College, Career, and Postsecondary Success: An Analysis of Building Trade Academies in

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,

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.

Introduction

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

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]

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.*

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 lead to the creation of the California Partnership Academies (CPAs), a network of California career academies that 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]

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[28] Oakes and Saunders, "Multiple Pathways," 7.
[29]

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:

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-outsourceable 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]

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.

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 workers[61] 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 impo1ent andd56ggnizeon.

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 to 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-

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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

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]

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[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 radualonment.

projects. The construction industry often has a false image of being a "harsh physical world not suited to disabled people."[76]

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

M8OUSD) has grappled. Like many other

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.

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[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'

African American area. However the housing boom brought about an uprooting of both renters and homeowners who had occupied the area for decades. The

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 ips s are ins9kers, scs u/.rfky ts than h beTc 0.0002n /atsoi[Tgasos(saoFTjT*1s lac

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://eschoolfprofile.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

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.

BSFI 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.
[106]San 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 morning and afternoon sessions, 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

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

meets them where they are."[113]

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 at of AFSF.[114]

BSFI'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

60% female, 40% male
Became school program in 2004
A partnership between the Architectural Foundation of San Francisco and SFUSD
Places students i1 Tf1.04 0 Td(Became school p

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

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, SFTA 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]

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.

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[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.

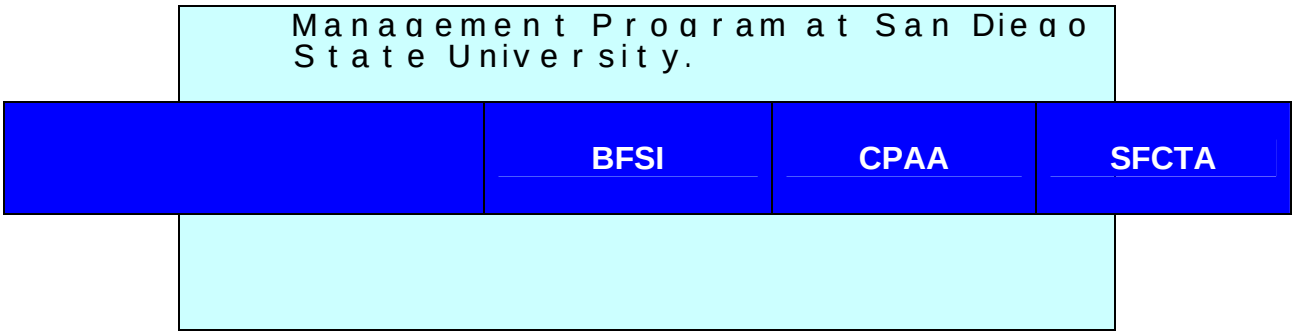
However, SFCTA has worked to establish a culture of college preparation instead of an alternative place for learning. Furthermore, the structure of the school itself makes tracking impossible. Hillegas explained that there is no separation made between who is advanced and who is not. Rather, students 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." s an efficacy in catering to various populations and general inclusiveness. However, it, hould 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 hould consider how to attract women into construction and building trades

y 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, etbacks 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.*



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 to 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.

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.

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

Grade 11			
Traditional Schedule		4x4 Schedule	
Fall:	*Spring:*	*Fall:*	*Spring:*
- English	- English	- English	- U.S. History
- Math	- Math	- Math	- Biology
- Art	- Art	- Art	- Spanish
- Biology	- Biology	- Elective*	- Elective*
- Spanish	- Spanish		
- U.S. History	- U.S. History		

Appendix 2. Photos of CPAA Campus

(Source: Author, 11 March 2008)

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.

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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