Career Technical Education Pathways Initiative

This fourth annual report highlights the progress toward creating a system of pathways that prepare students with rigorous academics and career skills.

California Community Colleges Chancellor’s Office
Jack Scott, Chancellor

Prepared by the Division of Economic Development and Workforce Preparation and the Office of Communications

DECEMBER 2010
January 6, 2011

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

Dear Governor Brown:

I am pleased to present to you the Chancellor’s Office 2009/10 report on the Career Technical Education Pathways Initiative.

The Career Technical Education Pathways Initiative prepares students to succeed in the workforce through newly formed partnerships between the 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 contact Erik Skinner, vice chancellor for programs, at (916) 323-7007 or eskinner@cccco.edu.

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

Sincerely,

Jack Scott, Ph.D  
Chancellor
Executive Summary

The California Community Colleges serve 2.7 million students and is the largest system of higher education in the nation. The state’s 112 colleges provide workforce training, teach basic math and English, and prepare students for transfer to four-year universities.

Similarly, the California Department of Education (CDE) serves 6.2 million students in 1,043 school districts, comprising the nation’s largest K-12 education system. An explicit CDE priority is to increase the number of high school graduates who are ready for college and career.

Given their interrelated missions, the California Community Colleges Chancellor’s Office and CDE have joined together to develop pathways that provide continuity for career technical education (CTE) from the middle grades through community college and beyond. This system will equip students with the knowledge and capabilities they need for careers in the changing California workforce, careers that require high-level skills and pay high wages.

This partnership has had a champion in Governor Arnold Schwarzenegger. Long a supporter of CTE, he launched “Improving and Strengthening Career Technical Education.” This Initiative grew from and bolstered the growing momentum to systematically strengthen California students’ academic and career readiness. The Governor’s Initiative became law in 2005 when he signed Senate Bill 70, authored by Jack Scott. Also called the CTE Pathways Initiative, SB 70 provides funding to be disbursed by the Chancellor’s Office and CDE to community colleges and K-12 to accomplish the goals of the legislation.
The Chancellor’s Office, in consultation with CDE, has primary responsibility for administering the Initiative. The two entities identified the following strategies to guide grant-making and achieve the CTE Pathways goals:

- **Increase career exploration for middle school and high school students** through a variety of strategies, including strengthening career guidance, developing individual college and career plans and connecting with industry and business to offer intern, apprenticeship, and work-based learning opportunities.

- **Create seamless pathways** for students in career technical education by aligning K–12 CTE, including Regional Occupational Centers and Programs (ROCPs), with California’s community colleges and four-year institutions.

- **Promote programs and partnerships with business and industry** that build CTE capacity and improve CTE delivery across school and college settings.

In consultation with CDE, the Chancellor’s Office compiled this report, based on findings from its ongoing statewide evaluation of the CTE Pathways Initiative. This report meets the annual statutory reporting requirements for 2009/10. It includes key findings and recommendations to further the Initiative’s development and improve its implementation.

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1 California’s 74 Regional Occupational Centers and Programs (ROCPs) have been part of California’s educational system for over 35 years, providing high school students 16 years of age and older, as well as adult students, with career technical education to prepare students to enter the workforce with skills and competencies to be successful; pursue advanced training in postsecondary educational institutions; or upgrade existing skills and knowledge. Students receive training at a variety of venues from regular classrooms on high school campuses to actual business and industry facilities, such as automotive dealerships and hospitals. In most ROCPs, courses are offered during the regular school day throughout the school year, in the late afternoon and evening and sometimes during the summer months.
Overview: A Statewide Pathways Vision

The vision, goals and strategies for achieving academic and career readiness for all California students is captured in a state plan for CTE. Its mission is to provide “industry-linked programs and services that enable all individuals to reach their career goals, in order to achieve economic self-sufficiency, compete in the global marketplace and contribute to California’s economic prosperity.”² CDE’s *Multiple Pathways to Student Success* report describes attaining this goal by way of pathways that “effectively integrate both academic and career technical content, problem-based instructional strategies, work-based learning opportunities and support services.”³

State Superintendent Jack O’Connell highlighted the CDE report’s recognition that such an approach can offer “an exciting opportunity to transform the high school experience and offer students more academic rigor, curriculum that is relevant to the real world and relationships with caring adults, leading to more students who are college- and career-ready at the end of high school.”⁴

**CTE Pathways Initiative approach.** In keeping with this vision, work has focused on supporting the development of local/regional CTE pathway systems and integrating those into a statewide network (see Components of the CTE Pathways Strategy, page 5). Using Initiative funds, the approach has been to award grants to those moving forward in specified categories to seed, strengthen and otherwise support local/regional partnerships.

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Grants have been awarded in two broad categories over the past five years:

- **Coordinated regional or local implementation grants** that support linkages as well as capacity building between and among middle schools, high schools, ROCPs, community colleges, industry and other organizations to develop coordinated programs directly serving students, faculty and/or other stakeholders.

- **Statewide infrastructure grants** that strengthen California’s CTE infrastructure and support capacity building, including research and development.

Funding to support grant making totaled $20 million in 2005, $20 million in 2006, $42 million in 2007, $58 million in 2008 and $48 million in 2009 for an overall total of approximately $188 million as of June 30, 2010. All regions of the state have received CTE Pathways grant support, with community college districts forming partnerships with K-12 districts, business/industry and other organizations or higher education institutions. (See Appendix A, Tables A1 and A2 for grant subcategories, amounts and number of grantees by year. Methodology for collecting data and data sources and time period covered are presented in Appendix B.)

Based on available data as of June 2010, this funding had helped create or enhance at least:

- 5,134 CTE partner organizations\(^5\) among diverse stakeholders, including all community college districts, many K-12 schools and districts, ROCPs, employers/industry, local workforce investment boards, Employment Development Department, chambers of commerce and adult education;
- 342,957 skills training or upgrades to students;
- 16,806 teachers, counselors or staff participated in trainings or externships.

Table 1, following page 6, presents the numbers of partnerships, students and faculty served.

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\(^5\) Grantees were asked to list their partners on data collection instruments. However, it is at the grantees’ discretion whom they considered to be partners. In many instances, partners include relationships established or enhanced as a result of grant funds with educational institutions such as K-12, community colleges, adult education, ROCPs in order to work together to build CTE pathways. Partners also included local and regional employers in business and industry as well as local workforce investment boards (WIBs), economic and workforce development agencies, labor unions, chambers of commerce and other community-based organizations.
COMPONENTS OF THE CTE PATHWAYS STRATEGY

Over the long-term, the CTE strategy is to have a statewide, regionally-based infrastructure that supports a system of pathways to prepare students with rigorous academics as well as career skills. Key system components in each region are:

- **A partnership of leaders** from K-12, community colleges, other institutions of higher education (IHEs), intermediate education and workforce agencies and regional business and industry players. The partnership articulates a vision, agreed-upon goals and a long-range plan that evolves over time.

- **Alignment of integrated curriculum within and across systems** for college and career readiness. The partnership’s collaborators work to develop a curriculum for each region’s identified pathways that integrates CTE skills and provides rigorous, “a-g” fulfilling academics in high school; leads to certification and/or an associate degree in a specified career field in community college; and positions students for four-year degree programs and/or well-paying, in-demand careers.

- **Capacity building, policy support and structural integration within systems.**
  - Middle grade curriculum begins to address high school pathways. Information is provided to inform and excite students and their families about pathways and choices and engage them in developing plans that will guide their choices.
  - High school teachers prepare to teach rigorous academics as well as career and technical skills. This requires professional development for teachers, involvement of industry professionals and IHE faculty in classrooms and opportunities for teachers to gain up-to-date experience in workplaces and network with their professional peers in career fields. School and district leaders enable the pathways approach to high school learning by fostering needed structural and policy changes.
  - Community colleges benefit from exchanges that bring industry experts to campus to work directly with students and offer faculty fellowships or externships for rotating from campus to workplaces.

- **Statewide coordination, support and networking.** A statewide system should have a center to provide regions with professional development and capacity building, technical assistance, models, research findings and promising practices. In short, a center would create multi-faceted communities of practice.
<table>
<thead>
<tr>
<th>Building Integrated and Articulated Pathways</th>
<th>Prepare and Support Pathway Teachers and Counselors</th>
<th>Strategically Engage Business/Industry and Community Partners</th>
<th>Offer a Comprehensive Array of Career Exploration Experiences</th>
<th>Develop Innovative Program Models that Address Diverse Student Needs</th>
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<tbody>
<tr>
<td><strong>CTE Community Collaboratives, Supplemental, &amp; Workforce Innovation Partnerships</strong></td>
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<td>28,597 students in 965 courses. 197 new or revised articulation agreements.</td>
<td>653 staff participated in externships. 11,622 staff involved in an average of 23 hours of professional development.</td>
<td>1,876 partnerships. 5,247 students placed in internships or apprenticeships.</td>
<td>165,802 students involved in CTE activities.</td>
<td>California Partnership Academies</td>
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<td>14,499 students served. 1,582 partnerships.</td>
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<td><strong>Construction</strong></td>
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<td>2,533 students in 102 courses.</td>
<td>25 staff participated in externships.</td>
<td>120 partnerships. 333 students placed in internships or apprenticeships.</td>
<td>1,948 students involved in CTE activities.</td>
<td>Career Advancement Academies</td>
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<td>5,415 students served. 150 partnerships.</td>
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<td><strong>Quick Start Partnership</strong></td>
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<td>72,963 students served. 412 partnerships.</td>
<td>“a-g” Guide Project (UCCI) 38 high school teachers attended training in curriculum integration.</td>
<td>CTE Liaison Hubs 3,714 served via 946 technical assistance, trainings, or classes. 1,745 reached by marketing.</td>
<td>Career Exploration 17,450 students served.</td>
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<td><strong>Strengthening CTE</strong></td>
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<td>8,903 students served. 213 partnerships.</td>
<td>New Teacher Workshops CTE Teach 46 Certified Project Leads (Mentors). 5,734 hours of training. (Over 580 teachers &amp; 19 administrators trained.)</td>
<td></td>
<td>Health Science Capacity Building 2,578 students served. Of those, 1,275 involved in workplace learning experiences.</td>
<td>Distance Learning 22 online courses revised or developed. 401 students served.</td>
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<td><strong>Health Occupations Preparation and Education</strong></td>
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<td>4,151 students served. 45 partnerships.</td>
<td>Teacher Preparation Pipeline 1,174 students served.</td>
<td>Career Development and Work-based Learning Linkages to Professional Organizations First event took place October 2010.</td>
<td>CTE Student Organizations 3.1% increase in membership between 07/08 &amp; 08/09, compared to approx. 1% increase during 3 prior years.</td>
<td>Curriculum Planning for Emerging Industries 6 courses in new technologies developed.</td>
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<tr>
<td><strong>Statewide Career Pathways</strong></td>
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<tr>
<td>&gt;1,100 articulation agreements.</td>
<td>Leadership Development Will take place in 2011.</td>
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<td><strong>CTE Online</strong></td>
<td>Faculty/Counselor Work Experience 109 staff served.</td>
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<td>Young Entrepreneurs Project 10,963 students served. 736 partnerships.</td>
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<td>9 trainings provided. Close to 4,500 accessed website.</td>
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**Evaluation**
Data are presented in this report.

TOTAL STUDENTS SERVED: 342,957
TOTAL STAFF SERVED: 16,806
TOTAL NUMBER OF PARTNERSHIPS: 5,134

**SOURCE:** Available data as of June 2010 from various data collection tools. In most cases, data are cumulative through the duration of the grant and may include duplicates. Further detail regarding data sources and periods covered per grant type are in Appendices A and B.

**Note:** Number of partnerships refer to the number of partner organizations, not individuals.

* HOPE grantees provided outreach information to 14,713 secondary and post-secondary students.

Information on 2008/09 grants included in this report where data are available for individuals served or courses developed.

Information on grants that have ended.
Key Findings

The Initiative’s evaluators looked across the state to examine how regional partnerships and other grantees were using the funding in each grant category to achieve the Initiative’s goals. Their examination led to two overall findings:

1. Grantees in a number of places statewide are successfully using Initiative funds to pursue cross-system strategies. Though approaches vary, the study identified three broad indicators of progress. Grantee efforts show that funding benefits:
   - More students, starting in middle school, who are enabled to explore or pursue career pathways.
   - More teachers, who need professional development to prepare for both academic and evolving industry/workforce demands.
   - More partnerships, strengthening education systems and industry to enable and sustain CTE pathways.

2. The investment is most effective when the funding supports the work of established, well-coordinated regional efforts. Predictably, the impact of the investment seems most apparent in places where already established partnerships have mapped a comprehensive approach and are measuring and monitoring their own progress toward well-articulated goals. Such partnerships have strategically applied Initiative funds to efforts that further the implementation of their vision and plans. As one grantee put it, “We’ve got the engine, this is the gasoline.”

Where no partnership exists, the impact of the CTE Pathways investment is less clear. There are cases where the funds are providing a vital means to create a catalyst—e.g., a demonstration project whose success may trigger needed excitement and create a momentum that brings players together to develop that region’s foundational partnership. But lacking connection to ready guidance, models, expertise, training and other needed support, some grantees become bogged down and frustrated by barriers they feel unable to surmount.

In the pages that follow, this report first highlights four examples of regional partnerships that have used Initiative funding to further their clearly spelled out implementation plans or to spur development of the partnership. These examples
illustrate how orchestrating the same component parts (see page 5), Components of the CTE Pathways Strategy can require markedly different approaches, depending on local context. By illuminating the complex dynamics required for pathways-building success, these examples also show how daunting the task can be for isolated strivers in regions just getting underway.

Next, the report highlights investments that are helping to build a statewide pathways infrastructure. These include efforts to:

- build integrated and articulated pathways;
- help prepare and support pathways teachers;
- strategically engage business/industry and community partners;
- offer a comprehensive array of career exploration experiences; and
- develop innovative program models that address diverse student needs.
Building Blocks of a Statewide Pathways Infrastructure

CTE Community Collaboratives, Supplemental & Workforce Innovation Partnerships

Cross Sector Partnerships: Creating Regional Pathways. Throughout every region of the state, established and emerging partnerships are developing roadmaps for student pathways, from middle school through community college and some institutions of higher education (IHEs). These partnerships are delineating what each player (K-12, ROCP, community college, other IHEs, business/industry) needs to put in place, within what timelines, under what agreed-upon standards and with what indicators of success. Many of these partnerships have gained support from the CTE Pathways Initiative and are leveraging those funds with other resources to further their goals.

Several examples of major partnerships in Long Beach, San Diego County, Santa Cruz County and Tulare County are highlighted. The Long Beach partnership is a story of city-wide collaboration, involving a single K-12 system, one community college, one university and a diverse industry sector in a city with a track record of forward-thinking leadership. The others have different kinds of collaborative issues, given their less defined geographic boundaries, more than one K-12 or high school district, multiple community colleges and/or other institutions of higher education and/or a less diverse industry base.

Long Beach. The Long Beach partnership is widely recognized as a leader in enacting a systemic, coordinated, cross-system effort to create career and college pathways for every student.

Fifteen years ago, Long Beach Unified School District (LUBSD), Long Beach City College (LBCC) and California State University at Long Beach (CSULB) formed a seamless education partnership that has achieved much acclaim for its success in improving student achievement and teacher quality. It aligns academic standards, teaching methods and student assessments from preschool through graduate school. In 2007, LUBSD’s Board of Education unanimously approved expanding the partnership’s efforts by adopting the Academic and Career Success for All initiative, whose goal is to increase the college and career readiness of all students.
Specifically, enhancements to the partnership include:

- Educating students and parents about the “a-g” college entrance requirements\(^6\) and career options beginning in sixth grade.
- Collaborating with LBCC and CSULB to establish criteria for guaranteed college admission, helping students meet those criteria, identifying various college pathways for students and providing support to students during college.
- Aligning the higher education initiatives with career technical education to make certain that students have as many options as possible after they graduate from high school.\(^7\)

The Long Beach partnership has used its CTE Pathways Initiative funds in a number of ways to support progress toward its vision. These include:

- At the Architecture, Construction and Engineering (ACE) Academy of Long Beach, grant funds were used to successfully implement several career exploration activities, including 10 student internships with local businesses.

\[\text{An articulation agreement for the 211 Carpentry 1 course was completed and signed by the LBCC dean of admissions. Using Initiative funds, under the name of the Neighborhood Improvement Construction and Employment (NICE) Project, LBCC and LBUSD faculty formed a joint task force to examine how best to align LBCC courses to articulate with the LBUSD curriculum. The result was the establishment of a sequence of courses in carpentry, architecture/drafting, electrical, heating ventilation and air conditioning and sheet metal.}\]

- A related accomplishment was construction of the NICE Green Laboratory on the LBCC campus. Using funds from the Initiative, students from the trades

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\(^6\) To be eligible for admissions to University of California (UC) and California State University (CSU) four-year institutions, high school students must take a minimum of 15 academic courses, commonly called the “a-g” subjects. The intent of the “a-g” courses approval process is to ensure a course has met the requirements university faculty specified. Every comprehensive California public high school has a UC-approved course list, which students complete to be eligible for admission to UC/CSU.

\(^7\) For more information, go to [www.lbusu.k12.ca.us/Main_Offices/Superintendent/Success_Initiative](http://www.lbusu.k12.ca.us/Main_Offices/Superintendent/Success_Initiative)
and the ACE program went to work on a model home built by previous LBCC carpentry students and designed and infused green elements into it. Used for teaching purposes, the lab is currently equipped with solar lighting and energy efficient air conditioning and heating and energy efficient window treatments. Moreover, volunteers from the LBCC horticulture department created a green-based landscape of flowers and trees around it.

**Grossmont and Southwestern Community Colleges (San Diego).** In 2006, the Grossmont-Cuyamaca Community College District (GCCCD) began building the Regional Allied Health and Science Initiative (RAHSI), a collaborative, countywide effort involving secondary and postsecondary education, the health care industry and community partners across San Diego County. The RAHSI network focuses on an urgent problem: throughout the region, high-paying health care job openings routinely outnumber qualified professionals to fill them.

Analyzing the situation, the RAHSI partners zeroed in on key factors they needed to address collaboratively: lack of health care career awareness among middle and high school students, poor student performance in college science courses and high attrition rates in postsecondary health training programs.

By 2008, GCCCD joined forces with Southwestern Community College to provide more extensive support to eastern and southern San Diego County. Their approach has been to create a comprehensive health pathways system that hinges on redesigning high school science curricula to incorporate medical and health care applications, career exploration activities, state science standards and health industry skills. Integrating career-technical coursework and traditional academics, RAHSI has now developed new CTE models that are meeting the needs of all participants and improving the pipeline of students entering allied health career training programs throughout San Diego County.

Since its inception, RAHSI has grown so that it now extends across all county regions. Its partners include more than 20 high schools in nine districts, one middle school, 11 community college campuses across five districts, UC San Diego and CSU San Diego, the California Community Colleges Region 10 Health Occupations Resource Center, San Diego County Office of Education, ROCPs, the San Diego Border Area...
Health Education Center, the San Diego Workforce Partnership, Harder + Company Community Research, San Diego Science Alliance, Science Bridge, more than nine direct health provider systems, the San Diego County Health and Human Services Agency, the San Diego Division of the American Heart Association, the San Diego Association for Health Care Recruitment, the Hospital Association of San Diego and Imperial Counties, the Grossmont Health Care District and the Girard Foundation.

RAHSI received its initial funding in 2006 through the SB 70 Quick Start Partnerships in Allied Health Occupations Program. It continues operating with CTE Community Collaborative, Supplemental and Workforce Innovation Partnership funding, leveraging these resources with funding from Tech Prep, US Department of Labor American Recovery and Reinvestment Act grants and local foundations and health care district grants. Key accomplishments include:

- Development and implementation of two out of five planned pathway courses in the RAHSI sequence (standards-based medical biology and medical chemistry). Also underway are development of courses in medical anatomy and physiology, medical microbiology and medical mathematics. Partners commend the RAHSI team for providing robust curricula as well as technical assistance for implementation.

- Increased efforts to create partnerships with middle schools. In the 2010/11 school year, three middle schools will implement pathway prep programs, using 7th and 8th grade science curricula developed by RAHSI-involved science teachers, with health and medical applications that link to high school health pathway science coursework.

- Placement of Health Professions Outreach Coordinators at several community college sites to provide tailored student advising, guidance and orientation services related to health care fields of study offered at those campuses.

- Significant increase in the number of industry partners and development of a toolkit for organizations on offering internships. Industry partners report being very pleased not only with the toolkit, but also with the internship process and the participating RAHSI students.

- Creation and expansion of outreach efforts, notably the RAHSI website (www.RAHSI.org), which provides updated information for pathway partners and the public. RAHSI staff also present at statewide education discussion meetings and are responsive to numerous groups interested in replicating this model outside the San Diego area.
Evidence of the program’s impact is positive and encouraging. Indicators include:

- Most students enrolled in medical biology expressed an interest in attending a four-year university and pursuing a health career. Participating students tend to do better on statewide tests. As illustrated in the tables in Appendix C, RAHSI pathway students are consistently scoring higher than other students at their schools on the statewide biology test. For three of the four schools included as a sample of the overall network, pathway students’ mean California Standards Tests (CST) scores are also higher than those of other students in their district and statewide.

**Santa Cruz County Community Collaborative—Cabrillo College.** Santa Cruz County has struggled with a disparity between employer needs for skilled workers and the capacity of the local education pipeline to adequately meet those workforce needs. Since the mid-1990s, when funding from the federal School-to-Career Initiative first supported joint action, an evolving collaborative of educational institutions and local business and industry partners has worked to address the problem.

The original partnership established six CTE pathways that, to a greater or lesser degree, align and articulate high school and Cabrillo Community College courses:

- in agriculture and natural resources;
- business, marketing and information;
- arts and communication;
- home, health and recreation;
- social, human and governmental service; and
- engineering and industrial technology.

Though School-to-Career funding ended shortly after this accomplishment, the partnership remained committed to the work.

Led by Cabrillo Community College, a collaborative including the Regional Occupational Center and Program (ROCP); Santa Cruz and Watsonville/Aptos Adult School; local industry partners; local school districts; Your Future is Our Business, an education/business intermediary; and the county office of education was formed. It

Cabrillo College received several CTE Pathways Initiative grants, including grants for Quick Start (multimedia entertainment); Strengthening CTE (industrial technology and public safety); Career Exploration; Teacher Preparation Pipeline; and the Young Entrepreneurs Project. Each has helped further the pathways development and capacity-building goals of Cabrillo and its partners.
gained support from the federal Tech Prep program. Keeping the six general career pathways, it incorporated a specific focus on health careers, digital media, business and marketing. Working with the county, the Consortium also established four California Partnership Academies (CPAs)—state-supported schools-within-schools, grades 10-12, that integrate academic and career technical education. (For more on CPAs, see page 36). The CPAs focus on video, health, aquaculture and business.

When leaders from the health care community approached Cabrillo looking for solutions to a countywide nursing shortage, the college joined with all the county’s major health care employers including hospitals, the county health department, the larger long-term care facilities, visiting nurses, home health care agencies and several HMOs to form another collaborative, the Health Careers Partnership (HCP), in 2001.

That partnership has since restructured Cabrillo’s nursing program. Changes include increasing cohorts (from one to two cohorts per year) and instituting biannual graduation dates. To sustain the larger program, partner hospitals and the county contribute $80,000 each year to pay for nursing faculty. The HCP also created a pathway into the allied health programs for bilingual, bicultural students to meet employers’ needs to develop a workforce that reflected the community’s changing demographics.

During the 2006/07 school year, countywide partners who had worked together for more than a decade on career pathways and Tech Prep realigned their efforts and expanded their vision to create the CTE Community Collaborative. They drafted a plan, *Building Brighter Futures 1.0, A Career and Technical Education (CTE) Capacity Building Plan for Santa Cruz County*. Formally adopted by Cabrillo College, the county office of education and four main high school/middle school district school boards, the plan has resulted in renewed focus and is an immediate goal of building a better-coordinated, intersegmental system. It also provides a framework within which additional education/business partnerships can be developed, as regional workforce and educational needs change. (See Green Career Pathways, page 16.)

For the current year, the collaborative has created committees to accomplish work in five areas that cut across all pathways: data, programs of study, resource development, CTE awareness and marketing and professional development.

For strengthening the career development system, Cabrillo College and its partners are focusing on organizational development. Like a number of other community
colleges, Cabrillo finds itself leading multiple collaborative efforts focused on student academic success and workforce development. As workforce development rises on the national agenda, collaboration across entities will be increasingly important.

To address organizational development, Cabrillo College and its partners focus on:

- Mapping the workforce development system so that it is visible to all players as a system, rather than perceived as fragmented pieces.
- Improving measurement and evaluation by collecting and synthesizing the right data and using it to adjust programs and strategies. Link this work to the system map so that system performance is visible.
- Identifying structures and practices that enable a meta-organization to be fully effective.
- Identifying and securing funding to support a well-qualified person whose primary responsibility is supporting the partnership.

Cabrillo College has received several CTE Pathways Initiative grants, including grants for:

- Quick Start (multimedia/entertainment)
- Strengthening CTE (industrial technology and public safety)
- Career Exploration
- Teacher Preparation Pipeline
- Young Entrepreneurs Project

Each has helped further the pathways development and capacity-building goals of Cabrillo and its partners.

**Professional Development.** The Consortium’s professional development committee used eight summer mini-grants to support curriculum and resource development involving middle and high school faculty, counselors, and students. College faculty also participated in regional professional development activities, including alternative energy training, via the Bay Area Community College Consortium.

Moreover, in December 2009, the Consortium used Initiative funds to sponsor the first annual Green Conference, attended by over 130 college, high school and middle school teachers, counselors, and administrators. Cabrillo has received federal funds to build a LEED Platinum Technology Center near its south county campus in Watsonville and with its Construction and Energy Management Program developing
alternative energy courses with the ultimate goal of offering a degree in the field. The conference provided participants with up-to-date information from a Centers of Excellence director, PG&E personnel and a collaborative of Green Career Pathways consultants hired by pooling funding from public and private sources, including CTE Pathways funds.

The Green Career Pathways consultants conduct local and regional labor market scans to determine the needs for “green collar” jobs. These scans can be translated in curricula for integrated courses, and help develop a pipeline of well-prepared workers for emerging jobs.

**Strengthening CTE.** Among activities aimed at increasing countywide understanding of CTE among students and their parents, the Consortium:

- Designed and developed the Career a Month program as well as a curriculum to teach life and work skills and disseminated these, with training, to ROCP counselors, the eight comprehensive high schools, two continuation schools, 16 alternative education school sites, Cabrillo College’s counseling centers and most of the 13 middle school sites.

- Participated in an annual college and career night for more than 4,000 middle and high school students and their parents.

- Supports implementation of Career Locker, a work-based learning software program for career assessment at various middle school and high school sites. About 4,600 students have accounts and have used them repeatedly to do career exploration and maintain an electronic career-oriented portfolio (resume, research, letters of recommendation). Information students collect in their accounts during middle school can be transferred to high schools. Grant funds pay the annual cost with schools contributing to additional fees.

**Tulare County—College of the Sequoias.** A longstanding group of partners works together in Tulare County to match educational pathways to changing workforce needs. Largely due to the seasonal nature of many agriculture-related jobs, this Central Valley county has an unemployment rate above the state’s average. To help address this problem, the partners are aligning their pathways efforts with needs in industry sectors identified as growing, including advanced manufacturing, health and agriculture—but emphasizing opportunities for entrepreneurship, green and environmental technologies in each of these sectors.
The hub of this partnership is the College of the Sequoias (COS) Tech Prep Consortium, whose members include the Tulare County Office of Education (TCOE), the Tulare County Workforce Investment Board (WIB) and local industry and education partners. Established in 1992 in response to federal legislation, the Consortium now also implements the CTE Community Collaborative partnership funded by the Initiative.

The Consortium meets monthly with representatives from 22 high schools in Tulare and Kings counties to work on pathway-related issues, including curriculum integration and articulation across educational levels and institutions, as well as manage their collaborative efforts. Its mission is to focus on meeting high academic standards and provide the best teaching and learning experiences to prepare students for life-long learning and for the real world of work.

An important piece of this work is ensuring widespread awareness of changing workforce needs and how the Consortium partners are helping students prepare to meet them. One mechanism for broad community awareness is the annual Giant Tech Prep Expo described in the next section.

The College of the Sequoias has been involved in implementing several CTE Pathways Initiative grants—Quick Start Partnership in Advanced Transportation Technologies; Career Exploration for Middle School; Faculty and Counselor Work Experience; Strengthening CTE; Construction; and CTE Community Collaborative grants.

- **Teacher and counselor professional development.** Four consortium meetings were coordinated with secondary and postsecondary instructors to articulate/update courses using templates from Statewide Career Pathways Project (see page 21.)

- **Middle school exploration opportunities.** Two COOL Nights were held in October 2009—one in Visalia, the other in Porterville, where middle school students and their parents explored high school, college and career opportunities.
• **14th Annual Giant Tech Prep EXPO 2010.** Overseen by the COS Tech Prep coordinator, this March event held at COS drew approximately 875 high school students (age 16 and older) from 23 schools in Tulare and Kings counties. Students competed for certificates and cash prizes in 35 different events (including construction). In addition, approximately 200 students from six middle schools participated in career exploration activities. Event organizers included: COS, Kings and Tulare county offices of education, Kings ROCP, Tulare County Organization for Vocational Education, Tulare County School-to-Career, Visalia Unified School District, West Hills Tech Prep Consortium and College of the Sequoias Tech Prep Consortium.

• **Integrated WIA Youth Program.** The project coordinated the launch of common workforce readiness standards and introduced careers pathway recruitment strategies to a stimulus-sponsored summer youth program serving 1,830 students. These efforts have been included in year round programming and will eventually be connected to other skills certification efforts.

• **Providing WorkKeys profiles and assessments.** Developed by ACT, Inc., the WorkKeys assessment system includes job profiling—which helps employers determine basic skills required for individual jobs and occupational careers—and assessment, which allows individuals to measure their capability in basic skills that apply to workplace situations. COS provided WorkKeys assessments for over 150 students enrolled in industrial maintenance, welding, automotive and environmental control technology. To help students succeed, COS is also working with the WIBs in Tulare and Kings counties to create a WorkKeys assessment and training center as well as offer the training online to help students in a variety of CTE programs and locations improve their scores.
Building Integrated and Articulated Pathways

Building a statewide pathways system calls for creating an infrastructure to provide support to regional partnership efforts such as those just described. Pieces of that infrastructure are being put in place. They include statewide initiatives that help regional grantees to build integrated and articulated courses that result in pathways, prepare and support pathways teachers, strategically engage business and industry partners, offer a comprehensive array of career exploration experiences, and develop innovative models that address diverse student needs.

Each pathway requires a curriculum that integrates rigor across multiple academic subjects with career and technical skills as well as real world experiences in line with student interests. The curriculum also needs to be articulated, meaning that content at each level feeds into what’s taught at the next level.

For example, the curriculum for an engineering pathway may combine mathematics and science, including computer-aided engineering design and physics, with craftsmanship, including fine arts and sculpture as well as skills such as welding. Students may work in teams, applying scientific methods to problem solving, to produce real world products, such as a bridge that holds a certain amount of weight, a plane that can actually fly or a robot that can navigate a maze. Along the way, they learn to communicate their design ideas by developing and delivering presentations. They may do an internship with a local engineering company and courses in the pathway may articulate to a local community college.

Such a pathway requires a curriculum that takes a project - or problem-based approach - and incorporates rigorous learning in mathematics, science and other “a-g” content areas with skill development and field experience over two or three high school years. Ideally, student interest would be triggered by pre-engineering coursework or activities in middle school that feed into the high school curriculum, which then feeds into postsecondary degree programs.

“a-g” Guide Project: UC Curriculum Integration (UCCI) Institute. Developing integrated curricula for each locale’s pathway priorities is a major challenge across the state. A prominent source of support for accomplishing this work is the University of California, which has used CTE Pathways grant funding to develop the
UCCI Institute (www.ucop.edu/ucci) to help high school faculty create “a-g”-approved CTE courses.

In May 2010, UC held the inaugural Institute, focused on mathematics (subject area “c”) as integrated with finance and business industry sectors. The Institute’s strategy is to prepare faculty groups as a cadre of experts who will then further the development of integrated courses. For the mathematics institute, 21 teams of academic and CTE teachers from across the state—a total of 38 high school teachers—participated.

Another Institute in fall 2010 focused on history/social studies and English in conjunction with six media sectors, including arts, media and entertainment; and health science and medical technology. Two more are planned for 2011. As industry-specific model courses are developed, each will be available on UC’s “a-g Guide” website at www.ucop/edu/a-gGuide/ag/welcome/html, so that high schools throughout California can adopt them.

By clarifying criteria and offering tools, resources and support to high school teachers seeking “a-g” approval for CTE courses, UC has increased the number of approved CTE courses from 258 in 2001 to more than 9,095 in 2010. By 2011/12, UC expects to have approved 10,000 or about 43% of all CTE courses currently offered.

CTE Online. Another high profile curriculum development effort is CTE Online (www.cteonline.org), initiated by the Butte County Office of Education with Initiative funding administered by the California Department of Education. Unlike other efforts that collect and post curriculum collections, this innovation is an online tool that’s driven by the community of teacher teams who use it.

CTE Online provides training to local education agencies including district leadership and teachers on the resources available through CTE Online at no charge.

Curriculum Planning for Emerging Industries. Recent future-looking studies underscored the importance of preparing California students for careers in key emerging industries: nanotechnologies, biotechnologies, digital manufacturing and intelligent transportation. Heeding that call, the Initiative awarded four Curriculum Planning for Emerging Industries grants to support the development of model curricula for instruction in those industries. The recipients—American River College, West Valley College, Foothill College, and Pasadena City College—have developed the following:
- A biotechnology/bioinformatics curriculum and training manual for high school students.
- A geothermal technician course.
- A suite of three hybrid and online courses focused on nanoscience, nanomaterials engineering and clean energy technology.
- A podcasting curriculum for RSS and mobile devices.

*Statewide Career Pathways.* Under the state CTE plan as well as federal law, course articulation across education systems requires formal agreements—e.g., that link high school courses with community college courses. High school and college CTE faculty members collaborate and draw up the agreements, which may include alignment of course skills, concepts and sequences. They spell out how students can earn advance placement or even college credit for their high school courses, thus saving time and money and giving them a jump start on the college experience.

Prior to 2006, numerous efforts among faculty from Tech Prep and other CTE programs strove to increase and improve articulation agreements. But there was no organized endeavor to address articulation statewide. After passage of SB 70, the Academic Senate for California Community Colleges used grant funding provided by the new law to launch the first statewide alignment project, called Statewide Career Pathways: Creating School to College Articulation (www.statewidewaypathways.org).

The project has exceeded many of its original goals. Now, across a lengthy array of pathways, faculties statewide can use the project’s approved templates that “make creating local articulation agreements a snap.” Agreements resulting from the templates are added to the statewide public database for use as resources by others. Over 1,200 articulation agreements have been posted in the database (www.statewidewaypathways.org/showagreements.php).

The project also encourages local colleges to host articulation events (like the one mentioned above in the Tulare County example) and provides free supportive resources, such as a Regional Articulation Day DVD and an articulation handbook. Project staff also initiated a comprehensive, professional statewide marketing campaign to stimulate interest in CTE in California. The “Who Do U Want 2 B?” (www.WhoDoUWant2B.com) campaign began in February 2008 and continues to expand with new resources and partnerships.
Prepare and Support Pathways Teachers and Counselors

**Identifying CTE Instruction Challenges.** Teaching quality is pivotal in whether a pathways system succeeds. And it is clear that the state’s emerging pathways system faces its greatest challenges in the arena of teacher preparation and professional development.

An integrated curriculum and project-based approach call for new kinds of capacities and different ways of teaching. In the current high school norm, academic teachers have expertise in specific academic content and are credentialed to teach that content. To succeed in a pathways classroom, most need more exposure to the industry at hand. They also need to collaborate with CTE colleagues to help bring relevance to what they teach. CTE teachers have expertise and required experience in a career field. They bring rigor to the teaching of specific skills, which they are credentialed to teach. But while they know their industry, they are not always well prepared to teach; they need pedagogical support. They also need help from academic colleagues to identify the specific academic content within their industry program and ensure that its rigor meets what students need for postsecondary requirements.

*As Multiple Pathways to Student Success*\(^8\) points out, the mode of staffing pathways classrooms depends on the career field of focus. This requires a mindset change for many teachers—as well as support from site leaders who need to nurture a collaborative school culture and may need to enact structural changes involving shifts in uses of time and school scheduling.

School district administrators interviewed for the *Multiple Pathways* study reported major challenges in: hiring sufficient teachers qualified to teach in needed CTE areas, ensuring that both academic and CTE teachers are trained in work-based learning, and ensuring that all teachers are cross-trained in curricular approaches that blend academic and career technical education.

**Evaluation.** Evaluation interviews for this CTE Pathways report yielded similar concerns about focusing sufficient attention and resources on teacher development.

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An administrator at one community college pipeline program captured a sentiment expressed by many: “It’s shortsighted to think that we can launch a range of pathways from biotech to green technology, any of these cutting edge workforce growth areas and train folks without paying attention first to who will be standing in front of the classroom.”

Evaluators also heard related concerns about hurdles presented by CTE credentialing requirements. In some cases, the rules hamper responding to emerging industry needs. Said one high school principal, “Many of the courses we teach are on the bleeding edge of CTE and technology and have not existed long enough for people to have the years of required ‘industrial experience.’”

A number of programs initiated with Initiative funding specifically address the state’s challenges in recruiting, preparing and inducting pathways teachers and providing them with ongoing professional development.

**Teacher Preparation Pipeline.** Paralleling the shortages of mathematics and science teachers, pathways programs are particularly challenged in finding CTE teachers. To address this problem, community colleges throughout the state have taken advantage of Initiative funds to develop CTE Teacher Preparation Pipeline programs designed to prepare students to become teachers, with a particular focus on those interested in becoming secondary or community college CTE teachers in mathematics- and/or science-based CTE pathways.

Local pipeline projects identify future K-12 teachers and give them the opportunity to begin preparation by starting at the community college level. They also focus on professionals in various industries who want to teach CTE. Students earn credits transferrable to four-year programs, have paid opportunities for tutoring and other fieldwork and receive counseling on teaching pathways. Featured on the next page is one student’s story:
When Josue Arias was a Torrance-area high school student, he watched many of his friends who struggled in school drop out or succumb to pressures to join gangs. He was determined to avoid those paths. When someone suggested that he try out an engineering CTE course at his school, he did. The teacher he met there took an interest in Josue and became his mentor.

After graduation, Josue went to El Camino College. At the suggestion of his mentor, he decided to enroll in the Teacher Preparation Pipeline program. Through that program, he is now back at his old high school weekly, working in his mentor’s classroom as an intern.

Asked why he didn’t choose to become an engineer instead of a teacher, he smiles. His teacher had been such a positive role model and guide at a crucial time in his life, he says. By being a teacher himself, he feels he can be the same force for good in the lives of other young people.

**Funding CTE Instruction Solutions Through SB 70.** As mentioned above, CTE teachers, unlike their academic colleagues, often come to classrooms with solid industry knowledge but are not well prepared to teach. Funding from SB 70 has made it possible to address this problem.

**New Teacher Workshops: CTE Teach.** CTE Teach is an induction program designed to avert losing new CTE teachers by providing them with pedagogical support and mentoring. Administered by the Colton-Redlands-Yucaipa Regional Occupational Program in collaboration with the California Department of Education, CTE Teach is a two-year pilot training program (that began in July 2009) designed to provide new teachers with workshops, feedback on their teaching, training modules, mentor consultations and modeling.

Modeled on the Beginning Teacher Support and Assessment program (BTSA), the state’s longstanding and highly successful induction program for regular academic teachers, CTE Teach has shown encouraging early results, with new teachers reporting more confidence, informed instructional practices and increased professional growth. The program also fulfills the California Commission on Teacher Credentialing’s requirement of an early orientation program for new CTE teachers.
Participating entities include K-12 school districts, community colleges, ROCPs and charter schools.

Professional Development. Throughout the state, a great deal of professional development for pathways teachers is occurring within the regional partnerships, as described in this report. In addition, a number of statewide initiatives are providing opportunities that support and network teachers across the regions. These include: 

*The UC Curriculum Integration Institute, CTE Online, and Statewide Career Pathways,* all described in the previous section for their focus on supporting curriculum integration and alignment statewide, also provide teachers with excellent professional development. Each brings groups of faculty together to develop key pieces of a pathways system—programs, courses, lessons, activities—and to think through how to link those pieces together so that students transition seamlessly across systems.

These programs all have online components that enable the relationships built in face-to-face workshops or institutes to continue as ongoing collaboration across distances. These still-new networks have significant potential to grow into sturdy, lasting professional learning communities.

Externships (Faculty/Counselor Work Experience). High school and community college faculty cannot convey to students what the work world is like in a particular career field if they haven’t themselves experienced it. Some career fields are so new or so dynamic that even faculty who transitioned to teaching from that industry may quickly find their knowledge of their opportunities out of date. Externships, or time spent in a workplace to learn about how a discipline is applied in a career setting, give teachers a firsthand understanding of roles, practices and knowledge and skill applications that they can then pass on to their students. More than that, externships can be highly energizing and can affect teaching in unexpected ways. Teachers who are once again learners, seeing and experiencing the world their students are entering, may become more personally involved in what’s being taught and more empathetic with their students.

Initiative funding has markedly expanded externship opportunities around the state for high school and middle school teachers, counselors and college faculty.
Participating faculty and counselors report beneficial and even career-altering experiences. (See one teacher’s story on page 27.)

Some externships are deliberately structured to encompass specific kinds of professional development as well as industry exposure and networking. See the next section, Strategically Engaging Business/Industry and Community Partners, for an example from San Diego.
Teachers and Students Gain from Faculty Externships at JPL

Glendale Community College (GCC) offers an exemplary model of teacher externships that it has shared with Pasadena City College (PCC) through their CTE Community Collaborative partnership.* In the summer of 2007, four Glendale faculty members received grants to pursue 10–12 weeks of original research projects with senior scientists at NASA's Jet Propulsion Laboratory (JPL) at the California Institute of Technology. In 2009, four faculty from both GCC and PCC and in 2010, two faculty from each college participated in the externship.

Glendale oceanography instructor Laura Faye Tenenbaum used her externship to develop a general education college course on climate change. Working with preeminent climatologists, she studied recent changes in sea level and sea ice distribution. As a result, "We’re rewriting the lab manual we use and updating our information," Tenenbaum says. "What we used previously was from textbooks; this is from scientists themselves. The students were really inspired; some changed their majors and others became more involved in things like internships and research."

The externship also led Tenenbaum to write an article on JPL's ocean surface topography missions for NASA's newsletter, The Earth Observer and to host Glendale Community College students on tours of the lab, a kind of job shadow that her students—some of whom had previously taken a dim view of science—found inspirational. Two applied and were hired for summer positions at JPL and a third started in September 2010.

Tenenbaum continues to work with JPL’s Earth Science communication team as a grant partner to develop professional development opportunities, educational resources and Internet multimedia for NASA’s educational and interactive global climate change website (http://climate.nasa.gov), which won the 2010 People’s Voice Webby Award for Best Science website. She is also providing leadership for Glendale Community College and Pasadena City College faculty in helping to develop interactive media for classroom use and online courses in green and environmental technology.

The GCC/PCC Community Collaborative has funded six additional externships for teachers from each college. These have resulted in team presentations and cross-fertilization among science, technology, engineering and mathematics teachers and students at both colleges. PCC's Saeed Abedzadeh used his externship in the JPL Photovoltaics Applications group last year to enhance the first photovoltaics course offered at PCC and to work with high school ROCP teachers to develop a new solar energies pathway. William Cowell is
studying the science behind GPS satellites with the International Global Navigation Satellite Systems lab at JPL. He will not only apply this work in his engineering/surveying courses but will use it as well as to demonstrate real-world applications of trigonometry and geometry to high school teachers and students. Nargess Kiabi brought cutting edge industry applications to her PCC students through her externship in the Biotechnology and Planetary Protection group at JPL. This group uses micro and molecular biology to evaluate methods for protecting earth from potential threats from returned extraterrestrial samples on spaceflight projects such as the Mars Exploration Rovers. Says Kiabi, "When students can connect their hands-on microbiology labs to real events in the news like the Mars Rovers, it excites their imagination and adds renewed relevance to what they are learning."

Some other Glendale faculty grantees’ experiences helped students across disciplines benefit from the JPL connection. GCC photography instructor Joan Watanabe worked at JPL's Image Processing Lab to create a digital presentation of the journeys of the two Mars Rovers (Opportunity and Spirit). Building on her externship, Watanabe developed a curriculum on creating content to be used in digital planetariums. Some of her students then received JPL internships and Glendale students from different disciplines collaborated in a team project to create planetarium content. Art students instructed science students on imaging techniques and the aesthetics appropriate for planetarium shows. Together, they worked in a state-of-the-art facility at JPL, gaining skills suitable for employment at other digital planetariums or for related software development.

*In 2009, Pasadena City College and Glendale Community College secured CTE Community Collaborative funds and used the funds to expand programs across the two colleges and in local middle, high schools and ROCPs. Faculties from both colleges have access to faculty work experience with JPL. JPL selects GCC and PCC faculty members for positions in its summer faculty research program. These paid fellowships ($12,000 per faculty) assign each participating faculty member to a JPL mentor for 10-12 weeks (40 hours per week) during full immersion at a JPL worksite.
**Strategically Engaging Business/Industry and Community Partners**

Recognizing that business and industry partners are integral to creating statewide pathways systems, Initiative grants require funded programs to have business/industry and community involvement. Necessary partners include K-12 education, community colleges, adult education and ROCP as well as employment and workforce development representatives.

At a minimal level, a business partnership may be a one-time donation of used industry equipment for CTE classes or a one-time classroom visit where an industry professional talks with students about career opportunities or provides a booth at a career fair. As many examples in this report show business involvement across the state is often much more extensive. Business leaders often play key roles in the strategic planning of regional partnerships. Industry representatives provide insights on local economic trends and labor demand. They help design career pathways accordingly, delineating needed skills and types of required certifications. Companies work with educators to develop pathway curriculum and hands-on instructional experiences. Many also provide well-planned student internships and faculty externships.

Besides business/industry partnerships, Initiative funding also gives educational institutions with no history of working together reason to share and collaborate as partners—in much the same way that the federal School-to-Work legislation of the early 1990s spurred some of the partnerships discussed earlier in this report.

Business partnerships are primarily regional, geared toward supporting pathways specific to that region’s dominant industries. But the Initiative is funding several state-level mechanisms to support the local efforts.

**CTE Liaison Hubs.** To promote more coordinated relationships with business and industry, the Chancellor’s Office administers eight CTE Liaison Hubs. Located throughout the state, these hubs help ensure high school and ROCP course alignment with community college CTE programs. They also support pathway development by sharing new and exciting curricula, delivery modes and knowledge with CTE providers.

5,134 partner organizations from business/industry and community were enhanced or developed.
A key role of the CTE Hubs is to help connect related Economic and Workforce Development initiatives—also administered by the Chancellor’s Office—with the growing network of CTE Pathways partnerships to improve cross-pollination and communication among CTE instructors, community college deans, associations and other stakeholders. They promote models for integrating coursework, student internships and faculty externships and for improving the quality of work-based learning, career exploration and career outreach materials, with a particular focus on emerging industries. See the story on Miramar’s regional Hub on page 40.

**Career Development and Work-based Learning Linkages to Professional Organizations.** Another project overseen by the Chancellor’s Office, in conjunction with Irvine Valley College, connects educators and students to professional associations. This project aims to create learning and career development activities, tools and resources to be delivered by a network of trained counselors and career professionals in each region. In October 2010, 100 counselors and career professionals from 47 Southern California community colleges attended a two-day seminar on how to use professional organizations as a tool for connecting students to the workplace.

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9 The purpose of the Economic and Workforce Development program is to advance the state’s economic growth and global competitiveness through education, training and services that contribute to continuous workforce improvement, technology deployment and business development consistent with the state’s regional economies.
Miramar Regional Hub Facilitates Biotech Intern- and Externships in San Diego

An example of a regional Hub is the Southern California Biotechnology Center at Miramar College in San Diego (www.scbcmiramar.org). The San Diego region has over 500 life science companies and research institutions, affording numerous career opportunities for San Diego residents. The Biotechnology Center runs the Life Sciences Summer Institute (LSSI), which involves two programs—one for teachers and one for students.

For high school and community college teachers, the 12-day LSSI offers opportunities for hands-on laboratory curriculum training through the AMGEN-Bruce Wallace Biotechnology Laboratory Program at the Biogen-Idec Community Lab. In addition, teachers visit a variety of industry sites for half-day externships. Direct exposure to on-the-job working professionals gives teachers a firsthand understanding of what students will be expected to know and do in the workplace. Through LSSI, teachers can also receive free supplies, loaner equipment and staff support to implement their curriculum.

For students, the LSSI High School Student Program includes a full week of “boot camp” training called Introduction to the Biotechnology Industry (earning one unit of college credit), followed by a paid seven-to-nine week internship at a local research institution such as the Salk Institute, The Scripps Research Institute, The Burnham Research Institute or the La Jolla Institute for Allergy and Immunology or at one of several local companies, including Arena Pharmaceuticals.

Through its summer institute and other professional development activities, LSSI reached 100 high school and college educators and 8,100 students during the last 18-month grant period. The training of high school educators has increased the rigor of high school biology courses and credit by exam results clearly indicate that instructors who attend LSSI do much better in preparing their students for college credit in biotechnology.

LSSI’s founding partners—the San Diego Workforce Partnership, Biocom and the Southern California Biotechnology Center at Miramar College—were joined by Grossmont College in 2009, the program’s fifth year. Grossmont College now offers a new biotechnology program for high school students over age 16, designed especially to reach students in San Diego’s East County and expose them to the life sciences industry. In addition to funding from the CTE Pathways Initiative, LSSI receives funds from other major supporters, including the Amgen Foundation, Pfizer, Life Technologies, Gen-Probe and Biogen-Idec. Student and teacher work can be viewed at www.matsc.org.
Offering a Comprehensive Array of Career Exploration Experiences

For students to make informed decisions about pathways they might pursue in high school and beyond, they need opportunities to explore options, beginning in middle school. Career exploration includes career awareness activities and occupation-specific experiences to help students develop a high school education plan with postsecondary and career goals in mind.

Career Technical Student Organizations (CTSO) Initiative funding is strengthening six statewide organizations with hundreds of local chapters that provide CTE teachers and their member students with an array of training and experiences geared to help develop career and leadership capabilities in a given field as well as personal and citizenship skills.

The six organizations receiving funding are: DECA (focused on marketing, sales and service), Future Business Leaders of America (focused on finance, business and information technology), National Future Farmers of America Organization (focused on agriculture and natural resources), Future Homemakers of America-Home Economics-Related Occupations (focused on education, child development and family services), Health Occupations Students of America or HOSA (focused on health science and medical technology) and SkillsUSA (focused on arts, media and entertainment; building trades and construction; energy and utilities; engineering and design; manufacturing and product development; and transportation).

198,741 middle and high school, ROCP and community college students were exposed to CTE careers through activities such as student competitions, career fairs, industry presentations, worksite tours and entrepreneurship experiences.

Examples of how these organizations support student skills and interests include:

- **Health Occupations Students of America** (HOSA). This national student organization promotes career opportunities in the health care profession and has over 2,000 California members in nearly 50 schools. An Initiative grant has enabled expansion to two middle schools. Through active participation in leadership conferences and competitive events students learn about...
different aspects of the health care field as well as develop leadership and public speaking skills.

One second-year HOSA student offered a heartfelt account of the benefits. “HOSA has given me a chance to learn what medicine is by actually giving me a chance to intern at Palmdale Veterinary Hospital for a career that I possibly want to pursue.” She tells a personal story of moving multiple times until sixth grade, which resulted in falling behind other students, especially in learning English. She worked with after-school tutors but says, “It still was not enough until I decided in my junior year that I would run for state officer of Cal-HOSA. Everyone who knew about the struggle I had with English notices now that I have changed the way I read, write, speak and sound out words for the better. HOSA also gave me the chance to learn leadership skills that people need in the working world.”

- **DECA.** This global organization prepares emerging leaders and entrepreneurs in marketing, finance, hospitality and management. Initiative funding enabled DECA to increase its average California chapter size to 54 (the U.S. average is 33). The chapter at Monta Vista High School in the Silicon Valley is ranked in the top 10 in terms of membership among out of nearly 5,000 chapters worldwide—and its members thrive.

A student from Monta Vista High is an example. A former state DECA president, she participated in DECA’s entrepreneurship and competition training program, funded by the Initiative. As a senior, she founded a technology firm—her third startup—to help teens manage their digital lives and social network identities. Her firm received more than $100,000 in venture capital funding (with help from her father, a venture capitalist). This student was the featured youth entrepreneur presenter at the Web 2.0 conference in the Bay Area and was covered by the *Wall Street Journal* and *Yahoo!Finance*.
**Health Science Capacity Building.** Administered by CDE, grantees selected for funding under this program must be structured so that students begin in 7th grade to explore a variety of careers in health care. In grades nine through 12, students develop knowledge and skills that will prepare them for the transition to postsecondary education and specific careers in health care.

One example is **Bakersfield’s Stockdale High School.** Its grant is helping to support its well-established medical academy. Typically, students in the program already have an interest in the medical field, but need direction or focus. The academy provides them with a strong academic foundation as well as exposure to the range of medical specialties, particularly through a strong job shadowing component provided through its partnerships with local health care providers. Students shadow professionals a minimum of eight times per semester for at least two semesters, commonly extending the shadowing through summer or longer. Students have seen live natural and C-section births, cataract surgeries, lymphoma surgeries, family practice procedures, veterinary surgeries and dental procedures. Through these experiences, they develop a clear and grounded sense of the medical profession and are better able to chart their career choices.

**Health Occupations Preparation and Education (HOPE).** Also focused on increasing student interest in health care fields, the HOPE Center in the **Los Rios Community College District** has a goal similar to that of the Stockdale High School effort—to broaden students’ knowledge about the variety of career opportunities in allied health care fields. To that end, each year the HOPE Center sponsors a Healthcare Career Summer Academy for Sacramento area students entering their junior or senior year of high school. The academy provides them with opportunities to explore different health care careers through lecture, laboratory and job shadowing experience within a program structured to help prepare them for community college pathways into those careers.

At the community college, the HOPE Center supports students enrolled in nursing and allied health programs. It offers students a fully equipped study center, free tutoring, health career fairs, counseling for educational planning and strategies for success and a speakers’ bureau on health issues and related careers. More information about the HOPE Center is available at http://losrioshope.org.

**Young Entrepreneurs Project (YEP).** Administered by the Chancellor’s Office, these grants are intended to increase students’ awareness of and aspirations to self-employment as a legitimate career path that can provide a reliable living wage.
Qualified college-hosted Small Business Development Centers (SBDC) and Centers for International Trade Development (CITD) receive funding to further support their creative entrepreneurial education projects. The target audience for YEP grant projects includes youth and young adults, ideally those enrolled in a community college affiliated with the funded center and/or its feeder high schools, with special emphasis on rural and minority populations.

The **Napa Valley College Business Plan Competition** for Young Entrepreneurs showcased the kind of work being accomplished through these projects. Prior to the December 2009 event, Napa SBDC Advisors, Napa Valley College professors and area high school instructors trained and worked with more than 200 students to develop comprehensive business plans. A team of experts reviewed submitted plans and chose finalists at the high school and college levels. At the event, finalists presented their plans to a panel of judges who awarded the first place high school prize of $500 to a student whose business plan is for Pinky Lee Clothing, a rockabilly/pin-up girl inspired line of clothing. The college division’s $1,000 first place prize went to the team of students for their plan for Confianza, a mobile accounting/tax preparation business serving the Napa Valley Hispanic community.

Also sponsored by the Napa Valley partners was a week-long business boot camp for youth ages 14 to 27. YouTube videos are available at www.nvcyep.org/yep_boot_camp.html. Campers learned strategies for forming a mission and vision statement, marketing, developing a product and selling strategies. They heard stories from guest speakers, took field trips to businesses and developed their own business plans, which they presented at the end of the week. “The classroom was alive with collaboration,” said one participating SBDC business advisor. “I am amazed with the student’s ability for teamwork and multi-tasking. Their computer skills are astounding. Their ideas are innovative and very inspiring.”

**Developing Innovative Program Models That Address Diverse Student Needs**

The pathways approach of bringing real-world applications into the classroom and integrating academics with career skills is highly motivating for all students, but can especially make a life-changing difference for those who are disadvantaged or disaffected. School suddenly involves something they can relate to and get excited about. A skill they’ve learned or a product they’ve built offers a sense of pride. A mathematical formula suddenly seems useful. The team of kids who’ve struggled
together to get a program de-bugged or a structure angled properly have become people who care about each other.

Also drawn in by this approach are young adults who missed such opportunities in high school and drifted into adverse circumstances made worse by their lack of job or career skills—while local industries can’t find enough skilled candidates for well-paying jobs, even during the recession.

Initiative funding has helped support and develop a number of program models that specifically target these student groups and at the same time help meet industry demand. Most notable are the California Partnership Academies and the new Career Advancement Academy.

**California Partnership Academies (CPAs)** are the state’s longstanding pathways model, providing students in grades 10-12 with integrated academic and career technical instruction, including mentoring and internships, by way of school district/business partnerships. Under state law, at least half of students in a CPA must be “at risk”—i.e., have a record of under-achievement, poor attendance, disinterest or economic hardship. Structured as a school within a school, each academy creates a close, family-like atmosphere. Emphasis on student achievement is strong, with an eye to the future. Valued student goals include a decisive postsecondary educational focus and refined career plans. The program is voluntary; students must apply, be interviewed and be selected on the basis of need and interest. Evaluations have shown the CPA approach to be a promising strategy, with beneficial effects for students and for labor market outcomes.

Initiative grants for CPAs, administered by the CDE, support existing CPAs as well as the creation of new ones. Fashioned after the Philadelphia Academies of the late 1960s, the first CPA opened in the 1980s in the San Francisco Bay Area. Currently there are close to 500 such academies throughout the state.

To support CPAs across the state, CDE keeps all of them apprised of each other’s innovative approaches and links them to each other as mutual resources. For example, CDE uses Initiative funds to provide academy-to-academy mentoring wherein new CPAs are paired with more seasoned sites to benefit from the mentor’s programmatic, curricular and team development knowledge and experience. Funding for this mentoring is provided by the Initiative. (In 2008/09, funding for mentor sites totaled $25,000; mentee sites received $10,000.)
Another statewide source of CPA support comes by way of a CDE contract with the Career Academy Support Network (CASN) of UC Berkeley. CASN’s role is to:

- Research and acquire green curriculum for all industry sectors.
- Develop and launch a website for posting of curriculum and resources and facilitate dialogue among CPAs.
- Assist with planning and implementing the annual CPA conference (the next will be in March 2011 in Sacramento).
- Continue providing CPAs with assistance and workshops on applying for “a-g” status for their CTE courses.
- Implement a mentor academy training program and assist with mentor-mentee academy program implementation.
- Implement regional academy workshops.

Examples that help illustrate the approach and impact of CPAs include:

**Pacifica High School, Oxnard – Culinary Arts Academy.** Pacifica High School in Oxnard modified its long-time ROCP culinary program last year by turning it into a culinary arts CPA. The academy’s career focus on food preparation is reflected in the core academic courses, where teachers tailor lessons in mathematics, English and other subjects to incorporate a food theme. Core teachers meet with the academy’s advisory committee to regularly share ideas on ways to do this. Recent ideas include science classes that incorporate the macro-molecular breakdown of proteins, carbohydrates and lipids in foods; social studies discussions of embargos on certain food products or of local agricultural and environmental issues (i.e., water/irrigation problems); and book discussions in English class in line with the academy’s focus, e.g., focused on *The Immoveable Feast*.

Preliminary results show that 81% of students in the academy increased their GPAs by an average of nearly half a grade point (.497).

**Lincoln High School, San Diego—Public Safety CPA.** Lincoln High School, which serves a highly diverse, largely low-income community in San Diego, re-opened in 2007 after being completely rebuilt as an architecturally modern, state-of-the-art campus structured as five small learning communities, each with a career focus. In 2009/10, the school modified its Public Safety Academy so that it is now a CPA. In
this academy, students become career and college ready by focusing their studies on knowledge and skills related to fire and police services. Real firefighters and police officers teach the classes and share their expertise and experiences. In the fire class, core values are communication, discipline and teamwork. When two students don’t like each other, the fireman/teacher may deliberately assign one to be the incident commander and the other to be the executive officer, so that they learn the real-world lesson of having to work together despite differences to solve problems and be successful. The objective is not to direct every student to a firefighting career but to instill fire core service values that prepare students for any path.

“The confidence that it builds in kids is incredible,” says one teacher, who has seen students shift from being withdrawn and directionless to coming to school with an enthusiastic sense of purpose. The academy, he says, provides a support system and a feeling of connection and community. Students bond and take care of each other academically and personally—and that engagement spills over into parent involvement.

**Career Advancement Academies (CAAs)** are community college programs designed to establish pipelines to college and high wage careers for underprepared and underemployed youth and adults, ages 18-30. Launched in late 2007, the program aims to increase basic skills in reading, writing and mathematics while enrolling students in career technical training programs that lead to careers or additional higher education opportunities.

The program has ramped up swiftly. In a little over three years, CAAs:

- Have been established in nearly a quarter (29 of 112) of the state’s community colleges, clustered in the Bay Area, Central Valley and Los Angeles.
- Offer more than 40 distinct programs statewide each semester.
- Serve more than 5,415 students statewide.
- Incorporate programs focused on industry skills spanning 13 economic sectors, with programs heavily concentrated in the allied health,
transportation, construction, education, business services, information technology and energy sectors.

A study by Public/Private Ventures documents that almost all of those served are low-income individuals who are economically disadvantaged for a range of reasons, including low educational achievement (low basic skills or dropped out of high school), transitioning from welfare to work or transitioning from prison. Members of the target populations often struggle to positively differentiate themselves from the crowd of job applicants and secure jobs, due to perceived limitations in terms of criminal records, lack of language skills or lack of work experience. Formal job skill certifications and licenses gained through enrolling in a CAA help eliminate some of these barriers and enhance employability.

CAAs bring together faculty across disciplines and leverage resources from multiple partners (such as WIBs, K-12, ROCPs, adult education, business, labor, social service providers and community-based organizations) to support college-going and career preparation. They have developed new instructional approaches that “contextualize” basic skills instruction in reading and mathematics—meaning that they incorporate them into job or career technical training in students’ chosen fields. This practice makes academic skills more accessible and relevant, thus increasing motivation and learning. Combining foundational basic skills with technical training allows students to make immediate progress toward their goals, rather than having to wait until they’ve completed a succession of basic skills courses.

A clear key to the cohesion and quick enactment of the CAAs is the support they receive from the Career Ladders Project (CLP). Functioning as a kind of CAA hub, the CLP provides technical assistance, documents lessons learned and fosters a community of learners among sites across the three regions. CLP sponsors regional trainings and statewide professional gatherings for project managers and faculty; attends site meetings to assist with program implementation; provides guidance for partnership agreements and supports initiatives to identify, research and develop regional career pathways. The staff at CLP developed and maintain a centralized CAA project database/management site for program faculty and managers to share best practices and learn from colleagues. In addition, CLP provides an extensive reference library of best practices, research publications and statistical reports on their website at www.careerladdersproject.org. CLP operates under the auspices of the Foundation for California Community Colleges, a 501(c)(3).
The CAAs also participate in Cal-PASS\textsuperscript{10} for collaborative data collection and have pooled resources to fund a local evaluation by Public/Private Ventures, which is using qualitative and quantitative data to help the community colleges involved strengthen data collection and use outcomes to inform decisions about the design and delivery of CAA services. Examples of CAAs include:

\textit{The Alameda Transportation and Logistics Academic Support Initiative (ATLAS)} is a collaborative eight-week program that provides comprehensive accredited training in warehousing and logistics through the College of Alameda, one of the Peralta Community Colleges. A partner organization, Oakland Adult and Career Education, provides basic skills education support for the program in the form of contextualized mathematics and English (including English as a second language). Extensive collaboration with the Port of Oakland, the City of Oakland, the Teamsters and the International Longshoremen supports jobs placement for those completing the program.

\textit{The Career Advancement Academy at Fresno City College} offers 18- and 27-week training programs for entry-level jobs in automotive, welding and computer-aided manufacturing—fields with high local employment potential. The training integrates basics in English and mathematics in ways that relate to the relevant industry program. After the initial training, students can get jobs or continue their education and skill training through other programs at the college.

One of the first students to receive a certificate of training in the academy’s automotive program was 23-year-old Joseph S. Peckham, who spoke at the student recognition ceremony in July 2008 and whose story was reported in the State Center Community College District magazine.\textsuperscript{11} Peckham had graduated from Kingsburg High School, had problems with drugs and alcohol and ended up in prison. “I never thought I would go to prison,” he told the audience. “It was a big wake-up call for me.” He nervously enrolled in two classes in the Spring 2008 semester—and made the dean’s list. With that confidence boost, he has gone on to take further semesters.

\begin{flushleft}
\footnotesize\textsuperscript{10} California Partnership for Achieving Student Success (Cal-PASS) is an informational resource system that creates regional partnerships among K-12 schools, community colleges and universities through the sharing of student transcripts and performance information. Participating institutions submit student-level data to a central Cal-PASS database with data encrypted to ensure all privacy requirements are met. While each student receives a unique identification number in the Cal-PASS system to allow tracking across segments, the database is used to track cohorts of students. Such tracking allows educators to understand what happens to students as they transition from one segment of the educational system to the next.

\textsuperscript{11} \textit{Front and Center}, magazine of the State Center Community College District, March 27, 2009. (http://frontandcenter.cc/2009/03/career-advancement-academy-starts-with-success/)\end{flushleft}
of computer-aided design and computer-aided manufacturing, giving him a portfolio to show potential employers.

The Healthcare Career Advancement Academy at Los Angeles Valley College offers short, preparatory courses as a bridge back to academics for young adults—many from challenging backgrounds—who have not been in classrooms for years but want to pursue health career pathways. Within the context of the health care industry, these courses emphasize critical thinking and rational decision-making and also focus on reading, writing, mathematics, customer service, and communication skills. For example, one such course involves 80 hours of class time over four weeks.

Following successful completion, students move to phase two, where they select an area of focus in which they will earn their medical skills vocational certificate. Focus areas include medical front office, Emergency Medical Technician, or Certified Nursing Assistant (CNA). Once equipped with a vocational certificate, students begin a 120 hour paid internship at a partner medical facility. For example, a “Learn and Earn” program at industry partner Jewish Home for the Aging allows for employment and training towards full CNA certification.

The chart and table below and on the next page reflect the demographics as well as the high rates of completion, employment and persistence for Los Angeles Healthcare CAA students.

Source: Cal-PASS, June 2010
Distance Learning. Administered by CDE, the Distance Learning Pilot Project funded 10 grantees, starting in July 2009, for online learning via the Internet, including the use of video and audio technologies. Distance learning can: expand the range of courses available to students, especially in small, rural or inner-city schools; provide highly-qualified teachers in subjects where qualified teachers are scarce; provide scheduling flexibility; allow students with special circumstances (e.g., migrant students, pregnant or incarcerated students, dropouts, those ill or injured) to continue their studies outside the classroom; and teach technology skills.

Grantees have developed a wide range of distance learning courses, including: production design at Orange County Office of Education, health occupations at Corcoran High School, introduction to automotive technology at Barstow Community College, and computer applications at Rainbow Advanced Institute for Learning Digital Charter High School.

While reporting encouraging successes, grantees also speak of challenging barriers. A common problem, especially in rural areas, is that many students cannot take advantage of online courses offered outside the school day because they lack access to high speed Internet or have no computer at home. Another barrier cited was difficulty getting regular teachers to help develop curriculum for online courses, since no support has been provided for that work. And several grantees expressed frustration that there is no structured way to interact with each other to address common problems.

Completion, Employment and Persistence for LA Healthcare CAA Students
Fall 2007 - Spring 2010

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>CAA Bridge Completion</td>
<td>94%</td>
</tr>
<tr>
<td>Enter Employment or Persist in College</td>
<td>80%</td>
</tr>
</tbody>
</table>

Source: Doug Marriott, Project Director, Los Angeles Healthcare Career Advancement Academy

Note: For students who enter employment or persist in college, next steps in the Allied Healthcare pathway include enrolling in Certified Nursing Assistant (CNA), Emergency Medical Technician (EMT) or medical front office training and obtaining a skills certificate. Subsequent employment options include paid internships opportunities at partner medical facilities. For example, a “Learn and Earn” program at industry partner Jewish Home for the Aging allows for employment and training toward a CNA certification.
Conclusions and Recommendations

Achieving a vision of a regionally-based, statewide pathways system that prepares all students for academic and career success is a complex and ambitious endeavor. The challenges are magnified by the context of a deep recession. Local school districts are making painful budget-cutting decisions affecting programs that support instructional effectiveness generally—e.g., BTSA or teacher professional development. Such cuts can constrain pathway-building progress by limiting the ability to leverage Initiative funds.

From the many examples cited in this report, it is clear that the accomplishments of many grantees are highly impressive. At the same time, some grantees are struggling and many of them could accomplish considerably more if they were effectively linked to those whose programs and partnerships are farther along.

To date, evaluation findings indicate three key issues for consideration as the Initiative moves forward:

1. **Concerted, statewide coordination and support of regional pathway-building efforts should be strengthened.** Because Initiative funding flows by way of many disparate grant categories, ensuring that the pieces fit together as a concerted whole is crucial for reaching system-building goals. That requires ongoing coordination at the state level. While the actual work needs to be generated and tailored locally—from the bottom up—there also needs to be a central entity that keeps the regions focused on a common vision and provides multiple kinds of support for the local work. The CTE Hubs are meeting some of the linking and coordinating needs regionally. And the statewide academy programs—CPAs and the CAA—provide excellent examples of centralized support and linking within those programs. Similar orchestration of all Initiative efforts statewide would help ensure progress toward intended outcomes.

Such coordination could be provided by creating a state-level service center whose role would be to:

- Maintain ongoing communication across grantees in all regions. Ensure clarity with all grantees on the vision and 2014 goals for a statewide
pathways system so that local/regional partnerships can align their efforts accordingly.

- Provide a quickly responsive point of contact to address grantee questions and concerns. Use the existing CTE Central website (www.CTECentral.org) to issue and update frequently asked questions.

- Routinely link grantees with one another statewide via convening around key pathways issues. Follow up the face-to-face connections with web-based sharing and creation of online communities of practice.

- Strengthen the collaborative links between regions so they can learn from each other.

- Ensure online access, routinely updated, to models, best practice examples, professional development opportunities and technical assistance, new studies or reports and other resources.

- Identify needs and gaps in support of grantees and move to fill them; identify barriers to success, including policy barriers and take action to remove them.

- Create an advisory group of grantees to provide consultation to guide the above efforts.

2. The areas most in need of targeted support are human and organizational capacity building. Grantees report that they particularly seek support in terms of professional learning opportunities that help them develop pathways curriculum and effective instructional strategies. A number of regional efforts described in this report are actively offering targeted professional development. And statewide initiatives such as the UCCI Institutes, the Teacher Preparation Pipeline project and CTE Teach are examples of cross-regional strides being made to fill the professional learning gap. But the challenge of a statewide shift in classroom approaches—to a relevant instructional model that blends rigorous academics and high-quality career skills—is daunting.

The statewide center should provide services on faculty and administrator development efforts that address this challenge, including:

- Working with grantees to do a gap analysis that identifies professional development needs for pathways programs across systems and maps those to state and local initiatives designed to meet them.
• Ensuring that all grantees have awareness of and access to all existing programs and resources that provide teachers with opportunities to develop integrated curricula and expand their capacity for effective pathways instruction.

• Focusing online materials on models, best practice examples, research and information related to curriculum and instruction in pathways classrooms.

• Sponsoring workshops, webinars and other professional gatherings that foster dialogue across regions to encourage sharing, idea and resource exchange and problem solving.

• Supporting high school teams of teachers and administrators to address school-wide structural and scheduling changes needed to support the pathways approach.

Grantees also identify a need to develop the leadership and organizational capacity required to effectively run cross-institutional, cross-sector partnerships. These are meta-organizations that call for new kinds of relationship building as well as new ways of doing business. Many grantees point out that success requires training, technical assistance and models. To help, the statewide center can:

• Sponsor workshops, webinars and other professional gatherings specifically on the issue of developing and running meta-organizations, featuring experts from the state’s most successful partnerships as well as third-party expertise on such relevant topics as governance structures and “getting into each other’s business.”

• Connect grantees to training for critical skills such as facilitation and project management.

3. Data tracking and progress monitoring need continuing attention and support.

At the local and state levels, it is important to systematically monitor progress and use data to inform programmatic and policy decisions. The statewide center can help by:

• Working with grantees, especially newly established partnerships, to clarify goals, determine indicators for measuring progress and set outcome targets.
- Providing grantees with monitoring and accountability tools to help evaluate progress—e.g., self-assessment tools and rubrics for systematically analyzing program implementation and for assessing student outcomes—and supporting them to use resultant data to inform decisions about capacity building investments.

- Facilitating the sharing of local models for student data tracking across K-12 and postsecondary systems. California’s efforts to create a data system that can track students from pre-K through college are lagging but gaining momentum from incentives such as the competition for federal Race to the Top funding. In the interim, pathways partnerships can benefit from sharing locally-developed models for data tracking.

The CTE Pathways Initiative is slated to continue through 2014, with an additional expected investment of some $200 million. Pockets of impressive success illustrate the substantial power of the pathways learning approach to change lives and bolster economic health. Momentum exists among many regional education and business leaders to enact the vision of a statewide pathways system. By stepping up with centralized linking and support, the state can harness energy and talent, make faster progress and see a more potent impact from its investment.
Acknowledgments

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# APPENDIX A

## Table A1. Regional or Local Implementation Grants: Grant Amounts and Number of Grantees, by Year

<table>
<thead>
<tr>
<th>Grant Category</th>
<th>2005/06</th>
<th>2006/07</th>
<th>2007/08</th>
<th>2008/09</th>
<th>2009/10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coordinated Regional/Local Implementation</strong></td>
<td></td>
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<tr>
<td>Quick Start - enhance linkages in CTE pathways between high schools and</td>
<td>$10,800,000</td>
<td>$1,000,000</td>
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<tr>
<td>community colleges in order to increase new enrollments and student exploration</td>
<td>(25)</td>
<td>(25)</td>
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<tr>
<td>in CTE and to create a pipeline of students entering career pathways in</td>
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<td>emerging industries.</td>
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<tr>
<td>Career Exploration - create, improve, or expand middle school career</td>
<td>$1,649,235</td>
<td>$2,847,787</td>
<td></td>
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<tr>
<td>exploration and awareness activities (e.g., programs, curriculum, events) that</td>
<td>(11)</td>
<td>(19)</td>
<td></td>
<td></td>
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<tr>
<td>can be replicated regionally or statewide.</td>
<td></td>
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<tr>
<td>Faculty &amp; Counselor Work Experience - support community college, high school,</td>
<td>$499,652</td>
<td>$349,998</td>
<td></td>
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<tr>
<td>and ROCP faculty and counselors gain business- and industry-based work</td>
<td>(10)</td>
<td>(7)</td>
<td></td>
<td></td>
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<tr>
<td>experience so they can improve their work with students by incorporating new</td>
<td></td>
<td></td>
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<tr>
<td>skill sets, methods, information, and lessons learned.</td>
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<tr>
<td>Strengthening CTE - strengthen and improve the quality of existing CTE</td>
<td>$2,485,204</td>
<td>$10,229,225</td>
<td></td>
<td></td>
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<tr>
<td>programs.</td>
<td>(10)</td>
<td>(39)</td>
<td></td>
<td></td>
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<tr>
<td>CTE Community Collaborative and Supplemental - combines the four grant categories</td>
<td>$20,075,000</td>
<td>$18,091,034</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from 2005 - Career Exploration, Faculty and Counselor Work Experience and</td>
<td>(48 CC &amp; 21 Supp)</td>
<td>(52 CC &amp; 24 Supp)</td>
<td></td>
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<tr>
<td>Strengthening CTE - into one grant category.</td>
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<tr>
<td>Workforce Innovation Partnerships (WIP)</td>
<td>$1,650,000</td>
<td>$4,500,000</td>
<td>$2,731,034</td>
<td></td>
<td></td>
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<tr>
<td>(13 WIP)</td>
<td>(18 WIP)</td>
<td>(18 WIP)</td>
<td></td>
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<tr>
<td>Construction - increase, expand, and/or improve career pathways programs</td>
<td>$1,500,000</td>
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<tr>
<td>for the construction industry sector by developing model programs, articulating</td>
<td>(3)</td>
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<tr>
<td>course work, aligning curriculum, and developing advisory groups to link</td>
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<tr>
<td>education with business, industry, and labor.</td>
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</tr>
<tr>
<td>Career Advancement Academies - First year was a planning grant. Model projects</td>
<td>$150,000</td>
<td>$5,000,000</td>
<td>$4,137,931</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in major population centers to help most in need 18 - 30 years olds return to</td>
<td>(3)</td>
<td>(3)</td>
<td>(3)</td>
<td></td>
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<tr>
<td>school and combine learning with career opportunities in partnership with</td>
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<tr>
<td>industry.</td>
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<tr>
<td>CA Partnerships Academies - Structured as a school within a school, academies</td>
<td>$3,766,000</td>
<td>$5,064,000</td>
<td>$8,924,667</td>
<td></td>
<td></td>
</tr>
<tr>
<td>create a close, family-like atmosphere in which academic and career and</td>
<td>(49)</td>
<td>(87)</td>
<td>(147)</td>
<td></td>
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<tr>
<td>technical education are integrated, and viable business and postsecondary</td>
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<tr>
<td>partnerships are established. (CDE-administered)</td>
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<tr>
<td>Health Occupations Preparation and Education - support community colleges to</td>
<td>$998,962</td>
<td>$1,000,000</td>
<td>$827,586</td>
<td></td>
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<tr>
<td>create a learning center focused on careers in a variety of allied health</td>
<td>(3)</td>
<td>(3)</td>
<td>(3)</td>
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<tr>
<td>programs, provide ongoing support services for students currently enrolled in</td>
<td></td>
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<tr>
<td>allied health programs, and identify and engage partner high school students to</td>
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<tr>
<td>explore careers in health care.</td>
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<tr>
<td>Health Science Capacity Building - build quality programs statewide that will</td>
<td>$2,500,000</td>
<td>$2,500,000</td>
<td>$2,500,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prepare students for jobs or for postsecondary options in the health science</td>
<td>(19)</td>
<td>(41)</td>
<td>(46)</td>
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<tr>
<td>arena, with the end goal of ensuring that the state has an adequate number of</td>
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<tr>
<td>qualified workers to meet the critical worker shortages in the health-care</td>
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<tr>
<td>industry. (CDE-administered)</td>
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<tr>
<td>Young Entrepreneurs Project - EWD Small Business Development and International</td>
<td>$2,000,000</td>
<td>$2,000,000</td>
<td>$1,655,172</td>
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<tr>
<td>Trade Development Centers (approx. 40 centers) will provide statewide</td>
<td>(33)</td>
<td>(38)</td>
<td>(36)</td>
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<tr>
<td>information/education to high school and community college young adults to</td>
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<td>help them understand entrepreneurship in the global environment as a viable</td>
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<td>career pathway.</td>
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<tr>
<td>Teacher Preparation Pipeline - align career and technical education curriculum</td>
<td>$4,100,000</td>
<td>$1,600,000</td>
<td>$1,655,172</td>
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<tr>
<td>and student support services so as to establish pipelines for students</td>
<td>(15)</td>
<td>(9)</td>
<td>(10)</td>
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<td>interested in teaching in today's CTE fields.</td>
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</tbody>
</table>

Note: Unless otherwise indicated, grant categories are administered by the California Community Colleges Chancellor's Office.
<table>
<thead>
<tr>
<th>Grant Category</th>
<th>2005/06</th>
<th>2006/07</th>
<th>2007/08</th>
<th>2008/09</th>
<th>2009/10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infrastructure</strong></td>
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<tr>
<td>Statewide Career Pathways - established an infrastructure and processes for</td>
<td>$4,000,000 (1)</td>
<td>$1,500,000 (1)</td>
<td>$1,241,379 (1)</td>
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<tr>
<td>the articulation of secondary (high schools and ROCPs) CTE classes with</td>
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<td>community college courses.</td>
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<td>Technical Assistance Center</td>
<td>$565,909 (1)</td>
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<tr>
<td>Articulation with Four-Year Institutions - CTE articulation between two-</td>
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<td>$750,000 (1)</td>
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<td>and four-year institutions of higher education and related issues, such as</td>
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<td>transferability of CTE course work, portability of credits recognized by</td>
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<td>four-year institutions, and relative degree of consistency in prerequisite</td>
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<td>requirements and credit recognized for community college course work.</td>
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<td>Evaluation - provide information about the ongoing achievement of</td>
<td>$574,028 (1)</td>
<td>$1,000,000 (1)</td>
<td>$935,586 (1)</td>
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<td>objectives and activities (formative); gather information about the final</td>
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<td>outcomes or products of the projects (summative); determine ongoing</td>
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<td>technical assistance needs; and identify promising practices.</td>
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<tr>
<td>CTE Liaison, Initiative Hubs - To build a statewide system to link businesses</td>
<td>$1,000,000 (8)</td>
<td>$1,500,000 (8)</td>
<td>$1,241,379 (8)</td>
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<td>and economic development work with career technical education efforts. One</td>
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<td>center in eight of the ten initiatives will connect on-going work on new</td>
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<td>certificates, enrollments and enhancements to career technical education.</td>
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<td>CTE Online - Expand computerized, web-based systems for CTE teachers in all</td>
<td>$500,000 (1)</td>
<td>$1,000,000 (1)</td>
<td>$1,000,000 (1)</td>
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<td>15 sectors to improve course content and lesson plan information, including</td>
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<td>integrating academic and CTE curriculum, into the menu-driven system. (CDE-</td>
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<td>administered)</td>
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<tr>
<td>“a-g” Guide Projects - Develops industry specific model courses for</td>
<td>$150,000 (1)</td>
<td>$550,000 (1)</td>
<td>$600,000 (1)</td>
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<td>statewide use that meet “a-g” requirements for all 15 sectors and 58</td>
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<td>pathways. (CDE-administered)</td>
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<tr>
<td>CTE Student Organizations - Subject-based extracurricular activities for</td>
<td>$1,333,333 (6)</td>
<td>$1,333,333 (6)</td>
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<td>secondary/postsecondary CTE students to reinforce leadership and technical</td>
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<td>skills, deepen understanding of related industries, and facilitate internships</td>
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<td>and subsequent employment. (CDE-administered)</td>
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<td>Distance Learning - develop, implement, distribute, and support participation</td>
<td>$500,000 (10)</td>
<td>$500,000 (10)</td>
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<td>in CTE courses at a distance for residents in areas of rural California. (CDE-</td>
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<td>administered)</td>
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<td>New Teacher Workshop - Provide sector specific instruction, particularly</td>
<td>$1,150,000 (1)</td>
<td>$1,250,000 (1)</td>
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<td>for those secondary and community college teachers without formal teacher</td>
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<td>training, on classroom management, instructional strategies, etc. (CDE-</td>
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<td>administered)</td>
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<td>Career Development and Workbased Learning Linkages to Professional</td>
<td>$496,667 (1)</td>
<td>$551,724 (1)</td>
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<td>Organizations - expand, identify, and provide strong career development and</td>
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<td>work-based learning opportunities.</td>
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<tr>
<td>Leadership Development - Conduct a variety of strategies based on effective</td>
<td>$300,000 (1)</td>
<td>$300,000 (1)</td>
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<td>models to develop future CTE leaders and the community college and secondary</td>
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<td>systems. (CDE-administered)</td>
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<td>Curriculum Planning for Emerging Industries - builds on 4 recent future-</td>
<td>$300,000 (4)</td>
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<td>looking studies about the emerging industries of nanotechnologies,</td>
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<td>biotechnologies, digital manufacturing and intelligent transportation, and</td>
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<td>focuses on developing model curricula for instruction in those industries.</td>
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</tbody>
</table>

Note: Unless otherwise indicated, grant categories are administered by the California Community Colleges Chancellor’s Office
APPENDIX B:
Data Collection Methodology

In compliance with Education Code section 88532, which codifies SB 70, this annual report on the Initiative is submitted to the Legislature, the Governor and the Director of Finance by the Board of Governors of the California Community Colleges, in collaboration with the California Department of Education. The Chancellor’s Office and the CDE requested that WestEd compile the report for 2009/10, basing it on the most current findings from its ongoing statewide study of the CTE Pathways Initiative.¹²

WestEd conducted site visits or observations in spring 2010 with 46 grantees, in addition to the 51 site visits conducted in fall 2008 and spring 2009. These visits included a semi-structured interview with key staff and, in most cases, an observation of a grant-funded event (e.g., advisory meeting, career fair, career exploration event, professional development). Information generated provided an overview of what activities or services were being implemented with Initiative funds. In addition, these activities or services often functioned in conjunction with efforts supported by other funding streams to create a fully articulated and integrated CTE system in each grantee’s respective community.

Additional information from the various grant categories was collected from 2008/09 and 2009/10 grantee data reports, 39 phone interviews conducted with key informants (e.g., state monitors, project staff) in spring 2010, observations at grantee-specific conferences (e.g., Career Technical Student Organization leadership conferences, University of California Curriculum Integration (UCCI) Institute; Health Science Capacity Building Projects Conference) or some combination of the above. An online survey was also distributed to partners listed by CTE Community Collaborative grantees to gather information about their level of participation in implementing collaborative grant activities. The three grantees in the Career Advancement Academies (CAAs) category receive support from the Career Ladders Project; they also pooled their resources to hire a local evaluator. Information about these grantees was provided by the staffs of the Career Ladders Project and Public/Private Ventures.

¹² WestEd is a subcontractor to Coast Community College District, the CTE Pathways Initiative statewide evaluation grantee.
APPENDIX B (continued)

Data sources and periods covered per grant type

Data for Table 1 (Career Technical Education Pathways Initiative Data Overview from 2005) were collected from various data collection tools. In most cases, data are cumulative through the duration of the grant and may include duplicates (e.g., one student may have taken multiple CTE courses over several terms and would be counted more than once). Majority of the data reported include data reported through the 2008/09 school year (ending June 2009) due to the timing of the reports. For example, 2009/10 data for Community Collaborative grants are not submitted until late September 2010.

The following list details the source (in parentheses) and time period of the data reported in Table 1:

- Career Exploration, Strengthening CTE and Faculty & Counselor Work Experience – (2009 Governor’s report) Grants ended 2007 and are cumulative.
- Quick Start – Cumulative data through end of grant (2008).
- Teacher Preparation Pipeline and HOPE – (Chancellor’s Office final reports) Cumulative data through 2008/09 school year.
- California Partnership Academy – (CDE annual reports) Cumulative data through 2008/09 school year.
- CTE Liaison Hubs - (Chancellor’s Office online data collection) Cumulative data through June 2009.
- Young Entrepreneurs Project – (Chancellor’s Office summary annual report) Cumulative through 2008/09 fiscal year.
- Health Science Capacity Building – (CDE annual reports) Data for 2008/09 school year.
- Career Development & Work-based Learning – (Chancellor’s Office) First event took place October 2010.
- CTE Student Organizations – (CDE) Data from 2008/09 school year.
APPENDIX C: RAHSI

The following four pages show the California Standardized Testing & Reporting – Biology Score Results & Comparisons for 2008/09. It highlights data in proficiency and mean scores, student gender, grade level, and race ethnicity for:

- Granite Hills High School, San Diego County – Health Career Pathway
- Mount Miguel High School, San Diego County – Academy of Medical and Health Sciences
- Ramona High School, San Diego County – Health Career Pathway
- Valley Center High School, San Diego County – Health Career Pathway
Comparison of CST Biology Proficiency Scores

- **Advanced**
  - Granite Hills Medical Biology (n=45): 58%
  - Granite Hills High School (n=574): 36%
  - Grossmont Union High School District: 29%
  - State of California: 33%

- **Proficient**
  - Granite Hills Medical Biology (n=45): 26%
  - Granite Hills High School (n=574): 27%
  - Grossmont Union High School District: 24%
  - State of California: 33%

- **Basic**
  - Granite Hills Medical Biology (n=45): 12%
  - Granite Hills High School (n=574): 9%
  - Grossmont Union High School District: 13%
  - State of California: 11%

- **Below Basic**
  - Granite Hills Medical Biology (n=45): 9%
  - Granite Hills High School (n=574): 0%
  - Grossmont Union High School District: 0%
  - State of California: 0%

- **Far Below Basic**
  - Granite Hills Medical Biology (n=45): 11%
  - Granite Hills High School (n=574): 12%
  - Grossmont Union High School District: 13%
  - State of California: 12%

Comparison of CST Biology Approximate Mean Scores

- **Granite Hills Medical Biology (n=45)**: 405.3
- **Granite Hills High School (n=574)**: 355.5
- **Grossmont Union High School District**: 344.0
- **State of California**: 343.0

Comparison of Student Race/Ethnicity

- **Granite Hills Medical Biology**
  - Granite Hills Medical Biology (n=45)
  - Granite Hills High School (n=574)
  - Grossmont Union High School District
  - State of California

- **Granite Hills Medical Biology**
  - Female: 73%
  - Male: 27%

- **Granite Hills Medical Biology**
  - 9th Grade: 67%
  - 10th Grade: 33%

- **Granite Hills Medical Biology**
  - White: 67%
  - Hispanic/Latino: 20%
  - Asian/PacIsle: 2%
  - African American: 2%
  - American Indian: 5%
  - Other/Unknown: 4%

Granite Hills High School, San Diego County – Health Career Pathway
California Standardized Testing & Reporting - Biology Score Results & Comparisons 2008-09

Valley Center High School, San Diego County – Health Career Pathway

Comparison of CST Biology Proficiency Scores

- Valley Center Medical Biology (n=73)
- Valley Center High School (n=374)
- Valley Center-Pauma Unified Sch Dist
- State of California

Comparison of CST Biology Approximate Mean Scores

- Valley Center Medical Biology (n=73)
- Valley Center High School (n=374)
- Valley Center-Pauma Unified Sch Dist
- State of California

Comparison of Student Race/Ethnicity

- Valley Center Medical Biology (n=73)
- Valley Center High School

Prepared by Regional Allied Health and Science Initiative  May 2010