



## INSIGHT

Lessons learned from our grantmaking programs

# Making Progress Through California Multiple Pathways

*Findings from the ConnectEd  
Network of Schools Evaluation  
2007–2008*

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## Foreword

California high schools face several significant challenges: nearly a third of the state's ninth-graders drop out before graduation; many of the young people who do receive a high school diploma still lack the knowledge and skills needed to succeed in college and the workforce; and traditional education models are failing to engage too many of California's students in the serious business of learning.

Multiple pathways offers a promising approach to high school education that combines academic learning and career skills to give students the intellectual and real-world experience they need for success in college, career and life.

Through our Youth program, The James Irvine Foundation seeks to transform high school education in California by making multiple pathways available to a majority of youth in California, with a particular focus on low-income youth. Over the past four years, the Foundation has supported the creation of a network that demonstrates the multiple pathways approach across different types of existing schools and structures.

This Insight report summarizes an evaluation covering one academic year of student outcomes for this network, known as the ConnectEd Network of Schools. In reporting upon these preliminary findings, we are encouraged by the positive results achieved by these institutions, and we see opportunities to learn from the challenges identified. In evaluating this first-year experience, we've uncovered insights that will inform a more rigorous, larger-scale initiative demonstrating the promise of multiple pathways.

We share these early findings to inform other funders, policymakers and practitioners who, like Irvine, see the potential of multiple pathways to make a difference in the lives of students both during and after their high school experience — whatever path they may choose.



**James E. Canales**

President and Chief Executive Officer  
The James Irvine Foundation  
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# California Multiple Pathways: A Promising Approach

What drives students to succeed? It's an important question for all who care about young people and the communities they go on to shape. Growing evidence suggests that students are finding motivation, relevance — and success as they enter college and careers — in one innovative approach to high school education.

California Multiple Pathways help students gain an advantage in high school, college and career by connecting strong academics with real-world experience in a wide range of fields, such as engineering, arts and media, and biomedical and health. Pathways that link learning with student interests and job preparation lead to higher graduation rates, increased college enrollments and higher earning potential. Used in schools throughout California, this integrated approach helps students build a strong foundation for success in college and career — and life.

Students pursue a pathway from grades nine to 12 and graduate fully prepared for the entire range of post-graduation options — whether that means a two- or four-year college, an apprenticeship or formal job training. The California multiple pathways approach challenges and inspires students to learn and develops well-rounded, highly skilled individuals who have the foundation for lifelong success.

Note that the term multiple pathways is used differently in California than on the East Coast. In New York City the term refers to alternative ways to earn a high school diploma or GED. California Multiple Pathways refers to a college-prep curriculum organized around an industry theme from which students graduate ready for college and career. In this report the term multiple pathways always refers to the California approach.

## Core Multiple Pathways Components

Multiple pathways include the following four essential ingredients:

- **Challenging academics** – A core academic component of college-preparatory instruction in essential subjects, including English, math, science, social studies, foreign language and visual and performing arts.
- **Technical skills and knowledge** – A demanding technical component, emphasizing the practical application of academic learning and preparing youth for high-skill, high-wage employment.
- **Work-based learning** – A work-based learning component that offers opportunities to learn through real-world experiences, such as internships, apprenticeships and school-based enterprises.
- **Support services** – Supplemental services, such as counseling and additional instruction in reading, writing and mathematics.

There is no one right way to implement a pathway, but all pathways are grounded in a set of four guiding principles:

1. Pathways prepare students for both college and career, not one or the other
2. Pathways connect academics to the real world
3. Pathways lead students to the full range of postsecondary options including college, job training, apprenticeships and others
4. Pathways improve student achievement

**This report presents recent research findings that suggest multiple pathways can produce better student outcomes, such as:**

- Higher graduation rates
- Increased numbers of students meeting California's "a–g" university entrance requirements
- Better performance on the California High School Exit Exam, particularly for African American and Hispanic students
- Greater student engagement in school and learning

## ConnectEd Network of Schools

The James Irvine Foundation created ConnectEd: The California Center for College and Career, to serve as a hub for innovative practice, policy and research to expand the number of educational pathways that prepare students for both college and career. ConnectEd works on several levels to:

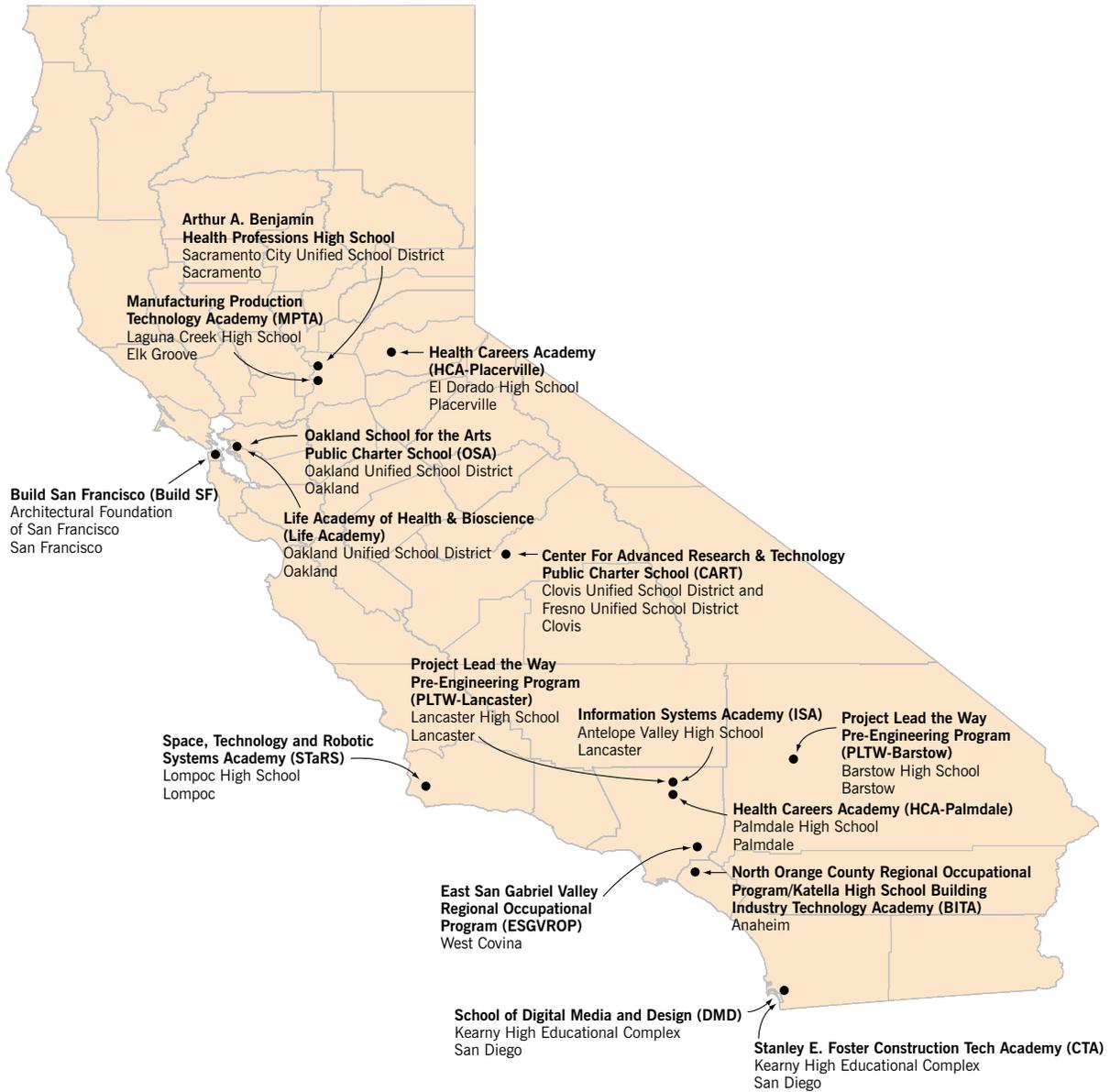
- Provide technical assistance to schools and districts implementing multiple pathways
- Develop integrated academic and technical curriculum units, tools and resources to support schools
- Promote policies that support wider adoption of multiple pathways
- Build awareness and understanding of multiple pathways

For policymakers, educators and industry and community stakeholders, there is no substitute for seeing and directly experiencing multiple pathways as they are practiced in schools. The ConnectEd Network of Schools was developed to provide a demonstration of multiple pathways in action and showcase effective, well-designed multiple pathway programs, revealing how pathways work and what they can accomplish.

The Network consists of 16 sites throughout the state (see map on following page for locations) that vary in structure, ranging from small autonomous schools to regional occupational programs (often called ROPs) serving several districts, to elective course sequences and a program run by a nonprofit organization. The Network schools represent 12 of California's 15 major industry sectors and serve thousands of students around the state. ConnectEd did not create these programs, but elected to offer them additional support because they embodied key features of the multiple pathways approach. ConnectEd's support included both funding for program improvement and technical assistance regarding pathway design.

Network schools have diverse populations, and most are located in low-income areas. They enrolled a slightly higher concentration of African American and Asian students than did the average California high school in 2007–08, and the student population was divided nearly equally between males and females.

Map 1. ConnectEd Network of Schools



Site abbreviations (in parentheses) are used in subsequent charts in this document.

## Exploring Pathways and Their Potential

Since its inception, ConnectEd has made a strong commitment to rigorous evaluation of multiple pathway programs. In addition to providing a demonstration of multiple pathways, network sites provided an opportunity to document the effectiveness of multiple pathways in the lives of students.

With support from Irvine, ConnectEd engaged MPR Associates, a leading education research and consulting firm, to evaluate results from the ConnectEd Network of Schools during the 2007–08 school year. MPR staff collected, analyzed and reported on quantitative data, including attendance, graduation rates and test scores, as well as qualitative data about student attitudes and behaviors gained through interviews and focus groups with educators and students. The full evaluation report is available at [www.irvine.org](http://www.irvine.org).

### Evaluation Focus

Researchers sought to uncover the answers to several questions about student outcomes and the effectiveness of program implementation based on the four guiding principles. Chief among these questions: How have these multiple pathway programs affected student achievement in school and readiness for life beyond high school?

While this report documents signs of positive progress among participating students, as well as specific areas for improvement, it is important to note that certain characteristics of the Network and the evaluation limit the broad applicability of the findings.

First, through the Network of Schools, ConnectEd sought to explore how multiple pathways operate in a variety of structures and program sizes. Schools were selected to participate in the Network based on an extensive set of criteria about student characteristics, curriculum, instruction and school environments. Schools and programs in the Network vary from small autonomous schools to academies to regional occupational programs and other novel structures. Therefore, averages across the groups contain a high degree of variation and tend to understate the impressive accomplishments of some sites.

Also, this was not a random assignment study. Students self-select into the programs studied. Comparisons used in the evaluation — to students statewide and nationwide — do not control for students' motivation or other characteristics of their backgrounds. This single-year snapshot also prevents analysis of change over time for students and schools.

The evaluation results presented here cannot be considered conclusive. They do, however, offer insights that have guided the planning of a larger, district-level demonstration of multiple pathways and its effects in the lives of students.

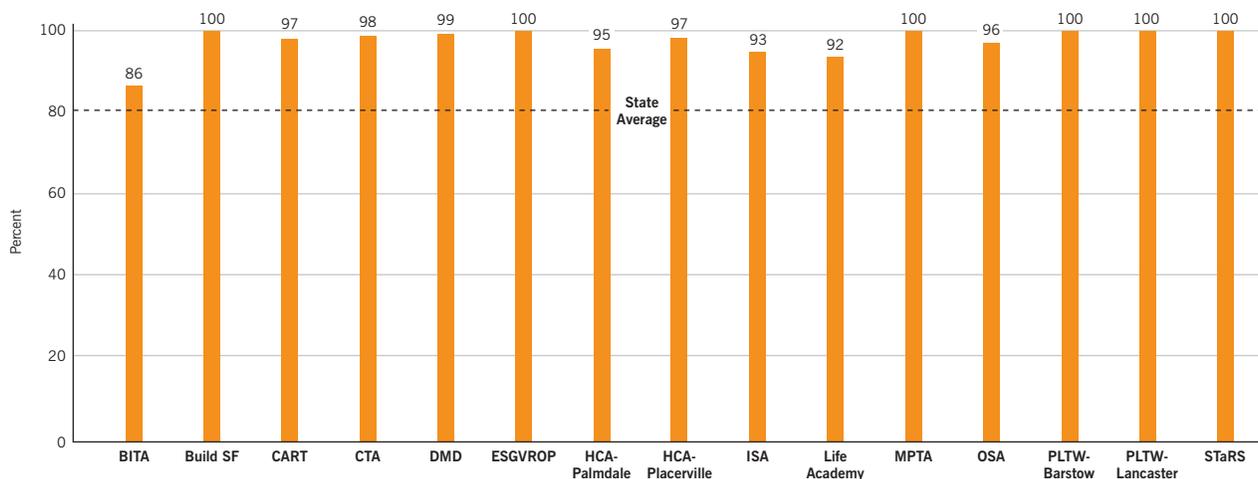
## Student Outcomes

Evaluation of ConnectEd Network Schools during the 2007–08 academic year and the fall of 2008–09 revealed several encouraging findings about student performance and engagement.

### High Graduation Rates

High school graduation rates in the multiple pathway programs exceeded the California state average. Approximately 2,300 students were enrolled as seniors in the ConnectEd Network of Schools, and 98 percent of these seniors graduated that year, having earned sufficient credit and passed the California High School Exit Exam. Six schools had graduation rates of 100 percent, with six additional sites reporting a rate between 95 and 99 percent. The California state average is 80 percent.

**Exhibit 1. Percentage of Graduating Seniors, by Site, 2007–08**



Note: Graduation rate is calculated as the number of seniors who graduated at the end of the 2007–08 school year divided by the number of enrolled seniors. Data are from school records. State average from the California Department of Education. This exhibit excludes one ConnectEd Network school which did not have seniors in 2007–08.

Most ConnectEd Network sites (nine of the 13 able to provide data for all three grade levels) indicated that 100 percent of their students in grades 10–12 were on track for graduation, while promotion rates at two sites fell below 95 percent for all three grades. On average then, 96 percent of 9th-graders, 90 percent of 10th-graders, and 98 percent of 11th-graders had sufficient credits to be promoted to the next grade and were on track for an on-time graduation.

### Building Evidence

These evaluation findings about the ConnectEd Network of Schools echo a March 2007 study conducted collaboratively by ConnectEd and the Career Academy Support Network at the University of California, Berkeley, which found that in California's partnership academies, a well-developed model aligned with the multiple pathway approach, students were:

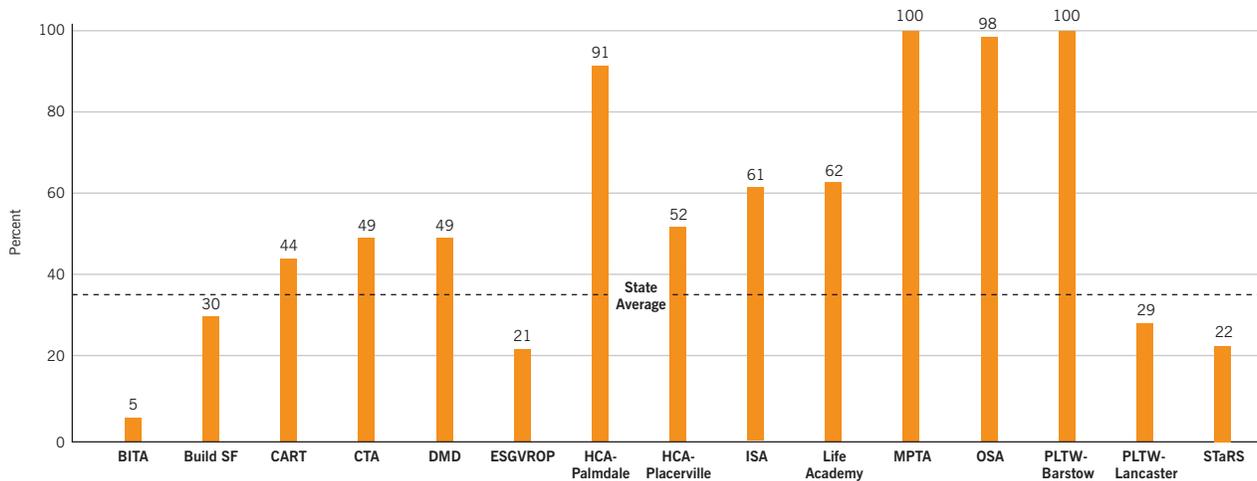
- More likely to graduate from high school
- More likely to complete the “a-g” requirements needed to be eligible for admission to California’s public universities
- More likely to pass the California High School Exit Exam on their first attempt as sophomores

## University Entrance Requirements Met

In addition to graduating at high rates, 35 percent of participating students met the eligibility requirements (in other words, they had completed the “a-g” courses) for admission to the University of California and California State University postsecondary systems. Statewide, 36 percent of students met the “a-g” requirements. The overall figure masks impressive accomplishments at certain sites. Ten sites exceeded the state average, and four sites exceeded it significantly — with 90 percent or more of their seniors graduated having fulfilled the “a-g” requirements. These strong outcomes suggest that a well-implemented career-relevant curriculum can prepare students for college.

Staff at sites achieving high success in meeting these requirements indicated that they had focused intently on the need for students to complete relevant courses and designed their programs to ensure the majority of their courses met “a-g” requirements.

**Exhibit 2. Percentage of Graduating Seniors Meeting “a-g” Requirements, by Site, 2007–08**



Note: Percentage of graduating seniors meeting “a-g” requirements is calculated as the number of seniors who graduated with passing grades in all of the UC/CSU approved “a-g” courses divided by the number of enrolled seniors. Data are from school records. The state average is from the California Department of Education and is based on the number of graduating seniors. This exhibit excludes one ConnectEd Network school which did not have seniors in 2007–08.

## Standardized Test Performance

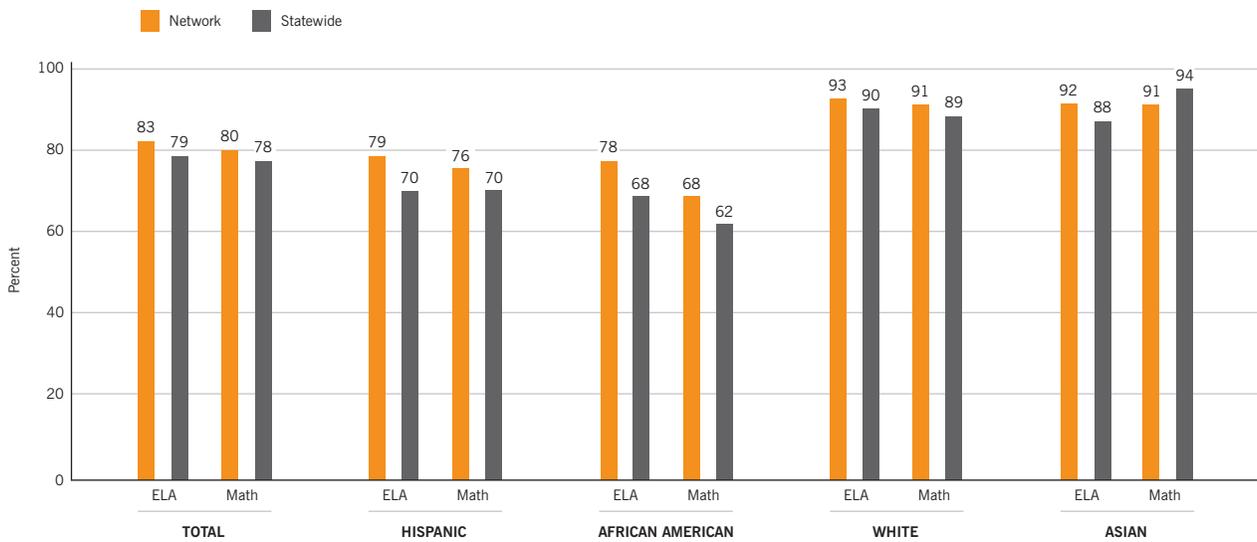
### *California High School Exit Exam*

Multiple pathway students in the Network were also more likely than other California students to pass the California High School Exit Exam on their first attempt in 10th grade. This was particularly true for African American and Hispanic students.

On the English-Language Arts assessment, 83 percent of Network sophomores passed the exam, compared with 79 percent of sophomores statewide. Pass rates within Network sites were 79 percent for Hispanic students and 78 percent for African American students, compared with 70 and 68 percent for their counterparts statewide.

Similar patterns are evident for the mathematics assessment: 80 percent of Network sophomores passed the exam, compared with 78 percent of sophomores statewide. Pass rates within Network sites were 76 percent for Hispanic students and 68 percent for African American students, compared with 70 and 62 percent for their counterparts statewide.

**Exhibit 3. California High School Exit Exam Pass Rates in English-Language Arts (ELA) and Mathematics, 10th-graders, by Race/Ethnicity, 2007–08**

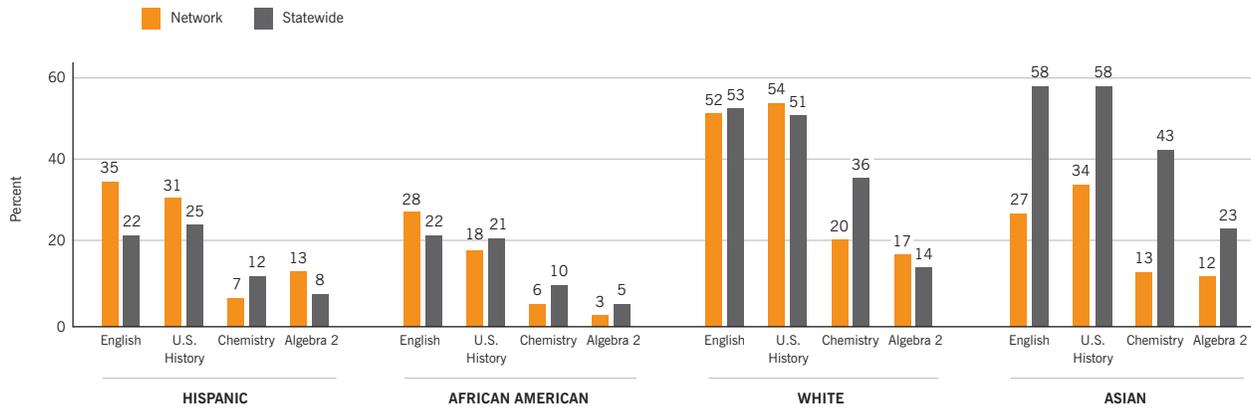


### *California Standards Tests*

Student performance on the California Standards Tests — end-of-course exams given in grades 9, 10 and 11 — varied by subject, grade level and student ethnicity, without a clear pattern. Network students as a group performed similarly to other students statewide on exams in English, history and several of the physical sciences. Hispanic and African American Network students were more likely to score proficient or advanced in those subjects compared to Hispanic and African American students statewide, whereas scores for Asian Network students were less likely to exceed statewide comparisons. In chemistry, physics, and most of the math exams, results for Network students lagged the statewide scores, which were already disappointing. A number of Network sites compared favorably with their home districts and/or the larger schools in which they were located.

The chart below provides an example of the mixed performance on California Standards Tests by comparing the percentage of 11th graders scoring at proficient or advanced levels on different subjects.

**Exhibit 4. Percentage of Students Scoring Proficient or Advanced on Selected California Standards Tests, 11th-graders, by Race/Ethnicity, 2007–08**



Note: Test administration rates for Network students across these four California Standards Tests were: English, 90%; US History, 89%; Chemistry, 37%; and Algebra 2, 41%.

The evaluators suggested several reasons for these disappointing test scores, including:

- When asked, the sites suggested that these scores may have lagged because students do not have the incentive to give the California Standards Tests their best effort. While these tests are used by policymakers and the public to make decisions about schools, they generally have no consequences for individual students, unlike the California High School Exit Exam.
- The differences in scores for Asian students have no simple explanation. One strong possibility is that Asian students in the Network sites are more likely than Asian students statewide to be part of immigrant groups that are more disadvantaged and less academically proficient. Data from this evaluation did not permit controlling for this hypothesis. Better understanding achievement for Asian students in pathways will be an important consideration in future evaluation of the district initiative.
- Data on test results for math and the sciences may not be statistically reliable because they represent so few students. Data were lacking because not all sites serve students in the grades in which earth science, life science and physics exams are administered.
- Math score data also reflect scheduling challenges to integrating academics into pathways. Students enroll in pathways at various levels of math proficiency, making it difficult to preserve a cohort for a mathematics class, and also difficult to include mathematics teachers in the same pathways instructional team. Some educators reported challenges in integrating math with the pathway industry curriculum. Program designers and staff at some sites and ConnectEd have been exploring strategies to overcome the math challenge, such as requiring four years of math or designating a portion of the block schedule to math.

## Engaged Students

The study of ConnectEd Network of Schools shows several signs that pathway programs had a positive effect on student attitudes toward school, learning, their teachers and themselves. In interviews and focus groups with district and school administrators, teachers and students, researchers discovered these signs of engagement. They also found evidence of engagement in school attendance and program enrollment data.

### *School Attendance and Program Enrollment*

The overall attendance rates for Network students were quite high — just over 94 percent. By comparison to a commonly-cited national attendance rate of 92 percent, this 2 percent difference represents the equivalent of attending an additional four days of school in a 180-day school year.

Sites also provided data reflecting whether their students would continue within the pathways program over the next school year. On average across the sites, 92 percent of 9th-graders, 81 percent of 10th-graders and 73 percent of 11th-graders expected to re-enroll in the pathways program the following year. Five of the 12 sites providing data for all three grade levels predicted that 100 percent of their students would continue enrollment in the pathways program from one year to the next.

**Students internalized the “college-going culture” and adapted their educational plans accordingly.**

### *Attitudes and Participation*

Students and teachers at Network schools said they believed that student attitudes were much more positive when compared to other programs they had been part of. Students appreciated the freedom to make choices about their studies, demonstrated self-confidence and motivation, and worked well together in the close-knit programs.

Network students tended to internalize the “college-going culture” fostered by the programs, and some changed their educational plans as a result of changing their employment goals. For example, one student decided that she wants to attend a four-year college after experiencing a radiology job shadow and internship.

Network students and teachers also noted that students discovered the career areas that interested them and adopted an attitude of professionalism toward their work. Most — but not all — Network sites offer off-site work-based learning experiences to make students aware of options in a given industry area. Students enjoyed these experiences and felt they had “a head start” on others entering the field.

Pathway programs tended to teach presentation skills, communication skills and other workplace skills explicitly and offered assignments designed to build skills in teamwork, research, problem solving, processing and time management. Participating students learned the skills necessary for their chosen field, as well as general workplace skills, often in facilities designed to resemble actual work settings (for example, a medical office, a design studio, etc.). They generally understood the expectations adult professionals in the field would have for them.

## Program Structures

Multiple pathway program structures within the Network schools varied significantly. For the demonstration purposes of the Network, this variety allowed ConnectEd to better understand how the structures align with the multiple pathway principles and core components. However, from an evaluation perspective, the variation also makes it challenging to discern the unique impact of multiple pathways.

The size of the student body at Network sites ranged from a low of 19 to more than 1,200. In addition to differences in size, the structure or format of these programs varied widely:

- 5 were small autonomous high schools
- 5 were career academies within larger high schools
- 2 were regional occupation programs
- 2 offered elective courses to all students, not just those participating in the program
- 1 was a nonprofit organization providing an off-site project-based course and an internship/mentor program to students from 18 high schools
- 1 offered a half-day program to 11th- and 12th-graders for credit in English, social science and career and technical courses

### Structured for Success

While each of the school structures listed above has its merits and challenges, those that most reliably delivered positive student outcomes were career academy sites and those that were “academy-like” in their structure. Schools with career academy programs were able to provide a supportive community and integrated coursework, while benefitting from the resources available in larger schools.

## Networkwide Challenges

Two of the greatest challenges for Network sites were effectively integrating academic and technical curriculum and ensuring the academic rigor of instruction.

Curriculum and instruction varied widely between and within Network sites. High-quality cross-curricular projects and units prevailed at some sites, while in others the integration of academic and technical content occurred mainly through individual teacher initiative.

The lack of a dedicated student and teacher cohort was the biggest obstacle to integrating academic and technical studies. Program staff and administrators felt hampered by the master schedule and an inability to keep pathway students in a cohort. Math was the biggest hurdle in creating a cohort for pathways students. Because students are placed by skill level — or can choose to take various math courses in different years — sites struggle to incorporate math into pathways programs.

The challenge of integrating curriculum was evident in most sites, though many have excellent examples of integrated projects that are serving to provide the opportunity for students to apply the academic knowledge they learn to interesting and engaging work-based learning projects.

Most of the sites, however, lack the consistent rigor — across their curriculum — that is desirable for ensuring high levels of academic learning. They are missing opportunities to inject rigorous academic content into technical education tasks. Most sites are still working toward true integration of rigorous academic and technically demanding content, which is key to seeing optimal results.

As ConnectEd prepares for a more ambitious district initiative, they are considering these and other challenges — as well as emerging solutions — in order to improve the effectiveness and reach of multiple pathways.

## Moving Forward with Multiple Pathways

Explored in a range of settings and structures, the promising strategy of multiple pathways shows noteworthy signs of progress. School reform literature shows that it is not easy to demonstrate positive effects on achievement, particularly at the high school level, so these results should not be taken lightly.

While this initiative and its evaluation were not designed to prove causality between multiple pathways and student success, they do provide important, guiding information for ConnectEd as it plans a larger-scale demonstration: the California Multiple Pathways District Initiative that will engage six public school districts to develop systems of high-quality multiple pathway programs, including implementing certified multiple pathways programs over the course of three to five years.

With further attention and greater focus on what is working well and what needs improvement, ConnectEd and The James Irvine Foundation believe that the multiple pathways approach can help a growing number of California's young people fully appreciate and realize their potential — for themselves and for the society to which they contribute.

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