California Postsecondary Education Commission

The Nexus Between Postsecondary Education and Workforce Development: A Workforce and Employer Perspective

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This report continues the Commission's ongoing examination of the nexus between postsecondary education and workforce development, focusing on the projected needs for skills and knowledge in a 21st century global economy.

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The Commission advises the Governor and Legislature on higher education policy and fiscal issues. Its primary focus is to ensure that the state's educational resources are used effectively to provide Californians with postsecondary education opportunities. More information about the Commission is available at www.cpec.ca.gov.

Introduction

There is a growing gap between how well the State prepares and equips California's workforce and what is demanded for preeminence in a highly dynamic, technology advanced, and globally-structured 21st century economy. Policymakers and industry leaders concerned with California's economic future know a skills and knowledge gap exists, and are increasingly alarmed that it threatens to erode our ability to sustain robust economic success and maintain California's high quality of life. Yet while the gap exists, there is neither clarity nor agreement on its nature or how to gauge its dynamics. The State lacks high quality measures to judge progress towards closing the gap and a state-level mechanism to bring stakeholders together around those measures so they address this challenge.

It *is* clear that today's global economy has left its old geographic-based industrial structure behind. Skills and knowledge are now the most critical element driving economic competitiveness and growth. In California -- with an economy ranked the fifth largest in the world -- how well we prepare and equip our workers will determine our economic future. Improving our ability to impart the skills and knowledge workers need to succeed -- and the state's economy needs to thrive -- must become an immediate and long-term priority for policymakers, educational institutions, business and industry, and the public. It is also clear that closing the knowledge and skills gap will require focused leadership and a collaborative partnership that brings the right people to the table committed and able to implement solutions that strengthen the nexus between workforce development and education.

To promote that discussion at the state level, the California Postsecondary Education Commission (CPEC) is exploring that nexus, with a focus on higher education. This is the second in a series of policy briefs developed for that project. The first brief provided an overview of the historical context surrounding the issue. This brief examines more deeply California's workforce needs in coming decades, and considers the skills that employers and economists see as vital to California's workforce. The next brief in the series will examine what the various segments in the postsecondary system are currently doing to address workforce needs. A fourth and final brief will draw the issues together and offer policy recommendations for state policymakers to help assure that our postsecondary education institutions are able to fulfill their respective roles in workforce development.

Is California Postsecondary Education Positioned to Address the Change that is Coming?

Many recent research studies and reports show a deep and persistent concern that education systems are not keeping pace with changes in California's population and economy, and that the state's ability to sustain a skilled workforce is in danger. In the past, most of the concern has focused on the K-12 system, where reform efforts have partly been driven by recognition that workforce preparation often succeeds or fails at that level. But recently, the question is whether the state's postsecondary education systems, public and private, are positioned to do what is required to assure that Californians will have the skills and knowledge the workforce needs.

California's pre-eminent system of postsecondary education -- long recognized as outstanding both nationally and internationally -- has contributed greatly to a highly skilled workforce, and has fostered the innovation and creativity that fuel new economic growth. But the rapid economic and demographic shifts now facing California suggest that postsecondary education will need to adapt and change. These shifts include, but are not limited to:

- Accelerated demands for advanced technical skills in newly emerging industries, and reduced demands for traditional manual production skills;
- Competitive pressures from other nations that are ramping up their postsecondary education and providing advanced skills to greater numbers of workers able to compete with the United States in innovation and creativity, not just industrial production;
- Increased demands for workers who can adapt to rapidly changing economic needs and who have both the capacity for, and access to, lifelong learning opportunities;
- The impending retirement of a highly-skilled baby boomer generation which makes up a large part of California's workforce;
- The fact that California's population and future workforce is growing fastest among population groups with the greatest challenges to educational access and achievement, especially Latinos and immigrants; and
- The increasing rate of change in all these factors, which requires more systemic strategies in order to identify and respond to needs before they become crises.

Employers, business leaders, economists, and policymakers question whether California's postsecondary education systems are adapting effectively to these changes. If they are not, California risks erosion of the highly skilled workforce that has been such a vital part of its economic leadership. The challenge for California is to close the gap between workforce needs and postsecondary education as effectively and efficiently as possible. But first, all stakeholders must come to agreement on the nature of the gap and what is contributing to it, and then build collaborative efforts to address it.

The Postsecondary Role in State Workforce Development -- A Fuzzy Picture

Although it has long been assumed that a strong postsecondary system is important to meeting the needs for skilled workers, there has been less clarity on exactly what part postsecondary education plays in that goal. Woven throughout California's 1960 Master Plan for Higher Education are references to workforce roles for each public segment. However, the statements are broad and general, with little guidance for how these roles should be carried out. A 2002 legislative report revisiting the Master Plan more thoroughly considered how to strengthen the ways in which postsecondary education could better prepare individuals for career success. Its recommendations have echoed those of other reports—better articulation along the P-20 continuum, more linkages between business and education, and the need for reform to be a higher priority. However, the adoption of policies to implement such recommendations has been limited.

For years, economists and employers have said that the jobs in the future will require some kind of postsecondary education, and that a high school diploma will not be sufficient for the best jobs. Even for jobs without specific postsecondary requirements, they see new occupations that demand skills and knowledge beyond what the average high school graduate brings to the table -- even assuming all high school seniors graduate with a high quality education, which is far from the case. A particular concern is that, compared with other nations, science, math, and technology education is eroding at both the K-12 and postsecondary levels. But the larger concern is not just meeting specific needs for high-demand occupations. It is whether students are gaining the particular skills and knowledge needed by *all* workers in a global knowledge economy. The reports and data that CPEC have reviewed make the case that California is facing significant change, and that it is essential to more deeply involve the entire postsecondary education system in finding and measuring the most effective and efficient ways to address that change so that the state has the educated workforce it will need .

California Occupational Projections -- Only Part of the Picture

Using recently released occupational projections for the years 2004 - 2014 from the California Employment Development Department (EDD) Labor Market Information Division (LMID), CPEC extracted data on occupations projected to grow the most over that period, and which require postsecondary education training. Displays 1 and 2 below represent growth occupations seen in two different ways -- "Fastest Growth," which refers to "Percentage Change," and "Largest Growth," which refers to "Numerical Change." In both cases, the tables represent only new jobs resulting from industry growth, technological change, and other factors. They do not include replacement worker needs due to retirement, relocation, employment in another occupation, education, or death -- a factor that increases the actual need for new workers unless the occupation itself is in decline.

It should be noted that EDD projections are only estimates of the expected workforce demand for individual occupations; the actual growth that occurs may be affected by factors that cannot be fully anticipated. Nevertheless, these figures indicate a shift in the economy to higher skilled jobs. The highest *number*s of new jobs are projected to be in established occupations which have grown over time and already are heavily represented in the economy. As a consequence, these occupations, even though they will grow more slowly than those with the highest percentage of growth, will generate more jobs than faster-growing emerging occupations, at least in the near term. In a sense, the "largest growth" occupations reflect the economy as it has been, and the "fastest growth" occupations better reflect the economy as it is evolving. The trend is toward rapid growth in occupations that demand higher level skills.

Largest Growth

In looking at just the *numbers* of new jobs, over half the state's job growth by 2014 will occur in the 50 largest growing occupations. Of the ten jobs with the greatest numbers of new workers shown in Display 1, four occupations require some kind of postsecondary educational training -- specifically, registered nurses, general and operations managers, elementary school teachers, and business operations specialists. But the occupation that tops the list for new job growth is retail salespersons -- an occupation that requires only secondary education preparation and some on-the-job training. Large numbers of jobs will also be created for food preparation workers, laborers, and several other occupations that also require only a secondary education supplemented by on-the-job training, mostly of short duration.

DISPLAY 1 California Occupations with Largest Projected Growth, 2004 – 2014

Occupational Title	Annual Average Employment 2004	Annual Average Employment 2014	Numerical Change of new Jobs	Percent Change	Median Hourly Wage[1]	Education and Training Levels
Retail Salespersons	474,700	590,400	115,700	24.4%	$9.94	30-Day OJT
Registered Nurses	230,300	291,200	60,900	26.4%	$33.85	**AA Degree**
Customer Service Representatives	199,300	252,200	52,700	26.4%	$15.17	1-12 Month OJT
Laborers and Freight, Stock, and Material Movers, Hand	282,900	333,800	50,900	18.0%	$9.71	30-Day OJT
Janitor and Cleaners, Except Maids and Housekeeping Cleaners	229,900	279,600	49,700	21.6%	$10.02	30-Day OJT
General and Operations Managers	219,900	264,300	44,400	20.2%	$46.47	**BA/BS + Experience**
Elementary School Teachers, Except Special Education	174,900	219,300	44,400	25.4%	n/a[2]	**BA/BS Degree**
Office Clerk, General	411,800	454,800	43,000	10.4%	$12.21	30-Day OJT
Business Operations Specialists, All other	140,500	182,600	42,100	30.0%	$26.38	**BA/BS Degree**
Combine Food Preparation and Serving Workers, Including Fast Food	205,400	247,100	41,700	20.3%	$8.20	30-Day OJT

1. Median Hourly Wage is the estimated 50th percentile of the distribution of wages; 50% of workers in an occupation earn wages below, and 50% earn wages above.
2. For some occupations, workers may not work full time all year-around. For these occupations, it is not feasible to calculate an hourly wage.

Source: State of California, Employment Development Department, Labor Market Information Division.

Fastest Growth

The picture looks different for the *fastest* growing occupations (see Display 2). These are the occupations projected to show the largest *percentage* growth relative to current employment. Of the ten fastest-growing occupations, eight require postsecondary education, due to the growth in the high-tech industry and in health care. Some of the jobs listed that require postsecondary education will not generate the largest *numbers* of new openings. For example, the number of new dental hygienist jobs -- which require an associate degree -- is considerably less than those for dental assistants, who require only moderate-term on-the-job training. Nevertheless, among fast-growing occupations, eight out of the ten require postsecondary education, and six of those eight require a bachelor's degree, a trend that can be expected to continue.

DISPLAY 2 California Occupations with Fastest Projected Growth, 2004 – 2014

Occupational Title	Annual Average Employment 2004	2014	Percent Change	Numerical Change of new Jobs	Median Hourly Wage[1]	Education and Training Levels
Network Systems and Data Communications Analysts	24,200	38,500	59.1	14,300	$32.74	**BA/BS Degree**
Home Health Aides	41,200	60,900	47.8	19,700	$9.12	30-Day OJT
Computer Software Engineers, Applications	84,400	123,600	46.4	39,200	$42.84	**BA/BS Degree**
Computer Software Engineers, Systems Software	51,100	74,500	45.8	23,400	$44.28	**BA/BS Degree**
Network and Computer Systems Administrators	29,600	42,000	41.9	12,400	$33.11	**BA/BS Degree**
Dental Hygienists	19,900	28,200	41.7	8,300	$38.93	**AA Degree**
Database Administrators	11,300	16,000	41.6	4,700	$34.88	**BA/BS Degree**
Dental Assistants	41,300	58,200	40.9	16,900	$15.38	1-12 Month OJT
Gaming Dealers	9,100	12,600	38.5	3,500	$8.10	**Post-Secondary Voc-Ed**
Physician Assistants	5,900	8,100	37.3	2,200	$39.72	**BA/BS Degree**

1. Median Hourly Wage is the estimated 50th percentile of the distribution of wages; 50% of workers in an occupation earn wages below, and 50% earn wages above.

Source: State of California, Employment Development Department, Labor Market Information Division.

Employment by Education Level

Another view of the need for postsecondary education in new jobs can be found in changes in the percent of total employment requiring particular levels of education. As Display 3 below indicates, the proportion of jobs requiring postsecondary education in California does not appreciably increase in the period between 2004 and 2014. Assuming "vocational qualification" indicates some form of postsecondary training, only three in ten jobs will require education beyond high school. However, this table does not show the percent of *new* jobs that will require education beyond the secondary level, which are estimated to be as high as 85%. Also, Display 3 shows that the total *number* of new jobs requiring postsecondary education by 2014 will increase by 1,035,200 -- which means California must find a way to provide that level of education to more than a million new workers or face shortages that could limit job growth.

DISPLAY 3 Components of Employment by Education Level

Education & Training Levels	2004 Jobs	Percent	2014 Jobs	Percent
Graduate or higher level	557,100	3.42%	677,600	3.58%
Bachelor's degree	2,999,200	18.39%	3,659,900	19.33%
Associate degree	539,500	3.31%	672,400	3.55%
Vocational qualification	678,000	4.16%	799,100	4.22%
Experience or on-the-job training	11,531,600	70.72%	13,128,000	69.32%
Total jobs	16,305,400	100.00%	18,937,000	100.00%

Source: Calculations from EDD data.

It is important to note that some occupations that require only on-the-job training may assume secondary education proficiency that many students (dropouts, for example) do not get from high school. Finally, these projections do not account for immigration and related types of demographic changes, such as people who are educated in California but work in another state or country, or people who were educated elsewhere but work in California. Given those and other limitations, occupational projections are useful, but must be viewed as giving only part of the information postsecondary educators need to really understand future workforce needs.

Moving from "Now" to "The New" Economy

At first glance, considering the projections on the previous pages in light of indicators of postsecondary participation, California may seem to be in good shape in providing higher educated workers to meet the projected needs. For instance, *Measuring Up 2006: The State Report Card of Higher Education*, produced by the National Center for Public Policy and Higher Education, shows that 33% of California's population aged 25 to 65 has a bachelor's degree or higher -- making it one of the higher-ranked states in educational achievement. This participation level has increased substantially since 1992 and contributes to California's prosperity. California also ranks well above the national average on the "New Economy Index" that measures the extent to which states participate in knowledge-based industries. The state has a long-standing commitment to high quality public postsecondary education and excellent private postsecondary institutions, as well as a continuing reputation for economic leadership, not just nationally but globally.

But the problem is less in its present condition than it is in the threat from a confluence of trends in population demographics, educational achievement, workforce demands, and forecasted economic changes. It is not so much how California is doing now as it is whether the state can continue to grow and thrive in the future, and whether its postsecondary systems are ready and able to address those trends.

The Impact of Economic and Demographic Changes

One of many warnings comes in the 2006 report *California's Edge: Keeping California Competitive, Creating Opportunity*, which argues that a combination of major demographic and economic shifts in the coming two decades pose major challenges to the state's economy, and by extension, to its postsecondary educational system. The report notes that a "highly trained and productive workforce" has been California's primary competitive advantage, supporting industrial innovation and productivity that create "per capita family incomes above that of the nation as a whole." But, as the report states, that situation could change:

> The state now stands at a historic crossroads. Over the next two decades, demographic shifts already underway will change California's population, particularly that of its prime working-age population. The highly skilled baby boom generation will be retiring, and many projections indicate that California's replacement workforce will have lower levels of educational attainment if current trends continue.
>
> While the world has changed, our institutions have ranked behind. Increasingly global markets and international competition, rapid technological advancement, and an aging workforce confront this state with a critical challenge. If we do not meet it, California may lose its competitive edge and the consequences will be borne by all the state's residents in the form of fewer jobs, lower wages, and declining state revenues.

> California cannot build a prosperous future on the basis of a low-wage, low-cost workforce. Already, income disparities are growing; too many of California's residents are living in poverty; and even more work for wages too low to provide a quality standard of living. To support state-of-the-art industry, continued innovation, and a world-class standard of living for all its residents, California must make investment in its people the centerpiece of its economic development strategy for the 21st century.

The report says the need for more postsecondary education will continue to increase, noting that while only 26% of all jobs currently require an associate degree or higher, this figure will climb to 34% by 2022. That report is only one of a number with the same message: in order to attract the cutting edge industries that distinguish the California economy, an increasing number of highly educated and skilled workers will be needed, but demand threatens to outstrip supply in coming years.

In its recent report, *CA2025: It's Your Choice,* the Public Policy Institute of California (PPIC) argues that part of the issue is a shift toward the service sector:

> Many people, if not most, see service-oriented industries as the domain of less-educated, low-wage workers. But service employment includes business, professional, entertainment, recreation, health, and educational activities. Compared to manufacturing, these require higher levels of education. The critical question is whether California can produce or attract the educated workforce this shift requires. The changing demographic mix of the population could work in the other direction because most population growth will be among groups that have historically had less education.

The report points out that already, workers in most service-oriented industries are twice as likely to have a high school diploma as manufacturing employees, and that the highest share of college degree holders can be seen in the fastest growing service industries.

Demographic changes that affect education in California do not bode well for addressing the need for more workers with higher levels of education. According to the PPIC report, the fastest growing segments of California's population are those with the lowest levels of educational attainment. Immigrants and their children, especially Mexican-Americans, will be a large percentage of the working-age population in 2025, but "this group has been among the least likely to finish high school or to attend or finish college." Californians' willingness to support both K-12 and postsecondary education will be a key factor in closing a gap between the needs of the workforce for educated workers and the population available in 2020.

Another 2006 report by the Institute for Higher Education Leadership and Policy at California State University, Sacramento focused on the growing share of the population made up of groups with lower college participation. It projected low rates of high school preparation for college, especially in math and science; decreasing rates of enrollment in college directly after high school for all racial/ethnic groups; continuing disparities among racial/ethnic populations in levels of college preparation, participation, and completion, and, most alarmingly, "Projections of a large drop in the education levels of California's workforce and per capita income if the gaps among racial/ethnic groups in college going and completion persist." The analysis concludes that closing racial/ethnic education gaps is "essential to California's social and economic health…" and suggests a number of policy options to support greater access to college for California's fastest growing population segments.

All these California studies largely reflect the findings of a number of national reports and some international studies as well. According to the International Adult Literacy Survey, a seven-country comparative study of adult literacy, "More than 40% of the U.S. workforce and more than 50% of high school

graduates do not have the basic skills to do their job. Even college graduates suffer from the skills gap: 16 percent have inadequate basic skills."

The National Center for Public Policy and Higher Education, in a September 2006 report, *Measuring Up Internationally: Developing Skills and Knowledge for the Global Knowledge Economy*, particularly highlights how the United States has lost ground in education relative to other nations. In the U.S., 86% of young adults age 20-24 have a high school credential -- a figure which has remained largely unchanged for 25 years and which is now below that of the Czech Republic, Korea, Norway, and the Slovak Republic. The U.S. places near the middle of 8th grade assessments of skills and knowledge -- behind such leaders as Korea and Singapore. And while the U.S. continues to be a leader in the share of the adult population with college degrees, it is no longer predominant -- many other countries now match or exceed America's rate of degree attainment.

Employers' View of Workforce Skills Needs

Necessary Workforce Skills Include Both Academic and Applied Skills

The concern about the nation's slippage in providing higher education to sustain a skilled workforce is not just about whether enough people are getting degrees or credentials. It is also about identifying the skills that employers need their workers to have in order to carry out their jobs. Employers are concerned that workers are not getting the skills and knowledge they need at *any* level of education.

When discussing the skills that employers need, many reports and studies use somewhat different terminology, but the terms can generally be grouped into two or three broad categories. The following list should be considered illustrative rather than definitive. Others may organize them differently, but all the skills listed appear somewhere in the lexicon of workplace skills, and most of those specifically identified by employers as "very important" can be found among them:

- "Basic academic skills"
  - Reading comprehension
  - Verbal and quantitative reasoning
  - Mathematics or computational skills
  - Writing and written communication
  - English proficiency
- "Soft skills" or "employability skills" (both basic and advanced levels)
  - Showing up dependably and on time
  - Good attitudes and workplace habits
  - Following directions, completing tasks
  - Ability to work in teams or collaboratively
  - Self-knowledge and career management ability
  - Active listening and active learning
  - Adaptability and flexibility
  - "Professionalism" and work ethic
- "Applied skills" (which sometimes includes the "soft skills" above)
  - Creativity and innovation
  - Leadership
  - Critical thinking and problem solving abilities
  - Interpersonal skills and ability to work with diverse individuals
  - Speaking

- Computer skills and knowledge
- Job-specific or industry-specific skills

Employers' Concerns with Workforce Skills – the National Picture

In *Are They Really Ready to Work? Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce*, the Conference Board in 2006 surveyed more than 400 human resources experts in U.S. companies on what skills employers consider critical for entry level jobs. The survey also asked whether the skills that applicants brought from high school, two-year college programs, and four-year degrees are "excellent," "adequate," or "deficient."

The conclusion is stark: "The survey results indicate that far too many young people are inadequately prepared to be successful in the workplace." The respondents indicated that over half of new entrants with high school diplomas "are deficiently prepared in the most important skills -- *Oral* and *Written Communications*, *Professionalism/Work Ethic*, and *Critical Thinking/Problem Solving*." While the report found that college graduates do better, it also found that "too few are excelling."

The report sought to identify what U.S. employers consider the most important skills to workplace success. Overall, "applied skills on all educational levels trump basic knowledge and skills, such as *Reading Comprehension* and *Mathematics*." It isn't that the "three R's" are not important -- but employers emphasized that applied skills like *Critical Thinking/Problem Solving*, *Oral* and *Written Communications*, and *Teamwork/Collaboration* are more critical to success at work. Employers also identified some emerging skills that will be very important in the future, including *Knowledge of Foreign Languages*, *Making Appropriate Choices Concerning Health and Wellness*, and *Creativity/Innovation*.

While there are and will continue to be jobs for high school graduates, there will be less of them: at least a quarter of the companies expect to hire fewer people with only a high school diploma in the next five years. "Almost 60% (58.8%) project that their companies will increase hiring of four-year college graduates and about half (49.5%) project increased hiring of two-year college/technical school graduates." This correlates with statistics showing that a high percentage of newly created jobs will require postsecondary education at some level and an increasing percentage of all California jobs will require higher education.

California Employers' Perspective on Skills

The Conference Board's national study does not report data specific to California. However, some current research may provide a more state-specific and statistically valid picture of what skills employers believe they need. A needs assessment targeted at secondary and postsecondary career-technical education needs being conducted by WestEd for the California Community Colleges has sought to identify those skills. Provided to CPEC in draft form in advance of its December release, the study provides useful data drawn from employer surveys and focus groups. This report shows similarities to the national employer studies, especially in the importance given to "employability" or "applied" skills. Some of the results were:

- California employers put a premium on what can be classified as "employability" or "applied" skills.
- 100% of respondents identified "good attitudes and workplace habits" and "computational (math) skills" as important for entry level workers.
- High percentages of respondents also identified "critical thinking and problem-solving abilities," "interpersonal skills and the ability to work with diverse individuals," and "reading and writing skills" as important.

- Employers placed great weight on students' capacities to continue learning and adapting while on the job, including demonstrating the "ability to learn online."
- Half of the employers said a college or industry-recognized certificate was important, and about 4 in 10 each said that a two-year and a four-year degree were important. For long-term success in managerial roles, over half of those surveyed said a four-year degree was necessary.
- There is a wide range of employer and industry involvement in career technical education; educators support substantive roles for employers, including asking them to help develop curriculum and determine learning outcomes based on needed skills.

Another ongoing effort will, hopefully, expand the picture of what California employers need from their future workforce. The California State Chamber of Commerce's Foundation for Commerce and Education is researching business leader opinions on education for a report to be issued at the end of 2006. According to Foundation President Loren Kay, this report "will clarify business leaders' perspectives on education and workforce development issues, leading to improved policy analysis in these areas and a better-informed policy debate in California."

CPEC Employers' Survey

In addition to reviewing reports and data collected by others, CPEC undertook an informal survey of employers to gather input from a variety of experts. CPEC staff conducted several interviews with employers in some of California's fastest growing industries and enterprises, including small businesses.

The surveys were conducted by telephone in October and November of 2006, based on a questionnaire provided to interviewees in advance (see Appendix A). Those surveyed represented construction, health care, information technology, professional services, small business, and education -- all areas of projected employment growth in the coming decade. Due to its very small size, the survey results should be viewed more as anecdotal. However, the insights provided by those interviewed were generally consistent with the findings of larger surveys.

Specific educational requirements for entry-level jobs varied according to position, but all the respondents required at least a high school diploma; most had some positions that require two-year or four-year degrees or postsecondary vocational training. All indicated they had to provide at least some training and education on the job. All the employers interviewed said they provide training opportunities, including support for outside education. Some work with postsecondary institutions to provide education and skills training for their employees.

The respondents to the CPEC survey generally put a high priority on "employability" or "applied" skills. Problem-solving skills, critical thinking, analytical skills, teamwork, adaptability, active listening, and similar skills were cited by almost all the respondents as very important. Basic skills were also cited -- with reading comprehension, writing, and mathematics and science being mentioned most often. Most respondents indicated that high school graduates are often deficient in employability skills. More frequently, college graduates, including two-year graduates, were seen as having "adequate" skills; however, some employers saw deficiencies in reading, writing and computer skills among *most* applicants, including college graduates. There was also a concern that many college graduates lacked critical thinking skills, although one respondent said applicants with some college or with degrees were generally better able to exercise those skills than those who were high school graduates.

Most of the employers surveyed by CPEC said that currently, they can find employees to meet their needs, but with varying levels of difficulty. Several reported that postsecondary institutions were doing a good job of preparing people in specific professions and occupations -- especially in areas such as engineering and other technical fields. However, some said they don't find all the skills they need in en-

try-level applicants and instead seek out people with potential; according to one, "we hire people who aren't where we want them, but they have the traits and skills to learn."

Need for Longitudinal Data

Although state and national surveys have provided helpful data on workforce skills issues, there is still a need for more extensive data, especially data in which changes can be viewed over time. California's industries are continuously adapting to accommodate changes in technology and the economy. As a result, employers change the expected skills they demand from their employees. Current studies are limited to employers' perceptions of today. By monitoring the potential dynamics in each industry and changing skills needs over time, it might be possible to better predict the nature and extent of future needed skills. This kind of longitudinal information could help employers, policy makers and educational institutions to work with each other to plan strategies to meet those needs.

What's Needed: A Comprehensive State-Level Collaboration

As evidenced throughout this brief, much has been written in recent years on the topic of workforce development and the role of education -- both K-12 and postsecondary -- that it seems the topic may need no further attention; but that is not the case. California needs more discussion and collaboration at the state level to better define the role that postsecondary education must play in workforce development, and to identify systemic changes and strategies that would enable it to do so. Especially important is finding and applying measures to help all the stakeholders evaluate the results of effort put into postsecondary education responsiveness to rapid social and economic change. Such measures might include workforce outcomes for graduates, employer satisfaction with the skills levels of graduates, institutional mechanisms for updating curriculum to reflect new skills demands, among others. That effort is being made, at least at the institutional and sometimes the regional level, and often it is approached collaboratively. But there is too little evidence of adequate success that can inform state-level policy.

This need for a state-level collaborative approach is not new, but it has yet to be fully addressed. In the late 1990s, the legislature created a state-level partnership under the Regional Workforce and Economic Preparation Act to link education with workforce preparation and economic development. However, the legislation included only the community colleges among the partners, not the four-year systems. The partnership published a framework for workforce development policy that argued strongly for bringing all postsecondary education into the collaboration. Yet there is still no state-level entity whose main purpose is to convene *all* the key stakeholders in the education-economy continuum and engage them in ongoing discussion of what role each must play. Currently, CPEC, through its Workforce Technical Advisory Committee, has engaged some of the players in the discussion, but this effort is informal. Ultimately, there must be an institutionalized mechanism that engages all key players at the decision-making level in ongoing collaboration to identify problems in the context of constant and rapid change and to find solutions that all stakeholders can support and implement.

While state-level collaboration is a key issue, it is not the only consideration for CPEC's work on the nexus issue. Other issues of workforce preparedness and postsecondary education merit deeper discussion, and are beyond the scope of this policy brief. They encompass a large number of topics, and it is noteworthy that some of them touch on other areas of the Commission's policy work, such as postsecondary accountability and access to postsecondary education. They also include: the changing nature of work and what it implies for the content of postsecondary education programs; the difference between higher education as a job requirement and as a competitive advantage in hiring; the role of the K-12 system in preparing students for *both* higher education and work; the need for career counseling and development of personal career management skills in postsecondary education; the role of postsecondary

education in meeting the need for "lifelong learning;" and the relationship of workforce development and postsecondary education to larger socioeconomic issues.

Where Do We Go From Here?

While it is still premature for the Commission to advance fully formed policy recommendations until the policy briefs in this series are completed, the work done so far to explore the needs of the workforce suggests some preliminary conclusions. There is a such concern about a gap between what workforce needs are and what educational institutions provide (both K-12 and postsecondary), and that the level of alarm is growing in the face of global market pressures, means this will be an important issue on the national and state agenda. The role CPEC can play is to frame the questions, gather data, and involve the postsecondary education community more deeply in a discussion that will effect change.

One recommendation the Commission might wish to adopt would be to enact legislation creating a special state task force to design a credible means for collecting data on the alignment of workforce needs with the delivery of postsecondary education and to implement effective mechanisms to finance and administer postsecondary education that will improve California's responsiveness to changing workforce requirements. Such a task force -- even if initially focused on data collection and analysis -- might ultimately help shape a more institutionalized and permanent state-level approach to connecting workforce development needs with postsecondary education.

There is no single "silver bullet" solution, even if there were agreement on the problem. The workforce needs of the nation are linked so closely to issues of the economy, educational structure and success, and social equity that they cannot be separated. It must be recognized that solutions will be complex, multilayered and only reachable over time. Also, this is not a case of finding one static solution to a dynamic problem. The pace of social, demographic, and economic change has increased dramatically in the last few years and it continues to accelerate. That means "today's" solution may be obsolete by the time it is implemented. There must be an ongoing and regular effort to measure progress and to anticipate where circumstances will demand new responses. This will require more systemic approaches that create a sustainable capacity to anticipate change and enable institutions to address new needs as they arise.

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Appendix A

CPEC Employers' Survey for Postsecondary Education and Workforce Development Nexus Study, October 2006

1. Which industry are you in?
   ____ Retail
   ____ Construction
   ____ Health Care
   ____ Computer Science/Information Technology
   ____ Financial Services
   ____ Manufacturing
   ____ State and Local Government
   ____ Education
   ____ Other (Please specify: _____)

2. What level of education do you require for an entry level job in your industry? Please check all that apply.
   ____ Less than High School
   ____ High School
   ____ Postsecondary Vocational Education
   ____ Associate Degree
   ____ Bachelor's Degree
   ____ Graduate or Professional

3. Based on your entry level education requirements, how prepared are applicants for a typical entry level job in your company with the following educational qualifications: Deficient: Applicants have few of the skills needed for positions.

   Adequate: Applicants have about half of the skills needed for positions.
   Proficient: Applicants have most or all skills needed for positions.

Education levels	Deficient	Adequate	Proficient	N.A.
Less than High School				
High School Graduate				
Vocational Education				
Associate Degree				
Bachelor's Degree				
Graduate or Professional				

4. Please rank the following skills in order of importance when hiring new employees from 1 to 10 (or more), with 1 being the most important.
   ____ Active Learning
   ____ Active Listening
   ____ Critical Thinking
   ____ Mathematics & Science
   ____ Writing
   ____ Reading Comprehension
   ____ Speaking
   ____ Analytical Skills
   ____ Problem Solving Skills

____ Job-Specific Skills
____ Interpersonal Skills
____ Leadership
____ Teamwork
____ Adaptability
____ Other (Please specify: _____)

5. Which skills are found to be deficient at each level of education? Please check all that apply.

Deficiency shown in	Less than High School	High School	Vocational Education	Associate Degree	Bachelor's Degree	Graduate or Professional
Active Learning						
Active Listening						
Critical Thinking						
Mathematics & Science						
Writing						
Reading Comprehension						
Speaking						
Analytical Skills						
Problem Solving Skills						
Job-Specific Skills						
Interpersonal Skills						
Leadership						
Teamwork						
Adaptability						
Other (please specify)						

6. Do you think postsecondary institutions are doing a good job of preparing students for your company?
   ____ If yes, what are they doing to adequately prepare students? Please specify:
   _____
   ____ If no, how can postsecondary institutions improve? Please specify:
   _____

7. How successful are you in hiring individuals with the skills you are looking for?
   ____ Very Successful
   ____ Successful
   ____ Somewhat Successful
   ____ Not Successful. (Please explain whether this is due to applicants not possessing adequate skills or there being a shortage of applicants.
   _____)

8. When making hiring decisions, can work experience substitute for any of your educational requirements?
   ____ Yes
   ____ No

9. What makes applicants more competitive beyond the minimum requirements?
   ____ Additional education
   ____ On-the-job training
   ____ Work experience
   ____ Other (Please specify: _____)

10. Looking ahead to the next ten years, what of the following skills do you think will be in demand in your industry? Please check all that apply.
    ____ Active Learning
    ____ Active Listening
    ____ Critical Thinking
    ____ Mathematics & Science
    ____ Writing
    ____ Reading Comprehension
    ____ Speaking
    ____ Analytical Skills
    ____ Problem Solving Skills
    ____ Job-Specific Skills
    ____ Interpersonal Skills
    ____ Leadership
    ____ Teamwork
    ____ Adaptability
    ____ Other (Please specify: _____)
11. Does your company provide its employees with training opportunities?
    ____ Yes
    ____ No
    If yes, what kind of training is provided?
    ____ On-the-job training
    ____ Opportunities to attend seminars
    ____ Opportunities to attend conferences
    ____ Tuition assistance
    ____ Other (Please specify: _____)
12. Where does your company most often turn for external education/training resources for its employees?
    Please specify: _____
    Can postsecondary educational institutions help provide training to your employees?
    ____ Yes
    ____ No
    If yes, how do postsecondary educational institutions help provide training?
    _____
13. How can the postsecondary education system work with employers to better accommodate for workforce training needs?
    ____ Consult with the business on curricula and program design needs
    ____ Promote internships as part of an educational requirement
    ____ Participate in job fairs and career counseling
    ____ Other (Please specify: _____)
14. Additional Comments
    Are there any other thoughts you would like to share on this subject? Is there anything that we haven't asked, but you think we should?