

***CAREER TECHNICAL EDUCATION:  
CREATING OPTIONS FOR HIGH SCHOOL SUCCESS***

**LITTLE HOOVER COMMISSION**

*November 2007*



*State of California*

# LITTLE HOOVER COMMISSION

November 15, 2007

The Honorable Arnold Schwarzenegger  
Governor of California

The Honorable Don Perata  
President pro Tempore of the Senate  
and members of the Senate

The Honorable Dick Ackerman  
Senate Minority Leader

The Honorable Fabian Núñez  
Speaker of the Assembly  
and members of the Assembly

The Honorable Michael Villines  
Assembly Minority Leader

Dear Governor and Members of the Legislature:

California is struggling to keep more students in school long enough to graduate and, at the same time, ensure that California's students have achieved sufficient academic proficiency so that they are ready for college, postgraduate training or work. An estimated 30 percent of California's entering ninth graders do not finish high school, an estimate because the state does not collect the data needed for an exact number. In Los Angeles County, home of the state's largest school district, the dropout rate, estimated at 55 percent, is higher than the graduation rate. And every year, the demands of an increasingly global economy require Californians to know more, understand more.

The current focus on career technical education – which accounts for less than 3 percent of the state's annual K-12 spending – is a measure of the intensity of the search for solutions. Educators and parents, business owners and labor leaders see in CTE – with its real world relevance and project-based learning – a way to engage students in education that is different than a purely academic approach. Newly available money for CTE creates the opportunity to invest in CTE strategies that work, as well as the responsibility to determine why some districts' programs are successful, so that other districts can benefit from sharing of best practices. The bulk of the nearly \$400 million in new funding is one-time money, putting a premium on ensuring the money is spent on investments that can pay continuing dividends. Another \$500 million in bond money is planned for CTE infrastructure.

In its study of career technical education, the Little Hoover Commission found encouraging evidence that CTE – in its modern, academically demanding form – can deliver an alternative approach to learning that can keep students engaged, help improve grade point averages and prepare students for both the work world and higher education. In their visits to career-oriented high schools in Sacramento and San Diego, Commissioners saw the new CTE at its best, academically demanding, rigorous and relevant, clearly engaging students who may, in other settings, have been at risk for dropping out.

The research, though encouraging, is not comprehensive. Far more is needed to determine what works in CTE classrooms to boost student outcomes, including proficiency on California's achievement tests. Evaluation should be a condition of receiving any new CTE money.

Lack of data is a problem not limited to CTE, however. The state's entire education system is hobbled by the dearth of real time information that can be used to measure performance of individual students, schools, districts and curriculum. California must find the money in its \$67 billion in annual education spending to fully implement the California Longitudinal Pupil Achievement Data System (CALPADS). Any talk of reform is empty without a way to track long-term performance and measure results.

Likewise, the problems of teacher credentialing and overly complex funding streams are not unique to CTE but burden the entire education system. But credentialing and funding can be addressed on their own terms immediately and should not have to wait for reform of the state's entire system.

CTE is not a panacea for all of California's education woes. But the research that exists, together with examples of how well it can work when done right, make it essential that CTE be preserved and promoted as an important option. An approach that combines rigor and relevance has lessons for the broader education system as well.

The Commission's recommendations are aimed at taking advantage of the current focus on CTE to take steps that will keep CTE viable and effective and ensure that the state's new investment in CTE pays lasting dividends.

California needs to create and implement a strategy for CTE, one that:

- **In the short term, evaluates, expands and replicates proven programs in districts that demonstrate they can support them; then, once more research is in hand, use it to build a long-term, evidence-based strategy that fully integrates academically rigorous career technical education into general education programs.** As the state invests more in CTE, it also must measure the outcomes of CTE programs to ensure best practices are replicated statewide. The new specific funding should be used to expand CTE curriculum that meets the high standards the state has adopted. Course sequencing from high schools to community colleges or other post-secondary education must be enhanced so that all CTE students can progress along an established path. And while the new categorical funding can improve and expand CTE, the state should simplify and integrate CTE funding. A data system to measure student participation and performance in CTE programs and determine whether CTE participation increases academic proficiency must be developed.
- **Is built on partnerships between education and workforce development.** Partnerships of local and regional education, workforce development and economic development leaders have proven to be essential parts of any successful CTE program, connecting current education to future workforce demands. Local districts that seek new money for their CTE programs should be required to demonstrate that they have built strong and active partnerships with the outside community so that what is taught in the classroom is relevant to what is happening in the economy and so that students have the connections with outside employers for learning in a work environment.
- **Expands the qualified CTE teacher workforce.** The state must address the need for teachers qualified to teach the new, more academically demanding CTE, a need that will grow with retirements. California must find a way to tap the wave of retiring baby boomers who could bring their professional experiences to the classroom. Barriers must be removed that hinder hiring more teachers, principals and counselors who will be central to preserving CTE as an option and ensuring that it can produce positive student outcomes.

The Commission commends the bi-partisan support that you have shown in the past several years by enacting laws and providing funding to improve CTE, but the Commission believes more must be done, particularly in measuring returns on the state's investment. The Commission urges you to move forward to implement its recommendations to continue expanding and improving CTE and stands ready to assist you.

Sincerely,



Daniel W. Hancock  
Chairman

# ***CAREER TECHNICAL EDUCATION: CREATING OPTIONS FOR HIGH SCHOOL SUCCESS***

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## *Executive Summary*

**A**s California grapples with high dropout rates and low proficiency scores, career technical education has entered the reform debate as one approach to keeping more students engaged in school and giving them the skills needed to succeed in a fast-changing economy.

CTE, formerly known as vocational education, is a new term that can mean vastly different things to different people. Although this has complicated the debate, it does not have to. The California Department of Education has issued CTE standards that make it clear that the content of CTE courses must be as rigorous as the content standards for high school academic courses.

From the state's perspective, the definition is clear: CTE means education that combines academic rigor and real world relevance. In many schools, however, CTE has all but disappeared. Where CTE survives, few courses meet the state's new CTE content standards.

The state is about to invest nearly \$400 million in CTE programs, much of it one time money. California voters have approved \$500 million more in bond money for CTE infrastructure.

The challenge the state faces in investing this money wisely is that it lacks a statewide strategy to integrate CTE into high school education, and it lacks a large body of conclusive research about what kinds of CTE programs produce improved student outcomes such as higher graduation rates, higher grades and greater academic proficiency.

Over the course of this study, the Commission found compelling evidence that academically rigorous career technical education could improve outcomes – compelling but not comprehensive or conclusive.

The Commission found that the state's system for governing and funding CTE mirrors the state's overall fragmented governance structure for its education system. Within CTE, governance and funding straddle three levels of government and two state departments. While these systems can and do work in concert, there also is discord and dysfunction. The fragmentation sometimes creates artificial barriers that limit access to CTE. In terms of accountability, the fragmentation makes it difficult to understand how much or how well money is spent on CTE.

It is clear that the present educational system is failing many. Roughly 30 percent of all ninth graders who enter high school disappear from the system before earning a diploma. In Los Angeles, home of the state's largest school district, the situation is even bleaker, with more than half of all high school students leaving before graduation. This, at a time when experts assert there is a shortage of workers needed for California's economy, both skilled technicians and college graduates.

The state cannot continue this failure without serious consequences. The state's economic well-being is at risk, as is the social fabric stretched by the growing number of Californians trapped in low-skilled jobs.

The Commission embarked on this study to better understand the research and issues so that it could make recommendations for how the state could best invest the new money available for CTE. The research, which suggests that CTE programs can keep students in school and help them learn skills required for future employment, is encouraging, but more evidence is required.<sup>1</sup> The state lacks data to track and measure outcomes of student participation in CTE. It needs to ramp up its data capacity – particularly the California Longitudinal Pupil Achievement Data System (CALPADS), its unique student identifier system – to enable policy-makers and educators to understand what is working.

Available research indicates that programs that combine career-themed coursework with rigorous academics are having a positive impact on students. Students participating in some of the state's CTE programs that have been evaluated are staying in school and graduating at rates higher than their peers. They are more likely to pass the high school exit exam; they are more likely to earn higher wages in jobs after high school; and, they are at least as likely to go on to postsecondary educational programs. Some studies show that those students at highest risk of dropping out benefit most from CTE participation. Other studies indicate certain subgroups of students who participate in CTE, including African Americans and Latinos, outperform their peers at even greater rates than CTE students overall.

Given the promising results, experts told the Commission that the state's schools need to make more academically rigorous CTE courses available to more students. It will not be the whole solution. But blending CTE into the state's overarching education strategy has the potential to improve outcomes for many – particularly those that are at greatest risk of dropping out.

## ***CTE – From the Margin to the Mainstream***

California must develop a strategy for integrating CTE into more schools across the state so that rigorous and relevant CTE courses can be an option for more students.

Career-themed high schools with programs touted as models have sprung up across California, but there is no process for measuring programs and ensuring effective programs are implemented statewide. The state has made a sound investment developing and adopting CTE standards and a framework, but schools lack the matching curriculum. The state also lacks any sort of mechanism to ensure that CTE content standards are embedded in CTE curriculum.

A few districts and schools have developed curriculum that meets the state standards, embedding statistics in classes on public health risks and high-level math to teach construction technology. The Commission found others have adopted nationally-acclaimed curriculum that meets state standards. But these represent only a small portion of the CTE courses taught statewide. The state must do a better job assisting local districts in developing and implementing successful CTE curriculum and program models.

New money has specifically targeted improving course progressions between high schools, Regional Occupational Centers and Programs (ROCPs) and community colleges so that students can progress along an established path that connects what they have learned from one course to the next. Still, there are exemplary programs at high schools and ROCPs with no corresponding linkage to community colleges. Likewise, there are outstanding community college programs with no feeder schools.

The governor and the Legislature have dedicated \$400 million over the next seven years to expand and improve CTE programs. The state has an opportunity with this cash infusion to make a difference for students and to improve California's economy by expanding its educated workforce.

**Recommendation 1: California must develop a strategy to, in the short term, evaluate, expand and replicate proven programs in districts that demonstrate they can support them. The state must use research results from its short-term strategy to create a long-term, evidence-based strategy to fully integrate academically rigorous career technical education into general education programs. Specifically, the state should:**

- ❑ **Expand and replicate successful career-themed high schools and effective CTE programs.** Through the Governor’s CTE Initiative grant program, the state should provide grant money to schools or districts that demonstrate they are implementing proven career-themed education models. The state should require those receiving grant money to track and report student performance. The state should provide technical assistance to help local districts identify and replicate academically rigorous CTE programs.
- ❑ **Expand the availability of academically rigorous CTE curriculum.** The state should specifically target a portion of its new CTE grants to expand academically rigorous CTE curriculum that meets state CTE standards. CTE grant recipients should be required to consult with business and industry in CTE curriculum development. Additionally, the state should provide grants for professional development to ensure that teachers are qualified to teach the new CTE standards.
- ❑ **Improve the process for qualifying CTE courses for the A-G requirements.** The state should require that all new CTE courses developed with CTE grant funding meet the California CTE standards and be rigorous enough to qualify for A-G credit. The University of California should be required to work with the Department of Education and local educational agencies to ensure rapid and consistent approvals of academically rich CTE courses so that more CTE classes meet the approval of the UC for its A-G requirements, particularly in core academic subject areas.
- ❑ **Align CTE courses into streamlined sequences.** The state should require all grant recipients to align their CTE courses and programs with course sequences in partner community colleges and ROCs. Such partnerships should include regional employers to help establish smooth paths for students in career-themed educational programs, as well as help them earn priority placement in postsecondary education programs that continue their career paths. The state should continue to evaluate the progress of the alignment effort and use evidence to further guide and improve course sequences.
- ❑ **Align funding.** The state should consolidate state CTE funding into one specific funding source to better coordinate and track CTE spending.

- ❑ **Measure results.** The state should fully implement the California Longitudinal Pupil Achievement Data System so that it can accurately measure dropout rates, graduation rates and the effectiveness of various educational programs, including CTE programs. The state should require local educational agencies to provide accurate data for CALPADS and provide funding to do so. The state also should further develop a data system to combine K-12, postsecondary and employment data information to measure post-high school outcomes.

## ***Connecting for CTE Success***

The state lacks a strategy for connecting education with workforce development and economic development. Previous efforts showed early signs of success, only to fall by the wayside when leadership changed or when funding disappeared. Efforts at the local level have shown mixed results.

As a result, California has not been able to sustain a state-level strategy for connecting education and workforce and economic development, and at the regional and local levels, many CTE programs lack the links that could align coursework with local economic conditions, enhancing connections and course sequences from high school to ROCP and community college programs. Such linkages are crucial to creating the work-based learning opportunities – such as job shadows, mentorships and internships – that both groups of stakeholders say they want.

Leaders from several model collaborative efforts described partnerships where high schools, districts, regional occupational centers, county offices of education and colleges had forged relationships with businesses, labor and local workforce investment boards. They used these partnerships to link curriculum and educational programs with state, regional and local workforce demands.

The state, as it works to reinvigorate the California Workforce Investment Board, should focus on bottom-up efforts at the regional and local level.

***Recommendation 2: To remain economically viable in the global economy and to ensure that education programs match workforce needs, California must better align its education, workforce development and economic strategies. Specifically, the state should:***

- ❑ ***Use existing money for incentives to develop and expand strong, high-level regional business and education partnerships.*** The state should commit part of existing CTE funding, including discretionary federal

money, to local county offices of education or community colleges to develop or expand regional partnerships that have demonstrated the capacity to produce measurable outcomes, such as creation of internships, job placement, successful CTE teacher recruitment or creation of a locally based CTE teacher credentialing program. These partnerships should work to advance integrated workforce development throughout the state. Local partners should include top local leaders, including superintendents from school districts and county offices of education; chancellors from local community colleges; presidents of local CSU, UC and private colleges, where applicable; leaders from the local workforce investment board; chief executive officers from local employers; and, county CalWORKs administrators. The regional partnerships should:

- ✓ Ensure CTE courses and sequences offered match high-demand jobs of the region and the state.
- ✓ Ensure that CTE curriculum and course sequences meet industry standards.
- ✓ Leverage local employers for work-based learning opportunities, such as job shadows and internships.

## ***Building Capacity***

The lack of educators qualified to teach to the state's new rigorous CTE standards is a major hurdle to sustaining and expanding CTE programs. The number of CTE course enrollments has declined 33 percent from 1987 to 2005, while the number of full-time equivalent CTE teachers has fallen 29 percent during the same period.<sup>2</sup> If schools are to upgrade their CTE curriculum to meet state CTE standards, they will need more teachers, and more teachers with better training. Experienced professionals find barriers that prevent them from easily moving into a teaching career.

In addition, career-themed schools require a new breed of leaders with different training and skill sets. Today's school leaders are accountable for improving academic proficiency, managing staff and students and forging partnerships with businesses, non-profit organizations and other educational institutions. A shortage of qualified counselors to guide students on career and college options also poses a barrier to expanding CTE.

The CTE credentialing process is a major barrier to increasing the number of teachers needed to expand CTE and upgrade programs with new curriculum that meets the state's CTE standards. The CTE credentialing system needs to be streamlined, aligning it with CTE

industry sectors to increase flexibility. Legislation to address this was passed in September 2007, and the California Teacher Credentialing Commission has formed an advisory committee to review this. Broader reform is needed. Artificial barriers, such as job-history requirements, prevent qualified professionals as well as teachers with previous industry experience from entering the CTE teacher workforce.

The Commission heard concerns that the state's primary training ground for new teachers, the CSU system, is not nimble enough to quickly adapt to the new standards. Most districts, however, lack training programs to help teachers upgrade their skills to teach more demanding CTE curriculum.

The state can address these issues by tapping county offices of education and local districts to develop and implement new training programs, pushing for a rapid overhaul of the credentialing process and removing barriers for qualified professionals. New money has been allocated for hiring more counselors. Some of it should be directed to developing CTE-specific counselors who can take the lead in working with a school's business community partners to create internships and other work-related learning opportunities.

***Recommendation 3: In order to improve student outcomes, the state must implement policies and remove barriers to expand the educational workforce, including teachers, administrators and counselors. Specifically, the state should:***

- ❑ ***Update and streamline the credentialing process.*** The California Commission on Teacher Credentialing should complete within two years its update of the CTE credentialing process, including aligning the CTE credential with the industry clusters established in the state board-adopted CTE standards and framework and eliminating barriers that make it difficult for industry professionals to enter the teacher workforce. Specifically, the commission should:
  - ✓ Revise the recent work history requirement.
  - ✓ Allow newly credentialed CTE teachers to participate in the Beginning Teacher Support and Assessment (BTSA) Induction Program.
- ❑ ***Require ongoing staff development.*** The state should require all Governor's CTE Initiative grant recipients to expand time for rigorous and structured staff development on blended CTE and academic curriculum. Specifically, the state should:
  - ✓ Require credentialing and other related education programs for principals to include training on developing and implementing CTE programs that meet the state's CTE standards.

- ✓ Provide incentives to local districts and schools to develop and expand their own credentialing programs to provide teacher certification for rigorous CTE courses. The state should provide incentives for districts and schools, where appropriate, to replicate successful district-based credentialing.
- ✓ Require CSU to assess teacher training and implement necessary changes to ensure new teachers are qualified to teach the rigorous CTE coursework based on the state's CTE standards.
- ***Provide incentives for professionals to teach.*** The state should implement programs and incentives to encourage mid-career and retiring professionals to enter the CTE teacher workforce. Specifically, the state should:
  - ✓ Provide incentives for team teaching approaches.
  - ✓ Consider tax incentives for businesses to loan professionals to schools.
  - ✓ Expand opportunities for summer externships so teachers get a better sense of the business world.
  - ✓ Lobby policy-makers at the federal level to eliminate the Social Security disincentive.
- ***Expand the number and role of counselors.*** The state should use previously approved money for local districts to expand the number of counselors trained in providing career advice, including postsecondary training and education options. CTE counselors funded with this money should take the lead role in outreach, serving as the main resource for generating internships and other job-based learning opportunities. The state should require Governor's CTE Initiative grant recipients to provide additional training for counselors about CTE programs and career options for students.

## Background

Nearly 2 million students are enrolled in California's public high schools, but only 71 percent of students who enter ninth grade will graduate.<sup>3</sup> Though California's overall graduation rate has edged slightly higher, graduation rates at individual schools and certain school districts within California – particularly those with high concentrations of minority and low-income students – are depressingly low. The graduation rate in the Los Angeles Unified School District, the state's largest school district, is just 45 percent.<sup>4</sup> Across California, the graduation rate for African American students is 57 percent, 60 percent for Latinos.<sup>5</sup>

California students who remain in school post test scores that lag far behind the rest of the nation. In the 2007 National Educational Assessment of Progress (NAEP) for math and reading, California comes in near the bottom of all states. Only three states score lower on the fourth grade assessment of math skills, and only four states score lower on the eighth grade assessment of math skills. For fourth grade reading, only two states score lower than California, and for eighth grade reading, only Mississippi scored lower.<sup>6</sup>

Many other students graduate but flounder for years in low-paying, dead-end jobs.

Meanwhile, California industries are struggling to find workers to fill high-wage, high-demand jobs.

As California's leaders debate how to tackle these issues, career technical education has come to the forefront of this conversation as part of a solution for both of these challenges. This conversation has a new context: New money is available for CTE, nearly \$400 million over the next seven years.

Debates about the role of career-based learning in high school education go back more than a century. Changes in the economy, technology and education have introduced new issues and realigned stakeholders, but the debate remains, embedded in the broader questions about the purpose of high

### *New Money for CTE*

On top of \$20 million a year over the next seven years, the governor has targeted \$260 million for CTE, one outcome of a 2006 legal settlement reached by the California Teachers Association and the governor.

In addition, the 2006-07 budget included \$80 million in one-time funding for CTE equipment and materials, split equally between public schools and community colleges. And in November 2006, California voters passed Proposition 1D, a public education facilities bond act, which earmarks \$500 million for CTE facilities.

school: Should high schools be expected to prepare students for college? Specific jobs? The work world in general? Or should high schools simply prepare students to meet agreed-upon standards of proficiency?

***Dropouts Costly, Add to Shortage of Skilled Workers***

The dropout cost is more than just missed opportunities. According to one University of California expert, the approximately 66,000 students who drop out in any given year will cost the state \$14 billion in lost wages. And high school dropouts are far more likely to go to prison and rely more heavily on government programs, such as welfare, public health care, food stamps and housing subsidies, over the course of their lives.

Longstanding support for CTE also comes from those who believe that a career-based approach to education can better prepare more students for jobs in a competitive economy. Business and labor leaders agree that California's continued economic success hinges on maintaining a high quality workforce. These leaders assert that California is in danger of losing its workforce advantage as highly skilled baby boomers retire and the next generation of workers – needed to maintain California's competitiveness and to fund expanding baby boomer retirement costs – are less educated and less skilled than their predecessors. Experts say that California will have to increase the number of college graduates as well as high school students with the necessary skills to enter the workforce and to pursue advanced education and training throughout their lives.

Sources: The Civil Rights Project, Harvard University. March 2005. "Confronting the Graduation Rate Crisis in California." Citing Russell Rumberger, Professor at the University of California at Santa Barbara. Also, Lynn Olson. June 22, 2006. "The Down Staircase." Education Week. Also, Hans P. Johnson and Deborah Reed. Public Policy Institute of California. May 2007. "Can California Import Enough College Graduates to Meet Workforce Needs?" Also, California Postsecondary Education Commission. December 2006. "The Nexus Between Postsecondary Education and Workforce Development: A Workforce and Employer Perspective."

In the early 1900s, vocational education, as it was known then, rose with the industrialization of the U.S. economy. The earliest infusion of job-oriented training into the public education system began with Congress and the Vocational Education Act of 1917, which provided money to states to prepare youth for jobs. In the early part of the last century, when 90 percent of youth left school by age 14, it was hoped that job-oriented training would keep more students enrolled and better prepare them for work in the factories, farms and homes of the era.

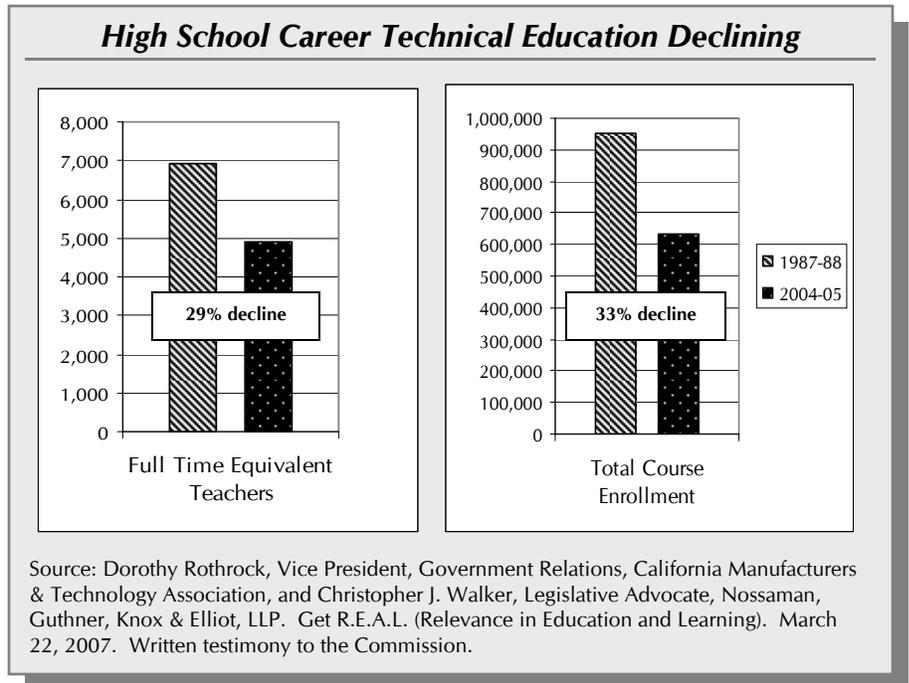
This 90-year old federal policy required that states establish a separate board for vocational education and established "separate funds, separate teacher preparation and certification, separate students, and separate and segregated curriculum."<sup>7</sup> This deliberate separation lasted for most of the 20<sup>th</sup> century, shaped many of the early job-specific vocational programs and helped establish the perception that work-related course content is for those who are not college-bound.

In the 1980s, career technical education emerged in the place of vocational education, a reflection of the new skills students needed to thrive in a new economy.

Many continued to view CTE as inferior to a traditional academic path. Previously, students who were not succeeding in academic coursework or were perceived to not be college material were steered to the vocational track. High achievers or those who aspired to higher education were directed to college preparation programs. More often than not, low-income and minority students were put on the vocational track.<sup>8</sup> Among many minority adults, CTE still retains its stigma from those days.

In 1984, Congress passed the Carl D. Perkins Vocational Education and Applied Technology Act, which required states to improve vocational education programs. The presence of CTE in high schools, however, continued to erode over the next two decades, in part because of changes in the economy, but to a greater degree, a shift in the broader educational environment.<sup>9</sup>

The 1983 report “A Nation at Risk: The Imperative for Educational Reform,” which warned that the nation’s educational system was failing, marked the start of a fundamental shift in education reform.<sup>10</sup> The report set in motion the accountability movement that led to academic standards reform in California in the late 1990s and, at the federal level, the No Child Left Behind Act of 2001.



California school districts, aiming to raise student proficiency to meet the new standards, put the focus on academics, and as budgets tightened, CTE classes started to disappear. Though a small number of CTE programs have bolstered their courses to make them more academically rigorous, many of the state’s existing CTE programs have been slow to upgrade their curriculum.

The California Department of Education made its direction clear with its release, in 2005, of new, rigorous CTE content standards that matched the state’s ambitious academic standards, followed up by a framework for those standards in 2007. That made moot many of the arguments about what CTE should be. The state has set the bar: To meet the standards, CTE must be academically rigorous and offer real world relevance.

It is not known how many CTE courses currently taught meet state CTE standards, but another measure gives a sense of scope. The 5,614 courses that the UC has approved as meeting A-G requirements account for about 20 percent of all CTE courses.<sup>11</sup>

## ***CTE Funding Sources Varied***

Career technical education is only a small part of how California educates its students. In 2006-07, the budget for K-12 schools, including adult education, totaled approximately \$67.1 billion. CTE spending, categorical and discretionary, represented about 2.5 percent of the total K-12 budget.<sup>12</sup>

CTE funding is spread across three layers of government: federal, state and local; two state departments: the California Department of Education and the California Community Colleges Chancellor's Office; and, several categorical programs as well as philanthropic organizations and foundations. The varied sources and the use of General Fund money for CTE at the district level make it difficult for the state to determine exactly how much money California spends on high school CTE each year.

Much of the state CTE money and all federal CTE money is in the form of specified funding that is isolated from general education spending. This pattern of funding perpetuates the separation of CTE and academic core courses. While experts told the Commission that the fragmentation of funding sources was a hurdle in many respects, it also may have prevented CTE programs from shrinking even further over the past two decades. Experts told the Commission that without dedicated money for specific categories of spending, CTE programs would be at risk of losing out to other priorities.

The varied list of specific state-funded programs includes the Regional Occupational Centers and Programs, partnership academies, agricultural vocational education, the apprenticeship program, the Governor's CTE Initiative, the vocational component of adult education, the community colleges' economic development program and nursing programs.

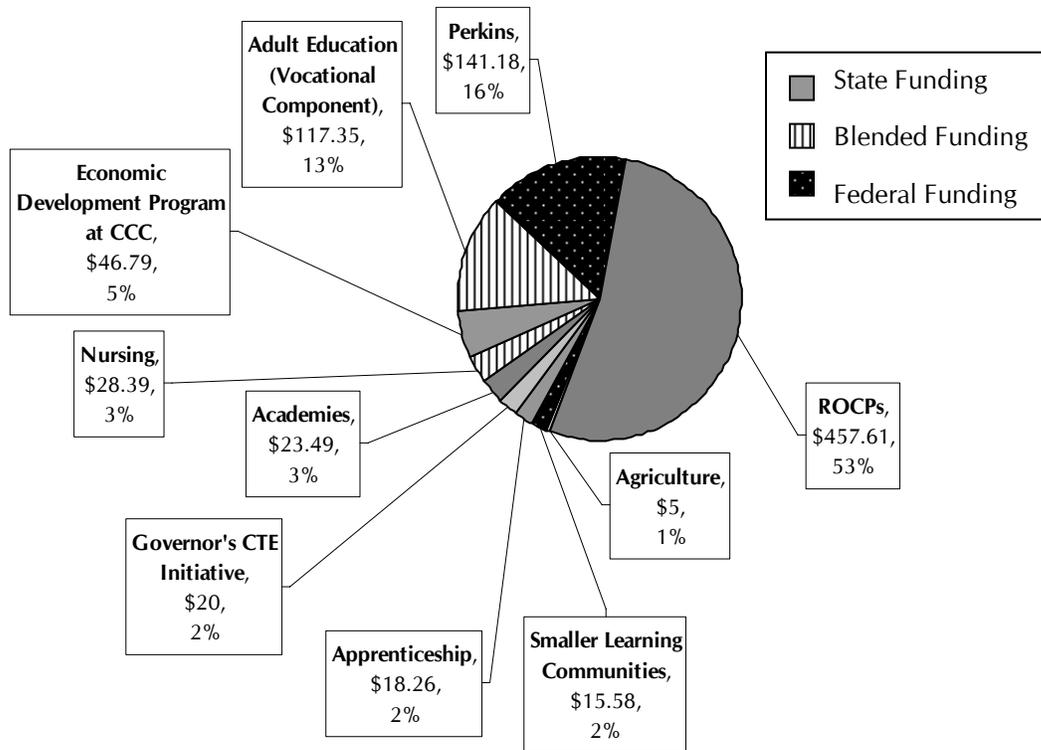
The Carl D. Perkins Vocational and Technical Education Act is the biggest federal source of money for specified spending, providing approximately \$140 million annually for CTE through two programs: Basic Grants to States and Tech-Prep Education. Perkins Act basic grant money flows to secondary schools, community colleges, ROCPs, adult education agencies and state institutions. Secondary and postsecondary education agencies receive 85 percent of the grant amount. Of that amount, about 44 percent is allocated to secondary schools.<sup>13</sup>

The following chart provides a breakdown of these federal and state categorical program funds for 2006-07, totaling nearly \$875 million and representing just over 1 percent of the budget for K-12 and community

college education.<sup>14</sup> The figures shown in the chart are inputs, representing separate categorical funding sources for CTE. Some of these funding sources are then blended as expenditures, i.e., there is a separate categorical funding source for ROCPs, but ROCPs can receive money from more than one categorical.

**Breakdown of Ongoing State (2006-07) and Federal (FY 2006) Categorical Funding for CTE**

Dollars in Millions – Total: \$873.65 million



Sources: California Department of Finance. "SDE/CCC Job Training and Nursing Investments in California." Also, California Department of Finance. January 10, 2007. "Entire Education Budget - Categorical Programs, Proposition 98." Page 10-11. Accessed at <http://www.ebudget.ca.gov/pdf/GovernorsBudget/6000.pdf>. Also, U.S. Department of Education. "Grant Award Totals by CFDA Subprogram for Fiscal Year 2006." Accessed at [http://wdcrobc01p01.ed.gov/CFAPPS/grantaward/rpt\\_gatcs.cfm](http://wdcrobc01p01.ed.gov/CFAPPS/grantaward/rpt_gatcs.cfm).

The programs have different lead agencies and are stretched across various populations. The chart on the following page shows the mix of agencies and populations served.<sup>15</sup>

Local school and community college districts can use their discretionary money to fund CTE classes and leverage categorical contributions. Using apportionment amounts from 2002-03, the Department of Finance estimates that local school districts spent nearly \$900 million and community college districts spent approximately \$655 million in non-categorical funding on vocational and career technical education in 2006-07, for a total of approximately \$1.55 billion.<sup>16</sup>

**Lead Agencies and Student Populations for CTE Categorical Programs**

		<i>ROCPs</i>	<i>Academies</i>	<i>Ag</i>	<i>Apprenticeship</i>	<i>Governor's CTE</i>	<i>Adult Ed.</i>	<i>Econ. Dev.</i>	<i>Nursing</i>	<i>Perkins</i>	<i>Smaller Learning Communities</i>
<b>Lead Agency</b>	<b>CDE</b>	X	X	X	X		X		X	X	
	<b>CCC</b>				X	X		X	X		
<b>Student Population</b>	<b>High School</b>	X	X	X	X (pre-apprenticeship)	X	X		X	X	X
	<b>Other Adults</b>	X			X		X			X	

CDE – California Department of Education

CCC – California Community Colleges

Finally, many local districts also apply for and receive philanthropic and foundation grants, which further leverage public money. Organizations such as the Bill and Melinda Gates Foundation, the James Irvine Foundation and others have played significant roles in guiding the creation of CTE programs through their research, technical assistance and this type of grant funding.

***What Research Reveals About CTE***

In Governor Arnold Schwarzenegger, the state has a leader who has experienced a career-oriented education first hand and wants to expand opportunities for California’s students. The governor’s support has drawn attention to an emerging body of evidence that suggests that career technical education can play an important role in keeping students engaged and attending high school and also improving their options after high school.

However, hard evidence to support this – like much of the education data in California – is limited. Because so few students have an opportunity to enroll in academically rich CTE courses, there are few students to study. Many of these academically challenging courses only recently have been developed and only have begun to spread into classrooms. Additionally, California’s assessment measurements also are fairly new, and most agree they lack a critical component – the ability to assess individual student progress. Many of the studies that have occurred have been funded by foundations as the state has been reluctant to invest in a better data system or require outcome measures for CTE programs.

The state does not know whether an algebra class that engages students with real-world examples linked to career interests will make kids learn better than a traditional algebra class. But we do know the status quo is not working for too many kids, particularly minority and low-income students.

Despite the shortage and the shortcomings of available data on CTE, witnesses at the Commission's public hearings and participants in the Commission's advisory committee meetings pointed to emerging research showing that academically infused CTE holds promise in keeping students in school and improving their academic performance. Research the Commission reviewed indicates that students who enroll in CTE courses have higher attendance rates, are more likely to pass the high school exit exam, are more likely to graduate and improve their grade point averages (GPAs) at greater rates than comparable students who do not enroll in CTE courses. And the data show those in CTE are equally likely to participate in postsecondary education.

Most compelling in some of these studies is evidence that some ethnic subgroups, including African American and Latino students, achieve even greater gains than the average CTE student. Research also has shown that some of the CTE programs that were evaluated provide the greatest benefit to those students who are most at risk of dropping out – those who have been chronically absent, have failed courses or have been held back.

### ***California Partnership Academies Target At-Risk Students***

California Partnership Academies have been studied more than any other type of CTE program in California, largely because they have generated more than two decades' worth of data, and the programs, because of their student body requirements, drew the attention of national researchers. Designed to engage at-risk students, partnership academies on 208 California high school campuses – sometimes more than one at a given school – function as a school-within-a-school with a broad career theme and related academic courses for students in grades 10-12. Each academy partners with businesses whose representatives provide oversight and input on curriculum and work-based learning opportunities. At least half of all students in each partnership academy must meet three of four eligibility criteria: prior irregular attendance; a record of under achievement; low motivation or disinterest in the regular academic program; and, economic hardship.<sup>17</sup>

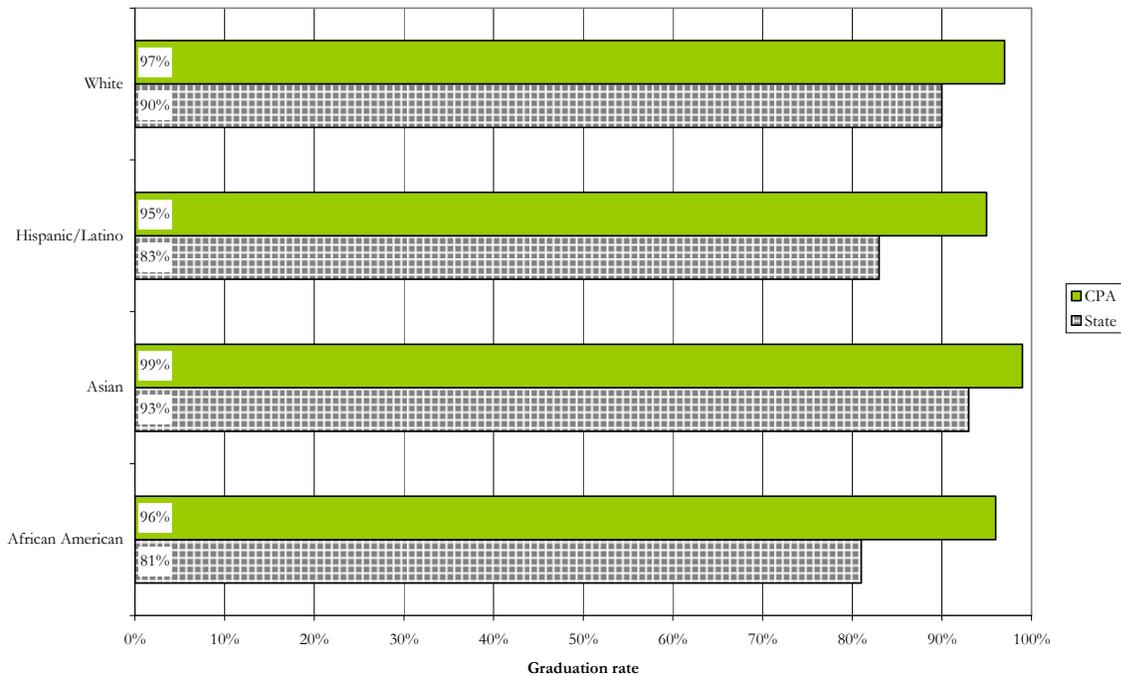
A 2007 review of California's 290 high school partnership academies by ConnectEd showed promising results. The assessment found that tenth grade students enrolled in partnership academies had higher passage

rates on the California High School Exit Exam (CAHSEE) than did their peers who were not enrolled in academies, with 84 percent passing the English language arts test, compared to 76 percent statewide, and 80 percent passing the mathematics test, compared to 74 percent statewide.

The most significant contrast in the data appears when scores are sorted by student ethnicity. Native American, Hispanic/Latino, Pacific Islander and African American students enrolled in partnership academies passed both exams at substantially higher rates – from 10 to 17 percentage points higher – than did students of the same ethnic groups statewide. In only one area did a group of students statewide outperform academy students – 92 percent of Asian students statewide passed the math exam compared to 88 percent of Asians enrolled in academies.

Graduation rates are another gauge of success identified in the ConnectEd report. Graduation rates of academy seniors were higher than those of seniors statewide – 96 percent as compared to 84 percent. As with the CAHSEE results, certain ethnicities, including Native American, Hispanic/Latino, Pacific Islander and African American students, had graduation rates 10 to 15 percent higher than did their peers who were not participating in academies.

**CPA AND CALIFORNIA 12TH-GRADE GRADUATION RATES BY RACE/ETHNICITY**



Source: Gary Hoachlander, President, ConnectEd: The California Center for College and Career, and Charles Dayton, Coordinator, Career Academy Support Network, University of California, Berkeley. March 2007. "A Profile of the California Partnership Academies 2004-05." Page 19.

Additionally, 50 percent of academy graduates met the college A-G requirements, compared with a statewide rate of 35 percent. Seventy percent of academy seniors reported that they planned to pursue a college degree immediately after high school.<sup>18</sup>

Despite these and other positive outcomes highlighted in the report, including high attendance and course completion rates, the overall average Academic Performance Index (API), a key state measurement based primarily on academic testing, on average was lower for academies than traditional high schools. Academies have a higher representation in low API schools and lower than average representation among top API schools. Given that at least half of the students admitted to the academies are at-risk – in part defined as a history of poor attendance and low academic performance – experts assert that it is not surprising that average APIs for academies are lower than many schools where half the population is not at-risk.<sup>19</sup>

The ConnectEd study also included key caveats. First, all of the data in the review were self-reported by the academies, and though highly structured with substantial student performance data, accuracy was not guaranteed. Additionally, not enough information was available regarding academy student selection processes to confirm whether the academies consistently met the program’s at-risk requirements. Additionally, the quality of the partnership academy programs varied across the state.<sup>20</sup>

Another national study, considered a model evaluation because of its rigor and random sampling design, documented positive outcomes for students who attended career academies. Since 1993, researchers at the Manpower Demonstration Research Corporation (MDRC) have tracked the outcomes of students enrolled in nine career academies across the United States, including four in California, as well as a comparison group. The MDRC studies are based on student records, student surveys during high school and follow-up surveys after high school. In its 2000 report on students’ engagement and performance in high school, MDRC found that career academies substantially improved high school outcomes among students at high risk of dropping out.<sup>21</sup>

For those students, career academy participation significantly cut dropout rates and increased attendance rates, credits earned toward graduation and preparation for post-secondary education. Among the students least likely to drop out of high school, the career academies increased the likelihood of graduating on time. Despite these positive outcomes, the study revealed the career academies had little or no impact on student scores on standardized math and reading tests.<sup>22</sup> Later studies of these students showed that career academies had

substantial positive impacts on employment and earnings after high school, particularly for young men and those who were considered high risk for dropping out.<sup>23</sup>

Another national study found that students who add a career concentration to a strong core of academic subjects had test scores that were equal to or exceeded those of college-preparatory students, had a higher grade point average in college, were more likely to remain in college and had better employment and earnings outcomes. This study also found that high-risk students were eight to 10 times less likely to drop out in 11<sup>th</sup> and 12<sup>th</sup> grades if they enrolled in a CTE program rather than a general program.<sup>24</sup>

### ***Regional Occupational Centers and Programs***

Initiated in 1967, California's 74 Regional Occupational Centers and Programs (ROCPs) provide career preparation courses that teach both technical and academic skills to high school and adult students. Approximately 75 percent or 375,000 of the 497,000 students served annually are high school students. Some programs are held on high school campuses while others use regional locations that draw students from multiple high schools.

#### ***Other CTE Models***

In addition to the previously described California Partnership Academies and Regional Occupational Centers and Programs, the state offers other established CTE models, such as its agricultural programs and "Tech-Prep" programs. Approximately 50,000 high school students each year are enrolled in the state's agricultural education programs, which combine academic coursework with the technical training needed to be successful in the agricultural field. Tech-Prep Programs, funded through federal Perkins grants, typically take the form of 2 + 2 programs offered through a collaboration between high schools and community colleges that combine two-year high school programs with two-year college programs that lead to a certificate or a degree.

Sources: California Department of Education. January 2000. "Agricultural Education: State Program Enrollment Data Report Summary 1999-00." Sacramento, CA. Accessed at [www.calaged.org](http://www.calaged.org). Also, California Department of Education. "Agriculture Education." Accessed at <http://www.cde.ca.gov/ci/ct/ae/>. Also, U.S. Department of Education. October 13, 2006. "Tech-Prep Education." Accessed at <http://www.ed.gov/programs/techprep/index.html>.

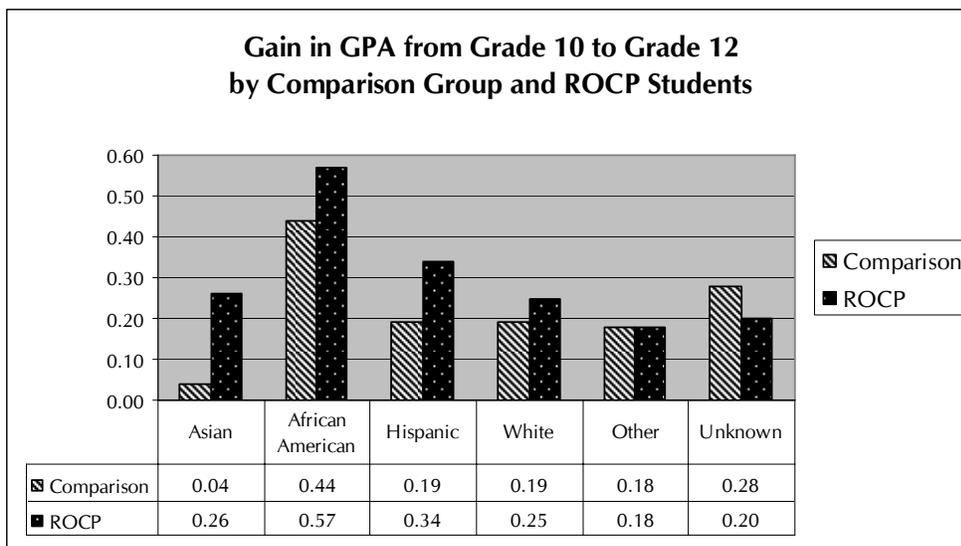
A 2006 study by researchers at the University of California, Riverside, compared a sample of current ROCP students and recent graduates to a peer group with similar academic and demographic characteristics. The study found that the tenth grade academic achievement of the ROCP student group – the grade at which most students begin ROCP coursework – was significantly lower than the peer group, a possible indication that high schools use ROCPs to meet the needs of more at-risk students. Additionally, ROCP students were slightly more likely to qualify for a free or reduced price lunch and also were more likely to be English language learners than the peer group.

Academically, students enrolled in the ROCP courses raised their GPAs by more than the peer group. The ROCP students had an average tenth grade GPA of 2.7 which increased to 3.0 by twelfth grade, a 0.3 increase. The peer group had a higher tenth

grade GPA, 3.1, but rose only 0.2 points to 3.3.

This study found that some of the greatest gains were made by student subgroups, including African Americans, who as a group increased GPAs by 0.57, and Hispanics, who increased GPAs by 0.34.<sup>25</sup> The report emphasized that the gains by the ROCP students were statistically too large to be accounted for by ROCP gains alone and reflected improvement in other coursework.

The increases in GPAs were more significant than those in a similar study of ROCP students in 2004. The UC Riverside study suggested that the increase in academically infused CTE coursework might be the underlying reason, although it cautioned that more research was needed to prove this correlation.<sup>26</sup>



Source: Laurel Adler, Superintendent, East San Gabriel Valley Regional Occupational Program and Technical Center. April 26, 2007. Written testimony to the Commission.

An examination of ROCP student performance on the state’s STAR academic achievement tests, however, revealed mixed results. The comparison group had higher math and reading scores in tenth and eleventh grade, though progress was flat. The ROCP students had significantly lower reading and math scores than the comparison group in both grades but improved their reading test scores modestly, while math scores fell slightly. Another methodology showed slight declines for ROCP students in both reading and math scores. The transcript data and follow-up surveys included in the study revealed positive outcomes when compared to the peer group. The ROCP students enrolled in postsecondary education at an equal rate as the peer group, earned higher wages upon graduation, had more success in securing raises and

promotions and expressed higher satisfaction with the high school coursework.<sup>27</sup>

The ROCP students said they had less enthusiasm for other high school academic, fine arts and physical education courses and reported that “only a few” of the general high school classes were relevant to getting jobs or preparing them for other aspects of adult life.<sup>28</sup>

### ***Other Promising Models***

Beyond reviewing the research, the Commission also visited high schools that offered students both an academically rigorous schedule and an approach to learning built around real-world relevance. At each school, Commissioners met and talked with principals, teachers and students. Recent data on results from two of these schools, Arthur A. Benjamin Health Professions High School in Sacramento and the Stanley E. Foster Construction Tech Academy in San Diego, are provided below.

***Arthur A. Benjamin Health Professions High School.*** Nestled between an industrial complex and one of Sacramento’s largest public housing projects, Health Professions High (HPH) draws students from the local neighborhood and other areas in the Sacramento City Unified School District as well as students from outside the district. Students dress in scrubs at this small health career-themed high school, conduct lab experiments in science that help them understand how germs are spread and learn percentages in Algebra by calculating prescription doses. The student population is 38 percent African American, 31 percent Latino, 19 percent white, with the remaining 12 percent comprised of various ethnicities. Approximately 58 percent of HPH students qualify for free or reduced price lunch.<sup>29</sup> As of 2007, the school was in its third year of operation and had approximately 375 students, with plans to grow to a maximum of 500 in 2008.

Because the school is so new, its first ninth-grade class has yet to graduate. However, data show that so far the school has a dropout rate of approximately 2 percent. Students showed significant gains in the first two years of operation as far as the percentage achieving proficiency in math based on academic testing, while proficiency based on English language arts tests did not change significantly. On another measure, the CAHSEE, 76 percent of tenth grade students tested passed the math portion, the same percentage that passed statewide, while 82 percent passed the English language arts portion, 5 percent more than the statewide average. Ethnic subgroups at HPH showed significantly higher passing rates than similar ethnic subgroups statewide. Results showed that 64 percent of African American students passed the math test, and 72 percent passed the English language arts test, above the statewide

averages for African American students of 58 percent and 66 percent. For Latino students, 75 percent passed the math and 87 percent passed the English language arts, compared to 66 percent for both those tests statewide.<sup>30</sup>

***The Stanley E. Foster Construction Tech Academy.*** The Stanley E. Foster Construction Tech Academy (CTA) opened in 2002 as a school-within-a-school at the Kearny High Educational Complex, formerly a comprehensive urban school in San Diego. With outside grant funding, CTA and 13 other San Diego schools became autonomous in 2004. CTA focuses on engineering, architecture and construction trades. Students use computer-automated programs to design everything from robots to a model for a redesigned San Diego International Airport. CTA's student body of 430 students reflects the ethnic diversity of the surrounding neighborhoods it draws from: 51 percent Latino, 20 percent white, 16 percent African American with the remaining 13 percent encompassing various other ethnicities. Two-thirds of the students participate in the free or reduced price lunch program.<sup>31</sup>

CTA is one of just four high schools in the city of San Diego where 100 percent of students graduating in 2006 passed the CAHSEE.<sup>32</sup> In 2006, 100 percent of CTA graduates were planning to participate in postsecondary training, including 27 percent who said they would attend a four-year university; 48 percent who expected to attend community college; 21 percent who planned to participate in an apprenticeship program; and, 4 percent who indicated they planned to join the military.

In 2007, the average percentage of entering tenth graders passing the CAHSEE from CTA was slightly below the statewide average for the English language arts test and significantly lower, 11 percentage points, for the math test. African American and Latino students significantly outperformed their ethnic counterparts statewide on the English language arts tests, though passed at rates of one to two percentage points below statewide averages on the math test.<sup>33</sup>

Data from the 2007 API (Average Performance Index) and AYP (Average Yearly Progress) revealed that after early gains when the school was first established, performance on academic tests recently has declined. Since its inception, CTA's API rose from 621 in 2002 to a peak of 714 in the 2005 school year and then declined to 658 in 2007.<sup>34</sup> The percent of students performing at or above the proficient level has declined from 44 percent on English language arts and 43 percent on math in 2005 to 28 percent and 40 percent proficiency, respectively, in 2007.

The school's student demographics shifted considerably during the same time frame. In the 2004-05 school year, 49 percent of CTA students

participated in the free or reduced price lunch program, growing to 66 percent in 2006-07. Additionally, English learners made up just 9 percent of the CTA student population in 2004-05, and one-third were proficient on the English language arts test. By 2006-07, English learners made up 21 percent of the CTA student population, and only 5 percent of this larger group of students was proficient on the English language arts test.<sup>35</sup> The school's principal attributes the decline in test scores primarily to the large increase in English language learners. He added that the percentage of English language learners is increasing because the students are drawn to the construction theme.<sup>36</sup> This analysis of existing data sources reveals how complicated it can be to understand either progress or declines in progress based on aggregate test scores, the only data currently available at the state level in California. The state's inability to track progress at the individual level points to the weakness of aggregated data for groups undergoing demographic change during a set period of time.

Taken in isolation, much of the research on CTE cited above might reinforce the idea that a career-oriented approach to education is only for high-risk students or students from low socio-economic backgrounds, underscoring the image for tracking that CTE has fought to escape over the years. But many of these programs, such as the career academies, were set up in part to help these students stay in school and were designed with evaluation in mind. The dearth of other, broader CTE research may reflect both an overall lack of relevant and comparable data and CTE's relatively small slice of education spending.

### ***Keeping Options for College Open***

The state, in 2005, signaled its policy that CTE courses must meet state standards. State Superintendent for Public Instruction Jack O'Connell told the Commission that the new standards are "being used widely throughout the state by districts and ROCPs to re-examine CTE course content and align the content to the higher expectations set forth in the standards."

The standards are organized into 15 industry sectors of interrelated occupations and industries and 58 career pathways. The industry sectors and career pathways are detailed in a chart in Appendix C.

Most districts, however, are just beginning to align their schools' CTE curriculum with the new standards.

Some districts, however, already have been increasing the rigor of their CTE courses to meet another bar, the University of California’s A-G admissions requirements, now also used by the California State University System.

Yesterday’s wood shop might now take the form of architectural engineering, with algebra and geometry built into the lesson plan. Health courses might include anatomy and physiology or forensic biology, leading to careers as diverse as phlebotomy, crime scene investigations or medicine.

Today, approximately 20 percent of the state’s CTE classes meet A-G requirements, which is increasingly important to retaining CTE as part of a general high school education. For many students, keeping college options open means giving first priority to classes that meet A-G requirements, and CTE classes that do not meet the A-G requirements often are left out of crowded student schedules.

To apply to the UC or CSU system, California students must take a minimum of 15 A-G college preparatory courses. The University of California recommends 18 courses. In the competition to get admitted, many students take more: Most students who gained entry into the UC system in 2006 had taken 23 A-G courses.<sup>37</sup>

Despite the emphasis on college preparatory courses at many high schools and California’s overall need for more college graduates, only two of 10 freshmen who enter high school go on to earn a four-year degree. Only a third of the students who graduate from high school have completed the minimum 15 A-G requirements.<sup>38</sup>

In hearings and in advisory committee meetings, the Commission heard that the A-G requirements are an unnecessary hurdle to creating more time for CTE

***Required A-G Courses for CSU and UC***

- A. History/Social Science – 2 years required
- B. English – 4 years required
- C. Mathematics – 3 years required, 4 recommended
- D. Laboratory Science – 2 years required, 3 recommended
- E. Language other than English – 2 years required, 3 recommended
- F. Visual and Performing Arts – 1 year required
- G. College Preparatory Electives – 1 year required (one year, in addition to those required in A-F chosen from visual and performing arts, history, social science, English, advanced mathematics, lab science and language other than English)

Source: University of California.  
[http://www.universityofcalifornia.edu/admissions/undergrad\\_adm/paths\\_to\\_adm/freshman/subject\\_reqs.html](http://www.universityofcalifornia.edu/admissions/undergrad_adm/paths_to_adm/freshman/subject_reqs.html). Web site accessed March 1, 2007.

***Income and Educational Attainment***

California is expected to have a shortfall of college graduates as well as skilled workers, and research shows that college graduates fare better overall. By attending college, even without earning a degree, students improve their potential income growth. On average, just having some college adds 25 percent to lifetime earnings. Compared to students with a high school education only, students who earn associate degrees increase their income by 47 percent, while a bachelor’s degree increases income by 108 percent.

Source: California Postsecondary Education Commission. June 2007. “Public Higher Education Performance Accountability Framework Report: Goal – Contributions to Economic, Civic, and Social Development, Measure: Per Capita Income by Educational Attainment.” Page 1.

classes and are not germane to high school students who do not plan to attend four-year universities. This should not be considered a barrier, given that CTE curriculum should be in the process of being upgraded statewide to meet the new CTE standards. Moreover, compared to other states, California’s A-G requirements are no more academically challenging than what is required simply for high school graduation elsewhere. While California has just 13 course requirements for graduation, the average for other states is more than 20 courses.<sup>39</sup>

***A Comparison of Course Requirements***

	<b>Course Requirements for Graduation in California</b>	<b>A-G Course Requirements</b>	<b>Course Requirements for Graduation in the Average State</b>
<b>English/Language Arts</b>	3	4	3.9
<b>Mathematics</b>	2	3 required, 4 recommended	2.7
<b>Science</b>	2	2 required, 3 recommended	2.5
<b>History/Social Studies</b>	3	2	2.7
<b>Other Credits</b>	3	4 required, 5 recommended	8.3
<b>Total</b>	13	15 required, 18 recommended	20.4*

\*Does not accurately reflect column total due to being the average of states’ total course requirements, not the total of the average requirements for individual subjects.

Sources: Education Week. 2007. “California: Ready for What?: Preparing Students for College, Careers, and Life After High School.” Page 2. Bethesda, MD. Also, University of California. “Subject Requirement (‘A-G’ Coursework).” Accessed at: [http://www.universityofcalifornia.edu/admissions/undergrad\\_adm/paths\\_to\\_adm/freshman/subject\\_reqs.html](http://www.universityofcalifornia.edu/admissions/undergrad_adm/paths_to_adm/freshman/subject_reqs.html).

## ***Creating a System for CTE***

Although the governor and the Legislature have shown significant support for expanding CTE, California lacks a strategy to ensure that high school students who have an interest in CTE have access to academically rigorous career technical education programs.

This in part is due to the state's inability to comprehensively evaluate the various CTE programs statewide.

Inconsistency in funding also has played a role. Beyond the steady funding the state provides to the Regional Occupational Centers and Programs and California Partnership Academies and the federal Perkins money, support for CTE – until recently – has been on the decline for more than a decade.

Now that the state has decided to dedicate a significant infusion of money to CTE through various grant programs funneled through the community college system, it also should evaluate CTE programs to ensure the money is spent on expanding and replicating those programs that have demonstrated they can improve outcomes for California students. The state should take the opportunity also to track districts' progress in adopting or developing curriculum that meets California's new CTE standards.

### ***Challenges To Taking the Next Steps***

Emerging evidence described in the background shows that rigorous CTE programs are showing promise in improving graduation rates, grade point averages and post-high school employment outcomes. At the same time, academically rigorous CTE courses do not limit options for college and, for some students, even enhance their options. But these more rigorous CTE programs are the exception, not the norm.

Given that the status quo is not working for at least 30 percent of students, as seen in the dropout rate, the Commission supports the state's renewed investment in CTE as a valuable option for students. But the lack of an evidence-based strategy imperils the state's ability to most effectively use its resources to expand proven CTE programs and help districts upgrade existing programs where interest and need is high.

Both the California Department of Education and the California Community Colleges Chancellor's Office recognize the need for a plan. These two entities are developing jointly a California State Plan for Career Technical Education, to be adopted in 2008 by the State Board of Education and the Community College Board of Governors. While driven by the federal Perkins grant requirement that states must develop a CTE plan, the current effort goes beyond the Perkins requirement in an attempt to "lay the foundation for a broader 'master plan' that will weave...funding streams and programs together into a fully articulated and integrated CTE system."<sup>40</sup>

The draft state plan, informed by an advisory committee and public hearing process, identifies many of the same challenges the Commission found through its public hearing and advisory committee process.

Discussions with the Commission, advisory committee members, school districts and other education experts surfaced five key barriers that California must overcome to create a strategy for career technical education in California:

- Career-themed high schools with model CTE programs are scattered across the state, but there is no process to measure the outcomes of these models and ensure effective models are replicated statewide.
- The state has developed model standards and a framework for CTE curriculum, but many local districts lack curriculum that meets the new standards.
- Course sequencing from high schools to community colleges or other post-secondary education that would allow students to progress along an established path has not been fully implemented.
- Funding comes from a range of state, federal and sometimes private sources, making it difficult to determine how much and how well money is spent on CTE programs.
- The state lacks data to measure student participation and performance in CTE programs or to determine whether CTE participation increases academic proficiency.

### ***Moving Beyond "Islands of Excellence"***

Currently, the state has a patchwork of CTE programs and career-themed high schools scattered across the state. Jack O'Connell, California's superintendent of public instruction, described these schools as "islands of excellence," where rigorous career-themed coursework is delivered to engaged students and where those students out-perform

their peers in areas such as attendance, enrollment and post-high school success.<sup>41</sup>

California Department of Education data indicate that about one-third of all public high school students enroll in a CTE course at some point in time.<sup>42</sup> However, it is estimated that only 10 percent of the state’s public high school students have access to academically rigorous CTE classes or career-themed high schools.<sup>43</sup> The state has encouraged the establishment of 290 California Partnership Academies, which serve about 2 to 3 percent of all high school students and are aimed at students identified as being at risk of dropping out. While the state can encourage districts to expand academically rigorous CTE courses, ultimately the decision whether to offer CTE education to students is up to local districts, not all of which want CTE programs.

The Commission had the opportunity to visit several of these “islands of excellence” and talk to students, teachers and administrators at San Diego’s Construction Tech Academy and at Sacramento’s Health Professions High School. The Commission also visited San Diego’s High Tech High School, a successful charter school model where there is “no distinction between college preparation and technical education.”<sup>44</sup>

In each setting, the high school is led by a dynamic principal. Teachers make clear their expectations that all students will perform at a high level. In at least two of the three settings, the schools would not have been possible without motivated district staff who sought out partners in the business community and foundations for money and guidance. By their own admission, most of the students had enrolled there because their parents had learned about the schools and were attracted to the small size of the learning community or the career-themed approach.

While different in design – enabling them to serve differing local needs – each school shares elements common to the best models, among them, greater student-faculty interaction, built-in time for teacher collaboration, flexible block scheduling and well-defined partnerships with business and industry.

***Elements of a Successful CTE Program***

Research has shown that there are six key elements to a successful CTE Program. They are:

- ✓ Curricular integration.
- ✓ Industry partnerships.
- ✓ System coherence.
- ✓ Personalization, career guidance and student services.
- ✓ Availability of skilled faculty, professional development and faculty collaboration.
- ✓ Continuous improvement and sustainability.

Source: WestEd. December 2006. “A Statewide Assessment of California’s Career Technical Education System.”

## ***CTE Curriculum Needs to Meet State Standards***

California’s State Board of Education adopted CTE standards in 2005 and, in 2007, adopted a framework for CTE curriculum that requires career-oriented content to be rigorous enough to meet the state’s academic standards. This is an area in which experts say the state clearly has succeeded. Experts assert that “California’s standards set a high bar for CTE courses and are generally viewed as an international model for rigor and for including academic content.”<sup>45</sup>

### ***Standards, Framework and Curriculum Defined***

**Standards:** What students need to know and be able to do. Standards are designed to guide local districts and educators in designing specific curricular and instructional strategies.

**Framework:** The context for the content in the standards. The framework serves as a blueprint for educators to implement the standards.

**Curriculum:** The instructional content, materials and resources taught to students.

The harder work is just beginning: “Now that we have the best CTE standards and curriculum framework in the country, it must be integrated into the school system. Every district and CTE teacher needs to understand and align their curriculum and instruction to the standards,” Superintendent O’Connell told the Commission.<sup>46</sup>

To date, however, the state lacks a mechanism to track how many of the 24,580 high school CTE classes are integrating new curriculum to meet the new standards.<sup>47</sup>

The state’s model standards identify 15 industry sectors. Some sectors, such as agriculture, have a greater amount of well-developed curriculum, in part reflecting the benefit of longstanding categorical funding. A growing number of high schools and districts are implementing nationally-developed curriculum, such as the engineering curriculum designed by Project Lead The Way, that also meets the state’s standards.

In addition, districts are drawing on community resources to develop their own academically demanding curriculum that both meets state standards and fits their own new approaches to learning. The Sacramento City Unified School District is one example, which with help from Linking Education and Economic Development, or LEED, a consortium of top education officials and business leaders, implemented a strategy to open small, independent career-themed high schools throughout the district.

Sacramento’s Health Professions High developed academically rigorous curriculum infused with real world scenarios from health care. In a math unit called “Risky Business,” students learn probability and statistics by seeing how risky behaviors – laid out in actuarial tables – influence insurance premiums. The school offers an “early college”

model course load, one that goes beyond the A-G requirements, and introduces college-level curriculum during high school. The school also has begun to implement CTE courses developed by Project Lead The Way.<sup>48</sup>

### ***Project Lead The Way***

Well-developed curriculum for engineering and engineering technology is in place across the country. Project Lead The Way, a 501(c)(3) not-for-profit national organization started in 1997, has created two programs for this industry sector that act as delivery models for both career technical and college-preparatory education. The first, "Gateway to Technology," consists of five stand-alone units for middle school students, including Design and Modeling, The Magic of Electrons, Automation and Robotics, Flight and Space and The Science of Technology.

The second, "Pathway to Engineering," is a four-year, eight-course program for high school students that offers a progression through three levels of courses from Principles of Engineering and Introduction to Engineering Design to specialized courses, such as civil engineering and architecture. The capstone course is engineering design and development.

Both programs are taught in conjunction with rigorous academic courses that are aligned with national standards for math, science, technology and English. The high school sequence, along with college-preparatory classes, is intended to prepare students for postsecondary education in engineering and other high-tech, high-wage career paths by using hands-on activities, projects and problem-based learning.

As of 2007, Project Lead The Way courses are being taught in 2,300 schools across 49 states and the District of Columbia. As of 2006, 21 affiliate colleges and universities were providing the required curriculum training to middle and high school teachers. Several of those institutions also offer credit to students who meet grade and end-of-course exam score requirements. In addition, teachers can access professional development materials at the on-line Project Lead The Way Virtual Academy.

In fall of 2007, California will have 107 schools implementing Project Lead The Way curriculum, up by 40 from 2006. Additional schools can access the curriculum through an annual registration process. Currently, four California high schools are certified, and more can be as they implement the full course sequence; train teachers and counselors; acquire and update necessary technology, software and equipment; and, fulfill the other requirements outlined in their agreements with Project Lead The Way.

According to the data available in 2004-05, approximately 80 percent of Project Lead The Way seniors planned to attend two-year or four-year colleges upon their graduations, while the national average for college attendance directly after high school is 65 percent.

Sources: Project Lead The Way. 2006. "Research of Project Lead The Way (PLTW) Curricula, Pedagogy, and Professional Development." Accessed at [http://www.pltw.org/Research\\_Report\\_PLTW\\_6-1-06.doc](http://www.pltw.org/Research_Report_PLTW_6-1-06.doc). Also, Project Lead The Way. "General FAQ's" and "The PLTW Network in California." Accessed at <http://www.pltw.org/faqs/faqs.html> and <http://www.pltw.org/schoollist-new.asp?toSelect=CA>. Also, Judith D'Amico, Director of State and Corporate Relations, Western Region, Project Lead The Way, Inc. August 21, 2007. Personal communication.

At many schools, educators are making the extra effort to get more CTE curriculum certified as meeting the A-G requirements for entrance into the UC and CSU systems. The effort pays off in two ways: Increased rigor can improve student proficiency, and A-G status makes it easier for CTE courses to compete for the limited number of class hours that students have in their schedules. More CTE programs, however, need to adopt curriculum that meets California's rigorous standards.

In the past six years, the number of CTE courses offered in California that meet the A-G requirements has grown substantially – to 5,614 from 300.<sup>49</sup> Despite the progress, as of 2006, the higher figure represented about 20 percent of all CTE courses in the state. The majority of those classes are in the “F” and “G” categories – visual and performing arts and college preparatory electives, not the core academic categories.<sup>50</sup>

Building on its well-regarded CTE standards and framework, the state can take the next step: connecting local districts with existing rigorous and relevant CTE curriculum. As part of a strategy, the state should provide financial incentives to districts who have demonstrated a commitment to CTE to help them develop new standards-based CTE curriculum so that the upgraded courses are available in the industry sectors most important to their programs.

Districts and CTE teachers will need time and resources to develop and align curriculum to the state’s CTE standards. According to Superintendent of Public Instruction Jack O’Connell, “This will require system-wide professional development over the next five years to ensure the standards are embedded throughout the system.”<sup>51</sup>

Though some CTE courses will not and should not be approved as A-G, experts agree that the UC system could be doing more to work with the Department of Education and school districts to approve more CTE curriculum and to approve more courses in the academic categories.<sup>52</sup> Experts told the Commission that the state needs a mechanism to ensure rapid, consistent approval of qualifying high school courses for A-G credit.<sup>53</sup>

### ***Creating a Path for Students***

To help their students get the most out of their CTE experience, some districts have established sequenced programs where courses progress along a well-defined path from high school classes to classes taught at Regional Occupational Centers and Programs and community colleges.

Witnesses and members of the Commission’s advisory committee said the state has not yet achieved a coherent strategy for connecting CTE courses in a progression of learning from one setting to the next, what educators call “articulation.”

It requires school districts and ROCPs and community colleges to coordinate schedules, course content and to ensure the appropriate feeder courses are in place.

When articulation works correctly, students can take exploratory career-oriented courses in ninth and tenth grade, enroll in more advanced courses at an ROCP or concurrently enroll in community college courses in eleventh and twelfth grades and then go on to more advanced coursework upon high school graduation. That step can be a combination of an apprenticeship program, community college program, four-year university or other postsecondary education option.

Such alignment, however, is not consistent across the state. In many of the proposals submitted for grants from the Governor's CTE Initiative, educators cited a lack of coordination between high schools and community colleges. A Legislative Analyst's Office analysis of the grant applications indicated that sometimes a high school and ROCP had exemplary CTE programs, but there were no follow-on community college programs to build on a student's CTE skills gained in secondary school.

In other cases, community colleges offered high-level CTE programs but lacked secondary-school feeder programs from high schools and ROCPs.<sup>54</sup> Additionally, state policies on concurrent enrollment at high schools and community colleges create barriers that can limit, instead of promote, opportunities for students. The challenges in meeting the state's nursing shortage reveal many of the systemic challenges of providing a seamless sequence of courses for a high-demand, high-wage occupation. A discussion of CTE issues in nursing is included in Appendix D.

Communication and coordination are essential components to making articulation work. The Stanley E. Foster Construction Tech Academy at the Kearny High Educational Complex in San Diego, for example, maintains an advisory committee and board of directors with representatives from businesses; industry organizations, such as dry-wall or plumbing contractors' groups; unions; and, educational institutions. Students can shadow someone on the job, hear a guest speaker, go on field trips to various job sites or participate in mentorships with industry professionals. They also can enroll at neighboring Mesa College and receive priority for apprenticeships. Many have gone on to San Diego State University's College of Construction Management and Engineering.

The best partnerships ensure that course and content development is guided by local, regional and state business and industry leaders. High schools, school districts, county offices of education, ROCPs, local community colleges, community college districts, four-year colleges and business and industry work together to provide seamless course sequences and course articulation.

Advisory panel members suggested that all CTE programs could be more efficient and effective if they are better aligned between high schools, ROCs and community colleges. Grants from the Governor's CTE Initiative are a start but are not the equivalent of a statewide strategy. Making such interaction a requirement of receiving grant money, however, would encourage local efforts to coordinate more. This kind of coordination should be embedded into a state strategy.

### ***The Issue of Concurrent Enrollment***

Concurrently enrolling high school students in community college classes provides potential for expanded and advanced CTE course and sequence options. Students who are able to complete high school graduation requirements and move on to more advanced career education at community colleges will be more prepared to enter high-paying, high-skilled jobs.

But barriers limit concurrent enrollment opportunities. According to the Education Code, concurrent enrollment is designed "to provide educational enrichment opportunities for a limited number of eligible pupils, rather than to reduce current course requirements of elementary and secondary schools."\* School district governing boards make determinations about which students would benefit from advanced scholastic or vocational work. High school students must receive their principal's recommendation and have parental permission in order to attend community college courses. Additionally, the number of students a principal is allowed to recommend in any particular grade level for community college summer session is capped at 5 percent, unless the student is enrolled in certain courses, including college-level occupational courses that are part of a sequence leading to a degree or certificate. Also, high school students are assigned a low enrollment priority.

Further limits on concurrent enrollment were added in 2003 by SB 338 (Scott) because of abuses by the community colleges. Starting in December 2002, articles in the *Orange County Register* reported that students were unknowingly enrolled in courses; instructors were paid twice for the same course; and, state apportionments for the same courses were paid to both K-12 schools and community colleges, which were using summer sports camps to inflate enrollment. SB 338 changed concurrent enrollment rules and added public notice and availability requirements. It also set caps on funding and the number of high school students enrolled in community college physical education courses.

Legislation to address some of the barriers that existed before SB 338 was considered in the 2007-2008 legislative session in AB 1409 (Portantino), but the law failed to pass. AB 1409 proposed eliminating the school board determination authority, deleting the requirement for a principal recommendation during the school year and expanding the type of courses students can take beyond advanced. It also would have phased in a removal of the cap on the number of high school students principals can recommend for summer session and removed the low priority designation for high school students. The bill also would have prohibited community colleges from being paid for a high school student's summer session if it was paid for at the K-12 school district.

\*California Education Code section 48800.

Sources: SB 338 (Scott), Chapter 786, Statutes of 2003. Bill text and analyses. Also, AB 1409 (Portantino), 2007. Bill text and analyses.

## ***Fragmented Funding Hinders Systematic Approach***

In 2006-07, the budget for K-12 schools, including adult education, totaled approximately \$67.1 billion. CTE spending, categorical and discretionary, represented about 2.5 percent of the total K-12 budget.<sup>55</sup>

CTE funding is spread across three layers of government: federal, state and local; two state departments: the California Department of Education and the California Community Colleges Chancellor's Office; and, several categorical programs as well as philanthropic organizations and foundations. The varied sources and the use of general fund money for CTE at the district level make it difficult for the state to determine exactly how much money California spends on high school CTE each year.

Non-specific funding for CTE is not tracked in any organized way, so state education officials are not able to give an exact figure for how much is spent on CTE education in California. CTE advocates suggest that spending on CTE had declined until recent infusions. Department of Finance officials, when asked, indicated it was not possible to determine a trend over time in spending since so much about CTE spending is unknown.<sup>56</sup>

## ***New CTE Money***

State funding for CTE has increased over the past two years and will increase further. New money has specifically targeted developing seamless course sequences between educational entities. For each of the past two years, the governor and the Legislature have included \$20 million for CTE, a boost designated by SB 70 (Scott, 2005) and known as the Governor's CTE Initiative. The new money from SB 70 initially provided competitive grants through the community college system to improve linkages and CTE pathways between middle schools, high schools, ROCPs and community colleges.<sup>57</sup>

An additional \$260 million has been targeted for the Governor's CTE Initiative over the next seven years as a result of a legal settlement between the governor and the California Teachers Association (CTA). The CTA sued the governor alleging that the state did not fully fund the Proposition 98 requirements. A settlement totaling \$3 billion was reached in 2006, and the resulting legislation targeted \$32 million for CTE programs in the 2007-08 budget and \$38 million for CTE each year from 2008-09 through 2013-14.<sup>58</sup>

The Governor's CTE Initiative has provided a boost to a CTE system weakened by years of neglect, educators told the Commission. But more

could be done to ensure that a greater share of the grant money makes its way to the classroom. According to a Legislative Analyst's Office analysis of the first year of the program, most of the grants were awarded to address a lack of communication and coordination between the many local interests involved in CTE. As the grants were awarded on a competitive basis, not all communities received the money.<sup>59</sup> Analyzing the 2006-07 grants and the proposed grants for 2007-08, the LAO concluded that the program may be attempting to provide money for too many types of activities and said the state lacked a long-term plan for the revitalization of the state's CTE programs.

Other experts have recommended that new funding be used to expand effective models and develop curriculum. And they recommended that this money, through project and formula grants, be made available to all districts across the state, awarded through community colleges as well as through county offices of education.<sup>60</sup>

The California Community Colleges Chancellor's Office, with input from the Department of Education, already has developed a five-year expenditure plan, from 2007-08 through 2011-12, for the Governor's CTE Initiative, although it may be altered. Each year, the plan must be approved by the Department of Finance. The expenditure plan includes efforts to increase enrollments, expand business partnerships, develop and implement curriculum and build staff capacity.<sup>61</sup>

Over five years, almost \$100 million will be used to support the development of programs to strengthen or re-establish CTE and ROCs in industry sectors identified by the Department of Education. Under the plan, the money will be used to develop model projects, articulate course paths and align curriculum with model curriculum standards. It also will be spent for planning and implementing new career academies; providing leadership; and, developing advisory councils to link education with labor, business and industry.<sup>62</sup>

The plan includes an evaluation component to assess the overall effectiveness of the grant program. An earlier version of the five-year plan also included funding for a longitudinal study to track and analyze data on CTE students to better understand academic performance and post-high school outcomes. In the final plan, the research component was eliminated.<sup>63</sup>

This research component, however, is essential to measuring outcomes. Without knowing what approaches help students improve their academic performance and seeing how CTE influences post-graduation success, the state loses the valuable opportunity to learn more about what works. This is of particular importance considering that the long-awaited

CALPADS system (discussed more fully below) will not be designed to gather data on post-high school outcomes. Given the limited resources available to CTE, the state cannot afford to spend money or resources on programs that do not work. The grant evaluation requirement is a good start, but it will not be sufficient if it allows the state to continue to spend money on programs that do not improve outcomes.

With approximately \$400 million in new funding dedicated to CTE over the next seven years, the state has an excellent opportunity to implement and monitor CTE programs across California, building the capacity that could improve outcomes for years to come. The state should ensure the one-time funding from the settlement is invested in measurable capacity – specifically CTE curriculum development and professional development – that will continue to deliver dividends when the funding stops.

The state should simplify CTE funding by consolidating all of its state CTE money and, to the extent possible, federal CTE money into a single funding pool. Such consolidation would allow state officials to take a more strategic approach to CTE spending and better track spending, which can then be more easily linked to outcome measurements. In the longer term, once the state has more research on what works, it may want to consolidate state and federal funding, which likely would require a federal waiver, to direct spending more efficiently. Given its short history of commitment to CTE funding, however, the state first will need to build up a track record of smart spending decisions.

The Legislature also should consider directing some of the money available through the Governor’s CTE Initiative to county offices of education to bolster CTE development from the ground up. The Commission remains skeptical of the community college system as the appropriate vehicle for allocating money to high schools and ROCPS. County offices then could direct money to districts to improve existing CTE programs and career-themed high schools. The money also should be used to develop and implement CTE curriculum that meets the state’s standards and teacher training to prepare educators to teach rigorous CTE curriculum.

### ***Without System-wide Data, The State Cannot Measure or Compare***

California’s successful high school CTE programs are reporting positive results. However, without more formal research, their success is difficult to replicate. The state simply lacks the data from local districts that could allow it to see California’s high school CTE effort as a whole.

Currently, the state collects a wealth of data on test score results, but only aggregate data by school or data by ethnicity. As student populations shift from year to year, it is impossible to clearly assess advances or regressions on test score results. The current system does not track progress of individual students – what courses they took, how much they improved or regressed individually on academic proficiency tests – so it is not possible at this point to know, based on proficiency data, what is working to improve student outcomes.

A critical shortcoming of the state’s data gathering is the lack of a unique student identification system, which would shed light on dropout and graduation rates and also give the state the ability to track progress by student. Such a system, used in other states, would allow California to measure effectiveness by linking individual student course participation to their individual outcomes.

Many CTE programs serve high-risk students – students who enter their programs with a history of low academic performance and high absenteeism – yet show improved outcomes. The stories of their individual “islands of excellence,” however, do not tell much about the broader picture of California’s CTE programs or where these schools fit in that picture.

As one high school leader told the Commission, “policy should not be built by anecdotes.”<sup>64</sup>

## **CALPADS**

State officials have been recommending a unique student identification system since the early 1990s.<sup>65</sup> In 2001, the federal No Child Left Behind Act added a requirement to track and report graduation data, and as a result, the state enacted SB 1453 (Alpert) in 2002, launching the development of the California Longitudinal Pupil Achievement Data System (CALPADS).

The CALPADS legislation stated that the system should:

- ✓ Provide school districts and the CDE access to data necessary to comply with federal reporting requirements.
- ✓ Provide a better means of evaluating educational progress and investments over time.
- ✓ Provide local educational agencies information that can be used to improve pupil achievement.
- ✓ Provide an efficient, flexible and secure means of maintaining longitudinal statewide pupil level data.<sup>66</sup>

Five years later, the system is still not completely up and running. In the fall of 2006, local educational agencies provided the first full-year enrollment data. In fall 2007, local districts will report on one-year changes in enrollment by student, with up to 28 different possible codes for reasons why a student is no longer enrolled. The California Department of Education expects that it will roll out a pilot program in 2008-09, with full implementation in 2009-10.<sup>67</sup>

Critics assert that the delay is the result of reticence by the Legislature and the Department of Finance to fully fund the effort. In September 2007 testimony to the Commission, former Superintendent of Public Instruction Delaine Eastin speculated that the data will reveal just how bad the education system is, and elected officials do not want the evidence revealed on their watch.<sup>68</sup>

Concerns remain about the quality of the data provided by the local districts. The state has relied primarily on federal money to pay for the development of the state data system. At the insistence of the Department of Finance, the CALPADS is designed to focus on data elements required by the federal No Child Left Behind Act to avoid an unfunded state mandate on local districts.<sup>69</sup> However, a Department of Education official has said that it might be possible to require local agencies to provide additional data if it meant eliminating a requirement for them to provide the same or similar data through a different system already in place.<sup>70</sup>

To date, the state has not been willing to provide financial incentives to ensure the quality of the data from local districts. Superintendent of Public Instruction Jack O'Connell and the Department of Education have advocated for money to provide assistance to local educational agencies to ensure data quality. The governor included \$65 million in the administration's 2007 May budget revision for this purpose, but the Legislature deleted the funding for the 2007-08 budget.

Once in place, CALPADS could be tapped to report outcomes beyond the requirements of No Child Left Behind, linking individual student outcomes with courses taken. This would allow policy-makers to make informed decisions on CTE and allow policy-makers and educators to replicate effective programs. Additionally, the Commission heard repeatedly that the state needs to understand what happens after a

### ***New Developments – CTE and the Academic Performance Index***

The state uses the Academic Performance Index (API) to evaluate school performance based on achievement test results. Currently, school API scores are based solely on test results, though this was not the intent of the original legislation. As originally designed, the API would combine multiple measures, including attendance and graduation rates, and test scores would constitute 60 percent of the index. Legislation passed in 2007 would have provided a timeline to add graduation data to the API and added new components, including A-G and CTE course completion data. However, the governor vetoed the legislation stating that the API should continue to be based on objective, reliable, valid and consistent statistical measurements.

Sources: AB 400 (Nunez, et al), 2007. Bill text and analyses. Also, Governor Arnold Schwarzenegger. October 14, 2007. AB 400 Veto Message.

### ***CTE and the School Accountability Report Card***

The state recently has made efforts to better track program availability and student enrollment in CTE courses as part of the School Accountability Report Card (SARC). The SARC originally was mandated by voters in Proposition 98. In 2005, SARC requirements were expanded through legislation (SB 687, Simitian) to include, among many other things, various measures on CTE programs, including:

- ✓ Programs offered by the school district that are aligned with state CTE standards and program sequences offered by the district.
- ✓ CTE advisory committee members, including the primary representatives from the school district and from businesses.
- ✓ Number of students participating in CTE.
- ✓ Percentage of students that complete a CTE program and earn a high school diploma.
- ✓ Percentage of CTE courses that are sequenced from a high school to a community college or other postsecondary education institution.

A cursory review of SARC reports made available by individual school districts linked through a CDE Web page reveals that most schools and districts are complying with the new SARC requirements. While this information provides helpful insight for parents and students making decisions about where to attend high school and sheds light on CTE program and sequence availability in individual schools, it was not designed to paint a statewide picture or inform policy-makers on whether or not CTE programs are improving academic proficiency and achieving other positive outcomes.

Sources: SB 687 (Simitian), Chapter 358, Statutes of 2005. Bill text and analyses. Also, California Department of Education. Link to School Accountability Report Card Web site. <http://www.cde.ca.gov/ta/ac/sa/ap/sarlink1.asp>. Accessed October 4, 2007.

student leaves high school – such as whether a student enters the military, attends college, enters an apprenticeship program, secures a job or participates in other possible post-high school activities. A secondary step beyond CALPADS would be to link CDE data with other state data systems, including post-secondary education data systems and Employment Development Department data systems, creating the potential for this kind of analysis.

The state has taken the lead in developing standards for CTE that meet the state’s high standards for academics. It has followed up with a framework for those standards. It now needs to take the next steps:

- Helping districts adopt rigorous CTE curriculum that meets the state’s standards and developing the teaching capacity that goes with it, and
- Implementing a data collection system that will allow the state, as well as schools, to track individual students and programs over time to assess the results of CTE programs on such outcomes as academic proficiency, graduation rates and post-high school success.

Until the state has built a bigger body of knowledge so that it knows what kinds of programs produce the best outcomes, it should focus on a strategy that builds California’s CTE programs from the bottom up. Such a strategy means directing money to existing CTE programs that have demonstrated the desire, the need and the capacity to invest new CTE money in ways that will improve student outcomes. CTE programs that receive this new money should be required to track those outcomes so that, ultimately, the state can make evidence-based investments in successful CTE models.

**Recommendation 1: California must develop a strategy to, in the short term, evaluate, expand and replicate proven programs in districts that demonstrate they can support them. The state must use research results from its short-term strategy to create a long-term, evidence-based strategy to fully integrate academically rigorous career technical education into general education programs. Specifically, the state should:**

- ❑ **Expand and replicate successful career-themed high schools and effective CTE programs.** Through the Governor’s CTE Initiative grant program, the state should provide grant money to schools or districts that demonstrate they are implementing proven career-themed education models. The state should require those receiving grant money to track and report student performance. The state should provide technical assistance to help local districts identify and replicate academically rigorous CTE programs.
- ❑ **Expand the availability of academically rigorous CTE curriculum.** The state should specifically target a portion of its new CTE grants to expand academically rigorous CTE curriculum that meets state CTE standards. CTE grant recipients should be required to consult with business and industry in CTE curriculum development. Additionally, the state should provide grants for professional development to ensure that teachers are qualified to teach the new CTE standards.
- ❑ **Improve the process for qualifying CTE courses for the A-G requirements.** The state should require that all new CTE courses developed with CTE grant funding meet the California CTE standards and be rigorous enough to qualify for A-G credit. The University of California should be required to work with the Department of Education and local educational agencies to ensure rapid and consistent approvals of academically rich CTE courses so that more CTE classes meet the approval of the UC for its A-G requirements, particularly in core academic subject areas.
- ❑ **Align CTE courses into streamlined sequences.** The state should require all grant recipients to align their CTE courses and programs with course sequences in partner community colleges and ROCs. Such partnerships should include regional employers to help establish smooth paths for students in career-themed educational programs, as well as help them earn priority placement in postsecondary education programs that continue their career paths. The state should continue to evaluate the progress of the alignment effort and use evidence to further guide and improve course sequences.
- ❑ **Align funding.** The state should consolidate state CTE funding into one specific funding source to better coordinate and track CTE spending.

- ❑ **Measure results.** The state should fully implement the California Longitudinal Pupil Achievement Data System so that it can accurately measure dropout rates, graduation rates and the effectiveness of various educational programs, including CTE programs. The state should require local educational agencies to provide accurate data for CALPADS and provide funding to do so. The state also should further develop a data system to combine K-12, postsecondary and employment data information to measure post-high school outcomes.

## Missing Connections

California lacks a recognizable, defined strategy to connect education, workforce development and economic development. This deficit impedes collaboration across agencies and departments, at both the state and local level, to align education and workforce needs, which is particularly critical for CTE programs. Connecting education, particularly CTE, to workforce needs occurs only when determined innovators at the regional and local level take the lead.

California is experiencing a shortage of skilled labor in virtually every sector of the economy.<sup>71</sup> While high-paying jobs go unfilled, thousands of California youth who could fill the ranks are missing the connection to the workforce and either dropping out or floundering for years after high school in low-wage, low-skill jobs. CTE courses, particularly those with work-based learning opportunities, can help students make the connection between school and work.<sup>72</sup> Both employers and educators have roles in ensuring CTE courses meet workforce demands and in creating awareness about the value of rigorous CTE programs.

### **Collaborative Efforts at the State Level**

Numerous agencies and departments are tasked with work-related education and training programs in California. Major players at the state level include the Department of Education, the state's three college systems and various departments within the Labor and Workforce Development Agency and the Health and Human Services Agency. Additionally, the

#### **Labor Shortages in High-Demand Fields**

Business and industry advocates report critical shortages of workers in high-demand, high-wage jobs. The following data underscore the workforce concerns of several key industries:

**Health Care.** The California Employment Development Department forecasts a need for an additional 109,000 registered nurses by 2010. However, the California Board of Registered Nursing reports that California is graduating only about 6,000 nursing students each year – about the same number that are retiring. Hospitals, clinics and doctors report difficulty hiring and retaining skilled workers.

**Manufacturing.** A 2006 survey of California manufacturers found that the single most important business challenge employers reported was “sustaining and/or acquiring a skilled workforce.”

**Service Industry.** Business and workforce development officials project increased growth in service and management occupations. Service jobs increasingly are requiring workers with higher level skills as more and more technology is integrated into job functions.

**Construction.** Between 2003 and 2005, 27 percent of all new jobs in California were in construction. According to the Association of General Contractors, far more skilled workers are leaving the workforce than schools and colleges are preparing for construction work. In response, employers are recruiting skilled workers from outside the state and outsourcing assembly projects to other places. Though the state's residential real estate market has weakened, more workers will be needed in the future to take the place of retirees as well as to fill construction jobs created by the state infrastructure bonds.

Source: California's EDGE Campaign. “California's EDGE: Keeping California Competitive, Creating Opportunity.” Accessed at <http://www.californiaedgcampaign.org/>.

Business, Transportation and Housing Agency houses the lead programs for economic development.

Attempts have been made in the past to bring the top leaders of some of these bureaucracies together to forge a unified strategy for education and workforce development. But many of these groups cannot sustain their momentum, particularly when administrations change or new, competing programs are initiated. Appendix E lists some prior recommendations to link education with workforce and economic development.

One notable effort was the 1997 Regional Workforce Preparation and Economic Development Act, which brought education, workforce preparation and economic development partners together at the state and regional level to develop an improved workforce development system through integration, collaboration and combination of resources. State partners included the leaders of the California Department of Education, the Chancellor's Office of the California Community Colleges, the Health and Human Services Agency and the now defunct California Technology, Trade and Commerce Agency.

With the help of an extensive advisory committee, the partnership developed a framework for workforce development and assisted the proliferation of six regional partnerships, though the state-level partnership ultimately disintegrated.<sup>73</sup> Key recommendations from the framework are summarized in Appendix F. With the election of a new governor, the appointees who had participated in the development and preliminary implementation of the state program were replaced with a new set of appointees who had different missions and priorities.<sup>74</sup> The new priorities were influenced by the 1998 federal Workforce Investment Act, which led to the creation of the California Workforce Investment Board.

Through the California Workforce Investment Board, the state set up 50 local workforce investment boards as well as 150 "one-stop shops." The effectiveness of the local boards has been uneven across the state. In some areas, local boards have either provided the leadership for or served as a key player in regional and local collaborative efforts. The East San Gabriel Valley Regional Occupational Program, for example, not only partners with its local Workforce Investment Board but houses a one-stop shop on one of its campuses.

This kind of success, however, hinges on the personalities of the local leaders, the Commission was told. In other areas, local boards have been reluctant to share dwindling resources to help forge critical partnerships with local educational agencies.

**Top-Down Efforts Difficult to Sustain**

California has seen several efforts to develop robust partnerships among leaders of state agencies responsible for education and workforce and economic development. These attempts to build a statewide strategy have been hampered by a lack of consistent vision and sustainability.

Year	What	Who	Funding	What Happened
1994	Federal School-to-Work Opportunities Act	<ul style="list-style-type: none"> <li>• K-12 Schools</li> <li>• ROCPs</li> <li>• Community Colleges</li> <li>• Labor Groups</li> </ul>	\$130 million in federal money over six years. A \$7.2 million federal supplement extended activities in 2000.	The act expired in 1999. It did not exist long enough for rigorous, conclusive evaluation, though it did seed CTE programs at high schools, ROCPs and community colleges that still exist today.
1997	California Regional Workforce Preparation and Economic Development Act	<ul style="list-style-type: none"> <li>• CDE</li> <li>• CCC Chancellor's Office</li> <li>• CTTCA</li> <li>• HHS</li> </ul>	\$4 million a year for 3 years. The state did not fund the collaborative effort, and money for regional grants came from the budgets of the state participants.	The state partnership disintegrated with a change in administration and priorities, though it was successful in developing a framework for workforce development. The act was eclipsed in part by the 1998 Federal Workforce Investment Act.
1998	Federal Workforce Investment Act (WIA)	<ul style="list-style-type: none"> <li>• CalWIB</li> <li>• 50 Local WIBs</li> <li>• 150 Local One-Stop Shops</li> </ul>	<p>\$378 million in federal money for 2007.</p> <p>85% to local WIBs.</p> <p>15% to state for discretionary spending.</p>	Results have been uneven at the local board level. Federal funding is diminishing. Weak direction at the state level spurred the 2006 California Workforce Training Act.
2006	California Workforce Training Act	<ul style="list-style-type: none"> <li>• CalWIB</li> <li>• CDE</li> <li>• CCC Chancellor's Office</li> <li>• Local WIBs</li> <li>• Other State Agencies</li> </ul>	No additional fiscal effect as act incorporates provisions of the 1998 WIA and its reauthorization and provides guidance for state implementation of the WIA.	The act requires the CalWIB to create a state strategic plan, which is intended to serve as a framework for the WIA strategic two-year plan; for the development of workforce policy and fiscal investment; and, for the operation of California's labor exchange, workforce education and training programs. The final strategic plan is slated for adoption in February 2008.

CDE – California Department of Education  
 CCC – California Community Colleges  
 CTTCA – California Technology, Trade and Commerce Agency

HHS – Health and Human Services Agency  
 CalWIB – California Workforce Investment Board  
 WIB – Workforce Investment Board

Sources: David Neumark. Public Policy Institute of California 2004. "The Effects of School-to-Career Programs on Postsecondary Enrollment and Employment." Also, Ed Source. June 2005. "The Evolution of Career Technical Education in California." Also, Berkeley Policy Associates. June 28, 2002. "Evaluation of the Regional Workforce Preparation and Economic Development Act – Final Report." Page 69. Also, Legislative Analyst Office. February 16, 1999. Analysis of the Budget Bill. Also, Little Hoover Commission. April 2002. "Only a Beginning: The Proposed Labor and Workforce Development Agency." Also, Assembly Budget Subcommittee Number 4 on State Administration. May 23, 2007. Meeting agenda. <http://www.assembly.ca.gov/acs/committee/c22/hearing/may%2023%20%202007%20part%20i%20public.cm.doc>. Web site accessed September 14, 2007. Also, SB 293 (Ducheny), Chapter 630, Statutes of 2006. Bill text. Also, California Workforce Investment Board. "SB 293." <http://www.calwia.org/sb293/index.cfm>. Accessed November 1, 2007. Also, California Workforce Investment Board. "Updated SB 293 Strategic Planning Road Map." [http://www.calwia.org/doc\\_files/Updated%20SB%20293%20Road%20Map%20\(2\).pdf](http://www.calwia.org/doc_files/Updated%20SB%20293%20Road%20Map%20(2).pdf). Accessed November 1, 2007.

***East San Gabriel Valley ROP & Tech Center***

The East San Gabriel Valley Regional Occupational Program and Technical Center provides a model for collaborative efforts between these programs and school districts, community colleges and workforce investment boards. The program, overseen by a joint powers agreement among seven local school districts, serves 7,000 students from 12 comprehensive high schools and seven continuation high schools. Approximately 87 percent of the students in the program are from high schools; the rest are adult students. High school students take ROP courses on their own campus or at three regional centers.

Local businesses and industries partner with the program to provide job shadowing, mentoring and interning opportunities. The program also collaborates with local community colleges to streamline course sequences from high school to college. The ROP collaborates with the local workforce investment board and offers a mini Workforce Investment Act-funded “One-Stop” career center.

More than a model for regional collaboration, the East San Gabriel Valley program also has more than a decade of experience integrating academics into CTE courses. In 1994, the program was awarded a competitive grant from the U.S. Department of Education to integrate academics into vocational coursework. This year, the program is part of a non-profit foundation project to demonstrate how to tie work-based learning to academic standards as a model for other California ROCs.

Source: Laurel Adler, Superintendent, East San Gabriel Valley Regional Occupational Program and Tech Center. March 27, 2007. Personal communication.

In response to the shortcomings of the state-level board and in an effort to get the state board to fulfill its mission, the Legislature clarified the board’s role in developing a workforce strategy in 2006.<sup>75</sup> The result was the Workforce Training Act.<sup>76</sup> The law requires “the California Workforce Investment Board, in collaboration with state and local partners, including the Chancellor of the California Community Colleges, the California Department of Education, other appropriate state agencies and local workforce investment boards, to develop a strategic workforce plan to serve as a framework for the development of public policy, fiscal investment, and operation of all state labor exchange, workforce education and training programs.”<sup>77</sup> The current board also includes four appointed legislators and more than two dozen leaders from business and labor.

With the new mandate for the California Workforce Investment Board (CalWIB) to partner with educational agencies to develop a strategic workforce investment plan, the board has the potential to fulfill the role initially envisioned for it. Experts, however, suggest the sheer size of the board will make it difficult to accomplish its mission. Additionally,

there is no representation from the CSU or UC systems or the state’s private colleges on the CalWIB. The CalWIB’s Special Committee on Lifelong Learning has shown promise but is not charged with developing a statewide strategy to link education with workforce and economic development and does not include the top officials from other key agencies.

Rather than developing an additional top-level effort, the state could more effectively direct resources and attention to regional and local boards, where the desire to make the connections is strong. Business and industry representatives repeatedly told the Commission that they would like to partner with schools and community colleges to help guide CTE coursework and to provide job shadows and other work-based

learning opportunities. The Commission saw compelling examples of how such partnerships could work in Sacramento's LEED and its work with the Sacramento City Unified School District, in the East San Gabriel Valley ROP and Tech Center and in San Diego's Construction Tech Academy.

Each is an example of bottom-up efforts to link stakeholders, and each has a concrete strategy to link students and schools to their local economies and to link the local economy's needs to classroom content.

Schools recognize the value of the partnerships, though they often find it difficult to pursue them. Principals from career-themed high schools told the Commission they struggle to find time to both be a good hands-on school principal and manage relationships with local employers, philanthropic organizations and other partners.

Specifically, the Commission consistently heard that connecting with local employers to set up student internships and other work-based learning opportunities is virtually a full-time job. Employers, too, told the Commission that it is time-consuming to establish relationships with individual high schools, particularly in urban regions where there are dozens of schools and numerous districts.<sup>78</sup>

At Sacramento's Health Professions High School, the principal and vice principal split the burden of coordinating with 300 business partners, setting up 250 intern placements and organizing 35 field trips and 50 guest speakers a year. Principal Matt Perry said the school continues to look for money for a full-time coordinator. In the meantime, Perry said, "We're getting better at telling students that it would be okay if you place yourself."<sup>79</sup>

### ***Linking Education and Economic Development***

Many successful regional and local partnerships across the state were inspired and developed by local leaders, often relying on grants from non-profit foundations or donations from business community partners. In the six-county Sacramento-area region, a non-profit corporation, Linking Education and Economic Development (LEED), has brought the region's top leaders to develop partnerships between employers, educators and civic interests to align educational resources to meet workforce needs and economic demands. Its board of directors includes a cadre of the region's key leaders, including the top executives from UC Davis, CSU Sacramento and the Los Rios Community College District as well as six superintendents from K-12 districts and county offices of education, executives representing key regional industries, labor, workforce investment boards and the California Department of Education.

For the past five years, LEED has served as the key link in implementing philanthropic grants that the Sacramento City Unified School District has used for high school redesign. LEED recently revised its focus to look more closely at workforce, educational and student development. Current initiatives include a regional workforce study and work with employers and educators to implement the nationally acclaimed pre-engineering curriculum, Project Lead The Way, at 13 school sites in the region.

In written testimony to the Commission, the chief executive officer of LEED stated that "objectives and strategies to align education to meet workforce needs can be developed more effectively and efficiently at the regional level than at the state or federal levels." He suggested LEED could be used as a model other regions could replicate and that the state could organize regional councils to assist regional collaboratives in developing common objectives and by providing resources.

Source: David N. Butler, Executive Director and Chief Executive Officer, LEED. April 26, 2007. Written testimony to the Commission.

## ***Making Connections***

To ensure that the California education system provides a workforce that is properly trained and educated to meet occupational demands, business and industry, workforce development entities and education institutions must work in concert. These entities must partner together to ensure that CTE program development is informed by the workforce demands of the California economy.

Partnerships between these entities must be developed and nurtured over time, with particular attention to regional and local efforts. The state has money available through the 15 percent of the federal Workforce Investment Act funds it is allowed to use for discretionary spending.

Local workforce investment boards that receive this discretionary WIA money first should be required to demonstrate that they have an established history of regular meetings, established goals – that include participating in local or regional education and workforce development partnerships – as well as a plan for meeting and measuring progress toward those goals. These partnerships should include top leaders from local educational agencies, local workforce investment boards, business and industry and labor. Their mission should be to ensure that CTE curriculum and course sequences match workforce needs and industry standards and to expand work-based learning opportunities.

Such support should not, however, preclude state financial assistance to other regional and local efforts. In order to receive state support, however, these efforts need to demonstrate they are structured and organized in such a way that they produce demonstrable results for students, such as internships, class-industry learning partnerships, worksite-based learning opportunities and better coordinated dual-enrollment at community colleges.

Regional and local efforts should take priority over state-level efforts. Experts told the Commission that a partnership made up of the key players, including the superintendent of public instruction; chancellor of the community college system; secretary of the Labor and Workforce Development Agency; secretary of the Health and Human Services Agency; secretary of the Business, Transportation and Housing Agency; and, senior representatives from the CSU and UC systems, could more rapidly develop a strategy for integrating education and workforce and economic development.

During this study, the Commission also identified specific opportunities for employers to team with public agencies, such as Web sites to promote careers and college. These opportunities are described in Appendix G.

***Recommendation 2: To remain economically viable in the global economy and to ensure that education programs match workforce needs, California must better align its education, workforce development and economic strategies. Specifically, the state should:***

- ❑ ***Use existing money for incentives to develop and expand strong, high-level regional business and education partnerships.*** The state should commit part of existing CTE funding, including discretionary federal money, to local county offices of education or community colleges to develop or expand regional partnerships that have demonstrated the capacity to produce measurable outcomes, such as creation of internships, job placement, successful CTE teacher recruitment or creation of a local CTE teacher credentialing program. These partnerships should work to advance integrated workforce development throughout the state. Local partners should include top local leaders, including superintendents from school districts and county offices of education; chancellors from local community colleges; presidents of local CSU, UC and private colleges, where applicable; leaders from the local workforce investment board; chief executive officers from local employers; and, county CalWORKs administrators. The regional partnerships should:
  - ✓ Ensure CTE courses and sequences offered match high-demand jobs of the region and the state.
  - ✓ Ensure that CTE curriculum and course sequences meet industry standards.
  - ✓ Leverage local employers for work-based learning opportunities, such as job shadows and internships.



## ***Building Capacity: Teachers Needed***

A key constraint to expanding CTE in California is the shortage of educators qualified to teach the expanding array of rigorous CTE courses. The lack of qualified educators diminishes the state's ability to make CTE courses available to interested students.

Like most states, California has struggled to maintain and expand its overall teacher workforce. Factors that erode the overall teacher workforce thin CTE teacher ranks as well and, in some cases, more severely.

Many school administrators – principals and superintendents – may lack the necessary skills to lead the new generation of high schools that are melding academic rigor and career-themed instruction. And while schools face a shortage of counselors in general, CTE programs specifically are hampered by a dearth of counselors with the training and the time to provide helpful career guidance.

State and federal policies that placed more emphasis on core academic subjects reduced the time available for CTE courses and, consequently, the need for CTE teachers. The number of credentialed full- and part-time CTE teachers has declined by nearly 1,200 to 7,794 since 2000. Currently, fewer than 3 percent of California instructors teach CTE.<sup>80</sup>

<b>Year</b>	<b>CTE Teachers*</b>	<b>Total Teachers</b>
2000 – 2001	8,992	327,369
2001 – 2002	9,014	333,478
2002 – 2003	9,427	338,281
2003 – 2004	8,213	331,221
2004 – 2005	7,978	332,007
2005 – 2006	7,794	333,964

\* Full- and part-time teachers are included in this count.

Source: California Department of Education, Demographics Office. 2000 – 2006.

To retain its current CTE teacher workforce and bring more working professionals into teaching, the state needs to assess and refine its current policies, including its policies for credentialing and teacher training. The state also needs to advocate for changes in certain federal Social Security policies that pose a significant barrier to mid-level professionals who want to enter the teaching profession.

## ***CTE Credentialing***

The California Commission on Teacher Credentialing establishes various teaching credentials. The CTE credentialing process was most recently revised in 1993 and included 175 occupation-specific subject areas from accounting to welding. Legislation passed unanimously by the Legislature and signed by the governor calls for updating CTE credentialing and aligning credentials to match the 15 industry sectors identified in the state's CTE content standards and framework.<sup>81</sup>

There are two types of CTE credentials: one which encourages working professionals to enter the teacher workforce – the Designated Subjects Credential; and, one which requires a bachelor's degree in a specialized subject – the CTE Single Subject Credential.

***Designated Subjects Credential.*** For a Preliminary Designated Subjects Credential, the state requires five years of work experience, a high school diploma or the equivalent and a general understanding of the U.S. Constitution. Additionally, two years of postsecondary vocational training can be substituted for two years of work.<sup>82</sup> Prospective CTE teachers also must have recent work experience in the CTE credential area for which they are applying. Specifically, the prospective teacher must have worked full-time during one of the three prior years.

For the most part, the preliminary credential is valid for five years. To become fully-credentialed, a teacher must have a valid preliminary credential, have successfully taught a minimum of one course for four terms within a five-year period, have completed an approved personalized teacher preparation program and have completed a unit in health education. A separate credential exists for part-time CTE instruction.

***Career Technical Education Single Subject Credential.*** Single Subject Credentials are issued in all academic and five career technical subject areas: agriculture, business, home economics, health science and industrial and technology education. To obtain a Single Subject Credential, prospective teachers must hold a bachelor's or other advanced degree, pass the California Basic Educational Skills Test (CBEST), verify subject matter competence and complete a commission-accredited single subject teacher preparation program.<sup>83</sup>

Of the more than 28,000 CTE teachers who received credentials in the past 10 years, 88 percent have a Designated Subjects Credential, and 12 percent have a Single Subject Credential. Although a college degree is not required for a Designated Subjects Credential, 58 percent of teachers with this credential have a bachelor's degree or higher.<sup>84</sup>

The federal No Child Left Behind Act requires that educators teaching core academic subjects and all instructing in schools that receive Title I funds must be “highly qualified.” In California, this means that teachers must have a bachelor’s degree; must have a state credential, intern certificate or currently be enrolled in an approved program; and, must demonstrate core academic subject matter competence.<sup>85</sup>

By establishing the types of credentials as well as requirements for earning various credentials, the Commission on Teacher Credentialing drives the design of the educator preparation programs. In California, the CSU system prepares the majority of educators. Private colleges, the UC system and other institutions, including individual school districts and county offices of education, prepare the rest.

### ***Credentialing Confusion***

Experts describe the credentialing process as complex, confusing and bureaucratic, with certain elements that pose barriers for prospective teachers.<sup>86</sup> For example, while it is important for CTE teachers to have recent and relevant work experience, the requirement that prospective teachers must have worked full-time during one of the three years prior to applying for a credential poses a barrier for someone who has worked part-time or who has been in a different but related part of the workforce.<sup>87</sup>

At the Commission’s public hearings, witnesses provided vivid examples of how the recent employment skills requirement thwarts credentialing of professionals who attempt to get a CTE credential. For example, someone who worked as a mechanical engineer for 20 years and then taught English for five years, under the current system, could not qualify for a CTE credential in mechanical engineering. Another example would be a veteran auto mechanic who decides to work part-time while attending college to get a bachelor’s degree and teaching credential. After working part-time and attending school for four years, the mechanic could not qualify for a CTE teaching credential in auto mechanics.<sup>88</sup>

The Commission also heard that industry professionals who enter the CTE teacher workforce with a Designated Subjects Credential might be most in need of added support to adjust to working with teenagers. But Designated Subjects Credential holders do not qualify for the state’s Beginning Teacher Support and Assessment (BTSA) Induction Program.

Begun by legislation in 1992 and refined in 1997, the BTSA program makes state funding available to local educational agencies to support new teachers but only those with a Single or Multiple Subject Credential.<sup>89</sup>

With the infusion of academic rigor into CTE curriculum and the infusion of applied concepts into academics, some experts have questioned whether or not two distinct types of CTE credentials are warranted. CTE instructors who are teaching academically rigorous CTE courses that count as academic core subjects must meet the “highly qualified” federal teacher requirements – meaning, they must have a bachelor’s degree and expertise in that core subject. Given these requirements and the new CTE standards for curriculum, experts suggest that the state should reassess its credentialing requirements.

Beyond streamlining and updating the CTE credentialing process, experts say the biggest challenge to expanding the CTE workforce will be ensuring that CTE teachers – current teachers as well as those entering the profession – are prepared to teach an increasingly rigorous CTE curriculum.

As CTE curriculum evolves to become more rigorous and more districts replicate and implement successful career-themed programs, the education workforce also must evolve to meet the needs of the 21<sup>st</sup> century classroom. Experts say that the current teaching workforce is “not well prepared to teach CTE as it has been newly envisioned...It is unrealistic to assume that schools can improve simply because they want to or state officials say they should. The changes that need to occur will require a significant investment in professional development for teachers and principals.”<sup>90</sup>

The overhaul has started. In addition to the 2007 legislation realigning the CTE credentialing system, the California Commission on Teacher Credentialing has established a CTE credentialing advisory committee to come up with a proposal to revamp the CTE credential process to make it easier for working professionals to enter the teacher workforce.

### ***Expanding CTE Professional Development & Training***

While the state has adopted standards and a framework for rigorous CTE curriculum, the state also needs to provide resources and incentives for professional development in order for teachers to learn the new curriculum. So far, there is no mechanism to ensure that the state’s four-year institutions are training new teachers to meet the new CTE standards.

David W. Gordon, former superintendent of the Elk Grove Unified School District, one of the fastest-growing districts in California, and current superintendent of the Sacramento County Office of Education, told the Commission that in order for the state to ramp up the number of instructors qualified to teach to the new CTE standards, the state should

encourage pilot training programs with districts and counties. He said that implementing swift changes in the state's university teacher preparation programs would be difficult; local entities could much more quickly adapt training to the new CTE standards.<sup>91</sup>

High Tech High School, a charter school in San Diego County, is the only individual high school with a professional preparation program accredited by the Commission on Teacher Credentialing. The school provides a model for locally-based teacher training. When the Little Hoover Commission visited High Tech High, the chief executive officer described its training program as a way for the high school to develop staff that would be effective in the school's unique and rigorous "hands-on" teaching approach. In fall of 2007, High Tech High began offering a master's degree program to train teachers as well as school leaders.<sup>92</sup>

## **Federal Policies Penalize Career Changers**

Additional impediments to expanding teacher ranks are federal Social Security rules that reduce benefits for mid-career professionals who enter the teaching workforce in California. In the late 1970s and early 1980s, Congress passed two amendments to the Social Security Act as part of a larger reform effort to shore up the financing of the Social Security system. The Windfall Elimination Provision reduces Social Security benefits for retirees who worked in jobs not covered by Social Security, such as teachers, firefighters and peace officers, but who also worked in other jobs where they paid Social Security taxes long enough to qualify for retirement benefits. This provision reduces Social Security benefits for these workers by more than \$4,000 per year. The Government Pension Offset reduces or, in some cases, eliminates spousal or survivor Social Security benefits for these workers.<sup>93</sup>

Recognizing the barriers that the Social Security Act amendments create, California Senator Dianne Feinstein has introduced S206, and California Congressman Howard Berman has introduced HR 82, both titled the

### ***Educator Training at High Tech High***

High Tech High (HTH) operates its own teacher intern program, which was approved by the California Commission on Teacher Credentialing in 2004. Through the program, HTH can certify teachers in math, science, English, history/social studies, Spanish, Mandarin and art. HTH partners with the University of San Diego School of Leadership and Education Sciences in order to offer what equates to a 120-hour pre-service program and 600 hours of training and practice over two academic years. Interns in the program also are employed as classroom teachers and earn full-time salaries and benefits.

The intern program aims to train teachers to combine components of technical and academic education in their classrooms. In June 2007, the first six interns finished the program and earned a preliminary license. As of fall 2007, there will be 28 interns participating in the program. HTH also is launching a graduate school of education in September 2007, which will confer master of education degrees in teacher leadership and school leadership. Both venues stress clinical experience and practice, while still providing classes on theory.

Sources: Erik W. Robelen. July 17, 2007. "Learning Where They Teach." Education Week. Also, High Tech High. "Educator Training." Accessed at [http://www.hightechhigh.org/about/educator\\_training.php](http://www.hightechhigh.org/about/educator_training.php).

Social Security Fairness Act of 2007, to repeal the pension offset and eliminate the Windfall Elimination Provision. As of August 2007, Senator Feinstein had 33 and Congressman Berman had 322 bipartisan co-sponsors for the bills, approximately two-thirds of all members of Congress. Californians and their lawmakers should advocate for federal lawmakers to enact this legislation and eliminate this barrier to mid-level professionals and retirees becoming teachers.<sup>94</sup>

### ***Other Options to Expand Teacher Ranks***

In addition to reducing and eliminating barriers that prevent private sector workers from entering the teaching workforce, experts suggested other opportunities to tap private sector experience in the classroom.

***Team Teaching.*** The Commission on Teacher Credentialing advisory committee members suggested that opportunities exist to team teach through partnering working professionals with credentialed teachers. Other states use this approach for some CTE subjects, and California could develop models based on the experience of other states as well as models in the California Community College system. In testimony before the Little Hoover Commission, the dean of Cabrillo Community College described how the college has partnered with local hospitals to provide classroom space and to tap the expertise of working professionals for various health care courses.<sup>95</sup>

While high school campuses pose different challenges, the partner approach provides an opportunity to tap into applied knowledge. Such team-teaching partnerships require time and resources to plan and implement. Some experts suggested that the state could provide tax breaks or other incentives to employers willing to loan professionals to high schools for team teaching. Another opportunity is for districts to work with employers and industry to provide externships and other opportunities for teachers to spend summers or other down time from school at job sites to improve applied teaching approaches.

***Tapping Retirees.*** Another opportunity exists in tapping the retiring baby boomer workforce, as many retirees may be looking to use their retirement to enter new careers or otherwise find ways to use their time productively. To address the shortage of qualified math, science and technology teachers in California, the governor launched a public-private partnership called EnCorps, designed to work with businesses to encourage retirees to join the teaching workforce in math, science and career technical education. The goal of the program is to bring retirees into classrooms by partnering with private companies to recruit, train and place employees who want to become teachers after retirement.

Several corporations, including Qualcomm, IBM, Edison International, Chevron, Ares Management, City National Bank and East West Bank, already are involved. The governor included \$10 million in the May 2007 budget revision for the program, but the money was not included in the final budget act. Despite the lack of state funding, the program will continue as a non-profit organization.<sup>96</sup>

### ***A New Breed of Administrator***

In addition to requiring instructors who can adapt to the new CTE curriculum models, schools also will require a different breed of principal. At each of the successful career-themed high schools that the Commission visited as part of this study, the principals are skilled entrepreneurs, as adept at applying for grants, partnering with employers and community colleges and designing and implementing flexible block schedules as they are at the more traditional role of leading teachers and interacting with students. While these administrators provide effective models for what the state's innovative and career-integrated high schools need, their effectiveness is, at least in part, a product of their own personal leadership qualities. To replicate the success of these high schools, the state has to find a way to provide professional development for existing administrators and revise its traditional approach to training. Again, local pilot programs have the potential to provide a swift transition to a new administrator paradigm.

### ***Career Counseling: Expanding Capacity***

In addition to appropriately trained teachers and principals, the state lacks school counseling capacity. As of 2004-05, California public high schools had the highest student-to-school counselor ratio in the nation – 471 students per counselor. The American School Counselor Association recommends a ratio of 250-to-1.<sup>97</sup> To respond to the shortage, California lawmakers initiated, in 2006-07, a \$200 million proposal to expand the number of school counselors for students in 7<sup>th</sup> through 12<sup>th</sup> grades. It is estimated that schools will be able to hire an additional 3,000 school counselors statewide with this money, reducing the ratio in high schools to 300-to-1.<sup>98</sup> The new funding gives priority to counseling services for students who are failing or at risk of failing to pass the high school exit exam.<sup>99</sup> Legislation enacted in 2007 expands the requirement of the new counseling funding to require counselors at schools that receive the money to review students' career goals and the availability of academic and CTE opportunities.<sup>100</sup>

Across the state, high school counselors have enormous caseloads and must provide psychological counseling as well as college and career

counseling. In addition to being overloaded, many also may be under-prepared to provide career advice. Of 16 required courses for a school counseling degree, the state requires only one course that focuses on career exploration.<sup>101</sup>

It is unrealistic to expect already overburdened high school counselors to take on the specialized task of providing guidance to CTE students. A more effective approach would be to use some of the new CTE money as well as a portion of the new counseling money for counselors specifically trained to work with CTE high school students. These CTE counselors, where possible trained by their own districts, could enhance their role by taking the lead in working with their school's outside partners. This would both make them better able to provide guidance and create the link for internships, site visits, workplace learning and jobs.

Stakeholders agree that the state needs to do more to encourage more Californians to become trained and credentialed CTE teachers. The state also must do more to ensure that current teachers are provided opportunities for professional development so that they can teach to the new CTE standards. For the immediate future, the two track credentialing process for CTE teachers should be retained. The state cannot afford to eliminate the pathway that has provided 88 percent of California's CTE teachers over the past decade. The state can help these teachers meet more demanding requirements by allowing them to take advantage of training through the Beginning Teacher Support and Assessment (BTSA) Induction Program.

Districts cannot wait for the California State University system to produce sufficient numbers of graduates who can qualify for the Single Subject Credential and teach more academically rigorous CTE. As the Commission on Teacher Credentialing proceeds with its overhaul, the state should encourage districts and county offices of education to take the lead of Elk Grove Unified School District and San Diego's High Tech High and establish teacher credentialing programs of their own.

Additionally, the state can do more to recruit and train dynamic administrators to lead 21<sup>st</sup> century high schools. The state also must do more to recruit and train CTE-specific counselors and to provide opportunities for further professional development to train existing counselors to be able to provide timely and accurate career guidance. One way to do this would be to encourage districts with existing credentialing programs to expand their scope to include counseling.

***Recommendation 3: In order to improve student outcomes, the state must implement policies and remove barriers to expand the educational workforce, including teachers, administrators and counselors. Specifically, the state should:***

- ❑ ***Update and streamline the credentialing process.*** The California Commission on Teacher Credentialing should complete within two years its update of the CTE credentialing process, including aligning the CTE credential with the industry clusters established in the state board-adopted CTE standards and framework and eliminating barriers that make it difficult for industry professionals to enter the teacher workforce. Specifically, the commission should:
  - ✓ Revise the recent work history requirement.
  - ✓ Allow newly credentialed CTE teachers to participate in the Beginning Teacher Support and Assessment (BTSA) Induction Program.
- ❑ ***Require ongoing staff development.*** The state should require all Governor’s CTE Initiative grant recipients to expand time for rigorous and structured staff development on blended CTE and academic curriculum. Specifically, the state should:
  - ✓ Require credentialing and other related education programs for principals to include training on developing and implementing CTE programs that meet the state’s CTE standards.
  - ✓ Provide incentives to local districts and schools to develop and expand their own credentialing programs to provide teacher certification for rigorous CTE courses. The state should provide incentives for districts and schools, where appropriate, to replicate successful district-based credentialing.
  - ✓ Require CSU to assess teacher training and implement necessary changes to ensure new teachers are qualified to teach the rigorous CTE coursework based on the state’s CTE standards.
- ❑ ***Provide incentives for professionals to teach.*** The state should implement programs and incentives to encourage mid-career and retiring professionals to enter the CTE teacher workforce. Specifically, the state should:
  - ✓ Provide incentives for team teaching approaches.
  - ✓ Consider tax incentives for businesses to loan professionals to schools.
  - ✓ Expand opportunities for summer externships so teachers get a better sense of the business world.
  - ✓ Lobby policy-makers at the federal level to eliminate the Social Security disincentive.

- ❑ ***Expand the number and role of counselors.*** The state should use previously approved money for local districts to expand the number of counselors trained in providing career advice, including postsecondary training and education options. CTE counselors funded with this money should take the lead role in outreach, serving as the main resource for generating internships and other job-based learning opportunities. The state should require Governor’s CTE Initiative grant recipients to provide additional training for counselors about CTE programs and career options for students.

## *Conclusion*

The Commission began this study with the broad goal of improving educational outcomes by increasing the effectiveness of career technical education programs. The Commission found the state's abysmal high school dropout rate – particularly among minority and low-income students – stunning. The Commission also was concerned about the shortcomings of the education system to prepare students for life after high school. The Commission was concerned too about the impact of dropouts and under-achieving high school graduates on the state's workforce and, ultimately, the state's economy.

In this study and others, the Commission has seen a government culture that focuses on inputs and gauges success in terms of increasing inputs. All too often, the bulk of those inputs are dollars, which are limited in supply. California must move to a government culture that focuses on outcomes. The state must develop policy around defining the right outcomes, creating the right path to producing those outcomes and measuring progress in achieving them. In this process, by no means an easy one, a key input is creativity.

It is difficult to overstate the value of the outcomes of a successful CTE policy: more Californians getting a high school education that prepares them to be successful adults and contributing members of our society. The results can be measured in a number of ways, through improved proficiency scores, higher grades and higher graduation rates. Important measures that could track how students do after high school will have to wait, but they are critical to knowing whether the state is pursuing the right policies to get the right results.

Californians – students, parents, voters, taxpayers – have the right to expect results from the state's investments in CTE. They have a right to expect accountability from the process as well.

For too long, the state has spent money without making its priorities clear, without expecting results and without measuring outcomes. The result is that unproductive programs roll on and on, wasting money that could be put to better use on programs that have demonstrated they improve student outcomes. The state cannot continue to reward failure. Resources are scarce, and the stakes are too high.

When the Commission began this study, career technical education – in California and nationally – was emerging as an option for keeping students in school and improving post-high school outcomes. California had just adopted rigorous standards and a framework for CTE, important steps for improving outcomes and accountability. Lawmakers had dedicated new funding to expand and improve CTE programs. The Commission found promising but not conclusive evidence that CTE is improving outcomes. Because many of the newly rigorous CTE programs are only beginning to reach the classroom and are available to so few students, there is not a wealth of data on CTE.

The most extensive data available come from studies focused on California Partnership Academies, which have been around since the 1980s, and Regional Occupational Centers and Programs, which have been around since the late 1960s. Several studies of both of these career-themed programs revealed that students who participate are more likely to graduate, to pass the high school exit exam, to improve their GPAs and to earn higher wages after graduating from high school than their peers who do not participate in a CTE program. Students from these two types of programs are as equally likely to attend college as their peers.

However, on another outcome measure – academic test scores – students in career-themed high schools do not yet appear to be gaining ground. Flaws in the state’s current data system make it impossible to know on a statewide basis how individual students are performing in CTE or any other educational program. The state is moving forward on implementing a unique student identification system, which will allow it to better measure and understand outcomes, but policy-makers have been slow to provide the resources required to fully implement the system.

When Commissioners visited model career-themed high schools, students told the Commissioners that their CTE coursework helped keep them interested in school and that their coursework was harder than their counterparts’ coursework at traditional high schools. Although few students leave the program at Arthur A. Benjamin Health Professions High in Sacramento, one student who did told the Commission that she left the school in her freshman year only to find that she had advanced academically beyond what was being taught at her new high school. Fortunately, she said, she was allowed to return to Health Professions High.<sup>102</sup> While improvements in individual lives are hard to measure and replicate, the examples of academically challenging career-themed high schools, combined with the existing data on CTE, support the state’s plan to expand and improve CTE programs.

The state has committed approximately \$400 million to improve CTE over the next seven years. The Commission, in this report, recommends that the state ensure that one-time funding is used to expand rigorous CTE curriculum; streamline programs; provide professional development for teachers, principals and counselors; and, at each step, measure the outcomes of its investments.

The state has taken steps to strengthen the California Workforce Investment Board. If the legislative reforms work, this board has an immense opportunity to create an integrated education and workforce development strategy. Given the past performance of such boards, the state should not rely on high-level boards for concrete outcomes. The Commission recommends that the state guide and support similar efforts at the regional and local levels to ensure educational programs – and CTE programs in particular – are aligned with current and future workforce needs.

The most critical key to expanding CTE lies in the state’s ability to expand its CTE teacher workforce. Lawmakers and the California Commission on Teacher Credentialing have already begun to re-assess and reform the confusing CTE credentialing process. This work needs to continue to remove unnecessary barriers that make it difficult for mid-career workers and the rapidly growing population of retiring baby boomers to enter the teacher workforce.

California has made progress in restoring money and enacting laws to align and refine CTE programs. But the state must measure CTE student outcomes so that proven programs can be expanded and replicated and so that many students – not just a few – have the opportunity to participate in high-quality CTE programs.



## The Commission's Study Process

Over the past two decades, the Commission has assessed various aspects of the state's education system more than a dozen times. Previous studies have focused on school facilities and construction, budget and finance issues, teacher preparation and credentialing and community college programs.

The Commission initiated this study to assess ways the state could expand and improve California's career technical education programs. The Commission was assisted by many individuals who helped guide its review, identifying model high schools, programs and curriculum as well as obstacles to expanding CTE. These experts also provided suggestions on opportunities for improving CTE.

As part of the study, the Commission convened two public hearings. Hearing witnesses are listed in Appendix A. The Commission also convened an expert advisory committee that met two times. Advisory committee members are listed in Appendix B.

Additionally, the Commission visited three high school sites to see first-hand CTE courses being taught and to talk with school principals, teachers and, most importantly, students.

Commission staff attended and were informed by discussions at meetings of the Career Technical Education Resource Group convened to advise the California Department of Education and the California Community Colleges Chancellor's Office on their joint effort to develop a statewide plan for CTE as part of the federal Perkins Act requirement. Staff also attended hearings of the Assembly Education Committee's CTE work group.

All written testimony submitted electronically for each of the hearings and this report are available online at the Commission Web site, [www.lhc.ca.gov](http://www.lhc.ca.gov).

### **Focus of This Study: CTE in High Schools**

The primary focus of this study is CTE programs for California high school students. During the course of the study, the Commission heard about the need for better linkages between high school CTE programs and advanced CTE coursework offered at the state's community colleges and public universities. While this report discusses the need for continued improvement in developing course sequences across systems, the Commission did not assess post-secondary CTE programs. The Commission also heard about the importance of adult education and its role in educating youth no longer attending high school as well as older adults; however, the focus of this study did not include adult education. Additionally, experts told the Commission about the critical role middle schools play in introducing young students to careers and high school CTE courses; however, the Commission did not review middle school programs as part of this study.



# Appendices & Notes

- ✓ *Public Hearing Witnesses*
- ✓ *Advisory Committee Members*
- ✓ *CTE Industry Sectors and Career Pathways*
  - ✓ *CTE Issues in Nursing*
- ✓ *Prior Recommendations: Linking Education and Workforce and Economic Development*
  - ✓ *Framework for Workforce Development*
    - ✓ *Opportunities to Connect Partners*
      - ✓ *Notes*



## Appendix A

### Little Hoover Commission Public Hearing Witnesses

***Witnesses Appearing at Little Hoover Commission  
Public Hearing on Career Technical Education, March 22, 2007***

Scott Himmelstein, Acting Secretary of  
Education

Gary Hoachlander, President, ConnectEd:  
The California Center for College and  
Career

Jack O'Connell, State Superintendent of  
Public Instruction

Dorothy Rothrock, Vice President,  
Government Relations, California  
Manufacturers & Technology Association

Christopher J. Walker, Legislative Advocate,  
Nossaman, Guthner, Knox & Elliott, LLP

***Witnesses Appearing at Little Hoover Commission  
Public Hearing on Career Technical Education, April 26, 2007***

Laurel Adler, Superintendent, East San  
Gabriel Valley Regional Occupational  
Program and Technical Center

Victoria L. Bradshaw, Secretary, Labor &  
Workforce Development Agency

David N. Butler, Executive Director and  
Chief Executive Officer, Linking Education  
and Economic Development (LEED)  
Sacramento

David W. Gordon, Sacramento County  
Superintendent of Schools, Sacramento  
County Office of Education

Helen Hawley-Kelley, Education  
Consultant, California Commission on  
Teacher Credentialing

José Millan, Vice Chancellor, Economic and  
Workforce Preparation Division, California  
Community Colleges Chancellor's Office

Mike Patterson, Career Technical Education  
Teacher and Representative of the  
California Teachers Association, South  
Tahoe High School and Central Sierra  
Regional Occupational Program I

Rock Pfothenhauer, Dean of Career  
Education and Economic Development,  
Cabrillo College

Paul Watters, President, California  
Association of Regional Occupational  
Centers and Programs



## Appendix B

### Little Hoover Commission Advisory Committee on Career Technical Education

Patrick Ainsworth; Assistant  
Superintendent and Director; Secondary,  
Postsecondary and Adult Leadership  
Division; California Department of  
Education

Rebecca Baumann, Legislative Aide, Office  
of Assemblymember Loni Hancock

Gary Borden, Deputy Executive Director,  
California State Board of Education

Mike Brunelle, Director, Career and  
Technical Preparation, Sacramento City  
Unified School District

Teri Burns, Director of Legislative  
Advocacy, School Innovations & Advocacy

Charlsey Cartwright, Executive Director,  
California Career Resource Network

Svetlana Darche, Director, Career  
Education, WestEd

Patricia de Cos, Senior Research Policy  
Analyst, California Research Bureau

Tom Gerin, Teacher, ISO Program,  
Foothill High School

David W. Gordon, Sacramento County  
Superintendent of Schools, Sacramento  
County Office of Education

Paul Gussman; Administrator; Curriculum  
and Instruction Branch; Secondary,  
Postsecondary and Adult Leadership  
Division; High School Initiatives and Career  
Education; California Department of  
Education

Jay Hansen, Legislative Director, State  
Building & Construction Trades Council  
of California

Helen Hawley-Kelley, Education  
Consultant, California Commission on  
Teacher Credentialing

Gary Hoachlander, President, ConnectEd:  
The Center for College and Career

John Hooper, Policy Advocate,  
California Chamber of Commerce

Karen Humphrey, Program Administrator,  
California Postsecondary Education  
Commission

Fred Jones, Attorney, Law Offices of Fred  
Jones

Rick Larkey, Director, Workforce Training,  
Northstate Building Industry Association

Roger Mackensen, Policy Consultant,  
Senate Republican Caucus

Lloyd McCabe; Policy Consultant; Office of  
the Director; Secondary, Postsecondary and  
Adult Leadership Division; California  
Department of Education

Peter McNamee, Assistant Director,  
California Postsecondary Education  
Commission

Gil Montano, Superintendent, Southeast  
Regional Occupational Program

Jeannie Oakes, Presidential Professor and  
Director, Urban Schooling, UCLA Graduate  
School of Education and Information  
Studies

Nona Olsen, Director, (ROP) CTE,  
Mendocino County Office of Education

Dale D. Peterson, Assistant Business  
Manager, International Brotherhood of  
Electrical Workers L.U. 302

Lee Angela Reid, Consultant, Senate Office of Research

Dorothy Rothrock, Vice President, Government Relations, California Manufacturers & Technology Association

Diana Schneider, Senior Director, Central County Regional Occupational Program

Ron Selge, Dean of Career Technical Education, California Community Colleges Chancellor's Office

Ernie Silva; Legislative Advocate; Murdoch, Walrath & Holmes

Diane Siri, Executive Director, Alliance for Regional Collaboratives to Heighten Educational Success (ARCHES)

Jason Spencer, Legislative Aide, Office of Senator Tom Torlakson

Jane Thompson, Legislative Chair, California Business Education Association

Christopher J. Walker; Legislative Advocate; Nossaman, Guthner, Knox & Elliot, LLP

Paul Watters, President, California Association of Regional Occupational Centers and Programs

Susan White, Manager, California Business Education Association

Chuck Wiseley, Career Technical Education Specialist, California Community Colleges Chancellor's Office

## Appendix C

<b>CTE Industry Sectors and Career Pathways</b>			
<b>Industry Sector</b>	<b>Career Pathways</b>	<b>Industry Sector</b>	<b>Career Pathways</b>
<b>Agriculture and Natural Resources</b>	<ul style="list-style-type: none"> <li>• Agricultural Business</li> <li>• Agricultural Mechanics</li> <li>• Agriscience</li> <li>• Animal Science</li> <li>• Forestry and Natural Resources</li> <li>• Ornamental Horticulture</li> <li>• Plant and Soil Science</li> </ul>	<b>Finance and Business</b>	<ul style="list-style-type: none"> <li>• Accounting Services</li> <li>• Banking and Related Services</li> <li>• Business Financial Management</li> </ul>
		<b>Health Science and Medical Technology</b>	<ul style="list-style-type: none"> <li>• Biotechnology Research and Development</li> <li>• Diagnostic Services</li> <li>• Health Informatics</li> <li>• Support Services</li> <li>• Therapeutic Services</li> </ul>
<b>Arts, Media and Entertainment</b>	<ul style="list-style-type: none"> <li>• Media and Design Arts</li> <li>• Performing Arts</li> <li>• Production and Managerial Arts</li> </ul>		
<b>Building Trades and Construction</b>	<ul style="list-style-type: none"> <li>• Cabinetmaking and Wood Products</li> <li>• Engineering and Heavy Construction</li> <li>• Mechanical Construction</li> <li>• Residential and Commercial Construction</li> </ul>	<b>Hospitality, Tourism and Recreation</b>	<ul style="list-style-type: none"> <li>• Food Science, Dietetics and Nutrition</li> <li>• Food Service and Hospitality</li> <li>• Hospitality, Tourism and Recreation</li> </ul>
		<b>Information Technology</b>	<ul style="list-style-type: none"> <li>• Information Support and Services</li> <li>• Media Support and Services</li> <li>• Network Communications</li> <li>• Programming and Systems Development</li> </ul>
<b>Education, Child Development and Family Services</b>	<ul style="list-style-type: none"> <li>• Child Development</li> <li>• Consumer Services</li> <li>• Education</li> <li>• Family and Human Services</li> </ul>		
<b>Energy and Utilities</b>	<ul style="list-style-type: none"> <li>• Electromechanical Installation and Maintenance</li> <li>• Energy and Environmental Technology</li> <li>• Public Utilities</li> <li>• Residential and Commercial Energy and Utilities</li> </ul>	<b>Manufacturing and Product Development</b>	<ul style="list-style-type: none"> <li>• Graphic Arts Technology</li> <li>• Integrated Graphics Technology</li> <li>• Machine and Forming Technology</li> <li>• Welding Technology</li> </ul>
		<b>Marketing, Sales and Service</b>	<ul style="list-style-type: none"> <li>• E-Commerce</li> <li>• Entrepreneurship</li> <li>• International Trade</li> <li>• Professional Sales and Marketing</li> </ul>
<b>Engineering and Design</b>	<ul style="list-style-type: none"> <li>• Architectural and Structural Engineering</li> <li>• Computer Hardware, Electrical and Networking Engineering</li> <li>• Engineering Design</li> <li>• Engineering Technology</li> <li>• Environmental and Natural Science Engineering</li> </ul>	<b>Public Services</b>	<ul style="list-style-type: none"> <li>• Human Services</li> <li>• Legal and Government Services</li> <li>• Protective Services</li> </ul>
		<b>Transportation</b>	<ul style="list-style-type: none"> <li>• Aviation and Aerospace Transportation Services</li> <li>• Collision Repair and Refinishing</li> <li>• Vehicle Maintenance, Service and Repair</li> </ul>
<b>Fashion and Interior Design</b>	<ul style="list-style-type: none"> <li>• Fashion Design, Manufacturing and Merchandising</li> <li>• Interior Design, Furnishings and Maintenance</li> </ul>		

Source: California Department of Education. 2006. "California Career Technical Education Model Curriculum Standards." Page vi-vii. Sacramento, CA.



## Appendix D

### CTE Issues in Nursing

California's difficulties addressing the state's nursing shortage reveal many of the systemic challenges of providing a seamless sequence of courses for a high-demand, high-wage occupation. California is facing a crisis-level nursing shortage. There are approximately 200,000 full-time equivalent registered nurses working in the state. The California Employment Development Department and the U.S. Bureau of Health Professions both estimate that California will need about 240,000 nurses by 2014. The University of California, San Francisco, produced a study for the California Board of Registered Nursing (BRN) in 2005, which projected a need of between 241,000 and 257,000 nurses by 2014. In short, assuming these projections are correct, California will need at least 40,000 more nurses by 2014 in order to meet health care demands.

Although nursing education programs are boosting their enrollment capacity, the increasing supply of nurses will not meet the growing demand. The enlarged enrollment capacity also falls short of demand among applicants to nursing schools, including associate, bachelor's and entry-level master's degree programs in nursing. In the 2005-06 school year, nursing programs in the state received a total of 28,410 eligible applications for 11,000 first-year slots. Factors affecting the ability of institutions to increase capacity include the cost of delivering nursing programs and lack of resources, specifically qualified teachers. The California Nurse Education Initiative 2006 annual report points out California community colleges "receive \$7,000 per student for two years of instruction, while it costs on average \$20,000 to educate a nursing student for two years."<sup>103</sup>

Attrition rates also remain high, especially at the community college level. In 2002-03, about 6,000 students were enrolled in community college nursing programs, and approximately half of those students graduated on time. The other students were split, with a quarter graduating late and a quarter not graduating at all. The attrition rate for the CSU and UC nursing programs is approximately 7 percent.

Critics contend that the high dropout rate is due to the non-merit based or only partially merit based admissions processes. Community colleges moved to these processes in the early 1990's because of a lawsuit threatened by the Mexican American Legal Defense and Educational Fund (MALDEF) regarding the disproportionate lack of admission of minority students. The lawsuit was avoided when the California Community Colleges Board of Governors agreed to come up with admissions requirements that were proved to be relevant to future performance. The California Community Colleges Chancellor's Office was able to research and, in 2002, find four predictors of student success that community college districts could use as admissions criteria. However, in order for the districts to use the criteria, they also have to conduct their own research. Because of the barriers, most community colleges still use lottery and wait-list systems for nursing program admissions. By spring 2008, all community colleges that receive grants from the Chancellor's Office must move to a merit based process.

In order to deal with the challenges posed by the non-merit based admissions processes, SB 1309 (Scott) became law in 2006. The legislation, among other provisions, established the Nursing Enrollment Growth and Retention program with the purpose of providing grants to certain community college nursing programs to expand enrollment, provide diagnostic assessments and develop and offer pre-entry coursework to prospective nursing students and diagnostic assessments and supportive services to enrolled nursing students. Signed in 2007, SB 139 (Scott), in part, allows community college districts to use multi-criteria screening measures for their nursing program admissions, and AB 1559 (Berryhill) puts into place a particular process and criteria for community colleges that choose to use multiple criteria in their admissions process.

SB 1309 also created the Health Science and Medical Technology Project to provide grants to middle and high schools to expand or start health career pathway programs that prepare students for the rigor of nursing and other health careers. One option for grant funding is to articulate programs in grades 7 through 14. This effort may help programs, such as Arthur A. Benjamin Health Profession High School in Sacramento, connect with community colleges and send prepared students to participate and succeed in nursing or other health career programs. With students having focused educations and making smooth transitions to community college, nursing programs can focus on graduating as many nurses as possible to reduce the statewide shortage.<sup>104</sup>

## Appendix E

### Prior Recommendations: Linking Education and Workforce and Economic Development

Linking education with workforce and economic development has been recommended previously.

- In 2004, Governor Schwarzenegger’s California Performance Review (CPR) identified the need to align education with workforce preparation. It found that “the state’s education system can serve its workforce preparation function more effectively if it is synchronized with the state’s economic growth and labor market trends.” The CPR recommended establishing an education and workforce council, made up of education leaders and the secretary of the Labor and Workforce Development Agency, and charged the council with developing a biennial blueprint on how California should synchronize its education system with economic development plans to improve the supply of an “appropriately skilled, educated workforce.”<sup>105</sup>
- The 2002 California Master Plan for Education found value in linking education and workforce and economic development. It recommended that the “K-12, regional occupation centers and programs, adult schools, and community college workforce preparation systems should be linked to state job training agencies and employers through one-stop career centers and other venues and through their inclusion in an expanded workforce report card.”<sup>106</sup>
- The Little Hoover Commission, in its 2002 analysis of the Governor’s Reorganization Plan creating the cabinet-level Department of Labor and Workforce Development, identified the fragmentation of workforce training programs across multiple departments and agencies as problematic for both workers and employers. During evaluation of the plan, witnesses described the need for aligning workforce and economic development and education. In its report, the Commission recommended better integration of workforce development and economic development.<sup>107</sup>



## Appendix F

### Framework for Workforce Development

In 1998, legislation was enacted that required the secretary of the Health and Welfare Agency, the secretary of the Trade and Commerce Agency, the chancellor of the California Community Colleges and the superintendent of public instruction to develop, through a collaborative process, a state workforce development plan. In 2000, they published a framework that includes the following key recommendations:

- Expand the partnership required by the Regional Workforce Preparation and Economic Development Act to reflect the full scope of workforce development, including the UC and CSU systems, and provide sufficient management and staff to meet state partnership commitments.
- Sustain and expand collaboration among workforce development policy bodies and service providers, including social support services.
- Engage the private sector as a full partner in every aspect of workforce policy and systems development, program operations and delivery of services.
- Incorporate a “move up” strategy within all segments of the workforce development system to continuously improve the knowledge and skills of every person in the labor force and ensure opportunities for career development and increased earnings.
- Support local development of regional boundaries for workforce development systems and service delivery methods.
- Remove fiscal, eligibility and other regulatory requirements that create barriers to accessing services.
- Expand accountability for program results and systemwide outcomes to ensure continuous improvement in service delivery.
- Continue and expand existing systems development initiatives as the foundation for regional and statewide systems.<sup>108</sup>



## Appendix G

### Opportunities to Connect Partners

Specific opportunities exist for employers to team with public agencies and tackle specific barriers that hamper the expansion of CTE programs.

The state has made a start through its various Web sites that promote careers and college, though they could be better coordinated, better linked and better promoted.

By partnering with business and industry and by involving youth in the Web site design, the state could do a much better job of promoting, enhancing and expanding the information available on these Web sites for students seeking information on work-based learning opportunities, careers and college options. Instead of competing for attention with MySpace, YouTube and other sites where students spend time, the state could leverage private partners and students creatively to link to or advertise on these sites.

Legislation to make the California Department of Education responsible for the development of Web site pages to provide comprehensive information about CTE opportunities and programs available in the state was adopted unanimously by the Legislature and signed by the governor in 2007. A unique feature of this legislation is that it provides an opportunity for CTE students in a Web design class to create and implement the Web site.<sup>109</sup>

Additionally, employers could assist the state in establishing and locating work-based learning opportunities for students by providing regional or statewide internship openings via the Internet. Given the flexibility the Web offers and the combination of Web reliance and facility shown by the target audience, there should be no need for a separate connection to be made by every high school, every district and every employer interested in providing work-based learning opportunities.

#### ***Resources On the Web***

Several state Web sites provide information to parents and students to help guide choices for careers and college, while others provide helpful information on occupational trends and career options but are geared more toward the general population than high school students.<sup>110</sup>

- ***California Career Resource Network*** – The California Career Resource Network (CalCRN), funded by federal Perkins money, provides interactive career assessments and tools to engage students in learning more about career opportunities. CalCRN also has developed a standards-based career exploration curriculum, based on a model taught to 85 percent of Canadian students, which is used in some California middle and high schools to help students in making career decisions and understanding the relevance of school.<sup>111</sup> [www.californiacareers.info](http://www.californiacareers.info)
- ***California Postsecondary Education Commission*** – The California Postsecondary Education Commission Web site includes a “Schools to Employment Pathways” guide.

Students can view career choices, find the level of education required and view colleges in California that offer coursework in various fields of study.<sup>112</sup> [www.cpec.ca.gov/Accountability/Steps.asp](http://www.cpec.ca.gov/Accountability/Steps.asp)

- **California Education Round Table** – The California Education Round Table (CERT) includes representatives from the three California public college systems, the Association of Independent California Colleges and Universities, the California Postsecondary Education Commission and the California Department of Education. CERT provides a Web site that helps students explore all the colleges in California and includes admissions and financial aid information.<sup>113</sup> [www.californiacolleges.edu](http://www.californiacolleges.edu)

### ***Promoting High-Wage, High-Demand Careers Online***

Models for promoting high-wage, high-demand professions to youth and young adults via the Web have been developed by private foundations and industry associations. Both of the campaigns described below included various advertising promotions to direct youth to their Web sites.

- **Make It In Scrubs.** The California Wellness Foundation provided a grant to Ogilvy Public Relations Worldwide to design and promote a comprehensive Web site encouraging youths to explore paths to employment in health care. The Web site, [www.makeitinscrubs.com](http://www.makeitinscrubs.com), provides detailed information in a user-friendly format on more than 100 jobs and careers in health care, including educational requirements, financial aid and other resources. The site includes video clips from various health professions. The Web site is part of the Wellness Foundation's campaign to increase diversity in the health care profession.<sup>114</sup>
- **Dream It. Do It.** To address the growing shortage of skilled manufacturing employees, the National Association of Manufacturers led an effort to develop a promotional campaign and Web site to introduce youth to manufacturing jobs and training opportunities. The Web site, [www.dreamit-doit.com](http://www.dreamit-doit.com), provides an opportunity for young people to explore manufacturing careers and includes career exploratory games and quizzes, video profiles of careers in manufacturing and a job bank that links to job opportunities via a Web site powered by Monster.com. The Dream It. Do It. campaign initially was launched in Kansas City but has since expanded to a growing number of communities across the nation.<sup>115</sup>

### ***Employability Skills***

Employers have indicated in national surveys that high school graduates frequently lack basic employability skills. A 2007 survey of more than 1,300 California business executives found they felt that high schools currently are not doing a very good job of educating students or preparing them adequately for the workforce. In national surveys, employers have indicated that beyond academics, students also need to learn the importance of showing up on time, working as a team and being respectful.<sup>116</sup>

Over the course of the study, the Commission was told repeatedly by representatives from business and industry of the need for high school students to graduate with these basic skills. In a 1991 effort led by the U.S. Department of Labor, the Secretary's Commission on Achieving Necessary Skills (SCANS) published a report that many experts consider to be the benchmark for the employability skills students need to succeed after high school. The commission found that less than half of young people possess the competence and foundation of skills and personal qualities necessary to succeed in life after high school.

SCANS was tasked with identifying skills needed for employment; proposing proficiency levels; recommending ways to assess proficiency; and, creating a strategy for reaching out to schools, businesses and homes. SCANS defines necessary employability skills as “workplace know-how” with five competencies and a three-part foundation of skills:

- **Workplace Competencies** – Effective workers should know how to productively use:
  - ✓ **Resources:** They know how to identify; organize; plan; and, allocate time, money, materials, space and staff.
  - ✓ **Interpersonal skills:** They know how to work on teams, teach others, serve customers, lead others, negotiate and work well with culturally diverse people.
  - ✓ **Information:** They know how to acquire and evaluate, organize and maintain, interpret and communicate and use computers to process information.
  - ✓ **Systems:** They know how to understand systems, such as social, organizational and technological systems; monitor and correct performance; and, design or improve systems.
  - ✓ **Technology:** They know how to select technology, apply technology to a task and maintain and troubleshoot equipment.
- **Foundation Skills** – Competent workers in the high-performance workplace need:
  - ✓ **Basic Skills:** They know how to read, write, perform mathematical operations, speak and listen.
  - ✓ **Thinking Skills:** They know how to learn, reason, think creatively, make decisions, solve problems and visualize.
  - ✓ **Personal Qualities:** They know how to demonstrate responsibility, self-esteem, sociability, self-management, integrity and honesty.<sup>117</sup>

While some states make competency in these skills part of their requirements for graduation, California does not. Even with national standards and available curriculum, the attitudes toward these “soft” skills and the lack of teacher time and training act as barriers in California. By expanding partnerships with employers to provide more work-based learning opportunities, more students could learn these basic employability skills.<sup>118</sup>



## Notes

1. The following reports show promising results in career academies, school-to-work programs and other types of CTE programs. Several reference multiple other studies:
 

Lehr, et al. University of Minnesota. National Center on Secondary Education and Transition. May 2004. "Essential Tools. Increasing Rates of School Completion: Moving from Policy and Research to Practice, A Manual for Policymakers, Administrators and Educators."

Becky Jon Hayward and G. Kasten Tallmadge. Office of the Undersecretary, U.S. Department of Education. June 1995. "Strategies for Keeping Kids in School: Evaluation of Dropout Prevention and Reentry Projects in Vocational Education. Final Report." Washington, D.C.

Marie Cohen and Douglas J. Besharov. May 2004. "The Important Role of Career and Technical Education: Implications for Federal Policy." Citing David Stern, et al., Winter 1989. "Benefits and Costs of Dropout Prevention in a High School Program Combining Academic and Vocational Education: Third-Year Results from Replications of the California Peninsula Academies." Educational Evaluation and Policy Analysis.

James J. Kemple, Manpower Demonstration Research Corporation. March 2004. "Summary of Career Academies: Impacts on Labor Market Outcomes and Educational Attainment."

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