Grossmont Union High School District students participate in a Surgery & Suturing Workshop during a Health Pathway Student Conference at Grossmont College. (Photo credit: Health and Science Pipeline Initiative)

Career Technical Education Pathways Initiative

California Community Colleges Chancellor's Office
Brice W. Harris, Chancellor

AUGUST 2013

STATE OF CALIFORNIA **BRICE W. HARRIS, CHANCELLOR**

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August 19, 2013

The Honorable Jerry Brown
Governor, State of California
State Capitol
Sacramento, CA 95814

Dear Governor Brown:

I am pleased to present the Chancellor's Office 2012/13 report on the *Career Technical Education Pathways Initiative*.

The Career Technical Education Pathways Initiative prepares students to succeed in the workforce through partnerships between California Community Colleges and the California Department of Education.

These partnerships provide students with a seamless career technical education from the middle grades through community college. This report captures the most recent highlights of our progress in three key areas: monitoring statewide coordination of regional pathways, building human and organizational support, and sharing data/progress monitoring.

If you or your staff have questions regarding this report, please do not hesitate to contact Vice Chancellor for Workforce and Economic Development Van Ton-Quinlivan at (916) 327-5492 or vtquinlivan@cccco.edu.

Thank you for your interest in these programs and the students they serve.

Sincerely,

Brice W. Harris
Chancellor

Introduction

The Career Technical Education (CTE) Pathways Initiative enables K–12 school districts, community colleges, employers and community partners to align educational offerings with employer needs, and reveals the types of efforts that can lead to effective CTE reform.

California's education system — the largest in the United States — is an essential resource for ensuring strong economic growth in the state. The California Community College system reaches more than 2.4 million students a year in 112 colleges. The California Department of Education (CDE) serves 6.2 million students in 1,043 school districts. These two segments of the educational pipeline are working together to better prepare students for college and 21st century careers.

The Career Technical Education Pathways Initiative (referred to as the Initiative in this report), which became law in 2005, brings together community colleges, K–12 school districts, employers, organized labor and community partners to strengthen the connection between school and work. By focusing on priorities such as career pathways and articulation, expanding business and industry engagement and teacher recruitment and professional development, the Initiative enables educational institutions to integrate core academic coursework with technical and occupational knowledge and skills. This double skill set makes students competitive for high-wage careers and prepares them for transfer to four-year colleges.

The California Community Colleges Chancellor's Office (Chancellor's Office) and CDE award Initiative grants to both California community colleges and K–12 schools and districts that place a high priority on CTE. The partnership supports the development of local and regional CTE pathway systems that have been integrated into a statewide network. This network closely follows the CTE Pathways Initiative vision described on the following page.

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Career Technical Education Pathways Initiative Vision

1. **Career Pathways and Articulation for Career Technical Education Students**. Align K–12 career technical education — including Regional Occupational Centers and Programs — with California community colleges and universities to increase the number and quality of career pathways and CTE courses, as well as student enrollments in CTE.

2. **Career Planning and Development**. Strengthen career awareness, exploration and guidance; develop individual college and career plans; and connect with industries and businesses to offer internships, apprenticeships and work-based learning opportunities.

3. **Programs for Underserved Students**. Increase enrollment in CTE programs.

4. **Business and Industry Engagement in Career Technical Education**. Expand opportunities in work experience, work-based learning, job shadowing, community classrooms and internships/apprenticeships; and build a statewide system to link business and economic development with CTE.

5. **Career Technical Education Teacher Recruitment and Professional Development**. Increase the number of students enrolled in CTE teacher preparation programs, develop in-service strategies for new teachers, and offer CTE professional development activities.

6. **Capacity Building, Research and Evaluation**. Provide strategic leadership in CTE system development.

In 2007, the Chancellor's Office and CDE commissioned WestEd, a nonprofit education and human development research and service agency, to conduct an ongoing statewide evaluation of the Initiative and its grant-funded projects. This annual summary report prepared by WestEd highlights the impact and activities of the overall Initiative. Data were collected from WestEd's analyses of grantees' accountability reporting, as well as through site visits and telephone interviews.

Following this introduction to the CTE Pathways Initiative report summary are:

- Quick facts related to the Initiative, including a cumulative overview of participants and partnerships;
- Key recommendations based on the evaluation study;
- Initiative highlights illustrating the key recommendations in action; and
- A table of all Initiative-funded grant types since 2005.

CAREER TECHNICAL EDUCATION PATHWAYS INITIATIVE CUMULATIVE DATA OVERVIEW

Career Pathways and Articulation	Career Planning and Development	Programs for Underserved Students	Business and Industry Engagement in CTE	CTE Teacher Recruitment and Professional Development
Community Collaborative and Supplemental •129,631 students in 5,292 courses •36,591 students in internships/ apprenticeships	•54,402 staff in trainings, externships and professional development		•1,315,835 in other CTE activities •2,771 partnerships	**Teacher Preparation Pipeline** •7,814 students •311 partnerships **Statewide Career Pathways** •2,183 articulation agreements **CTE Online** •1,058 staff participated in workshops and trainings **"a–g" Guide Project** •4,063 teachers trained •Nearly 11,000 CTE courses are now "a–g" approved.
Workforce Innovation Partnerships •16,020 students •228 partnerships	•337 staff participated in trainings and professional development			
	Health Science Capacity Building •13,271 students •222 partnerships **CTE Student Organizations** •Membership increased by over 20,000 (20 percent) **Youth Entrepreneurship Program** •62,967 students •1,184 partnerships	**California Partnership Academies** •53,075 students •Over 1,500 partnerships **Career Advancement Academies** •8,700 students •Over 270 partnerships	**Career Development and Work-based Learning Linkages to Professional Organizations (CA Career Cafe)** •3,265 counselors and staff participated in trainings	
GRANTS FOCUSING ON STAFF ONLY				
	Leadership Development Institute •51 participants		**CTE Liaison Hubs** •Over 3,700 staff served	**New Teacher Workshops (CTE TEACH)** •5,426 teachers trained
GRANTS THAT HAVE ALREADY ENDED				
Construction • 9,166 students	• 569 students in internships/apprenticeships	• 223 staff in trainings or externships • 125 partnerships		
Quick Start •72,963 students •412 partnerships **Career Exploration** •17,450 students	**Strengthening CTE** •8,903 students •213 partnerships **Health Occupations Preparation and Education** •Over 10,000 students •79 partnerships **Middle Grades** •13,674 students	**Distance Learning** •850 students •Over 25 online courses developed or revised	**Faculty/Counselor Work Experience** •109 staff	**Curriculum Planning for Emerging Industries** •6 courses in new technologies developed

Note: Summary cumulative data for Initiative grants from 2005 through the 2011/12 academic year were collected from various data collection tools, as were available as of June 2013. In most cases, data are cumulative through the duration of the grant and may include duplicates.

Quick Facts

Activities supported by the Career Technical Education Pathways Initiative include all available data from 2005 through 2011/12. Initiative funding has facilitated:

- Serving more than 1.7 million K–12 and community college students.*
- Building 7,400 partnerships between education and industry.
- Developing or revising approximately 1,700 secondary and postsecondary courses.
- Provide trainings or externships to more than 74,000 faculty and staff of high schools and community colleges.

Key Recommendations

Based on data from the evaluation study, these recommendations include:

- **Fund curriculum development and implementation for educators teaching the new and revised career technical education courses.** Whether the goal is building clearer career pathways or providing a context for course content, when instructional reforms are deeply understood and fully implemented by classroom instructors, student outcomes are improved.
- **Incentivize schools and colleges to create more flexible offerings and systems so that new career technical education approaches can be implemented**.
- **Facilitate cross-pollination of efforts among institutions** as a strategy to accelerate the rate of change and increase the chances that effective CTE approaches will be implemented on a large scale.
- **Create a system that allows student to make coherent career technical education or other education plans and move seamlessly between education segments**. Develop a coordinated statewide effort to further develop programs of study that are aligned with templates for courses, certificates and transferrable curricula.
- **To implement changes on a significant scale**, **provide time and space for ideas and activities to evolve.** Offer opportunities for collaboration grounded in common interests, bring together leaders and practitioners and communicate relevant information grounded in evidence.

* It is possible for a student to be counted more than once because of participation in multiple activities within a semester and across years.

- **Provide students access to the experiences that will help them best evaluate and prepare for specific careers.** Develop institution-wide partnerships, give employers a meaningful role in shaping what students learn and integrate workplace-based learning into academic lessons.
- **To better evaluate program effectiveness, continue to shift the emphasis from the number of students who participate in various activities to whether and how student and program outcomes improve.**
- **Prioritize clearly defined, collaborative and engagement-oriented projects,** which have demonstrated the strongest results based on outcome data.
- **Coordinate career technical education reform efforts across departments within an education institution and develop succession plans so that reform is not dependent on a single person.** Lasting change and ongoing innovation require support from all levels of the institution and systems or infrastructure to ensure its sustainability.
- **Identify and consistently deploy appropriate measures of career technical education program and student success across education institutions.** Data are a critical factor in decision making and funding. But conventional success metrics may not tell the full story of the impact of career technical education programs.

Highlights of Initiative Activities

The following highlights of 2011/12 grantee activities bring to life several of the Key Recommendations presented in the prior section.

Shifting Evaluation from Activities to Impact

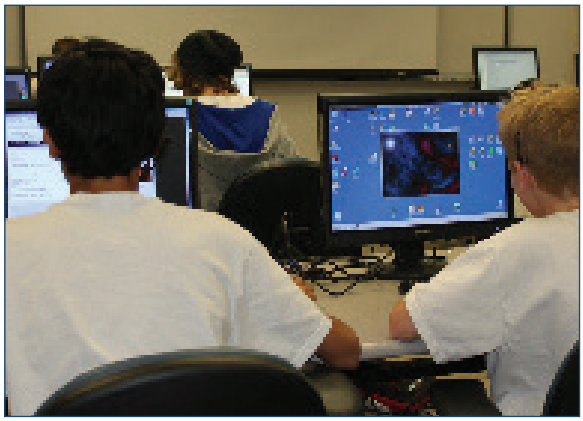
The shift in emphasis from how many students participate in career technical education classes or activities to whether these courses or activities lead to outcomes that improve students' access to high-wage careers is driving changes in the types of activities that educators implement. Clearly defined, collaborative and engagement-oriented projects should be prioritized, as these efforts have the strongest results.

For most of its history, the success of career technical education has been evaluated based on the caliber of its faculty and the number of students who attend classes or who participate in activities. Over the last decade, emphasis in decisions about which programs receive funding has begun shifting to student outcomes — the tangible skills that students display and the benchmarks that they achieve, such as degrees, certificates, and employment gains. This shift is requiring educators to rethink the way CTE courses are taught or CTE programs are implemented, ultimately measured and documented.

At the outset of California's Career Technical Education Pathways Initiative, success was measured by the number of students served or reached by the CTE programs or courses. As a result, most schools and colleges offered simple programs that touched many students but had no identified outcome goals. However, as these institutions sought to build stronger academic and career pathways for students, they found themselves exploring which CTE courses or activities resulted in more students making it further along in achieving their education and career goals. A large number of community colleges and K–12 partners redesigned key courses or CTE programs so that student outcomes, rather than number of students served by activities, became the gold standard. As a result, they created programs that fostered stronger student engagement and deeper industry partnerships. The examples that follow show two different ways that the focus on impact has changed the types of CTE programs that schools deliver.

Opening Doors to Jobs: Remaking Career Awareness Programs

One goal of the Initiative is to increase career exploration among middle school students. At the outset of the Initiative, this was largely achieved through career fairs. Middle schools encouraged employers and colleges to distribute brochures from tables spread around a gymnasium or community center with the hope that hundreds of students would wander through that room, pick up pamphlets or peer at table displays. However, many educators suspected that this approach was not an effective way to help students envision their career path. Across the state, Initiative funding sparked interactive career exploration programs where students could "try on" different career or educational opportunities. These programs proved so effective that they were



made standard practice at host institutions and were adopted by other schools.

Deeper Learning

In the Riverside and San Bernardino areas, schools and colleges used Initiative funds to build strong collaborations. Through a series of conversations across institutions, educators developed the idea of offering career exploration mini-lessons to middle school students during lunch. The goal of this new approach was to help students better focus on *specific* academic or career training opportunities and make it easier for them to ask questions. To ensure the quality of these offerings, counselors received training on career offerings and a toolkit to support the development of lesson plans.

San Bernardino Community College District was the first to adopt the model, followed by Mt. San Jacinto College, Riverside City College and Chaffey College using the same training and resources. At Riverside City College, instead of having counselors deliver the lessons, the school elected to have classroom teachers share this same information.

Focused Study

In Santa Clarita, educators decided to take an entirely different approach to building career awareness. College of the Canyons used Initiative funds to develop the Summer Institute, which provides middle and high school students opportunities to explore career paths in a summer camp format. Over the course of a week, students participate in hands-on activities in topics such as film, science, robotics, automation, special effects and fabrication, and photography. For example, students taking aeronautics build model airplanes, learn about the history of flight and master the laws of physics that affect lift-off. The courses, taught by College of the Canyons faculty, are based on age-appropriate content, which helps them to develop an appreciation for the subject and gives them a connection to a program in which they can further their studies and possibly pursue a career.

The Summer Institute has had ripple effects in both K–12 schools and community colleges. Middle school educators note that the Summer Institute has helped students make decisions about which high school courses will move them toward their goals, and community college faculties made their curriculum more rigorous when they found that middle and high school students could readily master college-level content. Many of these tracks have corresponding career pathways within the Hart District High Schools, which enables students to take what they learned over the summer and return to school to delve more deeply into what they learned. This model has also been adopted by other colleges, such as the Sacramento Law Enforcement Academy.

SIGNS OF SUCCESS

The Summer Institute at the College of the Canyons began in 2011 with 200 middle school students from three partner schools. Following on the success of year one, the 2012 Summer Institute was expanded to include high school students and doubled the number of students served to 392, including 10 junior high and high schools. The majority of parents surveyed (90 percent) were “satisfied” or “very satisfied” with the program and several requested more sessions because classes filled up very quickly.

Building Stronger Pathways to Careers

Funding that supports development of high-quality career technical education curriculum and teacher training yields stronger student outcomes because it helps ensure that teachers can fully implement these fundamental coursework reforms.

In addition to a wide range of academic coursework, community colleges offer students the opportunity to build job-readiness skills in fields ranging from medical assisting to automotive technologies. However, faced with all these options, students often find it challenging to figure out the right combination and sequence of courses required to prepare for a specific field or job. With few counselors available to support this decision making, colleges must find other ways to help students evaluate their options and set the most direct route to their academic and career goals.

A key focus of the Career Technical Education Pathways Initiative is defining and streamlining specific programs of study. Not only do these program pathways enable students to make informed choices about courses needed to reach their goals, they can lead to improvement of course content and bolster students' abilities to learn college-level subject matter. For example, pathways enable institutions to address the transition from high school to college; ensure that courses progress coherently within a sequence; and inform students about the current workplace context for coursework. Initiative-funded efforts have helped institutions establish pathways that lead to a family-sustaining wage and to opportunities for further education.

Educating the Educators: Supporting Pathways Redesign in High-Demand Disciplines

One clear lesson learned from defining CTE pathways for various occupational fields is the need to secure sufficient funding to support the high-quality curriculum development and teacher training that makes such reform effective. As an example, Grossmont-Cuyamaca Community College District in San Diego County leveraged Initiative funding to address a challenge common to community colleges across the state: responding to the growing demand for graduates in healthcare fields. There are two stumbling blocks to meeting this goal: students are not aware of the full range of health and medical career options available to them, and many students cannot pass prerequisite courses, such as chemistry and anatomy.

To ensure that more students enter and succeed in this career pipeline, Grossmont-Cuyamaca Community College District partnered with education, industry, and community partners as well as the Health Workforce Initiative — the health sector arm of the California Community Colleges Chancellor's Office Workforce and

Economic Development Division — to implement the Health and Science Pipeline Initiative (HASPI) across California. Starting as early as seventh grade, HASPI supports the integration of health and medical themes into core science courses such as biology, chemistry, physiology and microbiology. Students in these programs also participate in internships and employer-sponsored career exploration activities, such as visits to worksites to help them see the connection between their current coursework and future careers.

HASPI has partnered with over 95 middle and high schools throughout California. Schools interested in implementing HASPI curricula receive:

- access to core materials,
- workshops for middle school and high school teachers,
- peer networks that provide advice on implementation challenges and
- program and curriculum development trainings.

Outcome measures show that students involved in HASPI programs increase their awareness of healthcare careers, improve science proficiency, and are better prepared for college. As Kevin Barnett, Co-Director of the California Health Workforce Alliance notes, "HASPI has a critically important role to play in building the capacity of our public schools to effectively prepare the next generation of health professionals in California."

SIGNS OF SUCCESS

The California Standards Tests measure students' progress toward achieving the state's academic content standards.

In 2009/10, 86 percent of San Diego County HASPI sites teaching medical chemistry outperformed state mean scores for chemistry. Overall, HASPI medical chemistry students averaged 342, compared to the county mean of 338 and the state average of 337.

Improvements were even better for biology — 93 percent of HASPI San Diego County sites teaching medical biology outperformed state mean scores for biology. Average biology scores for HASPI sites, the county and the state in 2009/10 were 368, 354 and 347, respectively.

CTE Online had 92 teachers participate in 17 curriculum development teams, creating 180 lesson plans. Over 400 teachers participated in workshops and trainings in 2011/12.

Leadership Development Initiative trained 23 administrators in 2012.

CTE TEACH provided teacher trainings and support, such as teacher orientation, mentor assistance, train-the-trainer workshops, among others, to 2,692 participants in 2011/12.

To support the educators implementing these and other types of CTE courses, the California Department of Education has initiated several projects to enhance teachers' CTE content knowledge and instructional skills. CTE Online, with seven statewide curriculum development teams, offers local instructional leaders model courses and tools, along with workshops and trainings to help faculty teach new, richer career and technical curricula, as well as related academic content. CDE's Leadership Development Initiative provides professional development for new and aspiring CTE administrators at both the community college and secondary levels. And its CTE TEACH program offers onsite training and free online professional development to support new teachers and help industry veterans develop instructional skills as they transition to teaching.

Making Career Technical Education More Responsive to Employers

Meaningful connections between career technical education programs and industry cannot be initiated solely through an annual advisory committee meeting. Nor can they be sustained through a partnership between an individual industry representative and an education counterpart. In order for students to gain access to the experiences that will help them best evaluate and prepare for specific careers, institution-wide partnerships should be developed. In addition, employers must be given a meaningful role in shaping what students learn and workplace-based learning needs to be integrated into academic lessons.

Many faculty members who teach in community colleges come with industry experience. But once they are in the classroom, they need opportunities to revisit the workplace to keep up-to-date with industry developments. Students benefit from access to employers, as well. Their learning is deepened when they see how classroom topics apply in a real-world setting. Experience in a work environment also helps students choose a program of study or career that is a good fit for their interests and temperament. Employers value work-based learning as well, which can provide students with industry-specific skills that are in high demand.

The Career Technical Education Pathways Initiative seeks to expand business and industry engagement in CTE programs. Initiative grantees have taken many different approaches to linking CTE programs with employers, including faculty externships, in which CTE teachers spend time working in a business; students job shadowing in businesses; industry participation in national CTE student organizations; and student informational interviewing opportunities with industry personnel. Employers have also been invited to examine the topics covered in certificate programs and to identify how existing programs of study should be realigned to better address workplace realities. All of these approaches have enabled educators and employers to build sustained connections and to undertake significant revisions to what gets taught, so that students are better prepared to secure high-wage careers.

Linking High School and College Credits with Work-Based Learning

Health Sciences High and Middle College High School (HSHMC) is one example of meaningful industry engagement in identifying and building the skills necessary for students to earn a living wage and prepare for higher education. HSHMC is a charter school that provides an alternative pathway to both college and a career. Working in partnership with Sharp Healthcare, San Diego State University, San Diego City College and San Diego Mesa College, the HSHMC offers courses that confer college credit, particularly in the health

sciences. Students also participate in internships through the local health care provider network, which provides them exposure to a range of career options, such as biotechnology research, diagnostic services, health informatics, and therapeutic services. These workforce-focused options are strengthened by rigorous college preparatory courses, making students eligible for many college certificates or degrees.

HSHMC used Initiative funding to enhance student internship experiences and course offerings for the mental health career pathway. The project began with a general goal of engaging students in clinical and non-clinical experiences in health care settings. With grant funding, the school has been able to offer courses such as Psychology 101, Abnormal Psychology, and Health 101 to the curriculum in cooperation with their community college partners. All of these courses are transferable to any university and count as general education. HSHMC principal Sheri North is excited about the school's accomplishments, "Our partnership with health care industry partners has now expanded our attention to needed and obtainable specializations such as phlebotomy, certified nursing assistance and mental health workers."

Students have benefitted from these connections. For example, not only did 50 students enroll in HSHMC's mental health career pathway, but 10 of the 12th graders, with the support of San Diego County Department of Behavioral Health, planned a conference for high school teams across the county on ending the stigma associated with mental illness. They were effective in planning and hosting a professional day-long conference attended by over 300 students representing schools from across San Diego County.

CTE student organizations are another example of a substantive industry-education partnership. California Health Occupations Students of America (Cal-HOSA), one of six student organizations with funding support from the CTE Pathways Initiative administered by the California Department of Education, helps prepare students for careers in the health industry. Endorsed by the U.S. Department of Education and the Health Science Education Division of the Association for Career and Technical Education, Cal-HOSA provides a unique program of leadership development, motivation, and recognition exclusively for secondary, postsecondary, adult and college students enrolled in health science education. In 2012/13, Cal-HOSA held the largest State Leadership Conference in its history. It established an online system where chapters can submit their activities and plans for membership growth, and which increased partnerships and achieved more involvement with middle schools.

SIGNS OF SUCCESS

Health Sciences High and Middle College (HSHMC) has placed and supervised 550 students, who have accumulated over 50,000 fieldwork hours with health care providers. According to the HSHMC principal, 90 percent of the 125 graduating seniors are going to college. Another 10 percent are going on a vocational track or into the military.

Since the investment of Initiative funds in CTE student organizations from 2008 to 2013, membership in the six state organizations has increased by 20,585 members (20.2 percent). In 2011/12, student membership totaled 95,415:

Cal-HOSA	4,089
DECA	3,524
Future Business Leaders of America	7,390
National Future Farmers of America Organization	71,399
Future Homemakers of America–Home Economics-Related Occupations	3,712
SkillsUSA	5,301

Building Regional and Sector Partnerships for Career Technical Education Improvement

Cross-pollination of career technical education improvement efforts among institutions is valuable because it accelerates the rate of change and makes it more likely that effective approaches will be implemented on a large scale. Across the board, Initiative grantees who had access to information and support from other projects implemented more innovative programs.

Traditionally, community colleges have worked independently to develop and offer programs of study. This means there may be a great deal of unnecessary duplication of program offerings across community colleges in a given region. That, in turn, may cause confusion among regional employers who are trying to compare the value of a program degree or certificate — for example, child development or information technology — between one community college and another. In addition, each program may require expensive equipment that is difficult for community colleges to maintain in bad budget times.

Through programs such as the Community Collaborative, the Career Technical Education Pathways Initiative has helped to foster coordinated and strategic leadership among CTE deans from community colleges in the same region, faculty, key stakeholders from regional employers, and staff from industry-related community-based organizations. This groundwork has proved vital for statewide efforts, such as *Doing What Matters*. An initiative of the California Community Colleges Chancellor's Office Workforce and Economic Development Division, *Doing What Matters* is realigning funding streams and expecting student outcomes to close the skills gap that employers need and the skills that students have.

Within the past year, groups of community colleges have teamed up to identify common priorities and design efforts around economic regions — for example, Silicon Valley and northern inland California — and within discrete sectors, such as advanced manufacturing or agriculture, or water and the environment. Many of the proposed projects build off of efforts that were conceptualized and piloted through the Initiative. The example below shows how a region worked to rapidly improve local conditions by building off of lessons learned at other community colleges.

Creating Cohesion: Adapting Effective Practices to Address Regional Concerns

The southern and eastern Sierra encompasses a large rural region, covering 29,000 square miles and serving more than 55,000 students through 81 institutions, including four community colleges, 45 comprehensive high schools, 18 school districts, six adult schools, 17 continuing schools

and 18 regional occupational programs. With wide variation of scale and focus among these institutions, the region needed to decide how to handle delicate issues, such as distributing Initiative Community Collaborative funds and evaluating the impact of jointly funded programs. The group developed a goal-focused, data-driven and transparent infrastructure that is helping to accelerate the adoption of effective practices within the region. This approach has also helped to attract participation in the Southern and Eastern Sierra Community Collaborative — 300 people joined by the end of the first year and today that number has grown to 400.

The Community Collaborative elected to build its joint strategy based on student performance data. To better understand how to improve coordination between high schools and colleges so that more students enter higher education and do not need remediation, the Community Collaborative examined how many high students were receiving college credit under existing articulation agreements. They discovered two problems. First, there was no data system for tracking this type of information. The region turned to San Diego Community College District for help, which had already implemented a technology tracking solution, and leveraged Initiative funding to purchase the software and train staff. Second, requirements about taking a minimum number of units at a college were preventing students from receiving credit for work done in high school. The Community Collaborative worked with each college to remove the unit threshold requirement.

In addition to addressing structural concerns, the Community Collaborative has sought to replicate effective practices throughout the region. Santa Barbara City College received the national Aspen Prize for Community College Excellence due in part to innovative programs offered in high schools. For example, the college provides a required course to all 9th graders in which students craft a 10-year education and career plan. The Community Collaborative sent a large delegation to see the program in action and provided training on the curriculum. Now, 14 high schools in the Southern and Eastern Sierra Community Collaborative are implementing Santa Barbara's approach to educational planning, which has led to better attendance rates and higher scores on the high school exit exam.

SIGNS OF SUCCESS

The Southern and Eastern Sierra Community Collaborative made changes to articulation criteria that have yielded large gains in the number of students earning college-level credits while they are still in high school — a strategy shown to increase both retention and success.

- In 2010/11, before the project began, only 204 students were identified as receiving credit through articulation agreements.
- In 2011/12, 70 articulated classes were offered, 770 students enrolled, and of those, 468 received credit.
- In 2012/13, 364 articulated classes were offered, 4,156 students enrolled, and 2,466 received credit.
- The collaborative is on target to double the 2012/13 numbers in 2013/14.

Strengthening Intersegmental Connections

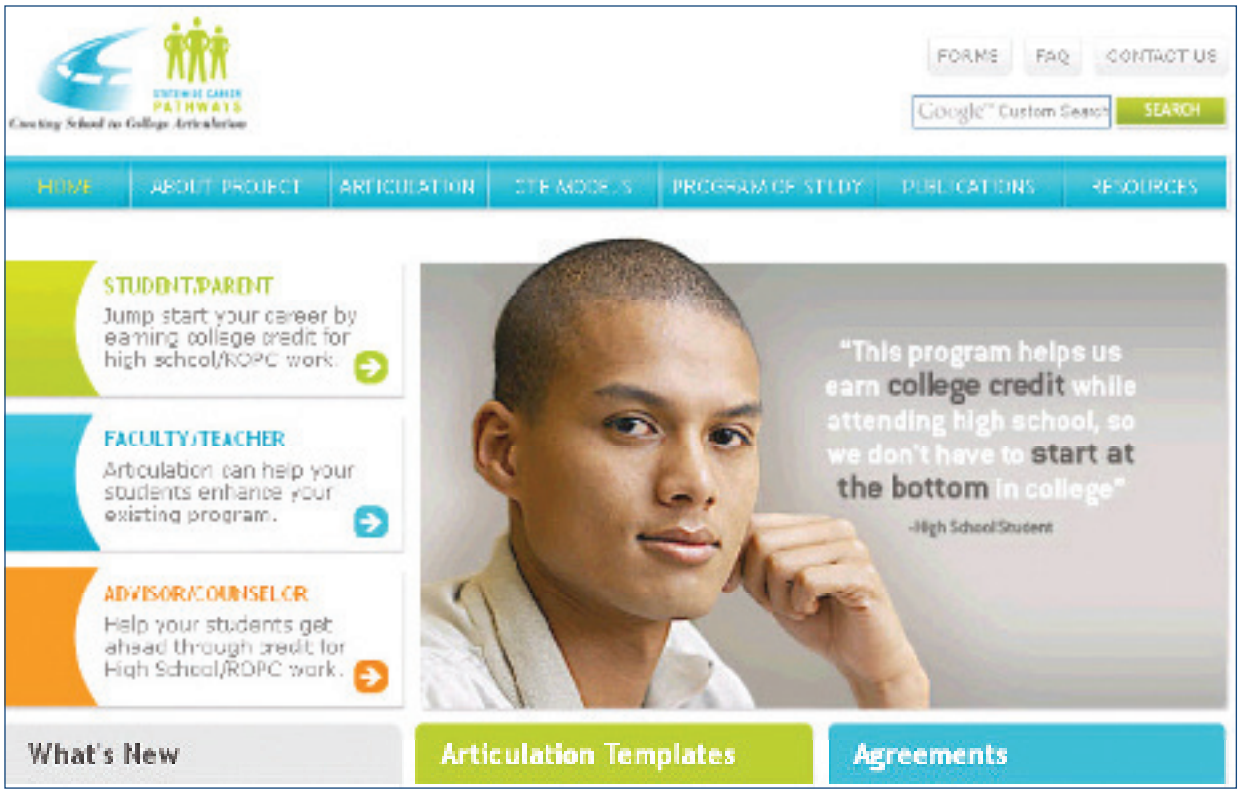
Much effort has gone into improving career technical education course articulation between high schools and community colleges in recent years. Currently, such course articulation agreements are helping high school students gain college credit and exposure to college-level CTE courses. But students will not be able to fully and consistently reap the benefits of this articulation until a coordinated statewide system is in place that supports CTE programs of study to align their course content and course credit requirements with available templates. In addition, structures and procedures must be in place at high schools and community colleges to ensure that high school students receive transferrable course credits for their CTE course work, and that those credits appear on their high school transcripts. Currently, such follow-through occurs mostly by chance, through the initiative of individual educators.

Students' academic and career goals may require them to navigate a number of education systems, including K–12, adult schools, regional occupational centers and programs, community colleges and four-year institutions. In California, these segments work largely independently, both in determining what content should be offered and in defining the standards for success. For example, content learned in adult school may not align with community college programs of study, and community college coursework may not meet requirements for transfer to a four-year institution. As a result, students frequently encounter disheartening gaps or coursework repetition as they pursue postsecondary or career goals.

One explicit goal of California's Career Technical Education Pathways Initiative is to engage these various education segments in developing articulated CTE pathways between and among themselves. Large numbers of students require English and mathematics remediation upon enrollment at two- and four-year colleges, partly because of the differing competency expectations between secondary and postsecondary institutions and among higher education institutions. As a result, many students may spend more than two years in community colleges to take the number of courses necessary to meet the differing CTE and academic proficiency requirements.

Charting a More Direct Career Technical Education Path: Statewide Articulation and Advising

Eliminating unnecessary course differences and redundancies between education segments is an important step in making education more efficient and effective for students. Over the past seven years, the CTE Pathways Initiative has helped educators lay the groundwork for a more coherent approach to helping students meet their academic and career-technical education goals, even if they move from one postsecondary institution to another. For example, the Academic Senate for California Community Colleges used Initiative funding to create the Statewide Career Pathways (SCP) project — an intersegmental mechanism to convene secondary and postsecondary faculty in career technical education fields for the purpose of



jumpstarting students' college and career preparation by earning college credits and learning college-level material while in high school.

Recognizing that students require information about CTE pathways early in high school and that counseling staff has limited capacity to provide such information, SCP developed an online counselor toolkit. This resource provides live information regarding a program of study that is specific to a student's community college of choice. Developed with high school counselors, the online tool is designed for the required "sophomore visit" meeting with a counselor and identifies detailed academic requirements for high school and college. When it launches in fall 2013, over 500,000 high school sophomores will be able to create their own academic plan.

A project initiated by the Ventura County Community College District used Initiative funding to ensure that students receive appropriate college credit for articulated CTE courses they take in high school. According to Ventura's Career Technical Education Pathways Initiative project director, Marnie Melendez: "To develop a seamless system offering fully articulated preparation for high-wage/high-demand CTE careers, 18 new articulations were developed, linking high school CTE and community college courses. And faculty from multiple CTE areas met to discuss how to coordinate their efforts in order to move students forward efficiently in their chosen CTE career pathway areas." Specifically, she noted that they identified curriculum content gaps and figured out ways to fill them, and built or enhanced programs of study. These 18 new CTE articulation agreements addressed: animation (1 course), graphic design (6), web

design (3), photography (1), drafting (5) and digital media (2). The educators also developed course sequences focused on drafting, stagecraft, acting and exercise science/athletic training.

Initiative funding was also used by Ventura County Community College District to purchase and to train high school and community college teachers and faculty to use Career and Technology Education Management Application (CATEMA), a computerized tracking system in which users (i.e., secondary teachers and counselors, students, college registrars) enter, update, display and report information on the progress of students taking CTE coursework. The primary objectives for CATEMA are to facilitate the management of career preparation programs, make this information available to everyone in education, provide accessible and printable data in detail and as summary reports, and ensure that the data are accurate and secure. The web-based interface allows users to establish and maintain their own accounts. It provides users a seamless record of a student's accomplishments from secondary to post-secondary education and beyond. High school students can use the CATEMA system to petition for articulated credit, community college faculty can use it to approve such requests, and college registrars are able to append the credit to a student's transcript. The system also allows for coordinated tracking and reporting among users.

Improving Access and Equitable Outcomes

Both community colleges and K–12 schools are initiating opportunities for their academic, vocational and support services personnel to improve efforts to engage and serve underserved student populations. These approaches must be flexible so that their structures and processes work for both students and employer partners. Education institutions need support and incentives to reexamine current practice and make needed changes.

Community colleges are the great democratizers of higher education. Like K–12 public schools, they are open-access institutions that enable students to participate in a wide range of academic, workforce training and personal development activities — regardless of economic background or the level of skills students have upon entry. However, as attention has shifted to outcomes, the value of access alone has come into question. Students who are first in their family to attend college, from low-income households or from backgrounds underrepresented in higher education are much less likely to succeed than their peers. Access without success undermines the promise of public institutions.

In order to improve outcomes for more vulnerable student populations, research points to the importance of approaches such as creating cohorts of students who study together over time, shifting lessons from lecture to hands-on learning, and providing support for the whole student, whether building study skills or helping secure financial aid. Educators need to understand how to implement these types of strategies to address the significant shifts in California's population. More than half of students in the state's public schools are now Latino and 75 percent are of color. Given the strong overlap between practices that support equitable outcomes and the California's Career Technical Education Pathways Initiative, it is valuable to examine the lessons learned by Initiative grantees, particularly by large-scale efforts like the Career Advancement Academies and California Partnership Academies.

Bridging the Gaps: Building College and Career Readiness for Underserved Students

The Career Advancement Academy (CAA) was designed in partnership with community colleges, workforce investment boards and community-based organizations to support young adults, aged 18–30, whose lack of skills in reading, writing and mathematics shut them out of well-paying jobs in high-demand fields. Using Initiative funding, the CAAs combine technical training with basic mathematics and English so that students can master academic skills within the context of the workplace. Students are grouped into learning cohorts, provided with intensive support during their time in school and receive additional help in securing a job. By coordinating the efforts of several traditional instructional and student service silos, community colleges are building pathways from CAA programs to careers or further education. As Rick Christl, a dean at Fresno City College notes, "The mission of community college is to provide the education and training needed for students to join the workforce and become

successful in their careers and lives. We are now providing more access to the students who need it most through the Career Advancement Academy."

CAAs have been implemented in more than a quarter of California community colleges, with 49 programs currently underway in 15 major CTE pathways. Roughly 175 employers were actively engaged during 2011/12 alone, including providing career advising, hosting work experiences, weighing in on curriculum and tailoring CAAs to regional industry needs.

The CAA model has been adapted to a wide range of disciplines in a manner that builds off of local strengths, rather than imposing a prescriptive model. For example, the College of Alameda created the Alameda Transportation and Logistics Academic Support Initiative, a collaborative eight-week program that provides comprehensive accredited training in warehousing and logistics. The local adult school provides basic skills education while the Port of Oakland, the City of Oakland, the Teamsters Union and the International Longshoremen Union support job placement activities. Nearby Laney College used the CAA infrastructure and a partnership with Pacific Gas and Electric (PG&E) to pilot PowerPathway — a program that teaches a combination of academic, technical and soft skills in preparation for energy-related jobs with entry-level salaries of $20/hour. PowerPathway is now offered at three community colleges, with 60 percent of students securing jobs with PG&E, 55 percent of whom are women and/or people of color.

Across the board, CAA programs have been successful in both serving students with greater needs — including large numbers of African-American, Latino and low-income students — and in helping to bridge the success gap. In 2011/12, over three-quarters of participants successfully completed CAA coursework statewide and nearly 40 percent received certificates, degrees or transferred to a four-year college within the same academic year.

Structured as a school within a school, a California Partnership Academy (CPA) is a three-year program for students in grades 10–12, targeting those at risk of academic failure. The CPAs improve students' high school performance and postsecondary outcomes by creating a close, family-like atmosphere for students and staff, integrating academic and career technical education and establishing viable business partnerships.

Students must apply, be interviewed and be selected to attend a CPA on the basis of need and interest. One-half of the incoming class must meet specified at-risk criteria, including past record of irregular school attendance, at least one-third of a year behind in coursework for grade level, low motivation or disinterest in the regular school program and be economically disadvantaged. Students in the 11th grade are matched with mentors from participating businesses and local community professionals who volunteer to be a career-related and/or caring adult.

Employer representatives serve on a CPA steering committee that oversees the program, help to develop the career and technical curricula, provide speakers for CPA classes, host field trips, provide mentors who serve as career-related role models and provide internship and summer job opportunities for students.

CPA teachers — whether they are CTE instructors or core academic content teachers — and business and employer representatives work together to improve the academic and career outcomes of students.

Lincoln High School, which serves a highly diverse, largely low-income community in San Diego, opened its CPA in public safety in 2009. In this academy, students become career and college ready by focusing their studies on knowledge and skills related to fire and police services. In the Fire Pro classes, real firefighters teach and share their expertise and experiences. The objective is not to direct every student to a firefighting career but to instill core service values of communication, discipline and teamwork to prepare students for any path.

Jorge Hernandez, Student Firefighter Program Coordinator, claims that two of the major changes he sees in his students are that they become more physically fit and drastically improve their grades. Hernandez also says that during lunch and after school, his classroom is packed. Other programs struggle to retain students, while he has a problem sending his students home at the end of the day.

"The confidence that it builds in kids is incredible," says Hernandez, who has seen students shift from being withdrawn and directionless to coming to school with an enthusiastic sense of purpose.

The CPA model provides a support system and strengthens a feeling of connection and community. By learning to work effectively in teams and trusting each other during firefighting drills like repelling, students develop strong bonds and take care of each other academically and personally. Students learn real-world lessons of working together despite differences to solve problems and be successful.

SIGNS OF SUCCESS

Career Advancement Academy (CAA) programs, most of which last between a semester and a year, have been implemented in high-demand pathways such as:

- Health
- Education
- Transportation
- Manufacturing
- Energy
- Construction
- Finance and Business
- Information Technology

Since 2007, CAAs have enrolled over 8,700 students in 32 colleges. 52 percent of CAA students are Latino and 21 percent are African American, compared to 36 percent and 7 percent, respectively, for the California community college system. About half receive financial aid.

Seventy-five percent of participants successfully complete CAA coursework and 39 percent receive certificates, degrees, or transfer to a four-year college within the same academic year.

In 2011/12, 168 Initiative-funded California Partnerships Academies served 16,582 students in 127 schools across 26 counties.

Contextualizing Career Technical Education Curriculum

Contextualizing career technical education curriculum requires a substantive reworking of the way a concept is taught and the development of partnerships with content experts in other areas. Courses are often made more challenging, which may run counter to assumptions about what students are able or willing to do. Therefore, this is an approach which may need up-front support to get established, with strong attention paid to ensuring that teachers understand new pedagogical approaches.

Community colleges are frequently referred to as "two-year institutions." However, few students complete their coursework in this timeline. Many students attend for four to six years before securing an associate's degree, certificate or transferring to a four-year institution. With funding for higher education on a downward trend, many community colleges are looking for ways to improve career technical education and academic efficiency. Streamlining pathways to community college completion also benefits students, as it can help to reduce education debt and move low-income students up the wage scale more swiftly.

One approach that is gaining momentum around the nation is contextualization — placing course content in a real-world context. For example, contextualization helps students master fractions in the context of tripling a recipe for a culinary arts assignment, or master writing skills by developing marketing text for a website. In this way, two concepts can be taught simultaneously. Contextualization also has the benefit of deepening student engagement with the course content, which makes them more likely to retain their learning and remain with a program.

Building on Multiple Levels: Linking Mathematics, Construction and Industry Engagement

Shortly after geometry became a requirement for graduation, Roseville High School was faced with a problem — many students were failing the course and thus were prevented from graduating. The school decided to contextualize the content as the swiftest way to solve the problem, and the school used Initiative funding to implement Geometry in Construction. First developed in Colorado, the program combines college-preparatory geometry with the opportunity to build a 650-square-foot house.

The course is based on the College Preparatory Mathematics model, which utilizes collaborative, discovery-based mathematics instruction practices. This represents a major pedagogical shift from how geometry has been taught in the past. Teacher Tyson Maytanes noted that students no longer ask, "Why

do we have to learn this?" — a common refrain in his traditional mathematics classes. However, he also noted that making the change to this new way of teaching was difficult for both his students and for him. "There's a lot of problem solving involved. It requires [the students] to think about the problems and figure them out …They just wanted me to tell them how to find the answer."

Although it has required an investment of effort, the results of the Geometry in Construction program are impressive. Students who participate in the program earn standardized test scores that are significantly higher than those of students who participate in traditional geometry, and they even surpass the outcomes of students taking honors geometry. Furthermore, the program helps students build concrete skills in areas such as wiring, plumbing, and heating, ventilation and air conditioning.

SIGNS OF SUCCESS

Roseville High School's Geometry in Construction classes outperformed the traditional geometry classes by more than doubling the percentage of students passing the district's Common Assessment in Geometry. Last spring 2013, of the 72 students enrolled in Geometry in Construction, over half (58 percent) passed the Common Assessment compared to 28 percent of students from the traditional geometry classes.

Another positive outcome has been the development of new partnerships. Roseville High School learned that the trade-based industries felt left out of the conversation about science, technology, engineering and mathematics education, despite the fact that these industries have a high need for a well-trained workforce with a solid grounding and mastery of mathematical concepts. Upon learning about the program, a number of local businesses proactively volunteered to supervise the building of the structure and to ensure that it met building codes. As a result, Roseville High School was able to sell the home at the end of the year and use the proceeds to fund the next year's class.

Evidence-Based Decision Making

Conventional success metrics may not tell the full story of the impact of career technical education programs, particularly those that retrain incumbent workers, enable professionals to retain their certifications, and lead to industry credentials. With data becoming such a critical factor in decision making — ranging from decisions at individual colleges to the possibility of performance-based funding at the state level — it is vital that appropriate measures be identified and consistently deployed across institutions.

When the Career Technical Education Pathways Initiative was first authorized in 2005, data to support decision making was a "nice-to-have." Today, that thinking has changed profoundly. Practitioners, policymakers, and the public want proof that a problem exists or that a course of action will be effective. Information about the impact of educational programs is also more readily available. For example, the California Community Colleges Chancellor's Office received national praise when it replaced highly technical outcomes reports with easy-to-read scorecards.

However, there can be a gap between having access to data and using it to inform future actions. Research gets ignored for a host of reasons. Sometimes the results do not support the course of action that has already been selected, while in other instances the issue that was studied is too narrow and leaves key questions unanswered. One common complaint from educators is that they cannot access the information they need most. This has led to an unanticipated outcome of the Initiative — a grassroots movement to "free the data" and the development of a statewide data tool to measure success.

Understanding Which Needles to Move: Examining Metrics for Career Technical Education Success

A number of measurements have become common to assess educational success. In community colleges, this might include passing a college-level course in English or mathematics, attaining 15 units, or securing a degree or certificate. However, these metrics are not always helpful when evaluating career technical education. For example, an automotive technology certificate may not include college-level English or mathematics courses and may stop at fewer than 15 units. Furthermore, many students drop out of CTE programs before completion. If students leave because they got jobs, should they be counted as failures?

A number of California community colleges have sought to better understand CTE success by surveying former students and asking questions, such as why students left, whether they are earning higher wages, and if they are employed in the same field as their studies. Results from Cabrillo College in Santa Cruz yielded some surprising results. While a large number of students completed the medical assisting credential and went on to get jobs, most were employed in other fields. This led the college to meet with local industry representatives, who revealed that students with the Cabrillo College medical assisting certificate often lacked a number of key skills. The college then revamped the program to respond to industry needs.

When this story was shared at a conference, it generated a tremendous amount of excitement. A group of CTE deans leveraged this enthusiasm to develop a new statewide resource — the CTE Employment Outcomes Survey. Meeting via conference call, 150 practitioners and policymakers helped shape a common set of questions and 15 community colleges paid to participate in a pilot study, many using Initiative funds. The data generated by the study proved to be immediately valuable. The information was used to inform local decisions about ongoing funding of CTE programs and to clarify that, statewide, a large number of the students who left before attaining a credential had secured higher wages. Because the survey offers the types of information that CTE practitioners need most to inform their decision making, 35 colleges signed up to participate in the second year.

The momentum created by the CTE Employment Outcomes Survey also helped instigate the creation of a new statewide infrastructure for examining CTE data. A broad array of practitioners and stakeholders met in summer 2012 to discuss additional ways to encourage the use of data. Participants articulated the need to aggregate various CTE metrics and to display them in a manner that supports local, regional, and sector conversations about improving student outcomes. The group also identified metrics that need to be captured more systematically, including wage gain, employment in field of study, and attainment of industry or state certifications. Initiative funding was then leveraged to develop just such a tool, called the Launchboard.

The Launchboard, which will be available for all 112 community colleges by the end of 2013, will display success metrics in seven major categories that can be viewed at high levels or disaggregated by a host of factors, such as age, ethnicity and disability status. The data elements include interim milestones on student pathways from K–12 and into higher education, as well as labor market signals, credentials and wage gains. From this portal, practitioners will be able to view outcomes required by specific funding sources, such as the common metrics that are required for the Chancellor's Office Workforce and Economic Development grants and the Carl D. Perkins Vocational and Technical Education key indicators. To address common challenges in documenting outcomes for specific grant-funded activities, such as those conducted using Initiative, the Launchboard plans to include a tab where unique student identification numbers can be uploaded to determine the outcomes for individual cohorts. To capture the impact of Workforce and Economic Development programs and contract education that are not included in the Chancellor's Office data system, the Launchboard will also feature a self-registration mechanism.

SIGNS OF SUCCESS

Career technical education outcomes require different metrics to fully understand the impact of programs. Many CTE programs have positive impacts on wages and economic development without generating degrees or certificates.

Examples of these alternative measures include:

- Job placement in the same or similar field of study as educational pathway
- Industry recognized third-party credential
- Wage gain
- Layoff aversion
- Meeting heightened occupational credentialing requirements
- Transitioning employees whose occupations are being eliminated
- Up-skilling existing employees

Leadership for Substantive Change

Strong attention to implementation, equitable sharing of the workload and an emphasis on products that benefit all partners keep everyone (involved in CTE improvement) at the table. According to College of the Sequoias Dean of Career Technical Education, Larry Dutto, "[Programs funded by] California's Career Technical Education Pathways Initiative grants were the first to form a true collaborative effort between K–12 and community college CTE programs. This type of collaboration spawned a spirit of cooperation between the partners and served as a model for utilizing a variety of resources to provide career technical education."

California's Career Technical Education Pathways Initiative has created a vast testing ground for innovation and leadership in education-industry partnerships focused on workforce development. While several broad categories of activity have been established — such as developing career pathways and expanding industry engagement — community colleges and K–12 school districts were given considerable leeway in how they could use the Initiative funding. Seven years into implementation, a number of clear lessons appear.

When grantees identified a focused problem to solve — rather than distributing dollars equitably across existing schools, communities, or regions, they generated stronger results. But, understanding which specific issues to address was not sufficient: effective Initiative-funded programs also had strong project directors who nurtured connections with outside partners, cultivated the buy-in of both faculty and administrators, and fostered innovation. In turn, programs were more likely to be sustained and to grow if these project directors had access to enthusiastic senior leadership who provided necessary infrastructure, the space to field-test and redesign efforts, and support to institutionalize effective approaches.

In addition, it appears that lasting change requires support from all levels of the institution, rather than expecting a few brave individuals to work on their own to generate reform. Educational institutions need to coordinate efforts across departments, support innovation and develop succession plans so that sustaining these efforts is not dependent on a single person.

All Hands on Deck: Using a Common Vision to Drive Innovation

College of the Sequoias (COS), located in the Central Valley just south of Fresno, has a long-standing Tech Prep Consortium that focused largely on agriculture. When new funding became available through the CTE Pathways Initiative, project

directors Dutto and Randy Wallace from the Tulare County Office of Education seized the opportunity to expand this model so that it included multiple industry sectors located in the impoverished region.

The team secured the participation of K–12 schools, community colleges, regional occupation programs, adult education and businesses and formalized their engagement through agreements that spelled out expectations. By pooling funding from multiple sources, Wallace and Dutto generated an innovation fund and worked with the Tech Prep Consortium to determine the areas of greatest need and the topics of highest priority. Not only did participating organizations have the opportunity to learn about other efforts underway, the group examined ways to minimize redundancy. Funding was distributed using a mini-grant system that required partners to write short proposals, which were reviewed and approved by the Tech Prep Consortium.

SIGNS OF SUCCESS

Three years ago, the Tech Prep Consortium helped found the Visalia Technical Early College High School, which has generated outstanding outcomes.

- The first graduating class attained a 96 percent college- and career-transition rate and a 98 percent graduation rate.
- Graduating seniors improved their GPA by more than 1.8 points and attendance by more than 6 percent.
- Eighteen percent of graduating seniors received College of the Sequoias Certificates of Completion in an approved career and technical education program area.

The Tech Prep Consortium generated a number of projects that yielded strong returns for students. For example, it helped to establish a charter school that focuses on career and technical education. Students from any of the district's four high schools can elect to attend Visalia Technical Early College High School, where they take courses in a broad range of career technical education pathways and enroll in college classes. One key element of the charter school's success is that it is located on the College of the Sequoias campus. Thanks to clear articulation agreements and the close proximity to postsecondary offerings, many students receive 15–20 college credits prior to finishing their high school coursework and some attain a college certificate.

Creating this kind of seamless link between segments required buy-in from a broad range of stakeholders, from the faculty who developed the articulated curricula to the college administrators who supported the co-location of the charter school. Strong leadership from the Tech Prep Consortium directors was backed by support from key administrators in the community who emphasized that a distinction should not be made between academic and vocational programs because both provide pathways to careers.

Scaling Innovative Education Reform

Observation of Career Technical Education Pathways Initiative projects over time suggests that implementing innovative education change at a significant scale requires some key conditions and processes: time and space for ideas to evolve, collaboration grounded in common interests, the involvement of both leaders and practitioners, and communication-based in evidence.

There is no shortage of ideas for innovation in education. However, many institutions and advocates express frustration about reform efforts that yield small pilot programs rather than large-scale change. There are a host of factors that influence whether an innovative education program reaches more than a handful of students. Initiatives that ignore community college policy or structural issues are often stymied because the intervention conflicts with funding formulas or transferability of credits. When reform efforts require the wholesale redesign of jobs and institutional structures, it may be difficult for those implementing the changes to cultivate trust among those most directly affected by it, which then undermines success.

Several projects within California's Career Technical Education Pathways Initiative have achieved scale, as measured by the number of students and institutions participating, as well as by the cross-fertilization of innovative ideas across departments, institutions, or education segments. The lessons learned from these approaches can help inform ongoing efforts to scale innovation and encourage sustainability.

The Industry-Education Collaboration for Workforce Development: Promoting Regional Solutions

The Bay Area Community College Consortium (BACCC) showcases a sustained workforce development effort that has yielded large-scale, coordinated efforts among colleges and companies. The BACCC is one of California's seven regional CTE consortia, which offer a forum for colleges, businesses and other workforce development stakeholders to work together on improvement efforts. The BACCC coordinates and supports the work of 26 colleges and 10 Economic and Workforce Development initiatives. The BACCC has been particularly successful in leveraging its consortium structure to kick off multi-college efforts.

The BACCC is structured to bring workforce development stakeholders together to explore projects related to a given industry or issue, providing a forum in which all parties are able to state their interests and identify ways they might work together on common priorities. The BACCC has leveraged Initiative funding to create industry-education discussion related to secondary and

community college programs in such areas as healthcare, entrepreneurship, energy, industrial maintenance, water/wastewater and information and communications technologies.

The BACCC began its workforce development efforts by developing an inventory of the region's CTE programs. The BACCC members plotted the program on a map, tallied the number of students enrolled in those programs and highlighted performance metrics, such as how many students take a significant number of courses, leave part-way through a program, or complete a credential. As BACCC chair Rock Pfotenhauer notes, "We found that using maps and data inspires people to shift their thinking from a local orientation to a regional one; to see themselves as a critical part of a larger whole."

The BACCC then convened college, industry and community partners to discuss the scale of the region's workforce development investment and how best to leverage this capacity. These meetings had a broad range of participants, from deans who understand policy and procedural requirements, to faculty who know the nuances of course content, to employers who could describe how well graduates performed on the job.

From these meetings, the BACCC learned an important lesson: It is often cumbersome for major employers to work with community colleges because their CTE programs have been developed separately and differently from campus to campus, requiring industry or Workforce Investment Boards to engage each college program individually. (There are 49 business-led Local Workforce Investment Boards statewide, serving Local Workforce Investment Areas.) Once this basic challenge was on the table for stakeholders to examine, they decided to work together to make improvements on a wide range of targeted issues.

SIGNS OF SUCCESS

The Bay Area Community College Consortium (BACCC) instigated a large number of multi-college and industry partnerships that are transforming career technical education offerings. For example:

- In response to labor market demand, the number of colleges offering solar installation courses went from 1 to 7 in roughly 2 years.
- Eight colleges and 28 industry partners co-developed a sample advanced manufacturing curriculum and created work-based learning opportunities at six companies.
- 21 colleges and 55 industry partners worked together to align medical assisting curricula and to create a virtual electronic medical records lab that is now in use at eight colleges.

INITIATIVE GRANT TYPES AND FUNDING BY YEAR

Grant Category	2005/06 (# grantees)	2006/07 (# grantees)	2007/08 (# grantees)	2008/09 (# grantees)	2009/10 (# grantees)	2010/11 (# grantees)	2011/12 (# grantees)	2012/13 (# grantees)
Coordinated Regional/Local Implementation								
Quick Start — enhance linkages in CTE pathways between high schools and community colleges to increase new enrollments and student exploration in CTE and create a pipeline of students entering career pathways in emerging industries.	$10,800,000 (25)		$1,000,000 (25)					
Career Exploration — create, improve, and/or expand middle school career exploration and awareness activities (e.g., programs, curriculum, events).	$1,649,235 (11)	$2,847,787 (19)						
Faculty and Counselor Work Experience — support community college, high school, and Regional Occupational Centers and Programs faculty and counselors to gain business- and industry-based work experience so they can improve their work with students by incorporating new skill sets, methods, information, and lessons learned.	$499,652 (10)	$349,998 (7)						
Strengthening CTE — strengthen and improve the quality of existing CTE programs.	$2,485,204 (10)	$10,229,225 (39)						
CTE Community Collaborative and Supplemental* — combines the four grant categories from 2005 — Quick Start, Career Exploration, Faculty & Counselor Work Experience and Strengthening CTE.			$20,075,000 (48 CC & 21 Supp)	$23,200,000 (52 CC & 21 Supp)	$18,014,205 (52 CC & 24 Supp)	$25,242,243 (51 CC & 23 Supp)	$19,305,731 (52)	$20,059,850 (52)
Workforce Innovation Partnerships (WIP)			$1,650,000 (13 WIP)	$4,500,000 (18 WIP)	$2,699,863 (18 WIP)	$4,500,000 (20 WIP)	$3,500,000 (16)	$3,500,000 (16)
Construction — increase, expand, and/or improve career pathways programs for the construction industry sector by developing model programs, articulating course work, aligning curriculum, and developing advisory groups to link education with business, industry, and labor.			$1,500,000 (3)					
Career Advancement Academies — First year was a planning grant. Model projects in major population centers to help most in need 18–30 years olds return to school and combine learning with career opportunities in partnership with industry.		$150,000 (3)	$5,000,000 (3)	$5,000,000 (3)	$4,137,931 (3)	$5,000,000 (4)	$2,300,000 (4)	$2,300,000 (4)

Note: Unless CDE is included in parentheses in the first column (denoting that the California Department of Education is the grant administrator), grant categories are administered by the California Community Colleges Chancellor's Office.

* Starting in the 2011/12 funding year, supplemental grants were no longer separately offered. Instead, applicants could apply for additional funding when applying for a Community Collaborative grant.

INITIATIVE GRANT TYPES AND FUNDING BY YEAR *(CONTINUED)*

Grant Category	2005/06 (# grantees)	2006/07 (# grantees)	2007/08 (# grantees)	2008/09 (# grantees)	2009/10 (# grantees)	2010/11 (# grantees)	2011/12 (# grantees)	2012/13 (# grantees)
Coordinated Regional/Local Implementation								
CA Partnerships Academies — Structured as a school within a school, academies create a close, family-like atmosphere in which academic and career and technical education are integrated, and viable business and postsecondary partnerships are established. (CDE)			$3,766,000 (49)	$5,064,000 (87)	$7,706,667 (147)	$11,316,000 (184)	$8,977,838 (181)	$8,977,838 (172)
Health Occupations Preparation and Education — support community colleges to create a learning center focused on careers in a variety of allied health programs, provide ongoing support services for students currently enrolled in allied health programs, and identify and engage partner high school students to explore careers in healthcare.		$998,962 (3)	$1,000,000 (3)	$1,000,000 (3)	$827,586 (3)	$827,586 (3)	$250,000 (1)	
Health Science Capacity Building — build quality programs statewide that will prepare students for jobs or for postsecondary options in the health science arena, with the end goal of ensuring that the state has an adequate number of qualified workers to meet the critical worker shortages in the health-care industry. (CDE)			$2,500,000 (19)	$2,500,000 (41)	$2,500,000 (46)	$2,500,000 (37)	$2,022,254 (34)	$2,022,254 (39)
Youth Entrepreneurship Program — Economic and workforce development, Small Business Development and International Trade Development Centers will provide statewide information/education to high school and community college young adults to help them understand entrepreneurship in the global environment as a viable career pathway.			$2,000,000 (33)	$2,000,000 (38)	$1,655,172 (36)	$2,000,000 (15)	$1,560,000 (14)	$1,560,000 (9)
Teacher Preparation Pipeline — align career and technical education curriculum and student support services so as to establish pipelines for students interested in teaching in today's CTE fields.		$4,100,000 (15)	$1,600,000 (9)	$2,000,000 (9)	$1,655,175 (10)	$2,197,934 (10)	$1,200,000 (10)	$1,200,000 (10)
Middle Grades Career Technical Education and Career Pathways — provide middle grades students with career technical education and career exploration learning experiences							$1,800,000 (13)	

Note: Unless CDE is included in parentheses in the first column (denoting that the California Department of Education is the grant administrator), grant categories are administered by the California Community Colleges Chancellor's Office.

INITIATIVE GRANT TYPES AND FUNDING BY YEAR *(CONTINUED)*

Grant Category	2005/06 (# grantees)	2006/07 (# grantees)	2007/08 (# grantees)	2008/09 (# grantees)	2009/10 (# grantees)	2010/11 (# grantees)	2011/12 (# grantees)	2012/13 (# grantees)
Infrastructure								
Statewide Career Pathways — established an infrastructure and processes for the articulation of secondary (high schools and Regional Occupational Centers and Programs) CTE classes with community college courses.	$4,000,000 (1)			$1,500,000 (1)	$1,241,379 (1)	$2,000,000 (1)	$1,500,000 (1)	$1,500,000 (1)
Technical Assistance Center	$565,909 (1)							
Articulation with Four-Year Institutions — CTE articulation between two- and four-year institutions of higher education and related issues, such as transferability of CTE course work, portability of credits recognized by four-year institutions, and relative degree of consistency in prerequisite requirements and credit recognized for community college course work.		$750,000 (1)						
Evaluation — provide information about the ongoing achievement of objectives and activities (formative); gather information about the final outcomes or products of the projects (summative); determine ongoing technical assistance needs; and identify promising practices.		$574,028 (1)		$1,000,000 (1)	$935,586 (1)	$1,600,000 (1)	$1,000,000 (1)	$1,000,000 (1)
CTE Liaison, Initiative Hubs — to build a statewide system to link businesses and economic development work with career technical education efforts. One center in eight of the ten initiatives will connect on-going work on new certificates, enrollments and enhancements to career technical education.			$1,000,000 (8)	$1,500,000 (8)	$1,241,379 (8)	$1,500,000 (8)	$1,200,000 (8)	$1,200,000 (8)
CTE Online — expand computerized, web-based systems for CTE teachers in all 15 sectors to improve course content and lesson plan information, including integrating academic and CTE curriculum, into the menu-driven system. (CDE)			$500,000 (1)	$1,000,000 (1)	$1,000,000 (1)	$1,000,000 (1)	$849,148 (1)	$849,148 (1)
"a–g" Guide Projects — develops industry specific model courses for statewide use that meet "a–g" requirements for all 15 sectors and 58 pathways. (CDE)			$150,000 (1)	$550,000 (1)	$450,000 (1)	$600,000 (1)	$600,000 (1)	$600,000 (1)

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INITIATIVE GRANT TYPES AND FUNDING BY YEAR *(CONTINUED)*

Grant Category	2005/06 (# grantees)	2006/07 (# grantees)	2007/08 (# grantees)	2008/09 (# grantees)	2009/10 (# grantees)	2010/11 (# grantees)	2011/12 (# grantees)	2012/13 (# grantees)
Infrastructure								
CTE Student Organizations — subject-based extracurricular activities for secondary/postsecondary CTE students to reinforce leadership and technical skills, deepen understanding of related industries, and facilitate internships and subsequent employment. (CDE)				$1,333,333 (6)	$1,333,333 (6)	$1,333,333 (6)	$1,109,869 (6)	$1,109,869 (6)
Distance Learning — develop, implement, distribute, and support participation in CTE courses at a distance for residents in areas of rural California. (CDE)				$500,000 (10)	$500,000 (8)	$750,000 (8)	$457,070 (6)	
New Teacher Workshop — provide sector-specific instruction, particularly for those secondary and community college teachers without formal teacher training, on classroom management, instructional strategies, etc. (CDE)				$1,150,000 (1)	$1,250,000 (1)	$1,750,000 (1)	$1,043,821 (1)	$1,043,821 (1)
Career Development and Work-based Learning Linkages to Professional Organizations — expand, identify, and provide strong career development and work-based learning opportunities.				$496,667 (1)	$551,724 (1)	$666,667 (1)	$500,419 (1)	$666,667 (1)
Leadership Development — conduct a variety of strategies based on effective models to develop future CTE leaders and the community college and secondary systems. (CDE)				$300,000 (1)	$300,000 (1)	$300,000 (1)	$300,000 (1)	$300,000 (1)
Curriculum Planning for Emerging Industries — builds on four recent future-looking studies about the emerging industries of nanotechnologies, biotechnologies, digital manufacturing and intelligent transportation, and focuses on developing model curricula for instruction in those industries.				$300,000 (4)		$300,000 (4)	$200,000 (3)	

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