobs in high-demand fields and engage employers to make sure programs enable students to secure entry-level jobs in these fields.

Practice Area 2: Alignment	
Core DEEP practices (Fink et al., 2023)	• Inventory current dual enrollment offerings. • Map DE offerings to college degree programs in fields of interest. • Embed DE offerings in career-connected high school programs.
Career-connected DEEP practices	• Map DE offerings to postsecondary education and jobs in high-demand fields. • Engage employers to ensure dual enrollment pathways align with high-demand jobs.

Map DE offerings to postsecondary education and jobs in high-demand fields.

DE partnerships implementing career-connected DE strategies are developing on-ramps from DE coursetaking to postsecondary education. These on-ramps ideally position students to attain an associate of applied science degree, a bachelor’s degree, or a professional degree in a high-demand field—where these credentials have stronger returns in the labor market. Yet, starting students in career-focused programs on a postsecondary pathway has not always been a major focus of K-12 leaders. One school district leader shared, “We were like most districts, really focusing on industry certifications and following a CTE sequence, which is great, but what does it lead to?”

To help students and families understand how particular DE courses and career pathways lead to college education, partnerships can develop and share maps showing how DE courses connect to specific college degree programs and careers in fields with strong demand and good pay in the local labor market. They can also support students to receive articulated credit for the CTE courses they take in high school.

Odessa College’s participation in the Unlocking Opportunity project—an initiative designed by CCRC and the Aspen Institute College Excellence Program to help colleges improve their students’ post-college outcomes—was a key factor in what Odessa’s administrative team described as their shift from à la carte to purposeful dual enrollment. As one college leader explained, “There wasn’t real purpose to students’ dual enrollment in their coursetaking; it was more about fitting it into their schedule.” Many students were also, as this leader said, “completing with general studies degrees that had very little value.”

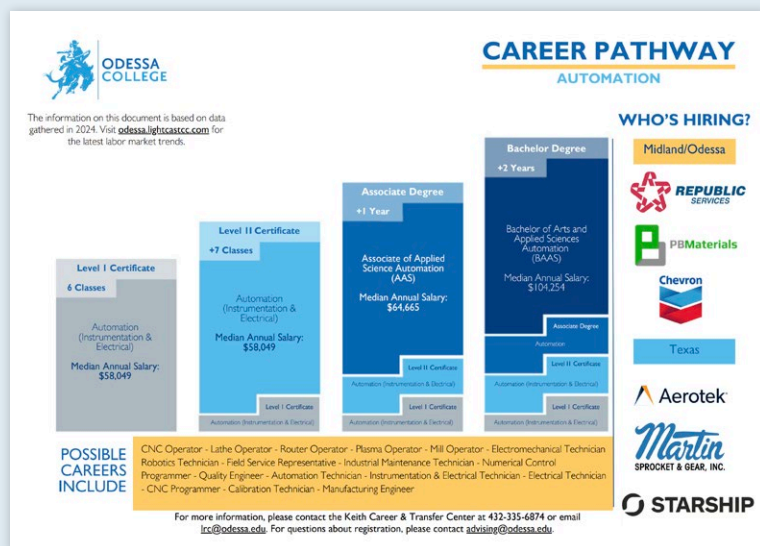
Odessa College was motivated to create clearer paths from its DE offerings to further education and careers due to increased regional demand in key industries. To help students understand the opportunities that DE facilitates, Odessa College made a [web-based tool](#) called Career Corral

available to DE students and high school partners to help them identify careers aligned with their interests and learn about occupations related to the college's programs. Career Corral curates information and trends related to specific occupations and includes regular job postings from employers that partner with Odessa. In 2025, students accessed the tool over 12,000 times.

To clarify its educational and career pathways for DE students, Odessa College has also analyzed labor market data within a 100-mile radius of its Ector County location. Using these insights, the college published transfer pathway maps for all its transfer-oriented programs and created career maps for all programs to clearly connect college credentials to high-value careers in their region. Odessa's career maps (see box) show students the sequence of credentials they can earn in a specific career field—inclusive of CTE certificates and associate degrees as well as applied bachelor's, major-specific transfer pathways, and graduate or professional degrees. The career maps also include median salaries expected for each credential, potential careers, and regional employers.

CAREER MAPS:

Visualizing Career Pathways at Odessa College



Source. Click for [career map](#).

Miami-Dade County Public Schools (M-DCPS) has made efforts to translate high school CTE courses to college coursework aligned to specific degree pathways. Many Miami-Dade County Public Schools (M-DCPS) students enroll at high schools that are organized into career academies, and for years M-DCPS has worked closely with **Miami Dade College (MDC)** to develop articulation agreements that provide students with MDC credit for high school CTE courses. One challenge in Miami and elsewhere has been whether or not students are aware that they can receive college credit for those courses and for which programs of study the credits apply. To address these challenges, MDC leaders created a [website](#) that shows students

and counselors which high school academy courses count toward MDC credits and allows students to submit an online request for a college transcript, which the college reports fulfilling in 48 hours. MDC's *Dual Enrollment Guided Pathways guidebook* also shows students and high school staff which high school career academy courses count toward MDC certificates and degrees and provides recommended DE course sequences related to students' academies.

Engage employers to ensure dual enrollment pathways align with high-demand jobs.

Employer involvement is crucial for designing high-quality career-connected dual enrollment. Employers have real-time data on workforce needs—including the qualifications and credentials students need to secure well-paying, career-path jobs. Without employer involvement, there cannot be clear alignment between DE coursetaking and jobs that offer substantial upward mobility. To align DE courses with high-demand careers, partnerships can build strong working relationships with local employers and industry partners to gather feedback on program curricula and the design of pathways that best provide students with the skills, knowledge, and postsecondary credentials they need to succeed in the labor market. As a leader at Texarkana College said, “We’re constantly in contact with [employers] because they want to use us as a pipeline, but we want to use them as a pipeline as best we can, too.”

At **Eastern Iowa Community Colleges**, demand from regional employers is a key factor that determines program offerings, including their college-based “Career Academy” programs, which enable students to start college CTE programs while still in high school. To engage employers, Eastern Iowa has established a joint advisory committee that brings together college faculty, teachers from their K-12 district partners, and local employers. These convenings have helped the college identify demand from employers in key sectors like advanced manufacturing, diesel technology, and healthcare. They have also helped the college understand that in order to position students to achieve true career mobility in these fields, students need postsecondary certificates and degrees and not just industry-recognized credentials.

Another example of these efforts is the partnership between Amarillo ISD’s **AmTech Career Academy** and **Amarillo College**. AmTech was established in 2020 following extensive community and advisory board input to develop academies (and academy-specific programs) that would meet the needs of high-demand industries. This process has helped the partnership determine not only which DE courses to offer in order to address community needs but also how to market the benefits of dual enrollment to families. According to one school leader, “If they want to help students and parents see the value of dual enrollment, it needs to be aligned with the needs of employers. Not using employer input doesn’t help anyone.”

Also in Texas, **Kilgore College** and **Longview High School** have partnered with local employers to create pathways from dual enrollment to in-demand jobs. For example, they developed a manufacturing technology pathway in response to the needs of Eastman Chemical Company and Komatsu Mining Corporation—two major pillars in the regional economy. Students in this pathway take courses at their high school campus in grades 9 and 10 and then, in grades 11 and 12, complete their remaining pathway courses at the Kilgore College Longview Center, which is located on the Longview campus. In their senior year, students decide on a manufacturing specialization for their pathway among three choices:

electrical, machining, or mechanical. By the time they complete the pathway, students can earn several industry certifications and can apply earned college credits toward an associate of applied science degree at Kilgore. These credentials qualify students for high-demand, manufacturing-focused jobs at Eastman and Komatsu.

DEEP Practice Area 3:

Advising to Help Students Explore Interests and Make Plans

Career exploration is essential but alone insufficient unless students receive ongoing guidance translating interests into educational plans. Therefore, successful partnerships help all students with career exploration and educational planning and leverage DE instructors as informal advisors for students.

Practice Area 3: Advising	
Core DEEP practices (Fink et al., 2023)	• Use dual enrollment to showcase college programs and support exploration. • Help students develop a college program plan and provide checkpoint advising. • Coordinate advising roles across sectors.
Career-connected DEEP practices	• Help students with career exploration and postsecondary planning. • Leverage DE instructors as informal advisors for students.

Help students with career exploration and postsecondary planning.

To help DE students take advantage of on-ramps to college and career opportunities, it's essential that they receive support to understand the types of careers that dual enrollment can lead them to after high school, identify what their goals are, and develop an individualized plan to get there. DE partnerships can provide opportunities for students to learn about available careers and help students develop educational plans aligned to their interests. Because students' interests and plans may change, partnerships should ideally create multiple opportunities for students to reflect on their career aspirations and review students' plans with them to ensure they meet students' long-term goals.

College advisors from **El Camino College** (called counselors) visit **Centinela Valley Union High School District** (CVUHSD) high school campuses on a regular basis to support DE students with academic planning and help ensure that eligible students complete college requirements to earn certificates through the college. One staff member at CVUHSD's Hawthorne High School said of their counselor from El Camino, "She's a great support. And don't take her away."

In Iowa, all students in grades 8 through 12 are required to have an individualized education plan (called an Individual Career and Academic Plan or ICAP). ICAPs help students map out their future plans, whether they want to go straight into the workforce, start an apprenticeship, or enter a postsecondary degree or training program. As part of **Eastern Iowa**

Community Colleges' Career Academies—its name for well-organized college CTE program pathways offered to high school students—DE advisors work with academy staff to help high school students create ICAPs. In the more rural communities that Eastern Iowa serves, it has also partnered with schools to support a position called the College and Career Transition Counselor (CCTC). CCTCs work with juniors and seniors taking DE courses to help them develop a plan for their transition from high school—either to Eastern Iowa, a four-year college, or the workforce.

Texarkana College also has a system in place to help DE students explore careers and plan for postsecondary education. The college's Academic Coaches for Dual Credit (ACDCs) provide regular (usually weekly) advising for DE students on high school campuses. They also help students develop individualized education plans aligned to certificates, associate of applied science degrees, or transfer pathways. Every DE student at Texarkana has a four-year education plan that they review with an ACDC at least once a year. The ACDCs also help students think about careers by providing them with career assessments. According to one ACDC, the educational and career support they provide is particularly beneficial for students in CTE programs because these students often do not have a plan for after high school. To encourage college-going at Texarkana after high school, ACDCs sign students up for tours at the college and lead information sessions about pursuing further education at Texarkana.

Texarkana College also encourages DE students to complete the Learning Frameworks (college success) college course within their first 9 credits, which helps reinforce the planning that students do with their assigned ACDC. Students develop a plan during the course that delineates their post-high school steps—whether they plan to start working after high school or continue their postsecondary education. The course also includes activities to help students explore career options and research occupations of interest to them.

Leverage DE instructors as informal advisors for students.

While all DE students should receive advising from a college advisor, there are various opportunities to provide additional—albeit informal—advising to students throughout their dual enrollment experience. Because DE instructors regularly interact with students, there are natural opportunities for them to provide advising to students. Colleges and K-12 schools can leverage the opportunities that DE instructors have to impart information and advice to students about future college and career opportunities.

Miami Dade College has invested in building relationships with high school CTE teachers, recognizing that they are influential advisors for students exploring their post-high school options. According to MDC's executive director for articulation and academic pathways, high school CTE instructors “are the first line in promoting the message that, ‘Hey, if you are completing this academy, Miami Dade offers you a certain number of college credits for the courses you already took.’” Each semester, MDC hosts a CTE Day professional development event, which welcomes CTE teachers and staff from M-DCPS high schools to connect with faculty in their areas, tour facilities, and get information about how high school CTE credits articulate into specific college programs.

DEEP Practice Area 4:
High-Quality Instruction, Real-World Learning, and Instructor Supply

High school students are more likely to continue into postsecondary education if they participate in a well-taught DE course that provides a rigorous and engaging “first-college” experience. The sites in our study are especially interested in integrating work-based and project-based learning into career-connected DE courses to help students develop versatile skills and to provide exposure to the world of work. Given the importance of teaching and the widespread shortages of CTE teachers, colleges and schools should also collaborate to build the supply of CTE instructors qualified to teach DE courses.

Practice Area 4: High-Quality Instruction	
Core DEEP practices (Fink et al., 2023)	• Scaffold coursework and frontload supports. • Respond quickly when students are struggling. • Provide additional, structured support for online classes. • Support DE instructors and monitor quality.
Career-connected DEEP practices	• Increase career exposure and connections by integrating work-based learning and project-based learning into curricula. • Collaborate to build the supply of qualified CTE instructors.

Increase career exposure and connections by integrating work-based learning and project-based learning into curricula.

Partnerships can build work-based learning (WBL) experiences into their programs to help students explore careers, develop skills that can prepare them for work, and help them assess whether a certain career path is the right fit. In a similar vein, partnerships can also implement project-based learning (PBL) into curricula so students can apply what they are learning to “real-world” scenarios without leaving the classroom.

Drawing on California’s WBL framework (the Work-Based Learning Continuum), **Centinela Valley Union High School District** leverages its diverse local economy to embed WBL throughout each of its career academies as a way to expose students to varied industries and build transferable skills. WBL is built directly into academy courses, so students gain industry-aligned knowledge, connect with mentors, and practice technical tasks while earning college credit. OUSD also draws on this framework. For example, at **Madison Park Academy**, every student participates in WBL each year—from job shadowing to internships—with personalized guidance to ensure all have meaningful experiences. The school uses an inventory to track the various types of WBL experiences students participate in from grades 9 through 12. Staff used the table shown below to assess which types of WBL opportunities are available to students in each grade, identify gaps in students’ high school experiences, and help prioritize where to expand WBL opportunities (see box).

INVENTORY:

Identifying WBL Opportunities at Madison Park Academy

Career Awareness: Learning ABOUT work	Career Exploration: Learning ABOUT work	Career Preparation: Learning THROUGH work	Career Training: Learning FOR work
Group of students	Small group or individual	Individual or small group (projects only)	Individual, over time
• Workplace tour • Guest speaker/teacher • Career fair • Visit a workplace	• Informational interview • Job shadow • Virtual exchange with a partner	• Student-run enterprise with partner involvement • Virtual enterprise • Integrated projects with partners • Service projects • Internships	• Internship required for a credential or entry to occupation • Apprenticeship • Clinical experience • On-the-job training • Work experience

In suburban Chicago, **High School District 214** also integrates WBL into each of its career pathways. For example, many health sciences students there earn Certified Nursing Assistant credentials by junior year of high school, allowing them to work during senior year at local hospitals and long-term care facilities. Aspiring teachers begin classroom observations as early as sophomore year, going on to intern in a variety of settings at local elementary schools. Over half of District 214’s students complete 30–60-hour internships or apprenticeships. One district leader explained that WBL is key mechanism for helping students learn about their educational and career interests because it creates opportunities for students to reflect on what they are doing and whether it is a path they want to continue on. While District 214 receives strong employer and community support to offer these experiences on a large scale, we also learned from school leaders that teachers play a large role in supporting WBL experiences (particularly in the classroom setting) through their own efforts to reach out and build relationships with local employers.

Sites are also implementing PBL to help students apply technical skills they are learning through their coursework. At **Hawthorne High School** (CVUHSD), career academy leaders adopted curricula from [Project Lead the Way](#), a national organization that specializes in instructional models such as PBL to make engineering and manufacturing courses more engaging. Their efforts became a model for other career academies to incorporate PBL and work-based projects alongside dual enrollment.

In Texas, small, rural high schools that partner with Odessa College—**Van Horn TECH** and **Iraan High School**—demonstrate how PBL and WBL is being used by rural communities to expose students to careers. Van Horn’s welding and engineering students tackle increasingly advanced projects aligned with industry standards. The school also connects students with local employers, including a regional hospital and the aerospace firm Blue Origin, through guest speakers and internships. Iraan High School similarly ensures that nearly every student follows a CTE pathway that blends sequential DE courses with PBL; by their final years, students participate in practicum experiences such as hospital rotations or school-based teaching.

Staff at both schools explained that offering these opportunities for students helps address needs from local employers who encourage students to participate in dual enrollment and WBL. From the employers' perspective, these experiences prepare students for jobs faster than training someone with no prior knowledge or experience. The schools also prioritize WBL through staffing: Each school has full-time administrators that help manage and preserve WBL and other career-related activities. In the words of one leader, supporting students requires the dedication of leadership: "If your dedication is 'More students, more access to college and careers,' you have to have the system and be willing to put that in place no matter the cost. It's the only way that it works."

In Greater Depth: Centinela Valley Union High School District Creating Magic for Students Through Work-Based Learning

Centinela Valley Union High School District (CVUHSD) builds WBL into the curriculum for each of its career academies. Early in high school, students participate in activities designed to support career awareness and exploration (e.g., meeting industry professionals and job shadowing), which help prepare them to participate in more intense career preparation and training later (e.g., internships and pre-apprenticeships). By graduation, most academy students have at least one substantive and oftentimes paid WBL experience. For CVUHSD, the key to scaling paid WBL has been creating site-based enterprises, where students are paid through the district's local workforce investment board (the South Bay Workforce Investment Board) to complete work on the high school campus that they would normally do at a workplace.

In addition to helping students build on the "soft and hard skills" they begin to learn through their academy and DE coursework, CVUHSD staff emphasized that scaling embedded WBL has been a key priority because it gives students greater perspective on their future college and career direction than they gain through regular classroom instruction alone. One academy instructor has observed this phenomenon when students interact with outside professionals: "But when I bring somebody from the outside in, all of a sudden there's a different level of credence that's coming with that. And they're asking those people the same questions that they might ask me—and I'd give them the same answer—but they're actually engaging and responding with it."

Another Hawthorne staff member that works closely with students to help them secure internships has observed that when students have hands-on career experiences they learn more about themselves and get closer to clarifying their career interests and goals. As this staff member reinforces to students: "Get involved in the community [through WBL] and you're going to see the magic. And if this isn't your cup of tea, what is? And how can we help you excel in that?"

Collaborate to build the supply of qualified CTE instructors.

Finding instructors who are qualified to teach CTE subjects is a challenge that institutions across the country face due to complex certification requirements and the decline in traditional CTE teacher preparation programs, among other reasons. And finding CTE instructors who are also qualified to teach DE courses adds another layer of complexity because these instructors must meet college requirements. To address this issue, colleges and schools can ideally work together to identify where they are encountering shortages and develop a strategy to build a supply of qualified CTE instructors.

At **Centinela Valley Union High School District** (CVUHSD), most DE courses offered as part of their career academies are taught by high school teachers that are approved by **El Camino College** as adjunct faculty, which has helped expand opportunities for students to earn college credit during the school day. To help high school teachers meet the minimum qualifications required in California to teach college-level courses, CVUHSD has focused on hiring teachers with industry experience and CTE credentials. Several of the high school teachers we interviewed from CVUHSD's career academies said they were able to rely on their industry expertise and credentials to become adjunct faculty.

Odessa College collaborates with schools in rural areas to help identify CTE instructors in their communities. Individual programs facilitate testing and training opportunities to help eligible rural high school teachers become certified to teach college CTE courses. While such professional development opportunities are offered on the college campus, they also offer trainings online to accommodate the rural schools they work with. One specific example comes from **Van Horn TECH**—located three hours away from Odessa College in rural Far West Texas. Before becoming assistant principal of Van Horn, Brock Tyrrell taught welding at the school and received support from Odessa College to become an adjunct faculty member of the college's welding program. According to Tyrrell, the hands-on support that Odessa College offers rural schools has been critical in meeting the staffing challenges that many of them face. Recalling his experience working with the college, he said, “And so that's probably the greatest success that I think Odessa College has—they're willing to go out of their way to help rural educators become adjunct professors and get them the training they need.”

Schools in rural communities are also developing other related solutions to address challenges in finding qualified CTE instructors to teach college-level courses. **Andrews ISD**, another rural partner of **Odessa College**, established its own grow-your-own program for its teachers enrolled in state-approved alternative certification programs. They were motivated to create their own program after observing that their new industry-certified teachers were unable to get timely, in-person support from the programs they were enrolled in—which were online and headquartered in larger cities located several hours away from the school. To address barriers, the district's program provides real-time guidance and support for teachers through a dedicated instructional coach. Employed by the district, this coach works face-to-face with new teachers to answer their questions and help them navigate matters related to instruction, classroom management, and curriculum design.

Teachers in the district also receive regular support from the school's experienced CTE DE teachers, who help them bridge the gaps they may have between their industry skills and classroom pedagogy. In addition, the program provides financial support for teachers by

paying for their training modules and exams. In exchange for the financial backing and other support provided by the district, teachers are expected to complete all requirements of their alternative certification programs, complete a three-year internship with Andrews ISD, and sign a contract that commits them to teaching at the district for a minimum of three years.

Lessons for Leading Career-Connected Dual Enrollment Partnerships

Despite widespread demand from students, families, educators, and policymakers, career-connected dual enrollment is far from operating on a large scale nationally. Challenges related to funding, instructor availability, student eligibility, and mindsets that reinforce the college-or-career divide continue to impede progress. The sites we studied illustrate how colleges and their K-12 partners face these and other challenges and successfully implement career-connected dual enrollment on a substantial scale.

A common theme we found across the sites is that scaling career-connected dual enrollment does not require creating entirely new schools or programs. Rather, leaders described how they strengthened existing high school CTE pathways, career academies, and college CTE programs and used dual enrollment to connect students more effectively to postsecondary credentials required for well-paying, career-path jobs. The lessons below reflect what college and K-12 leaders said that they learned while building and scaling their partnerships and how they would advise colleagues at other colleges and high schools.

Lesson 1:

Create a Shared Vision for College and Career Success

Many of the leaders we interviewed emphasized that one of the biggest barriers to building career-connected pathways is not technical or logistical—it is mindset. CTE is popular among students, families, employers, and policymakers, but many people continue to view CTE and college preparation as separate tracks. Students who are interested in careers are often encouraged to focus on getting a job after high school, while students pursuing college are steered toward academic acceleration opportunities with little connection to careers.

Strong partnerships reject this divide. Instead, they embrace a vision that seeks to expand both college and career opportunities. Leaders consistently emphasized that the goal of career-connected dual enrollment is not simply to prepare students for their first job after high school but to help them continue into the education and training increasingly needed to secure jobs with strong wages and opportunities for advancement.

At Centinela Valley Union High School District in California, leaders repeatedly emphasized “college and career,” not “college or career.” Academy pathways are designed to help students explore careers while also preparing them for postsecondary education. Similarly, Odessa College and its high school partners have shifted their focus from helping students accumulate college credits to building pathways leading to postsecondary credentials in fields such as automation, healthcare, teaching, and welding that offer strong long-term employment prospects. Amarillo College leaders described a similar shift from a

Tech Prep-style “cafeteria model” of disconnected coursetaking toward structured pathways linked to credentials and careers.

The lesson from these sites is clear: Successful partnerships create a shared vision that helps students connect career exploration to postsecondary education and training, ensuring that pathway choices expand rather than limit future opportunities.

Lesson 2:

Engage Employers as Partners in Design and Improvement

Across the sites, employers contributed in several ways beyond hiring graduates and offering internships. They helped identify workforce needs, reviewed and validated curricula, and helped students understand what careers in a field actually look like.

At Eastern Iowa Community Colleges, employer engagement occurs through regional workforce partnerships that bring together industry representatives, college faculty, and K-12 educators. During one meeting focused on advanced manufacturing, employers emphasized that high school CTE can help students “get in the door,” but that continued education and training are increasingly necessary to secure higher-paying jobs with advancement opportunities. Those conversations help shape both college programs and Career Academy offerings.

Several leaders also stressed the importance of coordinating employer engagement across multiple schools and districts. Colleges can partner with school districts to reduce duplication and consolidate requests of employers.

Lesson 3:

Start With Strong Pathways, Improve Them, and Scale What Works

Many policymakers and educators look for systemwide solutions to improving student outcomes. Yet the partnerships highlighted in this report demonstrate that scaling career-connected dual enrollment can be done by strengthening the career-focused pathways that already serve large numbers of students. Leaders across the sites emphasized that lasting systemwide change is achieved by redesigning existing pathways one at a time. Rather than trying to transform every program simultaneously, they started with a small number of high-quality pathways, learned from those efforts, and then expanded what worked.

Strong career-connected pathways require sustained collaboration among faculty, counselors, and college partners to align curricula, prepare instructors, engage employers, and provide effective student supports. Because developing that capacity takes time, successful partnerships typically begin with one or two pathways: They often refine the model and then expand it across additional programs. The lesson is not to think small, but to recognize that large-scale change often results from strengthening one pathway after another. As successful practices spread across programs and are supported by lasting systems and partnerships, incremental improvements become institution-wide transformation.

Lesson 4:

Invest in Staff and Systems to Scale and Sustain Progress

The sites in this study repeatedly demonstrated that best practices do not work without skilled and supported practitioners. Many successful partnerships began because of exceptionally committed individuals—a teacher, counselor, dean, or superintendent willing to challenge conventional thinking and invest extraordinary effort. Career-connected pathways depend on people who coordinate partnerships, engage employers, advise students, support families, and help link pathway experiences to postsecondary opportunities. Leaders emphasized that students need sustained guidance beginning well before they enroll in DE courses.

Beyond individual efforts, a broader lesson also emerges: Scaling career-connected pathways requires investing not only in the people but also in the processes that ensure long-term sustainability. Leaders consistently underscored that lasting change depends on building systems that endure beyond any one single staff member. Successful partnerships institutionalize pathway planning, employer engagement, advising, instructor development, and communication so that the work becomes embedded in how the college and its school partners operate. As one leader observed, the ultimate goal is to move from relationships between individuals to relationships between institutions.

Lesson 5:

Treat Instructor Capacity as a Strategic Priority

Instructor capacity emerged as one of the most common challenges across the sites. Colleges and school districts frequently cited difficulties recruiting, credentialing, and retaining qualified instructors. Yet leaders also stressed that instructors influence much more than course delivery. Students often learn about careers, postsecondary opportunities, and workforce expectations directly from their instructors. We heard repeatedly that advice from an instructor can determine whether a student does or does not continue their education right after high school. For this reason, the sites we visited view instructor development as a pathway-building strategy rather than simply a staffing issue.

Their efforts reflect an important lesson for other partnerships. Recruiting and developing instructors cannot be viewed solely as a college responsibility or a school district responsibility. It requires sustained collaboration between K-12 and postsecondary partners.

Conclusion: Preparing Students for College *and* Careers

Preparing more students for well-paying, high-opportunity careers increasingly requires helping them continue into postsecondary education and training after high school. The partnerships highlighted in this report demonstrate that community colleges and K-12 schools can make greater use of educational structures that already exist on a large scale—high school CTE pathways, career academies, and community college CTE programs—by coherently integrating dual enrollment into those programs. Although the strategies for doing this differ based on

structure, they share a common purpose: Helping more students move from career exploration in high school to postsecondary education and training that leads to high-opportunity careers. Whether dual enrollment is embedded in traditional CTE pathways, career academies, or college CTE programs for high school students, the goal is the same—to transform existing educational pathways into stronger on-ramps to college and career opportunity.

Demand continues to grow for both dual enrollment and high-quality career programming in high school. The examples in this report are illustrative—they show that each community builds on its own strengths, institutions, partnerships, and labor market opportunities. They also point toward a shared vision: Dual enrollment should offer more than just the opportunity to earn college credit, and career programming should do more than just prepare students for a first job after high school. By bringing college and career preparation together, career-connected dual enrollment guides students to postsecondary programs and career pathways that interest them while helping them build momentum toward postsecondary completion, all before they finish high school. Career-connected dual enrollment offers a powerful mechanism to break down the college-or-career divide so that every student can benefit from college *and* career acceleration.

Endnotes

1. See ACTE Education’s *Quality CTE Program of Study Framework* (ACTE, 2018; see also ACTE, n.d.), which identifies 12 elements of high-quality CTE programs, including sequencing and articulation, career development, work-based learning, business partnerships, and data-driven improvement. See also Advance CTE’s modernized *National Career Clusters Framework* (Advance CTE, 2024), which positions coherent, learner-centered career pathways linking secondary education, postsecondary credentials, and careers as the foundation of high-quality CTE systems.
2. In Velasco, et al. (2025), students with a high school CTE focus attempted at least 10 CTE courses while in high school, equivalent to approximately 5 high school credits (Carnegie units). About a third of all high school students who took CTE coursework in the sample had taken 10 or more CTE courses.
3. Velasco et al. (2025) found that over 45% of students who had a CTE focus and took DE courses in high school completed a postsecondary credential by age 24, compared to 17% of students who had a CTE focus but did not complete any accelerated courses. Students who combined CTE and DE courses also achieved much higher, sustained wage growth by their mid-twenties compared to students who had a CTE focus alone; by combining their technical training with even just a few DE classes, CTE students were earning an average of \$1,649 more per quarter (\$6,596 more per year) by age 24 than peers who took regular high school CTE classes without DE courses. Furthermore, they earned nearly 40% more than students who took no accelerated courses at all.
4. Authors’ calculations of data from the NAEP 2019 High School Transcript Study (NCES, 2022). Velasco, et al. (2025) also found in their study of Texas high school graduates that only a small number of CTE students dipped their feet in college-level coursework during high school; in their analysis, fewer than 5% of all students combined a CTE focus with DE coursetaking.

5. *Career-connected dual enrollment* is a phrase that has been emerging among educators, intermediary organizations, and policymakers to describe efforts to use dual enrollment to help students prepare and build momentum toward high-opportunity careers after high school. For example, the phrase is used by the Department of Education's Unlocking Career Success Initiative and in the U.S. Department of Education's FY 2025 President's Budget.
6. A randomized controlled trial demonstrated that students who participated in career academies earned \$174 more per month, on average, than students who participated in non-academy high school offerings, over the eight years following students' scheduled high school graduation. These impacts were even higher for young men than for the full sample—an average of \$311 more per month (Kemple & Willner, 2008).
7. C.E. King High School and their partner San Jacinto College were featured in CCRC's report, *DEEP Insights: Redesigning Dual Enrollment as a Purposeful Pathway to College and Career Opportunity* (Fink et al., 2023).
8. C.E. King High School also operates the Sheldon Early College High School and the Sheldon P-TECH Academy.
9. Tri-County Technical College was featured in CCRC's report, *College Business Models for Scaling Purposeful Dual Enrollment* (Fink et al., 2025).
10. To read more about ACTE's 12 elements of high-quality CTE programs, see ACTE (2018).

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Appendix: Study Methodology

Research Site Identification

To identify research sites, we drew on three sources of data: (1) Statewide longitudinal administrative student records from the Texas Education Agency and Texas Higher Education Coordinating Board accessed via the Texas Education Research Center (ERC), (2) Expert referral through intermediary organizations, and (3) previously collected interview data through related DEEP research (Fink et al., 2023; Fink et al., 2025).

(1) Analysis of Texas ERC data. Potential Texas fieldwork sites were identified through a two-stage analysis of college–high school partnerships serving high school CTE students, with particular attention to priority subgroups including low-income, Black, Hispanic, and male students. This methodology used Texas ERC data for the class of 2022 to rank individual college–K-12 partnerships based on the following criteria:

- High participation in high school CTE or CTE dual credit (the term used in Texas for dual enrollment) with parity among priority subgroups;
- Favorable postsecondary outcomes among high school CTE or CTE dual credit students, defined as at least 50% credential completion or 75% college enrollment within one year of graduation; and
- Partnerships in which low-income students represented more than half of dual credit participants and ranked by the percent of low-income dual credit students who subsequently enrolled in a community college CTE program (minimum of 25%).

The resulting lists were combined and reviewed for sites that were particularly strong on one of the lists or ranked on multiple lists. Early college high schools, P-TECHs, specialized magnet schools, and partnerships with otherwise limited dual credit participation or weak postsecondary outcomes were excluded, producing a final shortlist that included partnerships associated with nine Texas community colleges.

(2) Expert referral through intermediary organizations. To supplement the Texas sites identified using statewide data, we reached out to leaders at intermediary organizations including Accelerate ED (Education Strategy Group), the Career Ladders Project, and the National Career Academy Coalition for referrals to sites that have successfully scaled dual enrollment as a part of high school career programming. This resulted in a list four potential sites that we conducted screening calls with and two sites that we visited for data collection.

(3) Previously collected interview data. Finally, we drew upon interview data with college and high school educators collected as part of prior projects conducted by the authors. These include interviews with staff at Miami Dade College, Miami-Dade County Public Schools, San Jacinto College, and C.E. King High School for the CCRC report initially presenting the DEEP framework (Fink et al., 2023), as well as interviews with staff at Tri-County Technical College for the CCRC report on college business models for scaling purposeful dual enrollment (Fink et al., 2025).

Table A1.
Research Sites by Identification Method

College site	College context	High school site	High school context
Analysis of Texas ERC data			
Amarillo College (TX)	2,111 DE students (18% of headcount)	AmTech Career Academy	• City • Very small (~22 students)
		Highland Park High School	• Rural • Very small (~213 students)
Kilgore College (TX)	4,790 DE students (50% of headcount)	Longview High School	• City • Large (~2,272 students)
Odessa College (TX)	5,839 DE students (41% of headcount)	Andrews High School	• Town • Large (~1,193 students)
		Crane High School	• Rural • Very small (~347 students)
		Iraan High School	• Rural • Very small (~112 students)
		Van Horn High School	• Rural • Very small (~116 at the high school)
Texarkana College (TX)	2,718 DE students (52% of headcount)	DeKalb High School	• Rural • Very small (~277 students)
		New Boston High School	• Town • Very small (~324 students)
Expert referral			
Eastern Iowa Community Colleges (IA)	4,733 DE students (41% of headcount)	North Scott High School	• Suburb • Mid-sized (~1,081 students)
El Camino Community College District (CA)	1,663 DE students (5% of headcount)	Centinela Valley Union High School District	
		Hawthorne High School	• Suburb • Large (~1,675 students)
		Leuzinger High School	• Suburb • Large (~1,981 students)
Multiple postsecondary partners for District 214 (IL)		High School District 214	
		Buffalo Grove High School	• Suburb • Large (~2,021 students)
		Wheeling High School	• Suburb • Large (~1,743 students)
Peralta Community College District (CA)	10,223 DE students (21% of headcount)	Oakland Unified School District	
		Madison Park Academy	• City • Small (~676 students)
		Oakland Technical High School	• City • Large (~1,579 students)

Table A1. (continued)**Research Sites by Identification Method**

College site	College context	High school site	High school context
Previous research			
Miami Dade College (FL)	21,318 DE students (23% of headcount)	Miami-Dade County Public Schools	
Patrick & Henry Community College (VA)	601 DE students (25% of headcount)	Not applicable	
San Jacinto College (TX)	9,707 DE students (22% of headcount)	C.E. King High School	• Suburb • Very large (~3,716 students)
Tri-County Technical College (SC)	954 DE students (12% of headcount)	Not applicable	

Note. All high schools are public comprehensive schools except for AmTech Career Academy (a public technical school).

All high schools are grades 9–12 except Madison Park Academy, which is grades 6–12.

Source for college data. IPEDS data system, 2023–24 academic year.

Source for school data. CCD public school data, 2024–25 and 2025–26 school years.

Data Collection and Analysis

Data collection for this study (excluding previous research by the authors) included a combination of in-person fieldwork at research sites and virtual interviews. In-person fieldwork included visits to three colleges in Texas and three of their high school partners, and two school districts in California including four high schools. For two of the Texas colleges we visited, their school partners (five total) were interviewed through video calls. All other data collection for this study was conducted virtually through video interviews.

During in-person fieldwork that took place at colleges and high schools, we spoke with college and school leaders, leaders of DE programs, DE instructors, college DE advisors, and high school counselors. Video calls included college and school leaders and DE leaders. In total, we conducted interviews with 92 college stakeholders and 43 K–12 stakeholders. After collecting data from all the research sites, study researchers identified thematic findings which were documented in individual site reports. Once all data collection was completed, we analyzed themes from the site reports to produce the findings and implications in this report.

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