Executive Summary

California is experiencing a shortage of skilled labor in virtually every sector of the economy. Labor market experts predict the gap between the number of available jobs and skilled workers will increase dramatically during the next decade and beyond. And, 75% of these jobs will require a high level of technical literacy and training while only 25% will require a bachelor's degree or higher. A fundamental disconnect between the outcomes of our current public education system and the needs of the economy is readily and dangerously apparent.

California's ability to maintain its competitive edge in the 21st century global economy requires a K-16 public education system that is capable of producing a sufficient number of motivated, skilled and educated workers. A critical factor in achieving this essential outcome is ensuring student access to career and technical education (CTE) courses in the public education system.

Currently, the CTE system in California is in a steep and steady decline. A twenty year period of changing educational funding priorities, various reform movements and cultural pressures regarding the necessity of curriculum to prepare all students for baccalaureate degrees has reduced the number of CTE teachers, classes and student enrollment to an historic low in California.

We believe that the existing K-16 educational system will not produce the skilled workforce we need and that major new initiatives are required to realign the education system to the actual needs of the economy both present and future.

Key policy decisions need to be made to:

- Require CTE coursework for *ALL* K-12 students;
- Adequately fund standards-aligned CTE foundational programs in 9th and 10th grades;
- Include CTE in school accountability measurement systems;
- Increase the numbers of CTE credentialed teachers;
- Expand taxpayer investment into K-12 CTE related facilities and equipment;
- Increase career awareness and institutionalize the alignment of K-12 public instruction with the skill and education needs of available careers in the actual economy; and
- Require publicly funded university systems to value CTE and applied learning in their admissions processes.

In education policy, we value what we *require*, what we *fund* and what we *measure*. **It is time for California to value career and technical education**.

What Our Leaders Are Saying:

"Our policy makers need to acknowledge that the nation's apathy toward developing a scientifically and technologically trained workforce is the equivalent of intellectual and industrial disarmament and is a direct threat to our nation's capability to continue as a world leader.

- *Commission on the Future of the United States Aerospace Industry*

"There is a notable void in blue-collar trades with a shortfall in plumbers, electricians and welders. We did the wrong thing in telling kids that to make something of themselves they had to go to college."

- *Wood Oge, Avondale Shipyard, Northrop Grumman Ship Systems.*

"The shrinkage of a U.S. technically able workforce is the greatest threat to our national security."

- *Rick Stephens V.P. Boeing*

Introduction to the New Economy

Excerpt from Dr. Ken Gray's "Career Counseling for Plan A and Plan B" – March 1, 2007

> Most everyone now realizes we have, in fact, entered different times. The competition for family-sustaining work is now worldwide. Annual earnings for baccalaureate graduates in the U.S. have been declining since 2000 while student loan debt has gone in the opposite direction. Underemployment/over-credentialing among college graduates is common; in the "Baccalaureate and Beyond" study by the National Center for Educational Statistics (NCES), almost half of respondents indicated they were in jobs that did not require a degree and had no real career potential. Using Department of Labor and Education data, we estimate that the supply of four-year college graduates exceeds labor market demand by at least 45%.
>
> Much is made about the future opportunities in the so-called "knowledge economy," but it is exactly these types of occupations that are the easiest to send abroad with a click of the computer key. We also often hear much about college graduates earning more than non-college graduates, the implication being that it is because they have a degree. Everyone seems convinced of this except economists who study this issue. The truth is that education explains only 10% of the variance in income among individuals. Eighty-three percent of two-year college graduates have the same annual earnings as four-year college graduates; about a fifth of college graduates earn less than high school graduates, similarly about a fifth of high school graduates earn more than college graduates. Thus it is wise for all involved to realize that the payoff to just having more education is far from guaranteed.
>
> Also, it is wise to observe that increased earnings from education go only to those who have degrees that are related to needed skills in the labor market. For example, in the NCES study mentioned above, the underemployment of arts and science majors was an astonishing 67%: only one in three reported finding work that they could not have gotten right out of high school. Meanwhile the under-employment rate for those with one and two year technician level degrees was nil.*

Part 1: California Workforce Demands for the Next Decade and Beyond

a. Growth of new jobs in the California economy

The employment forecasts by the Employment Development Department reveal a growing gap between the needs of the California economy and the availability of skilled workers.

California's economic base is concentrated in sectors with above-average growth potential in the national and world economy. California accounts for 20% of the nation's high tech jobs and production, 25% of new patents and 45% of new venture capital. The state is poised to take advantage of new opportunities in stem cell research and alternative energy technologies.

California is the nation's center for rapidly growing trade with China and the Pacific Rim. We have the nation's largest entertainment and tourism sector, and stand to benefit from a growing world economy. California has an above-average share of jobs in most high-wage and fast-growing professional services, including computer, architectural, scientific and management

consulting services.[1] And, we must work to maintain our strength in the core economic sectors of agriculture, business, construction, engineering, healthcare, manufacturing and transportation.

b. Future needs for a skilled workforce.
The California Employment Development Department expects 6.5 million new job openings to be generated in this state by 2014. The large number of jobs created by economic growth (2.5 million) and through baby boomer retirements (4 million replacement jobs) provides vast opportunities for young entry-level job seekers and middle-aged workers seeking advancement.[2]

According to the federal Bureau of Labor Statistics, 22 percent of California's jobs require a bachelor's degree or higher.[3] And, the majority of jobs in the new economy will actually require a high level of technical literacy and training from community colleges, apprenticeship programs, and/or private certificate programs. Examples of these jobs include computer support specialists, nurses, dental and medical assistants, administrative assistants, bookkeepers, electricians, carpenters, machinists, and automotive service technicians.

EDD projects vast needs for construction and repair occupations. Even though total manufacturing employment will remain flat, companies will be looking for many replacement workers to fill positions that are increasingly technology-based and that require skills to maintain high levels of productivity to compete in the global economy. The most advanced knowledge-based industries such as biotechnology and nanotechnology require dozens of skilled technicians for every professional level employee.

> ***"There is a critical shortage in entry level experts in computer-assisted design, integrated-circuit design and even radio frequency design for digital wire-less R&D"***
>
> - *Daniel Sullivan, Qualcomm*

Contrary to our cultural expectations, *most* jobs now and in the future do *not* require a four year college degree. While we need to maintain a focus on adequately preparing a segment of our youth to succeed in post-secondary baccalaureate programs, we also need to re-focus our resources and attention to prepare the vast majority of our youth to succeed in technical training after high school. They need to be interested, technically literate and prepared to succeed in apprenticeship programs and specialized courses and degrees at community colleges and private post-secondary institutions.

We need millions of skilled workers prepared to take jobs in all levels of the economy, from the entry level up through the technical ranks and to the highly educated engineers and scientists. Those students who pursue careers that do not require a bachelor's degree will need to complete a sequence of CTE courses in high school to adequately prepare them for further post-secondary training and education. And, while the college preparatory curriculum for admission to the University of California (UC) and California State University (CSU) systems is essential for students who will ultimately hold the 22 percent of all jobs that require a bachelor's degree it is not sufficiently comprehensive. These students should also complete some CTE curriculum in order to increase the focus of their post-secondary education and to assist in the preparation for their eventual careers.

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[1] California Economic Growth - 2006 Edition, Center for Continuing Study of the California Economy, www.ccsce.com.

[2] Industry Employment Projections, California Economic Development Department, http://www.labormarketinfo.edd.ca.gov/cgi/databrowsing/?PageID=145

[3] California Performance Review Report -- *ETV25 Balance Career Technical Education and College Preparation in High Schools http://cpr.ca.gov/report/cprrpt/issrec/etv/etv25.htm*

Part 2: Education Policy in California

a. From Standards to Accountability

The 1980s was a decade of educational experimentation, with "New Math", "New-New Math", "Whole Language" and other curricular reforms. It seemed every year brought new and radical changes to what children were learning, especially among the core disciplines of English Language Arts (ELA) and mathematics (epitomized by the "3 Rs" of Reading, Writing and Arithmetic).

To bring some consistency and academic rigor to core curricula, the state adopted content standards for core subjects. This was followed by accountability measures to gauge students' levels of performance through various assessments and reporting measures, including the Academic Performance Index ("API") and the adoption of the California High School Exit Exam. These accountability measures focus on English and math proficiency.

Students struggling with ELA or math were often "remediated" in subsequent years by doubling-up their ELA or math courses. Local districts began to focus more resources on these two subject-matter disciplines at the expense of other offerings (such as science, social studies, art, P.E., and career-technical courses). More recently, many elected school boards began holding their "at-will" administrators contractually accountable for annual progress in their standardized testing results and API scores.

As priorities changed and remediation rates soared, CTE programs were harder hit during the last few decades than other electives. One reason for this is the fact that CTE is not a required course for graduation or college admissions like P.E., art, foreign language, etc. And, the other reason is that schools, parents and the children themselves believed that success in life required a 4-year degree from college, and that every child should be encouraged to us their "electives" to achieve that goal.

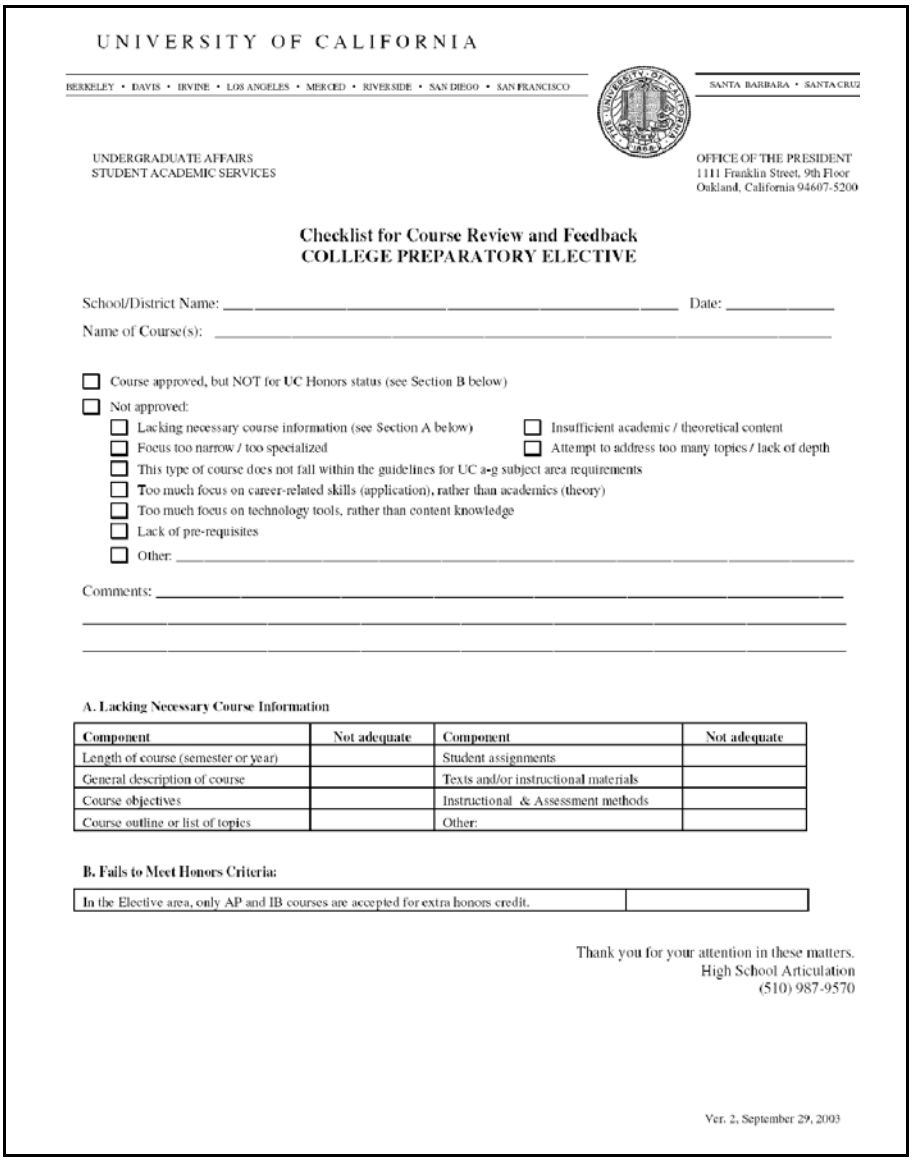
b. The College-Only Track

In 1987, approximately 74% of students were enrolled in CTE during high school. Despite the size and significance of career technical education, support has been lukewarm over the past decade as the emphasis of policy makers in the Department of Education has favored the "a-g" college preparatory curriculum over the workplace preparation offered by CTE.[4] This shift in priorities in addition to the narrowly constructed accountability measures has driven CTE enrollments to the lowest levels in state history. In 2005, only 34% of California high school students were enrolled in some form of CTE.

Many cultural and political forces have contributed over the past twenty years to the decline in both availability and enrollment in CTE. Students have been directed away from CTE, art, and other elective courses in order to raise individual and collective performance in ELA and math. Concurrent to this phenomenon students were being encouraged to only enroll in college-prep classes (those qualifying for UC admissions, commonly referred to as the "a-g" list of acceptable courses, which the CSU system recently adopted).

[4] California Performance Review Report -- *ETV25 Balance Career Technical Education and College Preparation in High Schools http://cpr.ca.gov/report/cprrpt/issrec/etv/etv25.htm*

Parents, counselors, teachers and the media help support the message to children that the preferred way to be successful in life was to go straight into a 4-year institution after high school. Secondary school administrators and school boards promoted this idea, believing that an emphasis on college-prep would also better prepare students for standardized tests. Organizations representing disadvantaged groups also took up this "college is the only means of success" mantra, calling for state mandated "A-G" curriculum for all secondary students.



UNIVERSITY OF CALIFORNIA

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UNDERGRADUATE AFFAIRS
STUDENT ACADEMIC SERVICES

OFFICE OF THE PRESIDENT
1111 Franklin Street, 9th Floor
Oakland, California 94607-5200

Checklist for Course Review and Feedback
COLLEGE PREPARATORY ELECTIVE

School/District Name: _____ Date: _____

Name of Course(s): _____

☐ Course approved, but NOT for UC Honors status (see Section B below)

☐ Not approved:

- ☐ Lacking necessary course information (see Section A below)
- ☐ Insufficient academic / theoretical content
- ☐ Focus too narrow / too specialized
- ☐ Attempt to address too many topics / lack of depth
- ☐ This type of course does not fall within the guidelines for UC a-g subject area requirements
- ☐ Too much focus on career-related skills (application), rather than academics (theory)
- ☐ Too much focus on technology tools, rather than content knowledge
- ☐ Lack of pre-requisites
- ☐ Other: _____

Comments: _____

A. Lacking Necessary Course Information

Component	Not adequate	Component	Not adequate
Length of course (semester or year)		Student assignments	
General description of course		Texts and/or instructional materials	
Course objectives		Instructional & Assessment methods	
Course outline or list of topics		Other:	

B. Fails to Meet Honors Criteria:

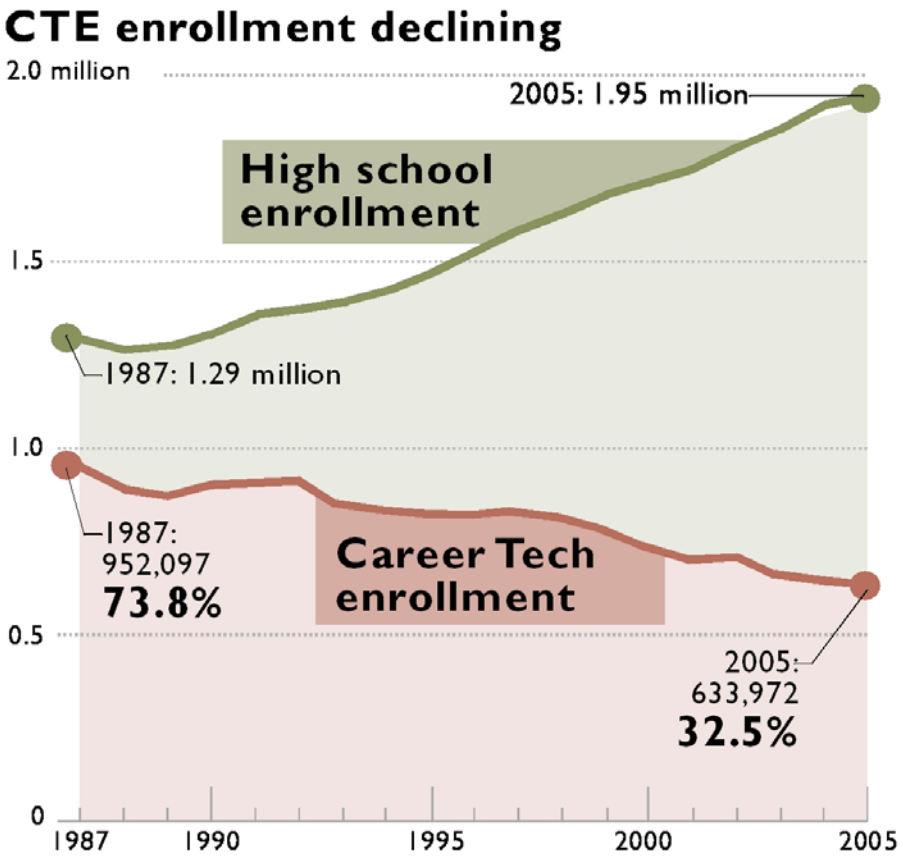
In the Elective area, only AP and IB courses are accepted for extra honors credit.	

Thank you for your attention in these matters.
High School Articulation
(510) 987-9570

Ver. 2, September 29, 2003

The competitive nature of being admitted to the UC system has caused today's high school students to use the finite time in their schedule to take an ever broadening array of "required and recommended" courses -- effectively eliminating time to take a sequence of career and technical education. Unfortunately, it is difficult for many rigorous and traditional CTE courses to achieve "A-G" status. A UC faculty committee called BOARS routinely rejects industrial and technology CTE courses submitted for approval, because these courses have "too much focus on career-related skills (application), rather than academics (theory)" and "too much focus on technology tools." *(See sidebar image)* To-date, nearly half of all so-called CTE courses that have been accepted by BOARS are actually fine art courses, the leading ones being Photography I & II. In fact, 83% of California's secondary CTE courses have not qualified for UC or CSU admissions.

The vast majority of rigorous CTE courses which are reliant upon applied and technical learning do not qualify for A-G status. As a result, student enrollment in CTE has dropped, facilities have been shut-down, and retiring CTE teachers have not been replaced. In 1987, California boasted 6,922 CTE teachers serving 952,097 students within a total high school enrollment of 1.29



million. However, the number had plummeted to 4,923 CTE teachers serving 633,972 within a total high school enrollment of 1.95 million by 2005. As the CTE pipeline continues to tighten and shrink, less and less students are being directed into life-long, career pathways, and their educational experience is disconnected from such market considerations.

Finally, in addition to the impact on CTE, the "A-G" curriculum is failing to adequately prepare our students for college. More than 25% of enrolled freshmen at the UC in 2005 failed basic proficiency in English on the Analytical Writing Placement Exam and were required to take a basic writing course.[5] The mean GPA for enrolled freshmen at UC in 2005 was 3.79 in their "A-G" approved coursework during high school. Similarly, between 36% and 55% of all incoming freshmen in the CSU in 2005 were required to take remedial math and English.[6] And, the mean GPA of these non-proficient students was 3.17 and 3.19 in their "A-G" approved math and English classes, respectively. These "non proficient" students were A to B+ students in high school "A-G" courses. This is remarkable given the common assumption that "A-G" is the standard for academic rigor and preparation for college success.

c. Irrelevance, Lack of Rigor and Dropouts

The dropout problem in California is severe. California graduated an estimated 71 percent of its high school students in 2002. Estimated graduation rates for minority students for that year were substantially lower: 57 percent for African-Americans, 60 percent for Latinos, and 52 percent for Native Americans.[7]

Students are increasingly "tuning-out" in high school. Struggling students get even more of the same of their worst subjects (piling on double and triple remediation courses in either English or math), while the rest receive little, real-world relevance in their theory-based "college-prep" academics. The vast majority of students are not stimulated nor provided the opportunity to connect their education with actual career goals and life aspirations.

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5 UCOPE Minutes – April 22, 2005; and College Destinations for University of California Fall 2005 Freshman Admits Susan A. Wilbur Director of Undergraduate Admissions University of California Office of the President October 2006

6 CSU -- all 2005 Final Regularly Admitted First-time Freshmen Remediation Systemwide -http://www.asd.calstate.edu/remediation/05/Rem_Sys_fall2005.htm

7 ***"Dropouts in California: Confronting the Graduation Rate Crisis"*** -- The Civil Rights Project of Harvard University – March 2005

According to a recent Bill & Melinda Gates Foundation study on high school dropouts, 47% said classes weren't interesting, while 81% called for more "real-world" learning opportunities. Somewhat surprisingly, 88% had passing grades when they dropped-out, and 70% said they could have graduated had they tried.[8] And, a 2006 poll of California's 9th and 10th graders reveals that connecting classroom to real-world motivates students to learn and stay in school.[9]

It is likely that the statewide dropout rate of 30% and lackluster academic performance of the "A-G" students is directly tied to the narrowing of course offerings and, more specifically, the decline in relevant and inspiring programs such as CTE. A consequence of such a narrow, academic focus in high school is a noteworthy decrease in career maturity and economic productivity; in 1960, the average beginning age of a skilled apprentice in California was 19; today it is 29.

Furthermore, studies show that academic-only high school students fall behind their colleagues in college who had sequenced-based CTE courses in high school in the time it takes for them to complete their college degree and their college graduation rates. A longitudinal study of the Lansing Area Manufacturing Partnership, a Michigan CTE program, found that the CTE students enrolled in college at rates significantly higher than a control group, did a better job in sustaining their enrollment, and reported being better prepared for the college environment.[10]

And, finally, nearly three times as many baccalaureate-degree holders enrolled last year in one of our state's Community Colleges compared to the number of A.A. holders who enrolled in a 4-year institution. This is a painful illustration that many high-achieving high school students are heading to college with no career focus and therefore far too many earn a degree that is not marketable. Upon completing their costly college degree (which taxpayers subsidize $20K/year per student at the UC level and $15K/year at the CSU), many find they must go back to school for career preparation. The best and the brightest of our college-bound students would greatly benefit from CTE exposure.

California should adopt new policies to realign the purpose of public education to both the needs of our students and the state economy. Career focus is essential to the future of all students.

Conclusion

California is failing to adequately prepare students for both careers and college. We do not recommend that California merely restore the traditional vocational education system into the schools. Nor do we recommend that CTE courses be forced into the "A-G" system to survive.

The 21st century economy demands workers that are highly skilled and creative problem-solvers. They must be productive, flexible, cooperative in team settings, and willing to be lifelong learners to keep up with technological advancements. The CTE of the future must be integrated into the public school system as a fundamental component of ***every*** student's education, from K-12 and through college. And, CTE must be recognized for the intrinsic value it can and should

8 http://www.gatesfoundation.org/UnitedStates/Education/TransformingHighSchools/RelatedInfo/SilentEpidemic.htm).

9 March 2006 Survey conducted by Peter D. Hart Research Associates on behalf of ConnectEd The California Center for College and Career

10 UAW-GM Center for Human Resources, "What Happens After They Graduate?"

bestow upon public education – namely relevant and applied learning opportunities for all students who seek a career in the future economy.

The following recommendations reflect the many aspects of the system we should realign to meet our goals:

1. **Require CTE coursework for *ALL* K-12 students**
   Changing High School Graduation Requirements. High school graduation requirements need to be adjusted for the 21st century economy. All students need some career planning and technical knowledge and skills in one or more of the 15 industry sectors comprising the California economy prior to graduation. Education Code 51225.3 should be amended to add "career and technical education" to the graduation requirements to be effective in 2014.

2. **Fund standards-aligned CTE foundational programs in 9th and 10th grades**
   Provide Additional ADA Funding for CTE Courses. Foundational CTE courses are necessary in 9th and 10th grades to build sequence-based CTE programs. These programs require additional operational resources than the traditional "textbook-only" academic programs. The enactment of AB 2448 in 2007 reduced adult enrollment in ROP programs in 11th and 12th grades on the notion that the CTE programs in 9th and 10th would be built-up again to provide a reliable number of non-adult students to the ROP programs. And, Proposition 1D provides new CTE facilities for high school programs serving 9th and 10th grade students. Now, the schools need the operational funds to provide the courses. Thus, the state should provide an additional $500 to $1,000 in ADA per student enrolled in non-ROP CTE foundational courses in grades 9 and 10.

3. **Include CTE in school accountability measurement systems**
   Strengthening the Academic Performance Index (API). We get what we measure. The API currently measures math and English at the exclusion of everything else. A 21st century public education system needs to measure outcomes from our schools that are broader including career preparation. The API needs to be changed to allow a better index for students and parents to judge their local schools. The API should include how many students are enrolled in CTE sequenced courses and the percentage of 9th graders who actually graduate by the end of 12th grade from that school/district.

4. **Increase the numbers of CTE credentialed teachers**
   Support for K-12 CTE Teacher Development. To address the shortfall of credentialed CTE teachers in grades 7-12, the state needs to promote emergency recruitment and credentialing programs targeted to CTE areas in need.

5. **Continue taxpayer investment into K-12 CTE related facilities and equipment**
   CTE Facilities – Bond Proceeds. Middle school and high school facilities need to be built and modernized as part of the secondary comprehensive school system. Prop 1D needs to be followed by yet another bond authorization for a second-wave of significant investment in 2008 to reflect the needs of necessary facilities and equipment for enrollment of all students by 2014 in some CTE.

6. **Increase career awareness and institutionalize the alignment of K-12 public instruction with the skill and education needs of available careers in the actual economy.**

Personal Planning Portfolio—Individual Career Plans. This proposal would target all students in their seventh grade year and require the supervised development and completion of an "Individual Career Plan" (ICP). The ICP would be developed after a semester of individualized introspection and evaluation of career interests and goals. The ICP in addition to the students' transcripts would constitute a "Personal Planning Portfolio" (PPP). The PPP would follow each student until completion of high school. The PPP would establish the necessary baseline for "relevance" in a student's educational experience by connecting their individual career goals with both the academic and technical education courses they choose to take between grades 7-12.

Increasing alignment of K-12 education -- The Secretary of the State Labor and Workforce Agency would be required to produce an annual report detailing job forecasts for review of the public and the Superintendent of Public Instruction (SPI). The SPI would then be required to issue a report indicating actual enrollment figures in those CTE courses that will address future job projections as contained in the Labor Agency report.

7. **Require publicly funded university systems to value CTE and applied learning in their admissions processes.** Publicly Funded Universities Should Adjust Admissions Requirements to Promote Technical Skills and Knowledge. An admissions process which included a CTE requirement would help promote career focus and maturity among students in grades 9-12. It also would benefit the recruitment and success of students in our publicly funded colleges by provoking a sense of purpose towards their education. Likewise, such an adjustment would create additional student access to CTE courses in grades 9-12. UC and CSU should consider adding to their admissions requirements (or recommended courses) a single yearlong approved applied arts course.