

Multiple Pathways in California

An Emerging Option for High School Reform

HIGHLIGHTS

- The multiple pathways approach attempts to better engage and prepare high school students by integrating academic and career education.....2
- A number of pathway models—such as Partnership Academies—offer high school alternatives that have demonstrated some success6
- Several initiatives are exploring practices and policies that could bring pathway programs to more students and ensure their quality..... 11
- The pathways option holds promise; but to bring it to scale, reformers must address implementation issues and differing views regarding educational goals for students 14

What could motivate more high school students to try hard in school, stick it out to graduation, and be well prepared for college and career? A group of educators and advocates believe the answer to that question may lie in a high school reform concept that in California has been dubbed “multiple pathways.”

This approach to operating high schools differently is based on the view that college and career are complementary rather than competing goals and that all high school students should be prepared for both. The approach proposes that the high school experience integrate academics with real-world applications and include problem-based learning. The models that fall under the pathways umbrella are generally organized around an academic core, a career-technical sequence or theme, work-based learning opportunities, and support services for students.

In California today, hundreds of these programs are in operation, but they serve only a fraction of the state’s high school students. Evaluations of the pathway approach have shown some benefits for the students who participate. But implementing this kind of high school program more broadly—and doing it well—presents a variety of challenges, and the approach is not without its detractors. This EdSource report describes the state of the pathway reform effort in California and addresses critical questions about its potential.

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“Multiple pathways” attempts to prepare more high school students for college and career



For decades, the comprehensive high school has been the predominant model for educating students in grades 9–12.

These large high schools typically enroll students based on where they live and offer programs intended to meet a diverse range of student needs and goals. Among other services, they provide:

- Basic academic courses for all, plus college preparatory courses for “college-bound” students;
- Career technical courses for students hoping to pursue a job, certification, or further education in a particular trade or career;
- Social and cultural events, sports, and other extracurricular activities.

Calls for reform of this comprehensive high school model have increased in frequency and urgency in recent years. Although some students excel within the comprehensive high school, some simply get lost and others see the curriculum as irrelevant. Student disengagement is a problem, illustrated in part through high dropout rates. This is true in the nation as a whole and in California.

Although experts differ on how the problem should be measured, 2007–08 estimates by the California Department of Education (CDE) suggest that 19% of high school students drop out between grades 9 and 12. The statistics are even starker for some student groups: the CDE estimates that 24% of Latino and 33% of African American students drop out during high school.¹

At the same time, some form of post-secondary education—whether a college education, technical certification, or apprenticeship—is increasingly viewed as essential for adult success. One analysis published by the Public Policy Institute of California (PPIC) found that the average hourly wage stagnated or declined for California workers with a high school diploma or less between 1980 and 2006. The analysis projects that the

supply of California workers with no more than a high school diploma will far exceed the number of jobs available to this group by 2020, while the supply of workers with some college or more could fall short of demand.²

Demand for skilled workers will come from a range of industries, according to another analysis by the Center for Continuing Study of the California Economy (CCSCE). There will be particular demand in middle-level occupations because of projected retirements among baby boomers during the next decade. CCSCE finds that there will be 150 to 200 replacement job openings in California for every 100 new job openings.³ Ideally, students’ educational experiences in high school will equip them to participate in this changing economy.

California is exploring the relationship between high school academics and career technical education

In the traditional, comprehensive high school, academic and technical preparation have historically been offered as two separate trajectories for different students. Despite criticism of this either/or view, its legacy has remained strong. Somewhat inadvertently, California’s standards-based reforms, which began in the mid-1990s, led state policymakers to focus primarily on strengthening the rigor of academic coursework and took attention away from high school reforms aimed at eliminating this dichotomy. That appears to be changing.

Standards-based reform has focused on academic coursework

For more than a decade, school reform in California has been driven by an emphasis on academic standards. Federal reauthorization of the Elementary and Secondary Education

Act (ESEA) in 1994 tied certain federal funds to California’s adoption of content standards. In late 1995, state lawmakers established a process for adopting new content standards and assessments.

By the first few years of this century, California had developed new academic content standards, new assessments, and a new public school accountability system. The clear focus was on academic coursework—in English language arts and mathematics in particular. Key academic benchmarks at the high school level include passage of the California High School Exit Exam (CAHSEE), which assesses content in English language arts and mathematics, and the requirement that all students pass a course meeting or exceeding the state standards for Algebra I in order to graduate from high school.

During roughly the same time period, the California State University (CSU) and University of California (UC) systems aligned the minimum academic coursework requirements they use to certify the eligibility of graduating high school students for university admission. In part, this was motivated by concern that too many students entering CSU needed remediation in English language arts and mathematics.

In 2003, CSU and UC aligned their eligibility requirements. These common “a–g” requirements, which exceed the state’s formal high school graduation requirements, have effectively become California’s default definition of high school rigor. (See Figure 1 on page 3.) Some school districts have adopted local graduation expectations that include the “a–g” requirements as a way of pushing local educators to increase the academic rigor of courses available to and expected of all students, especially low-income and at-risk students.

figure 1 | Comparison of state minimum course requirements for graduation with UC/CSU “a–g” requirements

High School Subject Areas	State-Mandated Graduation Course Requirements	UC/CSU “a–g” Eligibility for Admission Course Requirements
History/Social Science (a)	3 years Including U.S. history & geography; world history/culture/geography; American government/economics	2 years One year of world history/cultures/geography; one year of U.S. history/government
English (b)	3 years	4 years College-preparatory English
Mathematics (c)	2 years Including algebra	3 years (4 years recommended) Algebra, geometry, intermediate algebra
Science (d)	2 years Including physical and biological sciences	2 years with lab (3 years recommended) Laboratory science, covering foundational knowledge in at least two of biology, chemistry, and physics
Foreign Language (e)	1 year <i>Either</i> foreign language or visual/performing arts	2 years (3 years recommended) Same language
Visual/Performing Arts (f)		1 year
Electives (g)	No requirement	1 year College preparatory elective from the above subjects
Physical Education	2 years	No requirement

DATA: CALIFORNIA DEPARTMENT OF EDUCATION, UNIVERSITY OF CALIFORNIA

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Policy makers are paying renewed attention to career technical education, informed by the state’s academic standards

Despite a burgeoning “school-to-work” movement in the 1990s—which resulted in the federal School-to-Work Opportunities Act of 1994—career technical education (CTE) was largely eclipsed at the state policy level during the early years of standards-based reform. In 2002, however, California lawmakers called on state education leaders to apply what they had learned in developing academic content standards to the reform of traditional vocational education.

In response, the State Board of Education adopted model CTE curriculum standards for grades 7–12 in 2005 and a new curriculum framework in 2007. These documents emphasized the knowledge and skills students need for success in different industries and career paths, including the academic underpinnings of work in different industries based on the state’s academic content standards.⁴

State and federal lawmakers have continued to affirm the importance of CTE, development of clearer paths to careers and credentials beyond high school, and better

The term “multiple pathways” may soon change

This report describes California’s efforts to implement the multiple pathways approach to high school reform and the possibilities and challenges raised by these efforts. Proponents of the approach have begun serious conversations about developing a new term that better distinguishes it, however.

This likely change is intended, in part, to clarify confusion at the national level. In California, multiple pathways refers to an approach to high school reform that integrates academics, career technical learning, work-based learning, and support services with the goal of expanding students’ postsecondary options. But as a recent brief published by the Alliance for Excellent Education notes, multiple pathways is frequently used on the East Coast to refer to alternative programs for students at risk of dropping out of school.⁵

At this writing, California proponents of multiple pathways had not yet settled on a new term to better distinguish the approach.

connections between academic and technical learning. In 2005, California lawmakers passed Senate Bill (SB) 70—the Governor’s Career Technical Education Initiative—to provide grants to strengthen CTE and the alignment of secondary and postsecondary programs. Then federal lawmakers passed the Carl D. Perkins Career and Technical

figure 2 | California high school CTE courses meeting University of California “a–g” admission eligibility requirements in 2008–09

Career Areas	A History/ Social Studies	B English	C Math	D Laboratory Science	E Foreign Language	F Visual/ Performing Arts	G College Prep. Elective	A–G Total
Agriculture Education	25	4	0	312	0	9	558	908
Art, Media & Entertainment	0	1	1	0	0	3,014	122	3,138
Business Education	10	11	5	0	0	39	642	707
Health Careers	2	6	0	541	0	0	234	783
Home Economics Careers & Technology	0	0	0	2	0	35	143	180
Industrial & Technology Education	0	0	0	19	0	195	238	452
Other CTE Areas*	5	3	0	159	0	0	174	341
Total	42	25	6	1,033	0	3,292	2,111	6,509

* Includes Public Services and courses that do not fall under any of the six categories listed above.

DATA: California High School Career Technical Education Courses Meeting University of California “a–g” Admission Requirements for 2008–09, CALIFORNIA DEPARTMENT OF EDUCATION, NOVEMBER 2008 EdSource 11/09

Education Improvement Act of 2006. It tied certain federal funds to state and local planning to improve CTE and development of local CTE programs that integrate academics and lead to postsecondary credentials, certificates, or degrees.

One sign that these policy efforts to connect academics and CTE are affecting high schools in the state is the increase in the number of CTE courses that provide credit toward one of the “a–g” requirements. (CTE courses that focus primarily on technical applications important to success in an industry typically do not provide such credit.) In 2003–04, less than 8% of CTE courses taught in California high schools—about 2,000—qualified for some sort of “a–g” credit. By 2008–09, 25%—more than 6,500—did so. These courses primarily helped satisfy one of three course-taking requirements.⁶ (See Figure 2.)

- 51% of UC-approved CTE courses provided credit toward the “f” visual/performing arts requirement, primarily in the Art, Media & Entertainment career area and, to a smaller extent, in the Industrial & Technology Education area.
- 32% provided credit toward the “g” college preparatory elective requirement. UC-approved courses in the Business

Education and Home Economics career areas provided primarily elective credit, for example. Students may also complete the “g” elective requirement by exceeding the number of courses required in areas “a–f,” however.

- 16% provided credit toward the “d” laboratory science requirement, primarily in the Agriculture Education and Health Careers areas.

Another sign is expansion of California Partnership Academies (CPAs) in the state. Discussed in more detail later in this report, CPAs provide a small “school-within-a-school” experience that includes both academic and career-technical learning. Despite the state’s increasingly poor fiscal situation, lawmakers recently provided funding that supported the creation of 101 new CPAs that began operation in 2009–10. These academies connect academic coursework to industries that lawmakers see as particularly important to the state’s future, including “green” careers.

“Multiple pathways” is an effort to integrate academics and career technical education

As district and high school leaders work to connect academics with CTE, partner with their local communities and economies,

and prepare more students for adult success, “multiple pathways” has emerged as one potential approach for addressing these goals.

The approach has gained visibility and momentum during the past several years. ConnectEd: The California Center for College and Career, which was established by The James Irvine Foundation in 2006, has been an important hub for activity related to multiple pathways. Its work includes providing assistance and support to local educators to implement pathways. Researchers have evaluated, or are currently evaluating, these local demonstrations, with an eye toward their effects on students and important lessons for further improvement.

A 2007 collection of essays by researchers and others associated with UCLA’s Institute for Democracy, Education, and Access (IDEA) helped clarify the multiple pathways concept. The collection, which has since been revised and published in book form, documented the intellectual basis for the approach.⁷

What is multiple pathways?

Four principles guide the multiple pathways approach that has emerged:

- Postsecondary education and career are seen as complementary rather than

competing goals for which all high school students should be prepared.

- High school academics can be informed and made more engaging through real-world applications, problem-based learning, and other practices that encourage students to take an active role.
- Students should be adequately prepared to choose from as full a range of postsecondary options as possible at the end of high school. These options might include apprenticeship, job training, technical certification, military service, community college, and four-year university programs.
- Students' academic and technical proficiency as conventionally defined are important, but so is proficiency in such areas as thinking critically, solving problems, and collaborating with others. These qualities can help students succeed in life after high school, whether they enter the workforce immediately or after some form of postsecondary education.

In order to realize these goals, the multiple pathways approach also calls for a common set of four program components:

- **An academic core component** that prepares students for as wide a range of postsecondary options as possible. In California this means, in part, providing all students with access to the college-preparatory courses they need to fulfill the "a-g" course-taking requirements. The "a-g" requirements need not necessarily be treated as graduation requirements, however.
- **A career-technical core component** that includes a sequence or cluster of related CTE courses. This can include a range of different kinds of courses, from those focused on helping students develop the technical skills necessary for certification in an industry to CTE courses that provide credit toward one of the "a-g" requirements. They also range from exploratory courses, which introduce students to an industry, to capstone courses that require students to integrate a broad range of skills and learning.
- **A work-based learning component** that provides practical career experience.

Within a common framework, local educators implement pathways in many different ways.

These experiences frequently begin with mentoring or job shadowing and may lead to internships or school-based enterprises. In part, these experiences are intended to help students see the practical relevance of their academic and technical learning and increase their motivation to learn.

- **A support services component** that includes academic and career counseling and instructional support for students who enter high school needing additional help.

Student choice is an important part of the multiple pathways concept

Within the common framework just described, local educators implement pathways in many different ways. Pathways most often adopt an industry or career theme relevant to their local setting, but they sometimes adopt broader themes, such as investigation of social or ecological problems. Local educators also employ different school structures, or models, for implementing the concept. (These are described in more detail beginning on page 6.)

This diversity is important because the multiple pathways concept also calls for students to be able to choose from among a range of different high school programs as they leave the middle grades. This raises important questions for districts, such as how to ensure student access to a variety of high school programs, which may be located on different campuses.

Multiple pathways is gaining momentum, but there is still much to learn

School districts, education organizations, and others throughout California are exploring how the multiple pathways approach might be implemented. A range of organizations has gathered together in the statewide Coalition for Multiple Pathways to coordinate these efforts. The more than 140 members of the

coalition include state education agencies; school districts; education organizations and associations; business, industry, and trade organizations; community organizations; and research and policy organizations.

There is still much to learn about the multiple pathways approach, however, and support for the approach as a viable high school reform model is not universal (see page 18). Evaluations of initiatives undertaken in California to date are just emerging, or in some cases just getting under way. The remainder of this report provides an introduction to:

- Different models or structures educators use to implement pathways;
- New efforts to implement pathways on a larger scale;
- What has been learned so far about how California pathways are working; and
- Key practical and philosophical issues the concept is raising for educators and policymakers.

Multiple models for delivering pathways offer alternatives to the comprehensive high school



Programs that fit some or all aspects of the multiple pathways approach have taken root in a wide variety of contexts in California. Experts estimate that hundreds of programs of various types currently operate across the state.

No complete data exist regarding the number of pathway programs operating in California or the quality of their implementation. In part, this is because clearly defining which programs fit the concept is not always easy. But this uncertainty speaks to a larger fact: there are multiple models for implementing the pathways approach, depending on local needs and capacity.

Career academies are a longstanding model

Career academies are one longstanding model that is consistent with the multiple pathways approach. The model, which first emerged in Philadelphia in the 1960s, has also greatly informed the multiple pathways field. In addition to 464 career academies supported in California this year by California Partnership Academies grants from the state, the Career Academy Support Network (CASN) in Berkeley estimates that another 250 or so academies operate without such grants.

Career academies are small programs that operate within larger high schools, often referred to as schools-within-schools. According to CASN, career academies have the following in common:

- “A small learning community, comprising a group of students within the larger high school who take classes together for at least two years, taught by a team of teachers from different disciplines.
- “A college preparatory curriculum with a career theme, enabling students to see relationships among academic subjects and their application to a broad field of work.
- “Partnerships with employers, the community, and local colleges, bringing resources from outside the high school

to improve student motivation and achievement.”⁸

Some California career academies receive support from national organizations devoted to the model. For example, the National Academy Foundation (NAF) currently works with 43 career academies in the state. NAF provides affiliated academies with support for curricula, advisory board development, and teacher and administrator professional development in four industry areas—finance, hospitality and tourism, information technology, and engineering. NAF emphasizes paid internships as one component of students’ high school experience. NAF academies in California to date have been concentrated in the state’s major northern and southern metropolitan centers, and NAF is currently considering how to support more academies in the Central Valley and rural regions of the state as well.⁹ (For one example, see the Pathway Profile box on page 7.)

The career academy model has been the focus of a unique evaluation conducted for 15 years by MDRC, a nonpartisan, non-profit social policy research organization.¹⁰ Beginning in 1993, the evaluation tracked high school, postsecondary, and workforce outcomes among career academy and non-academy students from nine U.S. high schools. These included two schools in Eastside Union High School District (San Jose), one in Santa Ana Unified School District,

and one in Pajaro Valley Unified School District (Watsonville). Because each career academy was oversubscribed, students could be enrolled randomly in either their respective career academies or their regular high school programs.

MDRC found that high-risk students in the academy sample were more likely than high-risk students in the regular high school sample to attend classes and less likely to drop out of school before the end of 12th grade. In general, academy students described receiving greater interpersonal support, were more likely to participate in career development activities such as job shadowing, and were more likely to include both academic and technical courses in their high school schedules.

MDRC found no significant differences between academy and nonacademy students in the sample with respect to their attainment of postsecondary certificates or degrees after high school. However, young men in the academy sample consistently earned more, were employed more continuously, and worked more hours per week than their nonacademy peers during the eight-year period following high school. There were no statistically significant differences between academy and nonacademy young women in the sample on these labor market measures, however, and on average these young women worked less continuously and received lower wages than the young men.

In addition to 464 career academies supported by California Partnership Academy grants in 2009–10, another 250 or so operate without such grants.

PATHWAY PROFILE

Partnership Academy of Business, Porterville High School Porterville Unified School District—Tulare County



A California Partnership Academy for many years, the business academy at Porterville High School is in the process of becoming both a National Academy Foundation (NAF) program and part of ConnectEd's District Initiative.

The academy's focus is changing from technology to finance, says Program Director Larry Gray, and there will be more involvement with the program's business partners, which include lending institutions, department stores, medical facilities, the Chamber of Commerce, and a casino.

Currently, the business academy has about 160 students in grades 10–12. Next year, freshmen will be included, and the academy will be open to students from throughout the district. The academy has its own building, and about a dozen faculty use a cross-curricular, project-oriented approach to teach English, math, and social science as well as business courses. Students take other courses such as science from nonacademy teachers at the high school.

To graduate from the academy, students agree to go beyond the high school's requirements and take an additional year of English (four years total) and math (three years) and at least four business-related courses, such as accounting, entrepreneurship, and applied finance. Eventually, the academy plans to adopt the "a–g" curriculum required for entrance to the state's four-year universities.

Technology classes, such as CISCO networking, will remain as electives and provide opportunities for students to earn certificates and college credits. To fit this all into one day, the program has a zero and eighth period.

Students also get experience running their own café/store, which stocks a wide variety of food, clothing, and school supply items. The profits are used to finance field trips to industries and universities throughout the state.

The academy's business partners offer mentors, company tours, job shadowing, mock interviews, and sometimes jobs upon graduation. In one of the more creative partnerships, the El Futuro credit union used an IRS program to train accounting students to become certified tax preparers. The students then volunteered to help low-income field workers file their returns. Networking students helped by setting up computer systems at a temporary site.

However, businesses have not provided paid internships for students, something that NAF requires. Gray sees this as a big challenge because his program is one of six fledgling NAF academies in the Porterville district, and the city of Porterville has only about 50,000 residents.

While Gray compliments the support of the business partners, he adds, "It is going to be overwhelming to try to have a paid internship for 50 kids from each academy in Porterville. It's not that large of a community."

figure 3 | Distribution of California Partnership Academies (CPAs), by county, in 2009–10

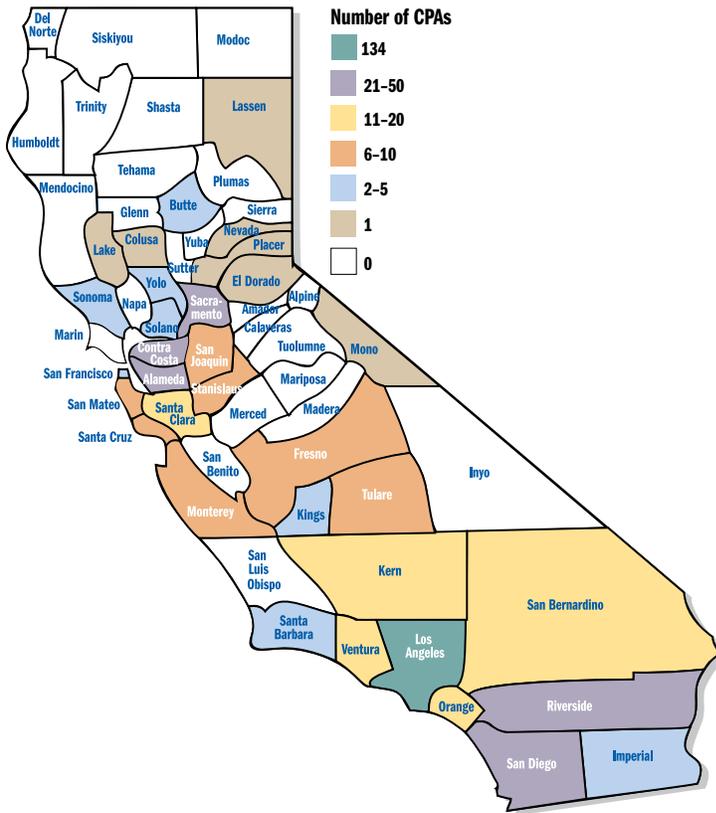


figure 4 | California Partnership Academies across industry sectors and counties in 2009–10

Industry Sector	Number of CPAs	Number of Counties with a CPA
Health Science & Medical Technology	77	23
Arts, Media & Entertainment	70	20
Finance & Business	53	16
Public Services	45	14
Engineering & Design	42	15
Education, Child Development & Family Services	31	15
Agriculture & Natural Resources	30	17
Information Technology	26	15
Energy & Utilities	26	13
Hospitality, Tourism & Recreation	22	12
Transportation	15	12
Building Trades	14	7
Manufacturing & Product Development	7	8
Marketing, Sales & Service	4	2
Fashion & Interior Design	2	2
All Sectors	464	33

DATA: CALIFORNIA DEPARTMENT OF EDUCATION, CALIFORNIA PARTNERSHIP ACADEMIES DIRECTORY, 2009–10

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California has invested in expanding Partnership Academies

In California, state lawmakers have supported the career academy model by providing funds for California Partnership Academies (CPAs) since the early 1980s. All four of the California career academies included in the MDRC evaluation described earlier were CPAs, including two electronics academies, a video academy, and a global business academy.

In total, 464 CPAs currently operate in California high schools, according to CDE. Typically serving students in grades 10–12, these CPAs operate in 33 of 58 counties in the state and across all 15 industry sectors defined in the state’s CTE model curriculum standards. (See figures 3 and 4.)

CPAs are explicitly intended to improve the educational experiences of at-risk students in the state. The California Education Code says that at least half of entering CPA students must be “at risk of dropping out of school,” with CPA funding contingent on these students’ attendance and timely accumulation of credits toward graduation. At-risk students are defined as those who meet at least three of the following four criteria:

- Past record of irregular attendance.
- Past record of underachievement in which the student is at least one year behind on the coursework for the respective grade level.
- Past record of low motivation or disinterest in the regular school program.
- Economic disadvantage.

CPAs unable to enroll enough at-risk students may also meet state expectations by enrolling students who score in the 40th percentile or below in mathematics or English language arts as measured by the Standardized Testing and Reporting (STAR) program, or who have a grade point average of C-minus or lower.

CPAs receive state funding through a categorical grant that also requires local investment. Each CPA’s local district must match the state grant. Local industry and community partners must also provide support that, in total, matches the state grant. Local contributions from districts and

local partners exceeded the state requirement in 2004–05, providing 76% of CPA funds, according to a 2007 analysis by ConnectEd and CASN.¹¹

State lawmakers recently affirmed the importance of CPAs in two ways. First, although nearly 20% fewer categorical funds are provided for CPAs in 2009–10 than in 2007–08, lawmakers maintained all regulations surrounding these funds and safeguarded them against any other use. In contrast, a range of other categorical programs received both substantial cuts and loosened restrictions in the February 2009 budget.

Second, lawmakers provided funds and/or established priorities that enabled CDE to provide grants for 101 new CPAs that began operation in 2009–10. Altogether, these new academies account for 22% of CPAs currently operating in the state. These include:

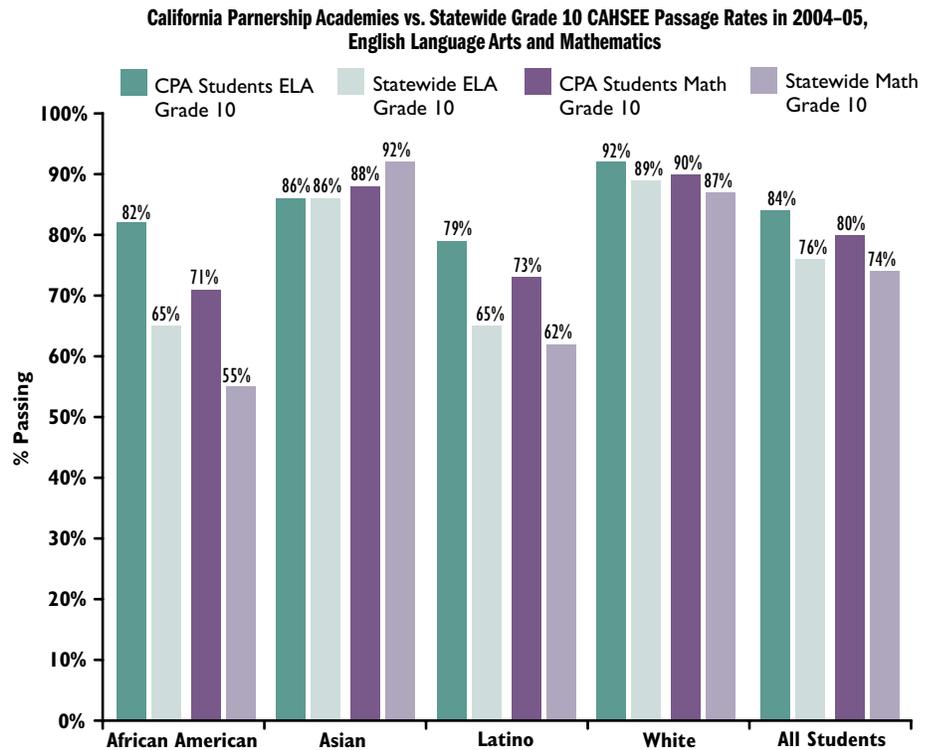
- 40 “green and clean” academies funded through Assembly Bill (AB) 519 (2008). (CDE plans to use remaining AB 519 funds to issue a request for applications for 17 green academy planning grants this fall.)
- 61 CPAs funded through the Governor’s CTE Initiative (SB 70, 2005). There are no restrictions on the themes these academies adopt, but they are expected to establish CTE course sequences articulated beyond high school.

These 101 grants include five grants for goods movement and logistics academies that began operation this year. Lawmakers called for the establishment of at least four such CPAs through AB 2855 (2008), with priority on establishing at least one within each of California’s four transportation corridors. CDE used SB 70 and AB 519 funds to meet these priorities.

The same 2007 analysis by ConnectEd and CASN also documented some positive results related to student performance and engagement, which include:

- Sophomores who chose to enroll in CPAs in 2004–05 were more likely to pass each section of the California High School Exit Exam (CAHSEE) on the first attempt compared with sophomores

figure 5 | In 2004–05, students enrolled in California Partnership Academies were more likely to pass the CAHSEE on the first attempt in grade 10



DATA: BRADBY, D., MALLOY, A., ET AL. (2007). *A profile of the California Partnership Academies 2004–2005*. BERKELEY, CA: CONNECTED AND CAREER ACADEMY SUPPORT NETWORK.

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statewide. This trend was especially striking among African American and Latino students. (See Figure 5.)

- CPA seniors were more likely to complete the “a–g” course-taking requirements: 50% of CPA seniors fulfilled these requirements compared with 35% of high school graduates statewide in that year.
- The average student attendance rate was 90% or higher in 90% of CPAs in 2004–05.
- Overall, 72% of CPA juniors participated in an occupational mentorship in that year, and 53% of CPA seniors participated in work-based learning directly related to their academy’s industry sector.

Models for delivering pathways are not limited to career academies

Although the experiences of career and partnership academies have greatly informed the multiple pathways approach, they are not the only models for implementing pathways.

PATHWAY PROFILE

Stanley E. Foster Construction Tech Academy, Kearny High Educational Complex San Diego Unified School District—San Diego County



Construction Tech Academy (CTA) is one of four small, autonomous high schools—each with its own career theme—that comprise the Kearny High Educational Complex in San Diego. Each school serves about 500 students.

“What is remarkable about the Kearny Complex is how successful it has been,” says Laura Bellofatto, who is in her first year as principal of CTA. “I attribute that to the tremendous effort that has been taken to keep one complex culture.”

Four main hallways divide the complex into its four schools. The four principals meet every Wednesday at 9:15 a.m. “no matter what else happens,” Bellofatto says. Each school reserves time for the shared facilities, such as the gym, library, and auditorium. Principals also share responsibilities for the complex. For example, one is in charge of athletics and another of operations and facilities.

All four schools are on the same block schedule. Each semester, students take four 90-minute courses. Each course counts as two semesters of a typical 50-minute high school course. The block approach allows students to take eight courses each year instead of six.

“If we didn’t have the block schedule, we couldn’t offer kids all the electives or opportunities to retake classes they may have failed,” Bellofatto says. “Kids come here at completely different levels—from remedial to honors. That’s our biggest challenge.”

CTA has three pathways—construction, engineering and architecture, and manufacturing and product development—which each offer a sequence of four classes. The schedule is set so that all students can complete the “a-g” college-prep requirements and the career sequence. High-achieving students can take courses that are counted as advanced placement at nearby Mesa College.

Each year students also take project-based “advisories” that are taught collaboratively by grade-level teachers. This year, the 10th graders are researching the best location for a new city football stadium that can double as a self-sufficient crisis/command center in case of an emergency. They will present their findings to a panel of experts.

CTA has an advisory board composed of industry representatives. Industry members also act as tutors and mentors, support field trips, and provide scholarships. Each summer the National Association of Women in Construction holds an eight-day camp for girls. And many businesses offer internships—often paid.

“By the end of their senior year, every student has had an opportunity to do an internship,” Bellofatto says.

In addition to the “school-within-a-school” structure of career academies, some pathways operate as small, themed high schools, including charter and magnet schools. Many themed high schools, such as Arthur A. Benjamin Health Professions High School in Sacramento City Unified School District, offer curricula aligned with one or more industry sectors. Health Professions High School, which first enrolled 150 freshmen in 2005–06, served about 470 students across grades 9–12 in 2008–09.

Other models also exist. For example, Stanley E. Foster Construction Tech Academy (see the Pathway Profile box on the left) is an autonomous, small high school that shares facilities with three other small high schools in the Kearny High Educational Complex in San Diego Unified School District. With support from the Bill & Melinda Gates Foundation, San Diego Unified closed its comprehensive Kearny High School and reopened the site in 2004–05 as four small high schools with different career themes. The School of Digital Media and Design, the School of International Business, and the School of Science, Connections, and Technology are also part of the complex. The district also took this approach to restructuring the San Diego and Crawford high school campuses as part of its High School Renewal Initiative.

Pathways also often partner with one of California’s 74 Regional Occupational Centers or Programs (ROCPs). Although not a model for implementing pathways by themselves, ROCPs often offer pathway students advanced and capstone CTE courses and provide access to work-based learning experiences. Created in 1967, ROCPs generally serve students across multiple districts. They offer classes to students at least 16 years of age in career areas aligned with regional needs and provide access to industry partnerships and technical equipment that might be out of reach for a student’s home high school. ROCPs are intended to prepare students to enter the workforce successfully or pursue further training at a postsecondary institution.

Lawmakers and local districts explore the feasibility of systems of multiple pathways



A diversity of local implementation models is central to the multiple pathways approach. But the concept also calls for students to be able to choose from among a diversity of pathways in their local areas, which has a number of implications for local districts. Various efforts around the state are beginning to address what it means to bring systems of multiple pathways to scale for more students.

Some school districts, building on their experience with pathways to date, are undertaking new efforts to develop such systems. Stakeholders in some parts of the state are exploring the role of regional collaboration in sustaining pathways. And state lawmakers recently called for a report on the feasibility of supporting pathway expansion statewide.

Some districts have committed to building systems of multiple pathways as part of a new initiative

Implementing a viable system of multiple pathways at the district level requires coordination and leadership to ensure not only that students have access to a range of high school options, but also that these options are of consistently high quality. A number of school districts in the state have committed to implementing such districtwide systems through the California Multiple Pathways District Initiative, led by ConnectEd with financial support from The James Irvine Foundation.

As part of the initiative, 10 districts—out of nearly 30 that applied—each received \$125,000 planning grants in November 2008 to devise plans for developing districtwide systems of at least six to eight pathways. These districts each enroll at least 5,000 students, at least 30% of whom are eligible for free or reduced-price meals. Each district also had existing experience with pathways on which to build.

In June 2009, six of the 10 districts received two-year implementation grants of more than \$1 million each. (The remaining four districts received continuing planning

grants of \$125,000; see the box on the right.) These six districts were selected based on a range of considerations, including existing capacity; thorough, realistic, and sustainable implementation plans; community support, and well-defined leadership structures.

The initiative will provide important information about the challenges and opportunities involved in bringing local systems of multiple pathways to scale at the district level. SRI International will evaluate district-level implementation of these systems during the next several years. In a few of these districts, SRI will also compare key outcomes for students enrolled in pathways with outcomes for a matched group of similar students who are not enrolled in pathways.

Participating districts hope new pathways will be certified as high quality

The districts participating in the District Initiative are also taking part in a new pilot process for certifying pathway quality, which ConnectEd will field-test and refine during the next two years. ConnectEd hopes to certify at least 20 to 30 pathways during the 2009–2011 pilot period. What agency or organization will ultimately take on the responsibility of certifying California pathways after this pilot is unclear, however. ConnectEd does not intend to take on this eventual certifying role.

In July 2009, ConnectEd introduced a draft Pathway Certification Tool that will guide this work and inform district implementation of pathways under the District Initiative. The draft tool draws on previous

Districts participating in the California Multiple Pathways District Initiative

Among the school districts participating in ConnectEd's California Multiple Pathways District Initiative, six recently received grants of more than \$1 million each to implement plans for expanding pathways. These six districts include:

- Antioch Unified
- Long Beach Unified
- Pasadena Unified
- Porterville Unified
- Sacramento City Unified
- West Contra Costa Unified

In addition, four other school districts received continuing planning grants of \$125,000 each:

- Los Angeles Unified, District 4
- Montebello Unified
- San Diego Unified
- Stockton Unified

For more information, see:
www.connectedcalifornia.org

Six regions are exploring the role of regional collaboration in implementing pathways

Six regional collaborations recently received grant funding through the Implementing Multiple Pathways Through Regional Collaboratives initiative. The initiative is being undertaken by the Alliance for Regional Collaboration to Heighten Educational Success (ARCHES), with financial support from The James Irvine Foundation.

The six participating ARCHES collaboratives include:

- The Merced County P-16 Education and Community Council
- The Monterey Bay Education Consortium
- The San Bernardino Superintendent of Schools—Alliance for Education
- The San Luis Obispo County P-16 Council
- The Santa Ana Partnership
- The Ventura County P-16 Regional Council

Each of the six collaboratives received a \$50,000 grant for the two-year implementation phase of the initiative, following a nine-month planning period and \$25,000 planning grant. For more information, see: www.arches-cal.org

thinking by ConnectEd about program assessment and the work of key organizations within the career academies movement, such as CASN, NAF, and the National Career Academy Coalition (NCAC).¹²

The tool suggests that evaluations of pathway quality consider pathway design, structures and supports for engaged learning, system leadership and support, and processes for continuous improvement and accountability.

The tool also highlights potential ways in which these characteristics might be measured. For example, pathway educators must be able to analyze data about the career readiness of graduating students in order to ensure their programs are enabling students to meet the standards and expectations of industry. No standardized, state-adopted assessments aligned with California's CTE model curriculum standards exist to inform this analysis. But pathway educators have a range of other kinds of information at their disposal for documenting and evaluating the quality of their programs relative to industry standards of competence. The draft tool cites such indicators as:

- Student success in completing industry certification at the end of the pathway.
- Student grades in capstone CTE courses at the end of the pathway.
- Student grades in CTE courses that are approved as meeting one of the “a–g” requirements.
- Student success in industry-supported technical competitions or events, such as robotics or moot court competitions.

Another initiative explores the role of regional collaboration in implementing pathways

Another statewide initiative is exploring whether regional collaborations focused on strengthening the preschool through post-secondary (P–16) education continuum might provide additional support for implementing local pathways. The initiative—Implementing Multiple Pathways Through Regional Collaboratives—is being undertaken by the Alliance for Regional Collaboration to Heighten Educational Success (ARCHES).

ARCHES began in 2005 as an effort to implement the recommendations of the California superintendent of public instruction's statewide P–16 Council by building a voluntary network of regional P–16 collaborations. The model was inspired in part by six existing collaborations in Long Beach, Monterey Bay, North State, San Bernardino, Santa Ana, and Santa Barbara. ARCHES and its partner organization, California Engaging Latino Communities for Education (ENLACE), currently support 22 additional collaboratives that bring together local educational institutions, businesses, and community organizations. These groups identify local challenges and coordinate resources with the goal of achieving measurable student outcomes. ARCHES also connects its member collaboratives with one another and affiliated statewide organizations.

ARCHES is exploring multiple pathways as a strategy for improving students' academic achievement through a \$1.5 million grant from The James Irvine Foundation.¹³ Six regional collaboratives within the ARCHES network received planning and implementation grants to do this work and are beginning the two-year implementation phase of the initiative. (See the box on the left.)

Each participating region has developed a different approach to implementing pathways. For example, the San Luis Obispo collaborative has opened a new green-focused academy within a local high school and began enrolling ninth graders this year. In contrast, the Santa Ana collaborative has created a concurrent enrollment program, the Career Academy Scholars Program, which builds on career academies already in place in Santa Ana high schools. The program, which encourages participation among Latino students in particular, provides college credit through Santa Ana College. It has enrolled 100 high school students in occupational courses in four high-demand fields.

Like the district initiative described earlier, ARCHES contains an evaluation component. The key policy question—to be explored by evaluators from WestEd—is whether established P–16 collaborations make a difference in implementing

pathways, such as by leveraging new resources to sustain pathways when state support to local institutions is reduced. The initiative will also evaluate whether these pathways contribute to improved student outcomes across a range of academic and other measures. Each region has also defined its own local objectives for improving student achievement and high school completion.

State lawmakers call for a report on the feasibility of expanding pathways

State lawmakers are also asking about the feasibility of expanding pathways in California. AB 2648 (2008) requires the state superintendent of public instruction to submit a report to the Legislature by Dec. 1, 2009, exploring this question. For the purposes of the feasibility report, the law defines multiple pathways programs in keeping with the vision and core components discussed at the outset of this publication. The Los Angeles Area Chamber of Commerce, which is a member of the Coalition for Multiple Pathways, sponsored the bill.

AB 2648 was contentious within some parts of the career technical education community. (See page 18.) Although early versions of the bill called for a plan to expand multiple pathways programs, the final text of the law only required a report on the feasibility of doing so. That report will explore key conditions that would be essential for expansion of pathways. For example, the report will discuss the capacity and supply of teachers, school and district administrators, and regional coalitions to enable pathways to expand and work effectively.

CDE contracted with researchers from WestEd to produce the feasibility report. In summer 2009, CDE submitted a status report on work conducted so far, including web dialogues, interviews, and focus groups with a range of stakeholders.¹⁴ At this writing, CDE expects to release a draft of the final feasibility report for public comment in November 2009. The draft will be posted online at: www.wested.org/mpreport/

PATHWAY PROFILE

Dozier-Libbey Medical High School **Antioch Unified School District—Contra Costa County**



Dozier-Libbey Medical High School, a magnet school in Antioch Unified School District, opened in 2008 with a freshman class of 206 students. Eventually the school, located near Kaiser Hospital, expects to enroll 600 students in grades 9–12. Eighth graders apply and are chosen by lottery. Students outside of the district may apply, but district students have priority.

Students must exceed the academic course entrance (“a-g”) requirements to the University of California, including four years of both math and science, to graduate. The program also meets the California Career Technical Education and National Healthcare Foundation standards. The school provides mentors and has a tutorial program to help struggling students.

The healthcare theme permeates the entire curriculum, which also includes courses such as Medical Terminology, Human Anatomy & Physiology, and Microbiology. These are coupled with hands-on Regional Occupational Program (ROP) courses in areas such as sports medicine and nursing. In addition, students must take four courses in health science that explore areas such as diseases and disorders; information technology; and safety, ethics, and legal practices. Students take required health-related courses for most of their district electives.

“At our school, we require so many courses that they really only have about three other choices the whole four years,” says Principal Nancie Castro.

Additional instructional activities include guest speakers, guided study tours of healthcare facilities and colleges, job shadowing, and service learning. Seniors will be expected to secure internships, externships, and/or jobs in their area of interest. Sutter Delta, John Muir, and Kaiser hospitals participate in the program, and the school also has partnerships with the local community colleges and California State University—East Bay.

Castro says it is a challenge to provide a variety of courses for a small number of students with varied interests. One approach has been dual enrollment at Los Medanos Community College. In addition, she says, the school is considering accredited online courses, partnering with the regional ROP, and sharing classes with other high schools. “Our students could go to their school for courses we don’t offer, and their students could take classes at our school that their school doesn’t offer.”

California pathways show promise as an approach to high school reform, but key challenges and questions remain



The multiple pathways concept challenges the traditional, comprehensive high school model in important ways. The experiences of local California educators who have developed and refined models consistent with the pathway approach are shedding light on ways that pathways might help participating students become more engaged and successful in high school.

These educators' experiences also illuminate important implementation challenges that they and proponents of multiple pathways will continue to address. The multiple pathways concept also raises important philosophical questions about how high schools can meet the needs of diverse students most effectively.

Pathways show promise in improving the high school experiences of participating students, according to a recent evaluation

As noted earlier, ConnectEd has raised the visibility of the multiple pathways approach by supporting a network of 16 school-level examples of how all or part of a pathway might be implemented in practice. One goal for these demonstrations was to evaluate their effects on students' high school experiences and clarify key challenges and responses.

MPR Associates, Inc., a research and consulting firm that specializes in education, recently released its evaluation of these 16 demonstration sites.¹⁵ As the evaluation notes, The James Irvine Foundation originally awarded the first grant for identifying and selecting the sites to MPR Associates, prior to the founding of ConnectEd. This grant was later transferred to ConnectEd. Gary Hoachlander, the president of ConnectEd, also serves as chairman of the board of MPR Associates, Inc.

Although the MPR Associates evaluation was not able to control for student selection into the programs or prior student achievement, it shows that the programs had some positive effects on students. The evaluation

also highlights key challenges to implementing pathways, described in the next section.

The evaluation considered a range of academic achievement outcomes for 2007–08, comparing the 16 demonstration sites with the state as a whole, with each site's local district, and—in the case of a school-within-a-school—with the site's surrounding high school. Student achievement on the high school California Standards Tests (CSTs) was mixed, with mathematics a particular area of challenge for the sites. CAHSEE and “a–g” course-taking outcomes were more consistently promising, however.

Network sophomores, particularly African American and Latino students, were generally more likely to pass each section of the CAHSEE on the first attempt compared with sophomores in the state as a whole. First-time CAHSEE passage rates within the demonstration sites in 2007–08 were about the same as or higher than the rates in their surrounding districts or high schools. In addition, the percentage of graduating seniors completing the “a–g” requirements far exceeded the state average at most network sites. At least 44% completed the requirements in each of 10 sites, and at four of those sites at least 90% did so. (Statewide, 34% of graduating seniors completed the “a–g” requirements in 2007–08.)

Work-based learning can contribute to students' interest in education and credentials beyond high school, according to a recent evaluation.

The MPR Associates evaluation also included interviews and focus groups with staff and students that provide a window into the culture of the demonstration sites. The evaluators found network students to be generally engaged with their studies, confident of their abilities to meet their educational and career goals, and likely to adopt “an attitude of professionalism.” Evaluators also noted students' communication, problem-solving, and technical skills and reported that industry partners providing job shadowing and internship experiences valued these qualities. In addition, these work-based learning experiences contributed to some students' interest in education beyond high school and in pursuing the credentials needed to further their career goals.

Challenges to implementing the multiple pathways approach remain

Given that the multiple pathways approach is so different from the traditional comprehensive high school model, leaders and educators also face important challenges in implementing pathways fully. Pathways educators and technical assistance providers see these challenges as important areas for further development.

For example, the pathway concept places a high priority on relationships between

schools and their local communities, including business and industry, and expects that community members will take responsibility for contributing to the quality of students' high school experiences. This raises new challenges for schools, such as staff capacity to identify, coordinate, and ensure the quality of students' work-based learning experiences. MPR Associates found that pathways within the ConnectEd demonstration network often cannot afford to staff this key role fully. However, two network sites located in the Kearny High Educational Complex in San Diego Unified School District have access to staff dedicated to employer outreach and ongoing oversight of students' work-based learning experiences.

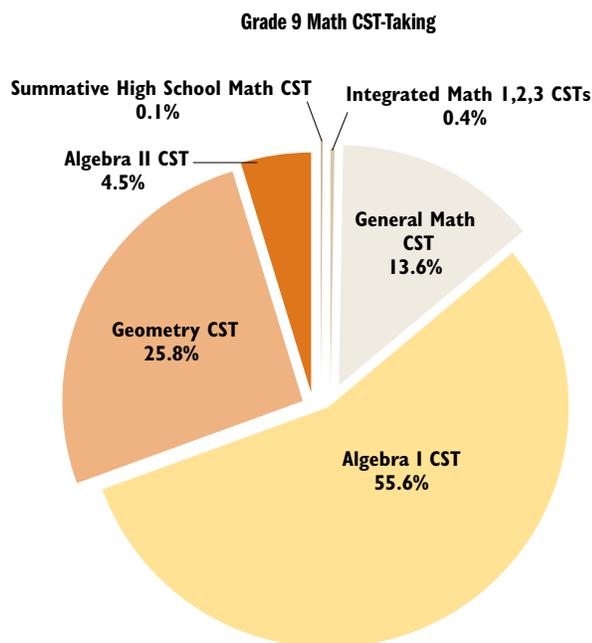
Effective integration of academic and CTE instruction remains a key implementation challenge

California pathways are also still developing their capacity for integrating academic and technical content in the classroom where possible—a goal that challenges the traditional vision of high school teachers as being primarily subject-matter specialists.

Based on their classroom observations, MPR Associates found that sites within the ConnectEd demonstration network “are still working toward true integration of rigorous academic and technically demanding content.” MDRC’s evaluation of career academies nationally also noted the challenge of integrating instruction in practice, finding few differences between academies and their surrounding regular high school programs in this regard. (The MDRC researchers viewed this as one likely reason why the academies they evaluated had no effect on standardized test scores.) ConnectEd has taken steps to help local pathways educators address this challenge through coaching and professional development. In addition, ConnectEd and others have developed integrated curriculum units for use in different industry pathways.

MPR Associates found that wide differences in the mathematics preparation of incoming pathways students in particular made it more difficult to organize master schedules that integrated mathematics with other content. Freshman readiness for high

figure 6 California 9th graders entered high school with widely varying degrees of math preparation in 2008–09



Note: Percentages are calculated by dividing the number of 9th graders taking a *particular* math CST by the total number of 9th graders taking any mathematics CST in 2008–09.

DATA: CALIFORNIA DEPARTMENT OF EDUCATION, STAR. ACCESSED AUG. 24, 2009.

EdSource 11/09

school mathematics poses a challenge for many high schools in California. In general, students' math course-taking patterns diverge clearly in the middle grades based on their readiness for algebra. In 2008–09, 9th graders statewide varied widely in their math preparation, according to data from CDE. As Figure 6 shows, among high school freshmen who took a mathematics CST last year, about 30% took a test above the Algebra I level, while about 14% were not yet enrolled in the course.

According to MPR Associates, these differences in math skill make it more difficult for some pathways to maintain the small student cohorts that support more personalized learning environments. As with California high schools more generally, the pathways in the demonstration network are taking various approaches to address students' incoming math preparation. They may provide additional time, offer a “math recovery class” at the beginning of the school day, or simply require all freshmen to enroll in Algebra I.

ConnectEd has also designed units for pre-algebra summer bridge programs and project-based “Algebra Drop-In” units to augment high school Algebra I instruction. School district cuts to summer school and other programs in the face of serious financial hardship pose complications for some academic support efforts, however.

For pathways to operate effectively, educators also need common planning time to collaborate across subject areas in support of this integration. Ensuring such time is another key challenge that pathways continue to address. MPR Associates found that only about half of ConnectEd demonstration sites were able to schedule regular common planning time in 2007–08.

The pathways concept challenges high school educators to approach their work in new ways. Several programs in California are beginning to address the implications for teacher preparation.

There is reason to believe such collaboration could produce benefits, according to a study published in 2006 by the National Research Center for Career and Technical Education (NRCCTE) in St. Paul, Minnesota.¹⁶ The study found that high school students who took CTE classes with enhanced mathematics content demonstrated significantly higher achievement on two assessments of math ability—the TerraNova CTBS Basic Battery and the ACCUPLACER Elementary Algebra tests—compared with students in a control group, adjusting for prior student achievement on a pre-test.

Collaboration between CTE and mathematics teachers was crucial for producing these gains, according to the researchers. The study randomly assigned volunteer CTE teachers to experimental and control groups. The CTE teachers in the experimental groups each worked with a partner mathematics teacher to develop math-enhanced CTE lessons using a lesson framework provided by the researchers. The math teachers also

provided support for (but did not help teach) these CTE lessons during the school year. The researchers concluded that such instruction, supported by professional development and collaboration for teachers, has the potential to improve students’ understanding of the math concepts involved in different occupations without detracting from their development of technical skill.

Teacher development for pathways is a key area for further consideration

The pathways concept challenges high school educators—principals, teachers, and counselors—to approach their work in new ways. For example, the pathways concept challenges academic and CTE teachers

to coordinate teaching and curricula across disciplinary boundaries, rather than work primarily or only within specialized departments.

Many argue that developing a teacher workforce skilled in this kind of work requires new approaches to teacher preparation. Some organizations in the state are beginning to focus on these questions. For example, the Center for the Future of Teaching and Learning (CFTL) will consider the teacher policy implications of various high school reforms—including multiple pathways—in its next annual report on the status of California’s teaching profession. This report is scheduled for release in December 2009.

Several teacher preparation programs around California are also beginning to address the question. In 2008–09, a cohort of aspiring secondary teachers at the School of Teacher Education at San Diego State University (SDSU) was able to pursue single-subject credentials from a multiple pathways

perspective for the first time. Similar cohorts are beginning this year at CSU campuses in Fresno, Sacramento, and San Bernardino. Leaders of the effort hope to develop a specialized certificate, recognized by the state, that would identify secondary teachers with special preparation to work in pathways.

Students in the SDSU cohort program approach their studies from an integrative and collaborative perspective that includes a focus on problem-based learning. They are placed in local high school pathways during their fieldwork. Cohort members also receive month-long placements in feeder middle schools where they consider how to support student transitions into career academies and other pathway models.

In a separate effort, the San Joaquin County Office of Education recently established a new graduate school, Teachers College of San Joaquin (TCSJ). The college is intended to help expand the supply of teachers in the Central Valley who are able to work in programs integrating academics and CTE. Beginning this year, TCSJ offers masters-level programs for K–12 teacher and administrator candidates that include a minimum of 16 units devoted to multiple pathways. This coursework focuses on such topics as the state’s academic and CTE standards, collaboration and curriculum integration, partnerships with local businesses, and learning how to drive multiple pathways reform in schools.¹⁷

University-based teacher preparation and graduate programs are only one important context that supporters of multiple pathways will need to consider, however. Some CTE teachers enter the profession by acquiring a preliminary single-subject credential—such as in agriculture, business, or health science—that requires a bachelor’s degree, completion of a preparation program, and verification of competence in the subject area. But others enter the profession by acquiring a preliminary Designated Subjects CTE Teaching Credential. The current rules for this preliminary credential require a high school diploma (or equivalent), several years of successful work experience in the relevant subject, and recommendation from a CTE program sponsor.

PATHWAY PROFILE

Oakland School for the Arts Oakland Unified School District—Alameda County



The Oakland School for the Arts (OSA), a small charter school for grades 6–12, is located in the Fox Theatre downtown. OSA provides students with conservatory-style training in the arts while maintaining a college-prep curriculum. The school’s 500-plus students, who come from throughout the Bay Area, are accepted based on auditions and a recommendation from an arts teacher. Most are accepted in 6th grade.

“The advantages of starting in the 6th grade are the continuity of working together musically, vocally, theatrically to create stronger ensembles,” says Executive Director Donn K. Harris.

OSA employs 50 faculty, of whom about a dozen are artists-in-residence working in specialty areas such as instrument coaching and spoken word and voice training. “We almost have to run two separate staff—professional artists and state-credentialed academic instructors,” he says. “We’re bringing in a different sort of educator who didn’t study teaching. Because we’re a charter school, we have that flexibility.”

High school students take four years of arts classes in one of seven areas of emphasis: dance, literary arts, instrumental music, vocal music, theater, visual arts, and arts management. “As in arts schools across the country, students here have a major,” Harris says. “The combination of meeting the ‘a-g’ [college prep] requirements plus the intensity of the arts program means that students have no other electives.”

To make the program work, students must be successful in every academic class or they will fall behind. And students come to the school from a wide variety of backgrounds. To assist struggling students, Harris instituted an intervention program. Students are temporarily pulled out of the arts program to get supplemental academic support.

Each year, OSA puts on a schoolwide musical plus a major play by the high school and another by the middle school theater students. Literary and visual arts students publish a monthly newspaper and a literary magazine. Seniors who excel in their chosen fields are selected for internships with institutions such as the Oakland Ballet, Savage Dance, YouthSpeaks, and Ex’pressions College for Digital Arts, to name a few.

“Arts schools require enormous expense, space, and personnel,” Harris says. “In addition, performances demand time and resources often beyond the immediate capability of a school. We rely heavily on volunteers and creative programming to make all of this work.”

Some observers note that high school programs that employ preliminary Designated Subjects CTE teachers must also ensure those teachers acquire the expertise they need on the way to a clear credential. Currently, the responsibility for supporting schools in doing this rests largely outside the university context, primarily with county offices of education. The California Commission on Teacher Credentialing has approved only three CSU campuses—Long Beach, San Bernardino, and San Francisco—to offer Designated Subjects CTE programs, for example.

Under the umbrella of TCSJ, the Project IMPACT program offers multiple-subject, single-subject, education specialist, and Designated Subjects CTE credentials. Preliminary CTE teachers working toward clear credentials within the program take several courses alongside single-subject candidates, and those who enter already holding a bachelor's degree have the option to pursue a single-subject credential simultaneously.

Philosophical differences remain regarding how high schools can best prepare more students for later success

What baseline of preparation should all students experience in high school? This question faces all high school reform movements. Educators and the public more generally frequently disagree about how to answer it, depending on the goals they believe high schools should meet.

Consider the complex economic context that awaits students after high school. The Public Policy Institute of California currently projects that 41% of California jobs will require a four-year degree or more by 2025. More young people will need to complete college to meet that demand.¹⁸ At the same time, this means the majority of California jobs will not require such degrees. And although workers with higher levels of education tend to earn more on

average, there is no straight line between years of postsecondary education and earnings. Data on usual weekly earnings in the second quarter of 2009 released by the U.S. Bureau of Labor Statistics show that—among U.S. workers who are at least 25 years old and working full-time—about half of workers whose highest level of education is an associate degree or some college actually earn more than the lowest-earning quartile of workers who have attained a bachelor's (but not an advanced) degree.¹⁹

How should educators respond to these needs and opportunities? Supporters of the multiple pathways approach argue that many different paths, models, and themes can lead to a common goal: keeping as many different postsecondary doors open for students as possible so they can choose from among a fuller range of options for their future lives and work. These possibilities might include four-year degrees, associate degrees, technical certificates, and apprenticeships. Supporters also argue that integrating academics and CTE—and employing more project-based and work-based instruction—could make academic coursework relevant and accessible for more students, including those who enter high school skeptical that traditional academic coursework has relevance for their futures.

Not all agree that pathways offer the best way to meet all students' needs, however. Some in the CTE community worry that pathways could increase high schools' curricular focus on the UC and CSU systems' "a-g" requirements, perhaps at the expense of a robust CTE program. For example, GetREAL—a coalition of business, industry, and education organizations that support CTE in California—argues that such a focus would be a mistake because most jobs in the state do not and are not projected to require a four-year degree, but do require high levels of technical skill.²⁰ They worry that students who are not interested in pursuing four-year degrees could become disengaged from school when they might otherwise be well served by the chance to focus on technical interests and skills that prepare them to thrive in specific fields and much-needed jobs.

Among educators and the public generally, opinions differ about what baseline of preparation all students should receive in high school.

Pressure is growing to improve the high school experience



The traditional high school curriculum is at a crossroads. The model has arguably worked reasonably well for many “college bound” students, likely including the roughly one in five public high school graduates in the state who enroll directly in either the California State University or University of California.²¹ But pressure continues to grow for high schools to increase the graduation rate and better prepare more students for work and some form of postsecondary education.

The California Department of Education estimates that roughly one in five high school students drops out of school between grades 9 and 12. The numbers are even starker for California’s Latino (nearly one in four) and African American (one in three) students. Among those students who do graduate, many are ill-prepared for postsecondary success or poorly positioned to take advantage of job opportunities in a changing economy.

There appears to be growing agreement that California high schools must do more to engage students and prepare them for successful futures. To accomplish these goals, many educators and reformers have argued for one or more of the following:

- Increasing the number of students who have access to and are prepared for more rigorous academic coursework;
- Making the high school experience more engaging and directly relevant to the lives and careers students will eventually undertake;
- Fostering stronger personal connections between students and adults, including school staff and community mentors; and
- Forging stronger relationships between high schools and local economies.

The leaders and supporters of the multiple pathways movement are working to incorporate all these strategies into a new curricular and organizational model for high schools. Their intention is to create high school programs and environments that motivate many more students to stay in school and graduate and that prepare

them for further postsecondary education or credentials and worthwhile work after graduation.

Are pathways feasible on a widespread basis? It is too early in the movement to tell. But given the number of California students

whose futures are at stake, the multiple pathways movement is a bold effort with worthy intentions and some demonstrated success. It will be worth watching as its supporters tackle the challenges they face and as the approach evolves. ■■

To Learn More

Organizations Related to Multiple Pathways

- Alliance for Regional Collaboration to Heighten Educational Success (ARCHES), www.arches-cal.org
- California Department of Education (CDE), www.cde.ca.gov
- Career Academy Support Network (CASN), casn.berkeley.edu
- Coalition for Multiple Pathways, www.connectedcalifornia.org/coalition/
- ConnectEd: The California Center for College and Career, www.connectedcalifornia.org
- National Academy Foundation (NAF), naf.org
- National Career Academy Coalition (NCAC), www.ncacinc.com
- San Diego State University School of Teacher Education, multiple pathways cohort, edweb.sdsu.edu/STE/
- Teachers College of San Joaquin (TCSJ), www.teacherscollegesj.org

Upcoming Reports of Interest

- The Assembly Bill (AB) 2648 multiple pathways feasibility report is due to the California Legislature by Dec. 1, 2009, and a draft for public comment is expected this November. See: www.schoolsmovingup.net/mpstudy/
- This year’s annual report on California’s teaching workforce from the Center for the Future of Teaching and Learning (CFTL) will present findings from a two-year inquiry into high school reform (including multiple pathways) through the lens of the teacher workforce. It is expected in December 2009: www.cftl.org
- *A County Course of Study: Creating a Standards-Aligned CTE System*, developed by the Curriculum and Instruction Steering Committee and Student Program and Services Steering Committee of the California County Superintendents Education Services Association (CCSESA) is expected in February 2010: www.ccsesta.org
- “*Sunup to sundown and beyond*”: *Leadership challenges in high schools and in multiple pathways* is written by W. Norton Grubb of the University of California, Berkeley.

Related EdSource Publications

- *Levers for Change: Opportunities to strengthen California’s high school curriculum* (2007) is written by Andrea Venezia and Mary Perry: www.edsource.org

Endnotes

- ¹ California Department of Education, Educational Demographics Office, via DataQuest. dq.cde.ca.gov/dataquest/ (Accessed Oct. 8, 2009.)
- ² Reed, D., *California's future workforce: Will there be enough college graduates?* (San Francisco: Public Policy Institute of California, 2008).
- ³ Levy, S., *California economic growth—2008 edition* (Palo Alto: Center for Continuing Study of the California Economy, 2008).
- ⁴ California Department of Education, *California career technical education model curriculum standards: Grades seven through twelve*, Adopted by the California State Board of Education, May 2005 (Sacramento, 2006); California Department of Education, *Career technical education framework for California public schools: Grades seven through twelve*, Adopted by the California State Board of Education, January 2007 (Sacramento, 2007).
- ⁵ Richmond, E., *Preparing students for college and career: California multiple pathways*. Issue brief. (Washington, D.C.: Alliance for Excellent Education, 2009)
- ⁶ California Department of Education, Secondary, Post-Secondary & Adult Leadership Division, *California high school career technical education courses meeting University of California "a-g" admission requirements for 2008-09* (Sacramento, 2008).
- ⁷ Oakes, J., & Saunders, M., eds., *Beyond tracking: Multiple pathways to college, career, and civic preparation* (Cambridge, MA: Harvard Education Press, 2008).
- ⁸ Career Academy Support Network, *What is a career academy* (Berkeley). casn.berkeley.edu/Definition.html (Accessed August 2009.)
- ⁹ Collaborative Communications Group, *Mapping opportunities for strategic expansion of the career academy approach to learning in the state of California* (New York and Berkeley: National Academy Foundation, 2009).
- ¹⁰ Kemple, J.J., & Rock, J.L., *Career academies: Early implementation lessons from a 10-site evaluation*, Executive summary (New York: MDRC, 1996); Kemple, J.J., & Snipes, J.C., *Career academies: Impacts on students' engagement and performance in high school* (New York: MDRC, 2000); Kemple, J.J., *Career academies: Long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood* (New York: MDRC, 2008).
- ¹¹ Bradby, D., Malloy, A., et al., *A profile of the California Partnership Academies 2004-2005* (Berkeley: ConnectEd and Career Academy Support Network, 2007).
- ¹² ConnectEd, Pathway certification tool, July 2009 version (Berkeley, 2009).
- ¹³ Alliance for Regional Collaboration to Heighten Educational Success, *Implementing multiple pathways through regional collaboratives: An ARCHES initiative supported by The James Irvine Foundation* (Sacramento, 2009).
- ¹⁴ See: *AB 2648 multiple pathways feasibility report: Status report, March 1-June 15, 2009* (San Francisco: WestEd, 2009). www.wested.org/mpreport/
- ¹⁵ Farr, B., Bradby, D., et al., *Evaluation of the demonstration sites in the ConnectEd network* (Berkeley: MPR Associates, 2009).
- ¹⁶ Stone, J.R., III, Alfeld, C., et al., *Building academic skills in context: Testing the value of enhanced math learning in CTE, Final report* (St. Paul, MN: National Research Center for Career and Technical Education, University of Minnesota, 2006).
- ¹⁷ Teachers College of San Joaquin, *2009-2010 catalog* (Stockton, 2009).
- ¹⁸ Johnson, H., *Educating California: Choices for the future* (San Francisco: Public Policy Institute of California, 2009).
- ¹⁹ U.S. Department of Labor, Bureau of Labor Statistics, Table 4: Quartiles and selected deciles of usual weekly earnings of full-time wage and salary workers by selected characteristics, second quarter 2009 averages, not seasonally adjusted (Washington, D.C., July 2009). www.bls.gov/news.release/wkyeng.t04.htm
- ²⁰ For example, see: GetREAL, *Facts & Figures* (2007). www.getrealca.com/media/GetREAL_facts_and_figures.pdf
- ²¹ California Postsecondary Education Commission, 2008 college-going rates to University of California and 2008 college-going rates to California State University (Sacramento). www.cpec.ca.gov/StudentData/CollegeGoingRates.asp



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