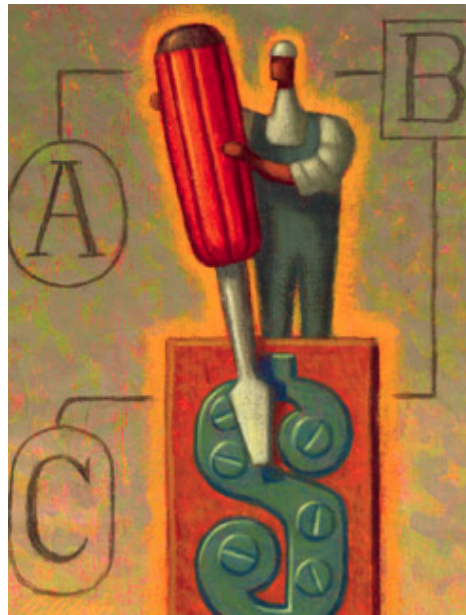


COLLEGE, CAREER, AND POSTSECONDARY SUCCESS:
AN ANALYSIS OF BUILDING TRADE ACADEMIES IN
CALIFORNIA HIGH SCHOOLS



(Credit: Rob Colvin/Getty Images)

I love career tech, love it.
-Governor Arnold Schwarzenegger

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Executive Summary

This paper seeks to explore career-technical education in building trade industries as a forum for educational reform in California. The history of traditional vocational education includes the tracking of women, minorities, English language learners, and special needs students. These practices have acted as oppressive forces for the above populations and have given career training a negative connotation in educational and political discourse. However, in recent decades, a new movement to renew vocational education has arisen. These reforms seek to eliminate the divide between “vocational” and “academic” and provide all high school students with multiple pathways for postsecondary success. Multiple pathways models are often implemented in the form of career academies that focus around one industry. In California an intricate system of California Partnership Academies adhere to specific educational standards that reflect the multiple pathways philosophy. CPAs have proven to be successful, with CPA students having higher pass rates on the state exit exam, meeting more of the requirements for UCs and CSUs, and being more likely to enroll in two- or four-year colleges than their statewide counterparts.

In order to better understand the applications and implications of multiple pathways, this paper explores career academies focused on building trades (architecture, engineering, construction, carpentry, plumbing, electricity, and other related industries). The building trades play an increasingly important role in the local and national realm as the economy begins to rely more upon non-outsourcable sectors. For example, construction, the fifth largest area of job growth in Los Angeles County, pays an average annual income of \$46,592, more than twice the annual salary of the average worker with only a high school diploma. Certain communities stand to benefit from eligibility to high paying jobs that do not require diplomas. For example, only 6% percent of workers residing in West L.A. do not have a high school diploma compared to 40% of workers in South and East L.A. without high school diplomas. More so, building trade career-technical education offers specific benefits to populations who have traditionally been excluded from the building trades or disadvantaged by vocational education: women, minorities, English language, and special needs students.

Using an understanding of the history and reforms of vocational education, case studies of building trade programs paint a picture of current applications in California high schools. The first study outlines College Preparatory and Architecture Academy, a small, autonomous school in Oakland. In operation since 2002, this program demonstrates many of the challenges and successes of running an academy in a diverse, urban school district. The second study describes the Build San Francisco Institute, operated through a partnership between the San Francisco Unified School District and the Architectural Foundation of San Francisco, a local non-profit. The program is not on a school campus, and students from throughout the district are able to attend. The Stanley E. Foster Construction Tech Academy in

Sand Diego gives a third example of building trades education in a multiple pathways context. This academy is renowned for its record of high student achievement and diverse post-secondary outcomes.

These case studies offer common themes: the avoidance of tracking, support of limited-English-proficient, special needs students, minorities and women, and a multiplicity of post-secondary paths. The studies also demonstrate the importance of business and labor partnerships in the establishment of successful building trades academies. Additionally, the studies expose the importance of curriculum rooted in real-world applications and hands-on approaches.

In order replicate the best practices and improve upon the case studies' weak points, this paper offers policy and curricula recommendations for community groups, educators, and policy makers. These suggestions include more state involvement in curricula and schedule development, better means of tracking student outcomes, and incentives for school-business partnerships. Furthermore, schools and community groups should: plan for their school to have broad pathways to avoid tracking, rely on community and business support in the planning process, establish secure funding, ensure small class sizes, and employ resource specialists to incorporate special populations.

As an intern at a community organization in South Los Angeles, I worked in a department that confronted daily the prevalent educational access issues in the area, including drop out rates of nearly 70%, an omnipresence of campus military recruiters and a virtual absence of college representatives, and dismal student-to-counselor ratios. Clearly, making tangible changes in these learning environments takes time, substantial political pressure, and resources, more than a semester-long internship could begin to tackle. However, during this short period, I learned that the organization, called the Community Coalition for Substance Abuse Prevention and Treatment (or CoCo to its constituents), had recently begun a campaign to get a Construction Technology Academy in a local high school. This proposed program would simultaneously offer students college prep courses and training in building trades with the objectives of alleviating and breaking cycles of poverty and educational disadvantages.

When I first heard this concept, I was dubious. “Construction Tech” evoked images of woodshop, of a non-academic, non-challenging school experience. It seemed all too reminiscent of the destructive history of tracking and vocational education in this country. Yet staff at CoCo strongly believed a Construction Tech Academy, implemented in the context of a college prep curriculum, would play a role in school improvement and economic renewal of the area. Eventually, I learned that this career-tech/college prep was part of a larger movement in education called “multiple pathways,” a demand to “prepare all students for both college *and* careers.”¹ This theory seemed rational and even advantageous, but then again, traditional vocational education theory appeared relatively innocuous without knowing its history of implementation. With these questions in mind, I began to wonder about other building trade academies in California, and whether or not their results challenged the status quo of vocational education’s problematic past.

¹Jeannie Oakes and Marisa Saunders, “Multiple Pathways: High School Reform that Promises to Prepare All Students for College, Career, and Civic Responsibility,” (University of California, Los Angeles, 2007), 1.

Regardless of opinions on vocational schooling, one can hardly deny that our schools desperately need to adapt “to teach a diverse student body that is dramatically different from the ‘generic’ white, middle-class, monolingual, monocultural students for whom curriculum was developed in the past.”² These reforms are even more pertinent in California where the number of English language learners nearly equals the number of Caucasians in public schools and where no one racial or ethnic group can claim majority status.³ Acknowledging this dire need for change, my research seeks to explore career-technical education, particularly in the building trades, as a mechanism to transform our current system into a more progressive, inclusive, and equitable scholastic environment.

What the traditional system fails to do, and what multiple pathways education recognizes, is that schools must begin understanding and supporting the multiple intelligences of students. For too long, our society has created a false dichotomy between intellect of the hand and the brain, of mental and manual labor.⁴ Career academies that teach building-related trades should not be perceived as any less intellectual than high school English or math. Instead, our society and culture must begin to value the immense intellectual capacity required of skilled work and trades and view them as a forum to combine real-world learning with conventional areas of “academic” study.

In order to explore the possibilities of implementing a building trades academy in South Los Angeles or other communities seeking educational reform, this paper examines the histories and policies that have both created and reformed the vocational education system. Additionally, this research will observe building trade-themed programs that are currently applying multiple pathways curricula and examine their viability for low-income communities of color, women, English language learners, and special needs students – all

² Jim Cummings, *Negotiating Identities: Education for empowerment in a diverse society*, (Ontario, Canada: California Association for Bilingual Education, 1996), 123.

³ California Department of Education, “2007-2008,” *DataQuest*, <http://dq.cde.ca.gov/dataquest/>.

⁴ Mike Rose, *The Mind at Work: Valuing the Intelligence of the American Worker*, (New York: Penguin, 2005), xviii.

groups who have been traditionally tracked in vocational programs but who may flourish in and highly benefit from career technical education. By examining other successful models' attempts at securing college success and high-paying jobs for their students, analyzing state and national policies, and educational standards, this research will determine the various benefits and challenges in creating successful building trades academies in Los Angeles and other communities.

Vocational Education: An Oppressive History

In order to discuss the implications of vocational programs, it is essential to define their place within the United States educational system. The 1990 Carl D. Perkins Act characterized vocational education as “organized educational programs offering a sequence of courses which are directly related to the preparation of individuals in paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree.”⁵ This definition implies three possible courses of study: “consumer and homemaking education, general labor market preparation, and specific labor market preparation.”⁶ The first two programs usually enroll a wide variety of students and do not define a student’s entire course of secondary study. Instead, students may enroll in a few vocational classes, with the goal of attaining a variety of life skills. However, the third variety of these programs represents “vocational education” as it is most widely understood in this country. These programs prepare students for “paid employment in a specific occupation.”⁷ These educational tracks commonly include occupational programs in trade construction, mechanics and repairs, agriculture, and health.

Vocational programs have occupied a contested place in American policy debates. As early as 1903, Booker T. Washington promoted vocational training

⁵ Karen Levesque and others, “Vocational Education in the United States: The Early 1990s,” 2

⁶ Ibid., 2.

⁷ Ibid., 2-3.

as a means for African Americans gaining economic self-sufficiency.⁸

Washington and other supporters felt that vocational education would prepare youth for the labor market, since not all adolescents were bound for higher education. In 1913, the Report of Commission on National Aid to Vocational Educations also stressed the importance of schooling in preparing students with “different tastes and abilities” for “highly differentiated adult roles.”⁹ In an era where college degrees were not as commonly pursued as today, many perceived vocational education as creating opportunities for students of all racial and economic backgrounds who were not necessary bound for higher education.

In theory, vocational programs generate positive outcomes, yet their implementations have historically lead to the tracking of minority students, women and people with disabilities. The term tracking refers to the “[stratification]” of students into curricula that prepare some for “college attendance and others for work.”⁷ Tracking is a detrimental practice, evidenced by studies showing that students are seldom placed into programs based on merit. Rather, they are likely to be put into a “high (academic) or low (vocational or general)” track based on class, race, and sex.¹⁰ Furthermore, lower tracks most often prepare youth for menial jobs with little potential for advanced training or degrees.

By preparing different groups for different futures, vocational education has systemically perpetuated injustices in American society. To track women, the government created highly gendered policies such as the George-Ellzey Act of 1934 and the Smith-Hughes Act of 1917. These policies left little funding for female vocational programs and limited women’s training to home economics, essentially denying women preparation to become active members of the paid

⁸ Booker T. Washington, “Industrial Education for the Negro,” (1903), quoted in Annagret Straiger, “Recreating Blackness-as-Failure through Educational Reform? A Case Study of a California Partnership Academy,” *Equity & Excellence in Education* 38 (2005): 35.

⁹ John Rogers, Joseph Kahne, and Ellen Middaugh, “Multiple Pathways, Vocational Education and the ‘Future of Democracy,” in *Multiple Perspectives on Multiple Pathways Series* (University of California, Los Angeles, 2007), 6.

⁷ James Ainsworth and Vincent Roscigno, “Stratification, School-Work Linkages and Vocational Education,” *Social Forces* 84, no. 1 (2005): 262.

workforce.¹¹ While these gender-biased initiatives no longer exist, they still affect patterns of female participation in vocational training. For example, women today are more likely to be tracked into “low-wage service sector vocational training” instead of “blue-collar vocational courses.”¹² In California, where women make up the majority of career-technical education students, the most heavily female-dominated pathways include “Hospitality, tourism, and recreation” and “Education, child development, and family services.”¹³ These pathways are less likely to lead to high paying careers and still fall within conventional gender stereotypes.

Vocational education has played an even more oppressive role for racial minorities. White policy makers often used vocational programs to further segregate schools and track minorities into “industrial jobs rather than for work that required intellectual or managerial skills.”¹⁴ In this system, the educator and school districts, instead of students themselves, usually decided who would participate in vocational programs. Whites used overtly racist language to justify this tracking, claiming that minorities “[could not] master abstractions, but they [could] often be made efficient workers.”¹⁵ Perhaps our country’s most flagrant example of differentiating curriculum and methods, vocational education limited minorities’ upward academic and economic mobility by making access to college, and therefore better jobs, difficult to attain.¹⁶ Thus, minority students were systemically denied social and economic ascension and mobility by the limitation of postsecondary options.

Different from women and minorities, special needs students have historically been excluded from vocational education. In the late 19th and early 20th centuries, the severe stigmatization of people with mental and physical disabilities lead to their social and academic isolation.¹⁷ Further reinforcing

¹¹ Aisnworth and Roscigno, “Stratification,” 261.

¹² Aisnworth and Roscigno, “Stratification,” 270.

¹³ Denise Bradby and others, “A Profile of the California Partnership Academies 2004-2005,” (Berkeley: ConnectEd, 2008): 14.

¹⁴ Oakes and Saunders, “Multiple Pathways,” 3.

¹⁵ Oakes and Saunders, “Multiple Pathways,” 3.

¹⁶ Graubard, Allen, “Could Vocational Education Be Progressive?,” *Radical Teacher*, no. 69 (2004): 10.

¹⁷ Gary D. Meers, *Handbook of Special Vocational Needs Education*, 8.

this pattern, the Smith-Hughes Act (that also acted as a tracking mechanism for women) set an exclusionary tone for disabled students. Policy Bulletin Number 1 of the act states that vocational education should specifically serve “normal boys and girls” and not special populations.¹⁸ After World War I and subsequent conflicts, vocational training services were provided for veterans who had subdued physical and emotional trauma during the war, yet this provided a narrow lens through which to define disabilities and did not ultimately reach the larger population of special needs students. More so, when special needs students did participate in vocational education, the programs usually entailed menial, low-paying jobs.¹⁹

The history of limited-English-proficient (LEP) students in vocational education also differs from other populations. For one, data and statistics are often limited or inconsistent and LEP students are not explicitly mentioned in most policies until recently. However, one can conclude that English language learners were historically underrepresented in vocational education programs. A survey from the mid-1980s reports that only 1.3% of students enrolled in vocational programs were LEP students (or 131,101 out of 9,237,701 total).²⁰ Another problem may be that LEP students were categorized as “special needs” students,²¹ and may have been either excluded from vocational programs or relegated to low-paying job paths.

Reforms in Vocational Education

Nevertheless, the negative effects of vocational education did not go unnoticed and a calls for reform emerged in the 1970s and 1980s. The Vocational Education Act Amendments of 1976 called for the elimination of biasing and stereotyping by gender. Additionally, the amendments required vocational education funding be directed to communities with high

¹⁸ Meers, *Handbook of Special Vocational Needs Education*, 9.

¹⁹ *Ibid.*, 8.

²⁰ Jeanne Lopez-Valadez, “Training Limited English Proficient Students for the Workplace: Trends in Vocational Education,” *National Clearinghouse for Bilingual Education*, no. 11 (1989), <http://ncela.gwu.edu>.

²¹ Meers, *Handbook of Special Vocational Needs Education*, 2.

unemployment, and also demanded community input for the planning of current and future vocational schools.²² However, no explicit mentioning of race and vocational education was mentioned these policies. Then, in 1988, the William T. Grant Foundation issued a report declaring that “youth between 16-24 years, who had only 12 years or less of school education...were destined to end up in part-time or dead-end, minimum salary jobs, or among the long-term unemployed.”²³ More so, these youth tended to be low-income Latino and African Americans.²⁴ The Grant Foundation recognized the government’s prioritization of college-bound students as opposed to perceived non-college bound students.

In order to remedy the destructive dichotomy described in the Grant report, the Carl D. Perkins Vocational Education Act of 1990 introduced the concept of multiple pathways. Unlike previous vocational referenda, the 1990 Perkins Act called for “a series of courses in which vocational and academic education are integrated, and which directly relates to, and leads to, both academic and occupational competencies.”²⁵ Unlike previous vocational programs, the Perkins Act envisioned a system that would prevent tracking by eliminating the divide between career training and academics. These programs would provide “*both* the academic and the career foundations students need for advanced learning, training, and responsible public participation.”²⁶ Furthermore, the 1990 Perkins Act recognized that vocational education should target minorities, persons with disabilities, limited-English-proficient students, women, and economically disadvantaged students in urban areas.²⁷

The popularity of multiple pathways and the recognition of the failures of traditional career training programs have caused a near disappearance of the term “vocational” in political and educational discourse. A frontrunner of this

²² Wisconsin Advisory Committee, “Vocational Education, Where are the Minorities and Women?,” (Washington DC: GPO): 2.

²³ Staiger, “Recreating Blackness as Failure?,” 35.

²⁴ Ibid.

²⁵ Levesque and others, “Vocational Education in the United States,” 5.

²⁶ Oakes and Saunders, “Multiple Pathways,” 1.

²⁷ Levesque and others, “Vocational Education in the United States,” 1.

movement, the American Vocational Association became the Association for Career and Technical education in 1998.²⁸ Additionally, the renewal of the Perkins Act in 2006 used “career technical education” instead of “vocational education.” (Oakes & Saunders, p. 7) While this change in language reflects changing attitudes in how vocational education is viewed, they do not necessarily reflect actual changes in implementation.

California’s Approach to Career-Technical Education

In addition to national strides for amelioration of career-technical programs, the State of California also has a strong history of multiple pathways implementations. In the mid-1980s, the California State Legislature ordered the replication of successful career academies throughout the state. This action eventually led to the creation of the California Partnership Academies (CPAs), a network of California career academies that focus around 15 different industry sectors. In 2004-5, there were 290 programs in 100 different California high schools.²⁹ It is important to note that the CPAs do not represent all career-technical education (CTE) programs in the state, as some career academies in California are not registered as CPAs.

CPAs demonstrate an interesting cross-section of California school students. 33,028 high school students (in grades 10-12) were enrolled in CPAs in 2004-5. The students enrolled reflected the same proportions of ethnic groups attending high schools statewide.³⁰ However, unlike the rest of their high school peers, CPA students have higher pass rates on the California High School Exit Examination (CAHSEE). While this is seen across the board, certain populations excel at higher rates. For example, African Americans enrolled in CPAs had a 20% higher pass rate on the English and Language Arts section of CAHSEE than African Americans statewide.³¹

²⁸ Oakes and Saunders, “Multiple Pathways,” 7.

²⁹ Bradby and others, “A Profile of the California Partnership Academies 2004-2005,” 6.

³⁰ Ibid. 13.

³¹ Ibid. 17.

California Partnership Academies also inherently embody the foundations of multiple pathways philosophy. This embracement is best observed in the Career Technical Education Model Curricula Standards adopted in 2005 by the California State Board of Education. In these standards, a career pathway is defined as:³²

A coherent sequence of rigorous academic and technical courses that allows students to apply academics and develop technical skills in a curricular area. Career pathways prepare students for successful completion of state academic and technical standards and more advanced postsecondary course work related to the career in which they are interested.

This definition clearly unites career training with academics and emphasizes the importance of high school education leading to various forms of postsecondary training. Another key aspect of the definition lies in the implication that a student's participation in the CPA is based on interest in a career path. This denotes a component of voluntary participation essential to the avoidance of tracking.

Defining Career Academies and Their Avoidance of Tracking

Multiple pathways models of education are often executed through the implementation of career academies, common throughout California and the nation. In California, there are 582 career academies (both CPA and non-CPA) in various high schools.³³ While academies differ in their career paths and structures, a set of defining characteristics exist which help to guide an understanding of their purpose and implementation. In *Career Academies: Partnerships for Reconstructing American High Schools*, David Stern, Marilyn

³² California State Board of Education, *California Career Technical Education Model Curriculum Standards, Grade 7 Through Grade (2005)*, 417.

³³ Career Academies Support Network, *Academies Directory*, http://www.wsdg3.com/casn_directory/directory.cfm.

Raby, and Charles Dayton outline the overarching qualities of career academies:³⁴

- Academies are usually smaller schools or special programs located on a larger high school campus
- Students undergo some sort of recruitment and application process for entry into the program
- The program's career theme matches the local economy and job growth patterns of the region.
- Curriculum focuses on both college and job preparation through both technical and academic content.
- Industry members often help to guide and plan the program and may help to arrange mentorships.
- Students often find jobs or internships related to the career theme of the academy
- Smaller class sizes allow for deeper connections to parents and community.
- Diverse sources of funding, from private and state grants, local school district support, and industry contributions.

The aforementioned characteristics help to explain how career academies differ from traditional vocational schools in their resistance to tracking. For one, students enroll in the academies by choice, and are not placed there based on notions of perceived ability or college-bound potential. More so, academic subjects and technical courses are thoroughly integrated, so that all students are on both a career and college track. Schools accomplish this incorporation through common planning periods where teachers can meet to coordinate lessons and units.³⁵ In this way, all subjects integrate aspects of both the academy's career theme and regular academics.

In the past, federal laws promoted tracking by defining vocational education as preparation for occupations not ordinarily requiring a baccalaureate or advanced degree. Conversely, today's career-technical schools are created with the specific goals of preparing students for college and career, so that youth are "[taught] rigorous academic concepts within the context of

³⁴ David Stern, Marilyn Raby, and Charles Dayton, *Career Academies: Partnerships for Reconstructing American High Schools*, (San Francisco: Jossey-Bass, 1992): 14-15.

³⁵ *Ibid.*, 19.

career education.”³⁶ The statistics of CPA graduates demonstrate that career academies in no way push students in one post-graduation direction. In fact, students enrolled in California career academies are better prepared for college than students enrolled in regular high schools. In 2005, 50% of seniors graduating from CPAs had met all their UC/CSU requirements, contrasting with 35% of state high school graduates.³⁷ These statistics reinforce an absence of tracking, as CPAs succeed in making their graduates eligible for four-year college. More so, 70% of CPA seniors reported that they planned to pursue either a two- or four-year college degree after graduation while only 23% reported that they would enter directly into the workforce after high school.³⁸ The percentages demonstrate that while CPAs are career-themed, they do not limit the options for post-high school training and education.

The Need for Construction and Building Trade Academies

With 15 industry sectors outlined in the California Pathways, this research paper focuses on building-related industries because of their economic relevance to the Los Angeles, state, and national economy. Los Angeles is, and will continue to be, a player in an increasingly globalized economy where “geographically rooted industries” will assume a vital role in the region’s economic sustainability.³⁹ From 1996 to 2006, Los Angeles’ highest areas of economic growth have occurred in two non-outsourcable sectors: leisure and hospitality and retail. Leisure and hospitality, which created 70,000 new jobs, averages an annual pay of \$26,676.⁴⁰ Retail, the second largest area of job creation, added more than 57,000 jobs that pay an average annual wage of \$29,224.⁴¹ However, these wages fall below what it takes to sustain oneself

³⁶ California State Board of Education, v.

³⁷ Bradby and others, “A Profile of the California Partnership Academies 2004-2005,” 21.

³⁸ Ibid., 20

³⁹ Sharon Delugach and Raahi Reddy, “Helping L.A. Grow Together: Why the Community Redevelopment Agency Should Adopt the Construction Careers Policy,” (Los Angeles: UCLA Labor Center, 2008): 11.

⁴⁰ Los Angeles Alliance for a New Economy, “Poverty, Jobs, and the Los Angeles Economy: An Analysis of U.S. Census Data and the Challenges Facing Our Region,” August 7, 2007, 9.

⁴¹ Ibid., 9

in Los Angeles, where the salary needed for a single parent to support one child is \$38,382.⁴²

On the other hand, construction is the fifth largest area of job growth in Los Angeles County and pays considerably higher wages than the two aforementioned industries. The 2006 U.S. Census data reports that the construction industry created 48,000 new jobs in Los Angeles County between 1996 and 2006.⁴³ More so, these new jobs offer an average annual income of \$46,592.⁴⁴ In fact, construction continues to be one of the few career paths that provides high-paying jobs to people without college degrees. In Los Angeles County, workers with only a high school diploma generally earn \$21,251 per year,⁴⁵ less than half the average annual income of construction workers.

Certain geographic areas of Los Angeles deeply feel the economic impacts of their community members not obtaining college education and would thus benefit from the creation of high paying jobs that do not require college degrees. For example, only 6% percent of workers residing in West L.A. do not have a high school diploma compared to 40% of workers in South and East L.A. without high school diplomas.⁴⁶ Not surprisingly, South and East LA also contain the highest concentrations of joblessness and largest proportions of working poor.⁴⁷ Evidently, these areas would highly benefit from having training to access high-paying jobs in construction.

Recently, Los Angeles has begun to recognize the economic viability and potential of building trades careers for disadvantaged communities. The Community Redevelopment Agency (CRA) recently adopted the Construction Careers and Project Stabilization Policy. This requires CRA-funded projects to “hire more local and at-risk residents from the communities in which the projects are built,” while simultaneously creating a Project Labor Agreement

⁴² Ibid., 7

⁴³ Delugach and Reddy, “Helping L.A. Grow Together,” 11.

⁴⁴ Ibid., 11.

⁴⁵ Los Angeles Alliance for a New Economy, “Poverty, Jobs, and the Los Angeles Economy,” 7.

⁴⁶ Delugach and Reddy, “Helping L.A. Grow Together,” 10.

⁴⁷ Delugach and Reddy, 10

ensuring jobs on CRA projects lead to “middle-class, union careers.”⁴⁸ CRA’s acknowledgement of the value of building trades jobs, which may include construction, carpentry, plumbing, electricity, design, engineering and other sectors related to the built environment, validates the industry’s capacity for alleviating poverty in L.A.’s most economically depressed areas. With the city directing more attention to building trades as a means of economic opportunity, now is the ideal time to explore the implementation of comparable high school training programs that similarly broaden the opportunities for low-income communities to access high paying jobs in the building trades.

The Benefits of Building Trades CTE for Specific Populations

Career academies that focus on building trades benefit specific groups of high school students for various reasons. For one, these academies open doors to populations who have historically been underrepresented in architecture, engineering, construction, and related fields. According to the National Science Foundation, women, minorities, and disabled people are underrepresented compared to the percentage of white males in the science, mathematics, and engineering workforces.⁴⁹ In addition to the actual acquired skills, the academic environment of building trade academies, which emphasize real-world connections and hands-on learning, accommodate a variety of learning styles and abilities. Instead of offering alternative courses of study to special needs and limited-English-proficient students, building trades academies allow all students to work together and can actually provide a more supportive and productive classroom environment.

It is also important to note that the groups described in the following section are in no way isolated from each, and in fact often intersect. For example, African American children are only 20% percent of children in the

⁴⁸ Los Angeles Alliance for a New Economy, “LAANE and Its Allies Celebrate Community Redevelopment Agency’s Passage of Trail-Blazing Construction Policy,” <http://www.laane.org/projects/ConstructionCareers/index.html>.

⁴⁹ Ellen Wahl, “Can She Really Do Science?: Gender Disparities in Math and Science Education,” in *Double Jeopardy: Addressing Gender Equity in Special Education*, ed. Harilyn Rousso and Michael L. Wehmeyer (Albany: State University of New York, 2001), 135.

U.S. public school system but represent more than 50% of all special needs students.⁵⁰ Of those 50%, eight out of 10 are male.⁵¹ Thus, in speaking of special needs, one must equally consider issues of race and gender. The reader should consider that programs suggested in this paper might have multiple layers of benefits to students identifying with one or more of the categories below.

Female Students and the Building Trades

As described earlier, vocational education has traditionally placed females into highly gendered pathways that usually lead to lower-paying jobs than their male counterparts. Not until 1976 did the federal government mandate sex equity with the Vocational Equity Act. Then in 1984 the government authorized funding to help eliminate sex-role stereotyping in vocational education and to increase enrollment in non-traditional careers. Today, the role of monitoring sex-equity in career-technical lies solely in the hands of the state.⁵²

Despite these reforms, women, and especially women of color, remain highly underrepresented in building related trades. In 1996, women earned 16% of all baccalaureates in engineering.⁵³ Of those 16%, 11.1% were white, 2% Asian, 1.4% African American, and .7% Latina.⁵⁴ The 2000 Census data on occupational groups paints an even grimmer picture for women in the construction and building industries in Los Angeles County. Females made up only 2.6% of construction and extractive craft workers and 9.2% of installation, maintenance and repair craft workers.⁵⁵ These sectors experienced the greatest

⁵⁰ David Pluviose, "Black, Hispanic Males Crisis Focus of Higher Ed Summit," *Diverse Issues in Higher Education* 23, no. 23 (2006): 22.

⁵¹ Ibid.

⁵² Katherine Hanson and Susan J. Smith, "Gender Equity in Education: Change and Challenge," in *Double Jeopardy*, ed. Rousso and Wehmeyer, 77.

⁵³ Ibid., 69

⁵⁴ Ibid. 69

⁵⁵ U.S. Census Bureau, "United States Census 2000," <http://www.census.gov/main/www/cen2000.html>.

gender disparity amongst all other occupations in the county. Furthermore, the women who worked in these industries were predominantly white.⁵⁶

While California Partnership Academies (CPAs) also encounter gender imbalance in building trade related academies, females do make up a larger ratio than the amount of women currently in the workforce. Females represent 27% of students enrolled in Building Trades and Construction Academies and represent 40% of students in Engineering and Design Academies. While these numbers are not balanced, 27% percent of female students training for careers in construction solidly outnumber the 2.6% of women currently in the workforce. CPAs in the building trades clearly aid women in breaking into industries where they have traditionally been underrepresented.

In discussing gender, one should consider males inherently implied in the discourse instead of as a separate element. Male teenagers of color, regardless of ELL status or special needs, stand to benefit from building trades education in high schools. For example, 47% of African American females in LAUSD graduated with all their UC/CSU requirements compared to only 29% of African American males. Similarly, only 44% of Latinas graduated with all their UC/CSU required courses compared to 32% of Latinos. Policy makers should recognize that schools are failing to meet the need of male and female students alike and that these disparities may be addressed through career technical education.

Minorities and Building Trade Academies

Career academies focused on construction and building trades address issues of discrimination and underrepresentation of minorities in these industries. Prior to the Civil Rights Act of 1964, most trade unions had forbidden the entry of blacks in their by-laws or guiding clauses.⁵⁷ These restrictions helped contribute to a history of acrimony and exclusion between

⁵⁶ Ibid.

⁵⁷ Dubinsky, Irwin, *Reform in the Trade Union Discrimination in the Construction Industry: Operation Dig and Its Legacy*, (New York: Praeger, 1973), 25.

African Americans and building trade unions. Since African Americans were usually denied entrance into unions, they would often go to work while unions were on strike. These situations were the cause of race riots throughout the Midwest during the early 20th century.⁵⁸ Even post-Civil Rights era, construction industry unions have been resistant to integration and business linkages with Black communities. Certain cities like Philadelphia and Chicago tried to implement affirmative action in the construction industries received negative, and even violent reactions from labor unions.

One reason that trade unions were able to continue unfair hiring practices may lie in the nature of the industry. Unlike industrial unions that operate in a market with a handful of large firms, craft unions operate in a sector with many one-skill unions and small contracting firms.⁵⁹ This structure makes it difficult to determine which party practices discriminatory recruitment and hiring: the unions or the firms. One could argue that the unions are reliant on the hiring preferences of contractors, who may use discriminatory hiring practices or that the unions themselves discriminate and the firms are forced to hire from primarily white union base.⁶⁰ Ambiguity as to who is responsible for these practices makes it difficult to hold the industry accountable for discrimination.

In Los Angeles, statistics paint an interesting picture of race in the building trades. Perhaps as a result of exclusionary practices, African Americans have not been able to break into the building trade industries, and constitute only 4.9% of construction and extractive craft workers⁶¹ and 6.1% of installation, maintenance, and repair craft workers. On the other hand, Latinos make up 56.2% of construction and extractive craft workers and 49.1% of installation, maintenance, and repair craft workers.⁶² While building trades have become a Latino-majority dominated industry, it is important to recognize

⁵⁸ Ibid.,26.

⁵⁹ Dubinsky, *Reform in Trade Union Discrimination in the Construction Industry*, 27.

⁶⁰ Dubinsky, *Reform in Trade Union Discrimination in the Construction Industry*, 29.

⁶¹ "Extractive crafts workers" include earth drillers, blasters and explosives Workers, derrick operators, and mining machine operators.

⁶² U.S. Census Bureau, "United States Census 2000."

that these figures do not describe whether the workers are unionized or not. Minority representation does not necessarily mean that the bulk of workers are in high-quality, high-paying jobs. Thus Latinos and African Americans alike will benefit from career academies' training and valuable links to businesses and unions. As Latinos and African Americans comprise the two groups most likely to be living in extreme poverty, with rates two-and-a-half times those of Whites and twice those of Asians,⁶³ access to these high-paying jobs becomes even more pertinent.

English Language Learners and Building Trade Academies

With nearly 40% of LAUSD students classified as limited-English-proficient (LEP),⁶⁴ the district will continue considering various ways in which it can cater to language learning students. Building trade-themed academies intrinsically benefit and include English Language Learners (ELL) through their strategies, standards, and objectives. Therefore, educators and policy makers should consider the advantages of building trade academies for LEP students

Methods often used to teach ELL students are inherently a part of career-technical education. An example is Specially Designed Academic Instruction in English (SDAIE), or sheltered instruction, which is one of the most common strategies providing support to language learners within academic classes. Unlike other approaches, SDAIE “features content instruction taught by content-area teachers with English-language support.”⁶⁵ In this model, instructors need only make slight curriculum modifications to work within the framework of SDAIE. For instance, a fundamental aspect of SDAIE is ensuring that students have many opportunities to talk about lesson content.⁶⁶ These interactions are accomplished through group work, teacher-

⁶³ Los Angeles Alliance for a New Economy, “Poverty, Jobs, and the Los Angeles Economy,” 6.

⁶⁴ California Department of Education, “2006-2007,” *DataQuest*.

⁶⁵ Lynne Diaz-Rico and Kathryn Weed, *The Crosscultural, Language, and Academic Development Handbook: A Complete K-12 Reference Guide*, (Boston: Allyn and Bacon, 2002), 103.

⁶⁶ *Ibid.*, 106.

to-student dialogue, and even discussions outside of the classroom or school. In a building-themed career academy, students encounter an abundance of opportunities to speak about their classroom experiences. Since themed academies often have coordinated instruction across subject matters, a student would be able to bring up what he learned in construction in his English, geometry or even history class. More so, building-themed academies often place students in mentorships where students may use their academic language in a real-world context. Additionally, students often have the opportunity to work on group projects where they can dialogue about the materials they learn. This repetition of vocabulary and themes is essential for language acquisition.

Career-technical classes, especially in the building trades, also create experiential learning environments that benefit limited-English-proficient students. For language learners, “the beauty of vocational education is that so much of it is hands on and procedural.”⁶⁷ This way of “actively engaging with content” is essential to LEP students’ acquisition of English and subject matter.⁶⁸ In the context of building trades education, hands-on instruction inherently plays a role in learning. Students utilize a variety of mediums and methods, such as computer software, model building, illustrations, and written descriptions, to learn content.

Further strengthening the connection between second language acquisition and building trades themed education, state standards for English language development and career-technical education easily align. The “California Career Technical Education Model Curriculum Standards” for construction-related industries easily align with the “English Language Development Standards adopted by the California Department of Education. For example, in the Early Advanced ELD level for 9-12 graders, one objective for ELL writing students is to “fill out job applications and prepare résumés that are clear and purposeful and address the intended audience

⁶⁷ Marlene A. Lozada. “Voc Ed’s Universal Language?” *Techniques* 73, no. 4 (1998), <http://vnweb.hwwilsonweb.com>

⁶⁸ Daniel Solórzano and Ronald Solórzano, “Beginning Teacher Standards: Impact on Second-Language Learners and Implications for Teacher Preparation,” *Teacher Education Quarterly* 26, no. 3 (1999): 25.

appropriately.”⁶⁹ Incidentally, the Career Planning and Management section of the Building Trades and Construction Industry Sector underlines a similar goal, to “know important strategies for self-promotion in the hiring process, such as job applications, résumé writing, interviewing skills, and preparation of a portfolio.”⁷⁰ These lessons and activities concurrently accomplish students’ English language and career development needs.

Another illustration of overlapping criteria lies in the reading standards for ELL students. For Beginning ELL level students in grades 9-10, students should work to “identify the vocabulary, syntax, and grammar used in public and workplace documents (e.g. speeches, debates, manuals, and contracts.)”⁷¹ In a similar manner, the Building Trades and Construction Standards require students to ““solve common mechanical construction problems by using Uniform Building Codes and Air Conditioning And Refrigeration Institute Standards.”⁷² Again, a single unit or lesson can adeptly target both language development and career training needs of students without watering down content.

Special Needs Students and Building Trades Academy

As stated earlier, vocational educational education often acted as a tracking mechanism for all students deemed non-college bound, a group that usually included students with special needs. However, when executed correctly and justly, career technical education, especially in the building trades, can be highly beneficial to students with learning and physical disabilities. Educational specialist Gary Meers clearly explains the advantages of vocational training for special needs students:⁷³

⁶⁹ California State Board of Education, *English Language Development Standards for California Public Schools, Kindergarten Through Grade Twelve*, 75.

⁷⁰ California State Board of Education, *California Career Technical Education*, 75.

⁷¹ California State Board of Education, *English Language Development Standards*, 50.

⁷² California State Board of Education, *California Career Technical Education*, 85.

⁷³ Gary D. Meers, *Handbook of Special Vocational Needs Education*, 22.

Special needs students who are disinterested and disillusioned with school see no relevance of school to the world around them. Because of the training it offers and the methodology it employs in this training, vocational education is a logical deliverer of educational services...Its basis is activity, which [special needs] students frequently find lacking in day-to-day school life. Through vocational education, students can see an immediate transference from the school setting to the world around them

Similar to ELL students, the hands-on, real-world aspect of career-technical education directly meets the needs of special needs students by providing alternative approaches to learning while still within the cadre of a rigorous academic environment.

One of the key ways that career academies may cater to the individual needs of disabled students is through mentorships or working experience. These interactions with professionals, an aspect ingrained in the CTE experience, can be useful for special needs students to meet mentors of the same disability who are accomplished in the field. These links create “communities of learners and norms of mutual support” that help to connect special needs students to their environment and help them envision themselves in future careers.⁷⁴

More so, students with special needs require training for high paying jobs in the building trades. The 1997 median earnings for people with no disability with \$23,700, compared with \$20,500 for those with a slight disability and \$13,300 for those with a severe disability. In 2000, 8.7 million people with disabilities were poor - a substantially higher proportion (17.6 percent) than was found among people without disabilities (10.6 percent). More so, individuals with disabilities are 20.6% of the population but only 4.9% of the science and engineering workforce.⁷⁵

Furthermore, adding diversity of ability to the construction and building trades workforce enriches the quality of construction and design

⁷⁴ Nancy Ferreyra and Estelle Eskenzie, “The Living Out Loud Program: Building Resiliency in Adolescent Girls with Disabilities,” in *Double Jeopardy*, 367.

⁷⁵ Wahl, “Can She Really Do Science?,” in *Double Jeopardy*, 136.

projects. The construction industry often has a false image of being a “harsh physical world not suited to disabled people.”⁷⁶ This stereotype is far from true and in fact when people with physical disabilities work in the building trades, they add a variety of perspectives relating to the built environment.⁷⁷ People with disabilities interact differently with physical space differently, and their viewpoint adds crucial inclusiveness to the industry. For example an alter-abled plumber or electrician may consider different ways of installing outlets or faucets that better accommodate persons of varying capacities of sight, hearing, mobility, or other special needs.

Conclusion

These lessons on the histories and reforms of vocational education play a crucial role in developing an understanding of how schools should prepare students for college and career. In California schools that serve an increasingly diverse population, education cannot and should not be “one-size-fits-all.” This means that schools no longer have the choice to prepare students for *either* college *or* career, but must succeed in doing both. For this reason, an overview of how building trades academies function and cater to specific populations will guide our understandings of how to critique programs already in place. Furthermore, knowing how career academies operate and whom they might serve will help to make generalizations about how local and state policies can be implemented.

⁷⁶ Oremerod, Marcus and Rita Newton, “Diversity Through Employment of Disabled People.” In *Managing Diversity and Equality in Construction*, ed. Andrew W. Gale and Marilyn J. Davidson (London, New York: Taylor and Francis, 2006) 212.

⁷⁷ Ibid.

Case Studies

College Preparatory and Architecture Academy

The Oakland offers a useful example of multiple pathways instruction associated with building trades training. The College Preparatory and Architecture Academy (CPAA), a small autonomous high school in the Fruitvale neighborhood of Oakland, provides architecture and construction coursework alongside challenging academic classes. Originally an academy at Fremont High School, CPAA's development into an independent school demonstrates the many benefits and obstacles in forming an effective career technical academy.



CPAA Entrance

(Source: Author, 11 March 2008)

The formation of CPAA mirrors larger trends and challenges with which the Oakland Unified School District (OUSD) has grappled. Like many other schools in OUSD, Fremont High School was underperforming, so in order to increase the caliber of education, the district started forming academies in the mid-1980s. In the late 1980s, the Architecture Academy, which would ultimately transform into CPAA, came into existence.⁷⁸ However, OUSD underwent subsequent changes that affected the status of these academies.

⁷⁸ Lauren Klaffky, interview by author, 11 March 2008.

One example includes the transformation of all OUSD high schools from a tenth through twelfth grade structure to a ninth through twelfth. In order to better integrate the ninth graders, Fremont established a first-year pod, however this alteration created instability and incongruity in instruction, and lead to further dissatisfaction at Fremont and throughout the district.⁷⁹

The low caliber of education at Fremont High and other OUSD schools lead to the conversion of the Architecture Academy into the CPAA. In 2000, Fremont High School received an API of 1 and four out of seven Oakland high schools received a 1 or 2.⁸⁰ At the same time, the Bill and Melinda Gates foundation began a campaign to fund the formation of smaller schools across the nation. Recognizing the potential benefits of such programs in OUSD, the Bill and Melinda Gates Foundation gave nearly \$16 million to the Bay Area Coalition of Essential Schools (BayCES) to start 10 small schools in Oakland.⁸¹ Fremont High School was one of the lower-performing schools selected to participate in this process. In 2003, the Fremont Campus transitioned into five autonomous small schools.

While the district and non-profits gave the financial and structural support for CPAA and the break-up of Fremont High School, community organizations also played a significant role in the successful implementation of the small schools model. Most notably, the youth organization Youth Together, active throughout the East Bay, worked to ensure a smooth and positive transition at Fremont. Youth Together's "Fremont Organizing Team" wrote and distributed a 25-question survey to over 1000 students that monitored attitudes toward the various institutions and resources at the school, the teachers, the extracurricular opportunities, and the roots of campus violence.⁸² Having a youth voice to guide and determine the future of the newly created CPAA contributed to the success of the school.

⁷⁹ Emilio Sanchez, interview by author, 11 March 2008.

⁸⁰ An API rank of 10 is the highest and 1 is the lowest.

⁸¹ Martha Groves, "Gates Foundation Giving \$37 Million to Small Schools," *Los Angeles Times*, November 16, 2000, Sec. A.3.

⁸² Youth Together, "Fremont High School," <http://www.youthtogether.net/student/fremont.php3>.

Today, any student in the OUSD may enroll at CPAA. Emilio Sanchez, assistant principal, explained that No Child Left behind allows for students in underperforming schools to opt out of the school in their neighborhood. Knowing that more schools in OUSD were underperforming than not, the district proactively addressed the situation. Thus, every student in the district has an opportunity to apply to CPAA. Sanchez explained that CPAA tends to draw in students from the surrounding area although students from other neighborhoods also attend the school.

CPAA serves as an ideal school to compare to Los Angeles and other urban areas for many reasons. First, CPAA serves a diverse student body, with high numbers of new immigrants. As of 2006-2007, the school's total enrollment was 365. The student body was 59.8% Latino, 18.8% Asian 17.1% African American, 2% Filipino, and 2.3% other.⁸³ Gender wise, the school population is well balanced and reflective of the district, with females making up 45.5% of the school and males 54.5%.⁸⁴ Also, Oakland public schools have experienced challenges similar to those of L.A. and their successes and failures gives Los Angeles ideas of potential venues for change. Nearly three-fourths of OUSD schools received an API rank of 1,2,3 while over half of LAUSD high schools received API rank 1, 2 or 3.⁸⁵ The statistics draw even more parallels when only analyzing the data for certain areas of LAUSD where 100% of schools in areas like such as South or East Los Angeles received a 1 or 2.⁸⁶

CPAA excels in offering rigorous classes and academics to students. The school provides a wide range of Advanced Placement (AP) courses, essential for postsecondary preparation. These APs cover various subjects, including English, Calculus, Chemistry, Spanish, United States History and American Government.⁸⁷ AP courses often fulfill a-g requirements and boost students' transcripts, thus heightening their possibilities of enrolling in a UC or CSU.

⁸³ California Department of Education, "2006," *DataQuest*.

⁸⁴ *Ibid.*

⁸⁵ *Ibid.*

⁸⁶ *Ibid.*

⁸⁷ Oakland Unified School District, "High School Descriptions," [http://webportal.ousd.k12.ca.us/docs/HS Options Descriptions.doc](http://webportal.ousd.k12.ca.us/docs/HS%20Options%20Descriptions.doc).

CPAA offers such a variety and quantity of AP and honors classes that students from other Fremont Federation schools even enroll in their advanced courses.⁸⁸

Not only limited to traditional high school classes, CPAA's career-technical courses also seek to challenge students with rigorous curricula. Students at the CPAA are able to take career-technical classes such as Architecture Design: Drafting 1 & 2, Construction Technology 1 & 2, Descriptive Geometry, and Graphic Design.⁸⁹ No less challenging than the APs, career technical education classes provide rigor grounded in a real-world focus.

This "real world" relevance acts as one of the defining characteristics of the school. Lauren Klaffky, intern principal, suggested that regional occupational programs (ROP) are thoroughly integrated into the fabric of the school, not separate from the academics. Klaffky described the mind frame of the school by saying, "we're here to build our futures, design what we want: here are the steps to get there." CPAA students actively employ their coursework to carry out school improvement projects. For example, using their skills in design, construction, math, and computers, the students designed and constructed a deck on campus.⁹⁰ They also built awnings and executed other small campus improvement projects. CPAA allows students to engage their career technical skills before graduation so they can begin understanding and deliberating potential outcomes and uses.

CPAA has a strong focus on students passing the California High School Exit Exam (CAHSEE). However, the CAHSEE only determines whether or not a student may graduate from high school. For this reason, CPAA focuses on other exams and resources that prepare students for college and postsecondary training. CPAA has 100% participation for students taking the PSAT and SAT I and II.⁹¹ More so, the school has "formed partnerships with college outreach programs such as Education Guide Center and Upward Bound."⁹² These affiliations are crucial since they do not require using the already limited

⁸⁸ Sanchez, interview.

⁸⁹ Oakland Unified School District, "Preparing for Your Future," <http://webportal.ousd.k12.ca.us/docs/8291.pdf>.

⁹⁰ Klaffky, interview.

⁹¹ Klaffky, interview.

⁹² Oakland Unified School District, "High School Descriptions."

resources of public schools and provide supplemental guidance and training for college entry.

Along with a generally focused and relevant education, CPAA is adept at providing an accessible and inclusive environment for ELLs. The four Fremont schools share the EL development program and certain schools house support staff and classes. CPAA provides the level C (highest) classes for language learners, while the lower A and B levels are offered at other schools at the Fremont Federation of High Schools. 139 ELLs, or 39% of the student body, attend CPAA. Of those students, only 4 students do not receive any EL services, a testament to the efficacy of EL support at CPAA.⁹³ Klaffky noted that the academy was popular amongst many EL students because of a higher focus on math instead of English. Klaffky also explained that many students benefit from career training at CPAA because of encountered difficulty enrolling in college due to immigration status.

Similarly, CPAA also caters to students with special needs. In 2006-7, CPAA served 22 students with specific learning disabilities.⁹⁴ CPAA has both full inclusion and partial inclusion of special needs students, depending on requirements of the student. Full inclusion entails a student spending his or her entire school day in a regular education classroom whereas partial inclusion means that a student may spend part of his or her day in both a special and regular education classroom. Another school at the Federation has a special needs support staff in order to better personalize and facilitate the education of students with physical and learning disabilities. In addition, some students from CPAA take special Math and English courses but still are partially included at the school.⁹⁵ Therefore, special needs students are able to fully engage in the career-technical aspect of CPAA while still receiving any additional support needed.

Recently, CPAA has seen rapidly changing demographics in their student population. CPAA is located in the Fruitvale neighborhood, once a majority

⁹³ California Department of Education, "2006-2007."

⁹⁴ Ibid.

⁹⁵ Klaffky, interview.

African American area. However the housing boom brought about an uprooting of both renters and homeowners who had occupied the area for decades. The decline in African American residents was followed by the growth of Asian and Latino communities in the area, a demographic change that is reflected in the enrollment of CPAA. For many urban areas, including Los Angeles, similar changes in demographics are occurring, and new career academies should consider how they will accommodate for changing populations.⁹⁶

Another set of challenges arises from having a federation of smaller schools on one campus. Sanchez expressed that the structure presents obstacles in establishing both a school and campus culture. Before the break up into small schools, healthy rivalries always existed between various Oakland high schools. For example, Castlemont and Fremont traditionally viewed each other as rivals, particularly in soccer. However, now rivalry exists between the small schools on one campus. Another challenge that comes with a federation of small high schools is managing what Sanchez describes as the “gray area.” After the break-up, the schools had to learn how to supervise and monitor common areas of the campus, like the gazebo and cafeteria. Having each area of campus accounted for ensures that students respect the camps as well as the administrators from each school.

CPAA also has to address aspects of campus culture remaining from the pre-small school era. While tracking does not exist within CPAA itself, Klaffky and Sanchez noted that there are labels given to certain schools based on their reputation before the break-up. During its time as an academy, Architecture was viewed as housing the “smart kids.” Today, CPAA still carries the reputation and continues to be the highest achieving of the Fremont Federation. Klaffky also noted that CPAA’s location on campus was on top of a hill and separated from the other schools, further differentiating the school from the rest of the federation. While this reputation may not be harmful to CPAA or its students, other stereotypes could potentially degrade an academy or continue a culture of tracking.

⁹⁶ Sanchez, interview.

Another problem with transitioning a school from academies to wall-to-wall small schools lies in what happens to students who attend the school at the time of change. Some students who attended Fremont High School felt they did not fit into the new small schools model. Therefore, Fremont was essentially a school in transition, with some students continuing to attend the “old” Fremont whereas others moved into the new small schools. Schools that plan to break up into small autonomous schools or even academies need to consider the outcomes for all students currently attending the school.

Another setback that CPAA hopes to address is its lack of established relationships with business and industry. At the time of this report, the school had no direct links to unions or the building trades industry. While the school encourages students to pursue summer internships, students do not receive credit for these experiences and there is no formal infrastructure for placing and monitoring students in their mentorships or internships. Klaffky noted that many teachers have personal relationships and connections to different firms or businesses and use these associations to enrich instruction. However, Klaffky recognized that community partnerships are incredibly important and that the school would be continuing to reflect on possible partnerships.⁹⁷

It is also important to consider the differences between BFSI, who has extensive business networks, and CPAA. BFSI, located in wealthy, downtown San Francisco, has greater proximity and access to firms, industries, and even city agencies. On the other hand, CPAA is located in a community with less resources and wealth. Even businesses that exist in the area may be earning lower profits than those in downtown San Francisco and may not have the same ability to take in students. Policy makers, school officials, and other groups hoping to establish career academies should consider how business partnerships can be established if the surrounding community is not able to provide these links.

CPAA has encountered great successes in the avoidance of tracking. Klaffky noted that in a small school, everyone is on the *same* track. Tracking

⁹⁷ Klaffky, interview.

becomes virtually impossible within CPAA, since everyone follows the same path of studies. All students are required to take Architecture Design and Construction. There are advanced courses, like APs, that not all students need to take. However, the general course of studies generally remains universal. Another way that CPAA avoids tracking is by its open admission policy. By having a district-wide application process, students place themselves in the school rather than *being* placed there for any number of reasons. The numbers of graduating seniors planning to enroll in four-year college (25%) or junior college (60%) also demonstrate the schools' ability to avoid tracking.⁹⁸ With 85% of students continuing their educations instead of directly entering the workforce, CPAA defies the stereotypes of building trades as non-college careers and proves the efficiency of multiple pathways.

Another way of measuring the qualitative success of the CPAA is analyzing the data from the Use Your Voice survey conducted by OUSD. Initiated in 2006, Use Your Voice serves as a "public, formal vehicle for all school stakeholders to speak their voices about what is working and what needs to change to improve our schools and district."⁹⁹ Administered in both English and Spanish, the survey results provide essential information about both student and teacher opinion at CPAA. CPAA saw 62% student participation (or 211 respondents) and 45% teacher participation (or 15 teachers).¹⁰⁰ Certain questions show definite alignment between student and teacher opinion. 87% of students report that their teachers often talk to them about college while 93% of teachers thought that teachers often talked to students about college.¹⁰¹ This question shows that college preparation is not only engrained into the fabric of the school but that students actually absorb or are aware of it. Furthermore, 87% of students felt that their teachers believe they can be successful in school, another indication of (p.13–Similarly, 93% of students reported that their teachers expected them to do their best in school,

⁹⁸ "College Prep and Architecture Academy at Fremont High," *eSchoolProfile.com*, <http://eschoolprofile.com>.

⁹⁹ OUSD, "Use Your Voice Survey: Examining Our Survey Data for 2006-7,"

http://student.ousd.k12.ca.us/Use_Your_Voice_Survey/index.html.

¹⁰⁰ *Ibid.*, 2

¹⁰¹ *Ibid.*, 26

highlighting a culture of academic rigor and achievement.¹⁰²

In studying career academies, CPAA illustrates many challenges of administering career-tech education within the cadre of urban school districts. CPAA's transition from an academy within a large, underperforming school to a small, rigorous academy serves as an important model for other inner-city schools. The school's unique focus on relevant, real-world projects rooted in the community allows students combine their learning with neighborhood engagement. More than other schools profiled in this report, CPAA also efficiently includes special needs students and English language learners and profits from the shared resources of other small schools on the same campus. Equally important to note, CPAA's lack of business and labor connections exemplifies an area in which effective state policies may play an important role, as the school could benefit from government assistance in forming important links to community partners. All in all, the non-profit funding support, coupled with community voices and district cooperation, have ultimately lead to a successful building trades academy.

FAST FACTS ABOUT THE COLLEGE PREPARATORY AND ARCHITECTURE ACADEMY
<ul style="list-style-type: none"> ● 45.5% FEMALE, 54.5% MALE ● 59.8% LATINO, 18.8% ASIAN, 17.1% AFRICAN AMERICAN, 2% FILIPINO, AND 2.3% OTHER ● 39% ELL ● BECAME AUTONOMOUS SMALL SCHOOL IN 2003 ● PART OF FREMONT FEDERATION OF HIGH SCHOOLS ● STUDENTS PARTICIPATE IN CAMPUS IMPROVEMENT PROJECTS, LIKE BUILDING DECK AND AWNINGS

Build San

Francisco Institute

A second program that incorporates building trades with academics is the Build San Francisco Institute (BFSI), located in the heart of downtown San Francisco. Operated by the Architectural Foundation of San Francisco as a

¹⁰² Ibid., 16.

half-day program open to any students in the San Francisco Unified School District (SFUSD), the BSFI offers high-tech and career training in the design and building trades. Although most other career-technology academies function as small learning communities within high schools, BSFI offers a unique approach at providing multiple pathways education by its status as an off-campus school program.



Classroom at BSFI (Source: Author, 12 March 2008.)

In the early 1990s, the Architectural Foundation of San Francisco (AFSF), created a summer program where students were placed in internships at various architectural firms in the city. However, in its first year, the program did not offer a fulfilling experience for all parties involved. Most of the problems resulted because the youth did not possess adequate skills to contribute meaningfully to the firms and the architects did not know how to incorporate the students into the workplace.¹⁰³ To address these obstacles, an academic component was added to the program the following year so that students could begin integrating their knowledge into the internship. Furthermore, the students collaborated with only one firm and consequently contributed to “one project currently in progress and to the whole design and construction team,”¹⁰⁴ creating a more directed and unified experience.

¹⁰³ Will Fowler, interview by author, 12 March 2008.

¹⁰⁴ Heather Livingston, “San Francisco Architectural Foundation Makes Big Waves From Small Steps,” *American Institute of Architects*, http://www.aia.org/aiarchitect/thisweek07/0601/0601d_sf.cfm.

For seven years, AFSF continued to run the summer program in collaboration with various architecture, engineering, and construction firms. In 1999, however, the school-to-career department of SFUSD proposed that the program collaborate with the school district and expand into an after-school program throughout the academic year.¹⁰⁵ AFSF accepted the offer and ran an after-school program for several years. Then in 2002, SFUSD approached AFSF about turning the after-school program into a half-day program. This transformation was part of SFUSD's Secondary School Redesign Initiative (SSRI) that sought to increase personalization, academic rigor, opportunities to apply learning, and access to powerful teaching.¹⁰⁶ Finally, after a year of planning, BFSI opened as a half-day school program in 2004.

BFSI receives funding from local, state, and national levels, and from both the public and private sector. The program has become the primary focus of AFSF and takes up almost half of the foundation's budget. AFSF's sixteen board members make contributions and carry out an annual year-end campaign to raise funds. Furthermore, the foundation has four fundraising events per year, some of which the students help to organize. For example, students recently worked on designing an indoor putt-putt golf course that will be built and used for to raise funds. Additionally, SFUSD pays for a full time teacher and provides books and tech support. The executive director, Alan Sandler, also applies for grants from various corporations like IBM, AutoDesk, and Adobe, as well as various foundations such as the William and Flora Hewlett Foundation, the Irvine Foundation, and the San Francisco Foundation.

While BFSI has evolved over the years to better meet the needs of its constituents, the basic model of the program remains constant. The program serves about 25 – 30 students a year who come from approximately eight different public high schools throughout the city. Some students are referred to the program by their counselors and others find out about the program at school-based recruitment sessions. Those students participating in BFSI still

¹⁰⁵ Fowler, interview.

¹⁰⁶San Francisco Unified School District, "Overview: Secondary School Redesign Initiative," <http://portal.sfusd.edu/template/?page=initiatives.ssri>

enroll as full time students at their regular high schools but arrange their schedules to take classes at the BFSI in the morning or afternoon. BFSI has no prerequisites to enter the program. Instead, students need only to write a page-long essay for admission, and even this requirement can be waived depending on students' needs or English language abilities.

BFSI has both a morning and an afternoon session, which serve different purposes. BFSI originally began as an afternoon program for juniors and seniors who take classes at the center three afternoons a week. Then, for two afternoons the students have a mentorship at architecture, construction, interior design, or engineering firm, or a public agency.¹⁰⁷ In this way, the students have a real world application of the materials they learn at their high school and at BFSI. More so, students are assigned design projects that require the application of mathematics, writing, speech and other subjects taught at their home schools. Consequently, BFSI builds upon students' prior knowledge and demonstrates how high school material can be functional in a work context.

In 2006, the school added a morning session for ninth and tenth graders at-risk of failing the California High School Exit Exam (CAHSEE) or who felt generally disengaged from their educational experience. These students do not participate in mentorships but still earn credits that count for UC/CSU requirements. Alan Sandler, executive director of the AFSF remarks that the morning program helps students "use the design process as a methodology to be connected with their community, to start to make sense of what their education is about and help them to remediate some skills so that they can be more proficient in whatever they choose to do."¹⁰⁸ In this way, students can become more engaged in their educational experience and begin to consider their postsecondary future well in advance.

With early preparation, BSFI hopes to heighten students' awareness of potential academic and career opportunities. Will Fowler, program director,

¹⁰⁷ ConnectEd: The California Center for College and Career, "Model Programs: Build San Francisco Institute," <http://www.connectedcalifornia.org/story/sanfran.php>.

¹⁰⁸ Livingston, "San Francisco Architectural Foundation."

explains that, “BFSF is not an ‘elite’ school... the focus of the program is not to create “young architects.”¹⁰⁹ Instead, the teachers and directors push the students to consider a broader range of options. For example, if a student is interested in construction, the teacher will instruct him or her on a variety of aspects of the trade, like construction management, HVAC (heating, ventilation, and air conditioning) and other aspects of the trade.¹¹⁰

In addition to preparing youth for postsecondary success, the program also aims to familiarize youth with the processes of their own city. By introducing aspects of city planning, real estate, and development, students can link their schoolwork to pertinent issues in their communities, such as gentrification, displacement, and soaring rents. If students begin to understand who is making decisions and why certain projects are undertaken, they may develop a larger sense of empowerment in shaping their city. In this sense, the program links design and construction with urban sociology and further connects students’ learning with their own lives.¹¹¹ On the same note, since students get to know and work with their counterparts from all over the city, “they learn the commonalities among themselves, and the meaning of community.”¹¹²

BFSI is strongly committed to students from socially and economically disadvantaged backgrounds. On a basic level, the program prioritizes lower income students by only accepting students from public schools. Moreover, in order to not punish students for the quality of education at their home schools, BFSI does not have pre-requisites or requirements for entrance. Once students are a part of BFSI, the staff and teachers recognize the difficulties in their students’ lives and work to adjust instruction according to individual needs. Fowler expressed that they, “get some kids with challenges but the program is there to help them grow...the program takes in a wide range of students and

¹⁰⁹ Fowler interview.

¹¹⁰ Ibid.

¹¹¹ Susie Hosking and Vishakha Parvate, “Build?SF: A Critical Thinking, Experiential Curriculum for Urban Sociology,” ldt.stanford.edu/~shosking/portfolio/ED208BCurriculum.pdf.

¹¹² Romana Mullahey, “The Build San Francisco Institute,” *American Planning Association*, <http://www.planning.org/resourceszine/articleview.htm?ArticleID=9072>

meets them where they are.”¹¹³ This is also seen in the program’s acceptance of English language learners, who make up a large portion of the students. While the program does not have an EL support staff for students, Fowler explained BFSF often waives the admissions essay for students with limited English proficiency.

BFSI also serves as a productive learning environment for students with special needs. The program consistently accommodates students with varying degrees of special physical and learning needs. The program often takes on students who have Individualized Education Programs (IEPs) that specialize their course of instruction. Fowler noted that IEPs often indicate that a “student needs more time” or “student needs to work alone.” Since the BFSF already individualizes instruction and emphasizes independent work, Fowler remarked that the program easily meets requirements of IEPs and students with special needs. Similar to the programs approaches with ELLs, special needs students benefit from the program’s small size and personalized curriculum.

The BSFI faces many challenges, especially in uniformity of instruction and scheduling. Since pupils come from a variety of schools and have very different educational backgrounds, staff needs to work with a multiplicity of levels. The program has addressed this challenge in starting the morning program for ninth and tenth graders. In this way, students can begin learning the same content and be better prepared for mentorships and complex design projects in their junior and senior years. Similarly, scheduling issues prevent students from attending BFSI. Many students cannot attend the morning or afternoon sessions because required classes are being offered during those times. Moreover, since the program takes up a large portion of the school day, students often cannot participate in other electives at their home school.

The BFSI program also faces challenges in its relationship with the school district. While SFUSD has always supported the program, BFSI is affected by the changing nature of city educational politics. Since there is always school

¹¹³ Fowler, interview.

district turnover, the program is often at the whims of those in elected and appointed positions. Fowler explained that BFSI enters re-negotiations with the school district every year and sometimes the district's vision for the program does not match that of AFSF.¹¹⁴

BFSI's success may come from its ability to simultaneously meet the needs of students while developing skills relevant to the job market in San Francisco. Fowler explained that San Francisco is "a world class center for design" where every job related to design and building has high career availability.¹¹⁵ Despite the cyclical nature of construction, a solid foundation of firms and businesses exist in the city, indicating a wide range of permanent careers in building trades. Therefore students obtain skills that match the economic situation of the city.

One quality of BFSI that may contribute to its success is that it does not resemble a high school. The program is located on the second floor of an office building in downtown. Fowler hypothesizes that since the program is not a school and does not look like one, students do not behave like they would at their home school.¹¹⁶ Instead the BFSI has the appearance of an office, with sections for drafting tables, computers, and a meeting room for group discussions. The program rarely encounters disciplinary problems because the students conduct themselves as if they were in a professional setting instead of a classroom.

Fowler indicated that the BFSI measures its success through many qualitative means. For one, students' attendance is an indicator of how well the student is engaging in the program or not. The students' mentors are also required to do evaluations of the students so that the program has an idea of the students' performance in the workplace. Furthermore, the program also receives information from the students' home schools noting that students are motivated and focused after their time in the program. Additionally, students' outcomes after graduation serve as an indicator of the program's success.

¹¹⁴ Fowler, interview.

¹¹⁵ Ibid.

¹¹⁶ Ibid.

Fowler noted that most students go on to community college, some enroll in architecture school, and some even go on to take paid internships at the firms where they had their mentorships.¹¹⁷

BFSI differs from the definition of “career academy” in the sense that it is not located on a larger campus. However, like other career academies, it accepts students from all over the district through an application process. And while the program cannot completely align itself with all the material covered at students’ home schools, BFSI adeptly integrates academic subjects with career-technical education and mentorships. Thus the program accomplishes career-technical goals of preparing students for a variety of postsecondary outcomes. With the right industry connections and planning, the BFSI model could easily replicated in other settings because of its innovative, community-based philosophy and flexible approach to student needs.

FAST FACTS ABOUT THE BUILD SAN FRANCISCO INSTITUTE
<ul style="list-style-type: none"> • 60% FEMALE, 40% MALE • BECAME SCHOOL PROGRAM IN 2004 • A PARTNERSHIP BETWEEN THE ARCHITECTURAL FOUNDATION OF SAN FRANCISCO AND SFUSD • PLACES STUDENTS IN MENTORSHIPS WITH MAJOR SAN FRANCISCO ARCHITECTURE, ENGINEERING, CONSTRUCTION OR INTERIOR DESIGN FIRMS OR CIVIC AGENCIES

Stanley

E.

Foster Construction Tech Academy

Located in San Diego, The Stanley E. Foster Construction Technology Academy (SFCTA), a small autonomous school, allows students to explore careers in construction, architecture, and engineering while simultaneously preparing students for entry into college, apprenticeships, and careers. Established by a collaboration of labor groups, non-profits, community

¹¹⁷ Ibid.

members, and school district officials, the SFCTA has used various approaches and resources to create a high-performance learning environment.

The SFCTA has its origins in the building trades itself. In the late 1990s, various employers and firms throughout the construction industry of San Diego struggled to find trained and skilled employees. For this reason, the Association of General Contractors (AGC) and the Union Carpenters Apprenticeship Coordinators approached the San Diego Unified School District in March of 1998 and proposed the formation of a new charter school focused on building trades and related industries. The labor and industry groups found that the San Diego Unified School District (SDUSD) was interested and willing to cooperate.¹¹⁸

To further explore the possibilities of a building trades themed school, an Advisory Committee was formed that drew in members from different constituencies and key players. The committee had representatives from diverse interest groups: the Teachers Union, community colleges and universities, AGC, School Board Trustees, SDUSD, Building Industry Association and other local developers and contractors. This group fully developed the school focus on architecture, construction, and engineering. The committee also weighed the different options for potential models of the new school. In the end, the Advisory Committee selected Kearny Mesa High School as the future home of the program. They based their decision on the fact that Kearny High already had a traditional vocational school with some equipment, workspace, and programming. Additionally, Kearny High was in a central location and easily accessible by bus from anywhere in San Diego. In addition to choosing a location, the Advisory Committee also defined the vision of the future Construction Technology Academy as to: “provide students an opportunity to explore construction related careers through contextual, hands-on and rigorous curriculum that prepares students for direct entry into college, apprenticeship programs, a job or a career.” Establishing a vision statement before embarking on fundraising and planning is essential to the success of an

¹¹⁸ Glen Hillegas, interview by author, 11 December 2007.

academy. It gives direction to the planning process and lets funders and outside parties have a basic understanding of the school's objectives. Other groups who will be planning or developing similar academies might consider making a vision or mission statement.¹¹⁹

On April 9, 2002, the Construction Tech Academy at Kearny High was approved by the SDUSD. In order to prepare the school for a new academy, a local contractor worked to expedite the revitalization and remodeling of one wing at Kearny High. To further help the process, the building trades industries helped to garner over \$1 million in cash and in-kind donations. The Foster Family Foundation donated \$500,000 in memory of the Stanley E. Foster who the academy would later be named after. The industry money was used during the first two years to provide director and administrative aide salaries, class size reduction, materials for interdisciplinary projects, field trips. The money also helped to fund an Employer Outreach Specialist (EOS) to bring in speakers, plan excursions, and coordinate mentorships.¹²⁰

In its first two years, the Construction Tech Academy operated as a magnet program at Kearny High. All eighth graders from any San Diego City School neighborhood could apply. The academy started with 120 ninth graders, six teachers, and a director. In its second year, the academy brought in a new class of ninth graders, doubling its size. The magnet program also ensured free bus transport to and from school. The program recruited students by making presentations at various middle schools across the city, in front of both parents and students.¹²¹

In 2004, SDUSD began to undergo changes that would influence the structure of the Construction Tech Academy. The Bill and Melinda Gates foundation challenged SDUSD superintendent Alan Bersin to open several small high schools throughout the city. With the help of Gates and a \$4.1 million grant from the U.S. Department of Education, SDUSD began the

¹¹⁹ Ibid.

¹²⁰ Ibid.

¹²¹ Ibid.

creation of smaller learning communities at various high schools.¹²² At this time, the Construction Tech Academy became an autonomous school instead of a magnet program.

The SFCTA relies on the support of union and building trade industries to guide the success and financial stability of the school. For one, members of the Advisory Committee regularly visit the school and even co-teach classes. Advisory Members, most of whom are industry professionals, also help to create relevant and integrated curriculum. The members meet regularly and often contribute resources and funds, averaging to about \$100,000 per year. These Advisory Members also use their industry connections to help place students in mentorships and internships. Another guiding force is the Board of Directors, half of which is union and the other half which is non-union. The Board consists of representatives from AGC San Diego, SD Union Carpenters, SD Building and Construction Trades Council, SD Sheetmetal Workers, Douglas Barnhard Construction Inc, and SD/Imperial County Labor Council. The Board receives and acts upon recommendations from the staff and advisory committee and controls funds raised by industry.¹²³

The Stanley E. Foster Construction Tech Academy serves as an extremely useful case study for any group hoping to start a construction-themed career academy. For one, it shows the immense steps that can be taken with the financial and organizational support of industries. Furthermore, it shows the positive outcomes of district partnerships between the industrial and non-profit sectors. In 1999, the API of Kearny High was a 3, but in 2003, after one year of the academy, the school API was raised to a 4. Furthermore by 2006, the API of SFCTA rose to a 5. The construction academy has caused tangible improvements to the quality of education at Kearny. Even more impressive is the fact that these betterments primarily affect low-income students of color. In 2006-7, SFCTA's 469 students came from diverse backgrounds with 51.2%

¹²² San Diego City Schools, "San Diego City Schools Receives \$4.1 Million Grants," <http://www.sandi.net/hsrenewal/index.html>.

¹²³ Hillegas, interview.

Latino, 16% African American, 19.4% White, 8.8% Asian, and 1% Filipino.¹²⁴ Of the 323 students included in the 2007 Growth API, 223 were considered socioeconomically disadvantaged.¹²⁵ These figures are reflective of other urban school districts throughout the state.

In order to create effective multiple pathways education, SFCTA employs a 4x4 block schedule instead of the traditional schedule. In a traditional schedule, students take 6 credits per semester and have the same classes throughout the entire academic year. However, a 4x4 block schedule allows students to take more electives or participate in off-campus internships. This type of schedule also entails taking 8 credits per semester. For example, in the fall a student might take English, math, physical education, and construction. In the spring instead of continuing these courses, the student could choose to take Spanish, physics, computer science, and pre-engineering (See Appendix 1). Glen Hillegas, principal of SFCTA noted that there were definite pros and cons to the 4x4 model. The schedule benefits students and allows for them to better integrate career-technical studies into their school day.¹²⁶ However, this schedule can cause difficulties for teachers. While the teachers have more class-time per day, they still must fit an entire year's curriculum into a semester. More so, when students only take a subject every other semester, there is more potential for students to forget concepts and previously learned materials. This results in teachers having to spend more time refreshing students' memories of previous semesters' lessons.¹²⁷

Academically, SFCTA excels in preparing every student for college or postsecondary training. While the school has no Advanced Placement courses, students receive all the mandated academic coursework for entrance to UCs or CSUs. In addition to the scholastic load, 52.6% of graduating seniors took the SAT in 2006-2007.¹²⁸ The classes of 2006 and 2007 had 100% of students passing the CAHSEE. However, beyond passing tests, class sizes average 28

¹²⁴ California Department of Education, "2006-2007," *DataQuest*.

¹²⁵ *Ibid*.

¹²⁶ Hillegas, interview.

¹²⁷ *Ibid*.

¹²⁸ California Department of Education, "2006-2007," *DataQuest*.

students, so students benefit from close relationships with their teachers and classmates. Students also take advantage of advisory periods with staff to guide their learning experience.¹²⁹

One obstacle that SFCTA has encountered is serving the ELL student population. During 2006-2007, 69 limited-English-proficient students (or 16% of the school population) attended SFCTA.¹³⁰ However, SFCTA does not employ an EL support or development staff, thus teachers take on the responsibility of sheltering language learners. Fifteen out of twenty-three instructors use specially designed instruction in English (SDAIE) in their classrooms.¹³¹ SDAIE entails instruction in English for English learners in a way that enhances students' comprehension of both English and the subject matter (history, math, etc). However, Hillegas noted that the lack of an EL support was the schools "biggest challenge."¹³²

On the other hand, SFCTA has established an effective system for students with special needs. The school currently has 59 special needs students enrolled.¹³³ To serve these students, the school employs one resource specialist and assistant who are scheduled into the classes and use a co-teaching model to accommodate special needs students.¹³⁴ This model qualifies as full inclusion, where special needs students are completely integrated into the school day. However, SFCTA also provides partial inclusion of students with severe disabilities. These individuals take independent living skills classes in addition to their normal academic work.

SFCTA has also recognized the importance of parent and family involvement for student success. Every two weeks, teachers collate assignments, materials, and other important information about each student and send a packet home to parents. The parents then review the packet, sign a form, and send the papers back to the teacher via the student. This method

¹²⁹ Hillegas, interview.

¹³⁰ Cal dept of ed

¹³¹ California Department of Education, "2006-2007," *DataQuest*.

¹³² Hillegas, interview

¹³³ California Department of Education, "2006-2007," *DataQuest*.

¹³⁴ Hillegas, interview.

improves student performance and grades by ensuring parental awareness. Parents know exactly what subjects the students are learning and will also be aware of any disciplinary or academic interests as they happen, instead of when report cards are issued. This form of “collaborative partnership...between home and school” is essential to literacy and learning for all children and especially for language learners.¹³⁵

Another integral aspect of the SFCTA culture includes relevance in instruction. The ACE Mentoring program provides one example of an outlet for real-world application of school subjects. Every week, fifteen or more architects, engineers, and construction managers collaborate with 27 students to deepen their project-based learning. The students execute real design projects with the guidance and feedback of industry and trade professionals. The program was so successful that SFCTA students won a contest to become the official architects for the new San Diego Airport. The school also works to guarantee students quality experience in the field. The school has partnered with AGC to provide 12 paid internships during the summer. The interns are paid \$12 per hour and also receive free transport.¹³⁶

In addition to providing relevant instruction in high school, SFCTA has created important links between high school and postsecondary training. Around the same time that SFCTA began operating, San Diego State University launched the J.R. Filanc Construction, Engineering, and Management Program. Today, any SFCTA graduate desiring to attend the program is eligible for a full tuition scholarship from AGC. This relationship between four-year college and the CTA reinforces that building trades can be a college-bound career and demonstrates the multiplicity of pathways available to students.¹³⁷

The relationship between SFCTA and SDSU also exemplifies the schools larger efforts to avoid tracking. Hillegas recognized that construction has traditionally been a vocational path that was considered a lower track.

¹³⁵ Barbara Come and Anthony D. Fredericks, “Family Literacy and Urban Schools: Meeting the Needs of At-Risk Children,” *Reading Teacher* 48, no. 7 (1995): 566.

¹³⁶ Hillegas, interview.

¹³⁷ Hillegas, interview.

However, SFCTA has worked to establish a culture of college preparation instead of an alternative place for learning. Furthermore, the structure of the school itself makes tracking impossible. Hillegas explained that there is no separation made between who is advanced and who is not. Rather, students of all levels work together and follow similar paths of instruction.¹³⁸

Additionally, the larger Kearny Educational Complex has avoided tracking. Hillegas explained that when the small schools first opened, “there was a fear that one would be the ‘smart’ track but that culture hasn’t developed.” Instead, there is a healthy conscious competition between schools. Additionally, the different schools at the complex are not racially segregated. Hillegas noted that “one school may have 5% more Latinos or 5% more African-Americans than the other, but they are pretty much all in the same ball park.” This shows an efficacy in catering to various populations and general inclusiveness. However, it should be noted that SFCTA’s student population is gender-disproportionate (22.6 % female and 77.4% male).¹³⁹ In contrast, the other three schools at Kearny High Educational Complex have equal gender balance or slightly more females. Schools should consider how to attract women into construction and building trades

The variety of students’ postsecondary outcomes clearly demonstrates the absence of tracking at SFCTA. In the class of 2007, 100% of CTA graduates have gone on to pursue postsecondary training. 27% of students attend a four-year university, 21% are in apprenticeships, 48% in community colleges (84% of them plan to transfer after 2 years) and 4% enrolled in the military. In addition, 30% of students are pursuing construction-related careers (21% Apprenticeship, 9% Construction Management), 18% training for engineering careers, 17% for architecture, 4% military, and 31% other. These outcomes are a testament to the broad pathways that the school provides.

One of SFCTA’s biggest setbacks has been finding sustainable funding sources. Hillegas ranked financial stability among the top things at value in the

¹³⁸ Hillegas, interview.

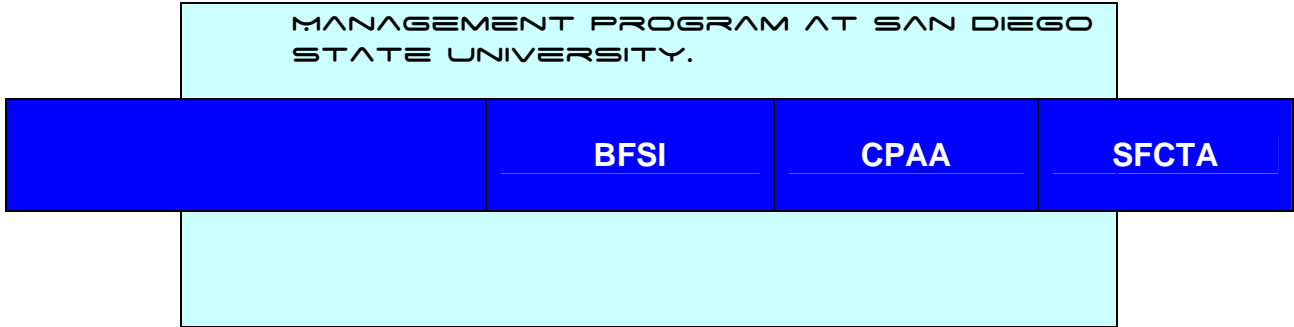
¹³⁹ California Department of Education, “2006-2007,” *DataQuest*.

success of a school, since higher attendance, graduation rates, and general academic success are impingent on funding. Unfortunately, the school has undergone severe budget cuts in recent years. In 2006-7, the school suffered an 18.5% budget cut from the district and will lose an additional 15% this year. More so, some funders have lowered the amount of grant money. For instance, AGC has lowered their funding from \$60,000 to \$25,000 in recent years. Hillegas explained that these financial constraints would force the school to make a lot of cuts and that the school would ultimately suffer as a result of the weakened economy.¹⁴⁰ This demonstrates the general vulnerability of schools, and especially small career-technical schools, at the hands of larger state and national economic downsizing.

SFCTA's setbacks and accomplishments serve as an excellent model for any group hoping to start a similar construction technology academy. Most notably, SFCTA demonstrates the power of labor and community partnerships in establishing a successful career technical program. These links to the real-world enforce the schools focus on creating well-rounded students prepared for postsecondary success. Furthermore, the school exemplifies the beneficial relationships that can exist between career academies and the industries themselves. The students learn and grow from the expertise of professionals. At the same time, these businesses and trades profit from a young, highly skilled workforce that is ready and prepared for jobs. Especially with a current budget crisis at state and local levels, SFCTA demonstrates the potential for private-public collaboration for success in high schools.

- 51.2% LATINO, 16% AFRICAN AMERICAN, 15.4% WHITE, 8.8% ASIAN, AND 1% FILIPINO
- 22.6 % FEMALE AND 77.4% MALE
- 16% ELL
- STUDENTS PARTICIPATE IN DESIGN PROJECTS WITH COMMUNITY MENTORS
- STUDENTS ARE ELIGIBLE FOR A FULL SCHOLARSHIP TO THE J.R. FILANC CONSTRUCTION, ENGINEERING, AND

¹⁴⁰ Hillegas, interview.



Similarities and Differences between BFSI, CPAA and SFCTA

Partnership with local firms and Businesses	X		X
Support/aid for students with special needs		X	X
Support for ELLS		X	
Offers A-G courses	X	X	X
Outreach to disadvantaged/minority students	X	X	X
Open to students throughout the district	X	X	X
California Partnership Academy		X	X
Public and Private Funding	X	X	X

What Next?

What conclusions can be made about the history and reforms of vocational education in relation to the building trade academies currently in place? For one, analyzing these programs allows educators and policy makers to understand how career training has actually evolved within school systems. Observing existing programs also demonstrates that multiple pathways education is more than rhetoric; it is a relevant and realistic way to design schools and curricula. The above schools also demonstrate the various levels that programs must work on in order to operate. For example, all three schools secured funding from the private sector while simultaneously working within the constraints of the school district and meeting the needs of the surrounding community. More so, all case studies depict career academies as inclusive environments that serve women, minorities, ELLs, and special needs students. California schools cater to a diverse student body and career-technical education plays an important role in meeting the needs of these various groups of students.

This study also outlines the best practices that can be replicated and the weak areas that may be remedied through statewide and local policy. Since many of the issues draw upon universal qualities of career academies, policy makers and educators can also apply these suggestions to programs outside of the building trades. While this paper focuses on construction-related industries, career-technical education in all domains is crucial to the transformation of California schools into more inclusive, efficient, and just

institutions. Policies must be adopted which will transform multiple pathways education from an exception to the norm and ensure that academies continue to develop and benefit the specific populations highlighted in this paper.

California state policies should:

1. Assist schools in developing rigorous integrated curricula that prepare pathways students for postsecondary success. Pathways education is most successful when “academic courses incorporate real-world problems and, likewise, technical courses help students see how academic content is applied in authentic, industry related situations.”¹⁴¹ Policy should make better-aligned standards and framework for career technical classes.
2. Provide incentives for secondary schools to forge partnerships with postsecondary education, business, industry, and the community.¹⁴² As evidenced in the three case studies, programs reach their highest levels of success when they pair with business and industry members. In order to promote higher participation, from these groups policy should encourage business and industries to lend their employees to construction programs as mentors or advisors.
3. Provide guidance and support for schools wishing to transition from a traditional schedule to one more conducive of career-technical education. As indicated in the case of Stanley E. Foster Construction Tech Academy, scheduling plays an important role in the structure of building trades academies and schools may need assistance in transitioning to newer models.
4. Develop a better way of recording and assessing the outcomes of career academy graduates. SFCTA, who kept detailed records of its students’ post-secondary paths, had more compelling proof of the schools success than BFSI

¹⁴¹ Gary Hoachlander, Roman J. Stearns, and Carol Studier, “Expanding Pathways: Transforming High School Education in California,” (Berkeley: ConnectEd, 2008), 20.

¹⁴² Roman Stearns, interview by author, 12 March 2008.

and CPPA who lacked these specifics. Detailed data describing the numbers of students who went on, not only to college, but to further training in the career pathway of their academy, will aid the state in understanding the successes the CTE system.

In addition to state policies, local efforts can be made to assure the best implementation of career academies. The structure, leadership, planning, and organization of an academy can greatly influence its success. Furthermore, planning committees have the potential to make valuable connections to unions, business, and non-profits, all sectors who may provide monetary or other forms of support. Schools or groups hoping to implement a career academy should:

1. Create broad pathways that will limit the possibility of tracking students and create a multiplicity of postsecondary opportunities for students. (I.e. instead of just construction, the academy should combine construction, architecture, engineering and/or other industries). All three programs described in this report allowed the students a great deal of freedom in exploring career opportunities and future courses of study. If a program focuses too narrowly on one field, it may discourage student participation or stigmatize the academy.
2. Establish business and community partnerships prior to the opening of school to ensure fulfilling internships/mentorships and real world forums of learning. BFSI and SFCTA demonstrated that when business partners invest in the program from the beginning, they are able to contribute important resources and connections and thoroughly engrain them into the fabric and culture of the program. Furthermore, these connections to labor and business will help students to find quality jobs in the career pathway during and after high school.

3. Promote coordination amongst teachers, staff, and faculty so that career technical coursework and academic coursework are integrated and connections are made between the two. In this manner, all classes uphold both academic achievement and postsecondary success. SFCTA's common planning period for teachers provides the ideal example of executing this strategy. This coordination helps to eliminate tracking and equalizing courses of study.

4. Employ EL support and special needs staff to guarantee successful incorporation of populations into school. While career-tech education inherently includes language learners and students with special needs, having support staff ensure that the curriculum will be correctly modified and most effective. A support staff also ensures that the program will be able to accommodate students with varying degrees of language development and learning needs.

5. Provide small class sizes and learning environments to maximize personalization of education. In the face of budget constraints, small learning environments often can substitute for other personnel or staff that is missing (college/career counselor, etc), as in the case of BFSI and SFCTA. Furthermore, small class sizes are essential to creating effective and inclusive learning environments.

6. Engage community members and students before, during, and after the implementation of the school. Community feedback is essential in the transformation of a school, especially if people are currently dissatisfied with how the school is being operated. The contributions of the Oakland organization Youth Together demonstrate this important connection. Furthermore, community members' engagement in the planning process will garner local support to implement the program and see its success.

7. Secure stable sources of funding that will provide long-term support.

Considering the current budget climate in the state, communities and schools will need to seek financial assistance from labor, business, and non-profit sectors. While, as demonstrated by SFCTA, these sources are vulnerable to the fluctuating economy, they will supplement any budget cuts coming from the district and state. This monetary support will also encourage members from the donating groups to invest time and resources to ensure the success of the program. BFSI also provides an interesting example of funding. Since BFSI is run primarily by a non-profit, it can benefit from fundraisers, extensive grant writing, and generous contributions from board members and members. The partnership of academy, non-profit, and school district might ensure stable funding.

Appendices

Appendix 1. Example of 4x4 Block Schedule for 11th Grade

Grade 11			
Traditional Schedule		4x4 Schedule	
<p><i>Fall:</i></p> <ul style="list-style-type: none"> - English - Math - Art - Biology - Spanish - U.S. History 	<p><i>Spring:</i></p> <ul style="list-style-type: none"> - English - Math - Art - Biology - Spanish - U.S. History 	<p><i>Fall:</i></p> <ul style="list-style-type: none"> - English History - Math - Art - Elective* 	<p><i>Spring:</i></p> <ul style="list-style-type: none"> - U.S. - Biology - Spanish - Elective* <p><i>Examples of electives include:</i></p> <ul style="list-style-type: none"> * ROP CAD * ROP Principles of Engineering * ROP Engineering Design and Development * Construction 5, 6 * Community College (advanced students)

(Source: Glen Hillegas)

Appendix 2. Photos of CPAA Campus



(Source: Author, 11 March 2008)



(Source: Author, 11 March 2008)

Appendix 3. Resource Guide for Career Academies in the Building Trades

Career Academy Support Network (CASN)

<http://casn.berkeley.edu/>

Housed in the Graduate School of Education at the University of California, Berkeley, CASN works to facilitate the development and improvement of small learning communities and career academies throughout the nation.

Contact information:

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ConnectEd: The California Center for College and Career

<http://www.connectedcalifornia.org>

Created by the James Irving Foundation, ConnectEd supports the development of career academies and innovative curricula that will prepare all California high school students for positive postsecondary outcomes. ConnectEd conducts research and advocates for policy to expand the number of pathways available to students.

Contact information:

ConnectEd: The California Center for College and Career
2150 Shattuck, Suite 1200
Berkeley, CA 94704
510. 849. 4945

Info@ConnectEdCalifornia.org

Association for Career and Technical Education (ACTE)

<http://www.acteonline.org/>

ACTE is the largest national organization that promotes the advancement of educational programs that prepare youth for career success. With over 28,000 members, ACTE increased public awareness of career-technical education and advocated for legislative support and recognition.

Contact information:

ACTE Headquarters
1410 King Street, Alexandria, VA 22314

General Questions: acte@acteonline.org

Lesson Plan Library Questions: lessonplanlibrary@acteonline.org

Public Policy Questions: publicpolicy@acteonline.org

Registration Questions: registration@acteonline.org

Association of General Contractors (AGC)

<http://www.agc.org/>

AGC represents contractors in forwarding federal policy and also promotes training and education for future and current contractors. AGC has helped the inception and funding of several construction and building trades academies across the nation.

Contact Information:

Associated General Contractors of America
2300 Wilson Blvd., Suite 400
Arlington, VA 22201

Liz Elvin
Director of Workforce Development
elvinl@agc.org
(703) 837-5389

703) 548-3118

National Career Academy Coalition (NCAC):<http://www.ncacinc.org/>

NCAC's mission is to provide a viable nationwide network of career academies. NCAC helps existing and emerging academies make crucial community, business, and governmental partners.

Contact Information:

National Career Academy Coalition, Inc.
NSU-FSEHS-NCAC
1750 NE 167th Street, Tech 332
North Miami Beach, FL 33162

Connie Majka
NCAC President
(215) 546-6300 x.104

National Center for Construction Education and Research (NCCER):<http://www.nccer.org>

NCCER is a non-profit education foundation created to help address the critical workforce shortage facing the construction industry. NCCER has curriculum development resources and information on teacher certification.

More information:

NCCER
3600 NW 43rd Street, Bldg. G
Gainesville, FL 32606

Jamie Van Voorhis,
Director of Workforce Development
(352) 334-0911 ext. 135

National Association of Minority Contractors: Southern California Chapter (NAMCSC):<http://namcsc.net/>

NAMCSC works to reduce and remove the barriers to full equality, which confront minority contractors. The organization seeks to provide education and training to minority contractors in construction and to bring about more equitable and wider procurement and business opportunities.

NAMCSC
P.O. Box 43307
Los Angeles, CA 90043

(323) 296-8005 Office
Email: admin@namcsc.net

Appendix 4. Allies and Advocates of Career Technical Education in California

- Senator Darrell Steinberg (SD-6)
- Senator Pat Wiggins (SD- 6)
- Assemblywoman Karen Bass (AD-7)
- State Superintendent Jack O'Connell

National

- Congressman Bob Filner (51-D) *Member of Congressional Career and Technical Education Caucus*
- Congressman Howard Berman (28-D)

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