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Expanding Opportunity for the People of California

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Assessing California's Multiple Pathways Field

Preparing Youth for Success in College and Career

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Contents

Foreword

Every child deserves an education that allows the opportunity to achieve his or her dreams. This is the shared belief of The James Irvine Foundation and the Bridgespan Group. Unfortunately, California's education system is failing to provide our young people the foundation for success in adulthood. We care passionately about this issue and are working, each in our own ways, to solve it.

Irvine believes that young people must be offered different ways of getting to the same destination: success in high school, college and career. The Foundation sees the need for a "multiple pathways" approach that recognizes the diversity of student interests and abilities – one that engages students in academically rigorous work and also demonstrates its relevance to the real world.

The Bridgespan Group works to increase the impact of nonprofits and foundations that are seeking to solve society's most important challenges, helping them develop and implement rigorous and data-driven strategies. We have focused more of our work on education reform than on any other area because we believe in the tremendous ability of high-quality education to improve the lives of disadvantaged people, who are at the heart of our mission. Sharing knowledge from our work is one of Bridgespan's key strategies for achieving greater impact in the social sector.

After four years of pursuing a strategy to advance multiple pathways in California, Irvine asked Bridgespan to assess the state of the multiple pathways field and to make recommendations to strengthen it. Bridgespan was eager to undertake this research, as growing evidence shows that the multiple pathways approach, combining rigorous academics with career education, holds the promise of increasing academic engagement and achievement, lowering high school dropout rates and boosting students' future earning power.

Both partners are excited to share this research widely to help bolster and align the work of actors throughout the multiple pathways field. We hope that everyone who reads this report will understand better the multiple pathways field in California and will take away ideas for how they can advance its cause – excellent high schools that prepare all students for college and career.

Together, we will use this research over the coming months to inform gatherings of leaders from the field and the Coalition for Multiple Pathways. We are also eager to create a broader dialogue, and we encourage you to share your thoughts at www.bridgespan.org/multiple-pathways.aspx where you can see what other readers are saying, post your thoughts and download additional copies of this paper.

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Education then, beyond all other devices of human origin, is the great equalizer of the conditions of men, the balance-wheel of the social machinery. – *Horace Mann*

Executive Summary

High school is not meeting the needs of the majority of students in California. About one-third of new ninth-graders in the state drop out before graduating. Another third finish high school, but lack the academic and technical readiness to succeed in college or a career. Only a third graduate on time and transition easily to postsecondary education and lasting career success.

The James Irvine Foundation believes that, to close the achievement gap, young people must be prepared in high school to succeed in college-level education *and* to succeed in their careers. Irvine's Youth program supports "multiple pathways," an innovative approach to high school education that integrates rigorous academics with demanding career and technical education, comprehensive student support services and relevant work-based learning opportunities. The evidence to date suggests that more students will complete high school on time, prepared for both college and career.

Not every multiple pathways student will choose to go directly to college after high school, but these programs are designed to provide students with the preparation, skills and opportunity to make that decision for themselves. They will have the ability to choose their own path, not have it chosen for them because of poor academic performance, inadequate preparation for college or a lack of relevant workplace skills.

The Youth program's goal is to increase the number of low-income youth in California who complete high school on time and earn a postsecondary credential by the age of 25. To achieve this goal, the program seeks to expand and strengthen California's multiple pathways field. To that end, Irvine commissioned the Bridgespan Group to assess the state of the field and identify its key opportunities and challenges. The Foundation initiated this work both to inform its strategy and to catalyze the field's development.

Assessment Method

Bridgespan consulted with a 24-member advisory committee representing the multiple pathways field and met with more than 60 additional leaders in the field through interviews and a focus group (see Appendices A and B). Research also included interviews with a few prominent skeptics of the multiple pathways approach, a review of available secondary research (see Appendix C) and an examination of the landscape of organizations in the field (see Appendix D). The findings and recommendations from this field assessment are discussed in this paper.

Five Signs of Strength and Related Findings

A field assessment framework was developed to structure this investigation – informing the types of questions asked in field interviews and the review of secondary literature – in order to help ensure that information captured about the multiple pathways field was consistent and thorough. (Go to www.irvine.org/publications to read "The Strong Field Framework," a guide to the field assessment framework.) The framework identifies five characteristics of strong fields. In support of each, the assessment surfaced a number of findings.

1. Shared Identity: In strong fields, people work toward a common goal, identify as members and use a common set of core practices and methods to achieve that goal.

> ***Findings:*** *Those interviewed were aligned around a common purpose and goal. However, it became apparent that the multiple pathways field is at a nascent stage in terms of developing a shared identity. Members of the field do not often agree on terminology or the definition of key concepts.*

2. Standards of Practice: Strong fields have codified their practices, created exemplary demonstration models, built training and professional development programs to support practitioners, and established processes and organizations to ensure the quality and fidelity of implementation.

> ***Findings:*** *The multiple pathways field is just beginning to develop standards of practice. Members of the field report promising demonstration models through a network of model programs, but they say the field still lacks large-scale, systemwide demonstrations. In addition, the field lacks sufficient infrastructure to support teachers and administrators and to help organizations meet the growing demand for multiple pathways programs.*

3. Knowledge Base: Fields with a strong knowledge base have expert researchers and practitioners engaged in the ongoing improvement of the field and involved in documenting and disseminating knowledge and best practices to support others.

> ***Findings:*** *The multiple pathways knowledge base has a solid foundation and is growing. Members of the field find existing evidence of program effectiveness encouraging, but they also believe that there is a need to develop, codify and disseminate best practices concerning work-based learning and program assessment. In addition, intervieweess report that few vehicles to facilitate knowledge sharing and collaboration exist.*

4. **Leadership and Grassroots Support:** Influential leaders and exemplary organizations advance strong fields. They also have a broad base of support from critical constituencies, such as parents, students, policymakers and the business community.

   Findings: *The field assessment indicates that district, policy and business leaders are showing growing support for the multiple pathways approach. While evidence of such support and leadership is emerging in discrete instances, there is no strategy for systematically engaging parents and students across the state in the multiple pathways field.*

5. **Funding and Supporting Policy:** Strong fields benefit from an enabling policy environment that makes available sufficient funding to sustain core practices.

   Findings: *While a handful of leading policymakers are supportive of multiple pathways, this has not yet translated into an overarching policy framework or dedicated funding for multiple pathways. Multiple pathways innovators and entrepreneurs have been able to cobble together the funding required to support their work. Conversations with these actors made it clear, however, that reaching the next level of scale will be difficult without incentives and supports for those who are less intrinsically motivated to move in this direction. Broad statewide adoption is highly unlikely without new policies and funding streams.*

Recommendations for Building the Field

California's multiple pathways field has built significant momentum through steady program growth, promising evidence of a positive impact on student outcomes and a supportive group of influential policymakers and exemplary organizations. However, when the field is assessed against important measures of strength, it becomes apparent that the field must overcome a set of key barriers to advance beyond this early stage of development and make multiple pathways available to many more youth. To overcome these barriers, the following targeted strategies are recommended:

1. **Develop a clear, precise definition of multiple pathways, messaging aligned with that definition and a quality-control system to distinguish high-fidelity implementations.**

The field is not aligned on a definition of multiple pathways. Though honing in on a precise definition and messaging may alienate some members of the field, the value of such a definition may be worth it.

2. **Establish large-scale, systemwide demonstrations.**

Large-scale demonstrations are held back by a combined lack of evidence, infrastructure and regional intermediaries. The field needs to overcome these barriers to prove the feasibility and impact of multiple pathways at a district or county level.

3. **Work to increase state funding and create more supportive policies that would facilitate broad adoption.**

Implementation of multiple pathways at the district or county level provides a unique opportunity to learn what's required for greater scale and to build a constituency for statewide adoption. Policymakers should be involved in these demonstrations, perhaps through a formalized partnership, so that they can see the benefits and the requirements of multiple pathways when implemented at a district or county level. Parents, students and district leaders in these demonstration sites should also advocate for state-level funding and supportive policies for multiple pathways.

The multiple pathways approach is one of the most promising solutions available to address the lack of academic and workforce preparedness among today's students, as well as the challenge of engaging young people who do not find school relevant. By making learning relevant, multiple pathways increases student engagement and thereby has the potential to improve academic proficiency, reduce the dropout rate and better prepare students for success in college and career.

Overview of the Field

Income and education are now more closely linked than ever before. Yet far too many of California's young people – particularly low-income, minority and immigrant youth – reach adulthood without the education, credentials and experiences needed to participate in our rapidly evolving economy. About one-third of new ninth-graders in the state drop out before graduating. Another third finish high school, but lack the academic and technical readiness to succeed in college or a career.

The Multiple Pathways Approach

Multiple pathways is a promising solution to provide young people with rigorous and relevant educations so that they complete high school and attain college-level credentials. The approach seeks to graduate high school students on time *and* ready for success in college and career.

Multiple pathways programs offer students a rigorous academic and technical curriculum, as well as work-based learning opportunities, academic and social supports, and a clear connection to college and career opportunities.

Not every participating student will choose to go directly to college after high school, but multiple pathways programs are designed to offer students with the preparation, skills and opportunity to make that decision for themselves. Students are invited to choose their own paths, not have paths chosen for them because of poor academic performance, inadequate preparation for college or a lack of relevant workplace skills.

The Evolution of the Multiple Pathways Field

The multiple pathways approach was born out of several movements to increase the rigor and relevancy of secondary education. In the late 1960s, community, business, education, labor and government leaders in Philadelphia came together to address the city's high dropout and unemployment rates. The coalition invented the first career academy, a secondary education program that linked academic coursework with career training. The success of the first academy led to its replication across Philadelphia, and the movement spread to California in the form of partnership academies during the 1980s. Today, more than 1,600 high schools across the United States are career academies.[1]

In the 1990s, the school-to-career movement grew out of a concern that the traditional public education system was not preparing American youth with the academic and technical skills required to succeed in the emerging global economy. This movement led to the creation of the School-to-Work Opportunities Act of 1994, which authorized federal funding for states to support

[1] Career Academy Support Network database (September 2008).

partnerships between schools and businesses and to develop high-quality school-based learning, work-based learning and connecting activities.[2] Although the act succeeded in encouraging many communities to embrace school-to-career as their secondary education-reform strategy, political support at the national level faded due to changes in political priorities and the rise of a movement focused on academic standards and accountability.

Since 2004, a number of high-profile reports have called for the "reinvention" of high schools and have highlighted the shortcomings of the movement to increase standards and rigor.[3] The reports maintain that standards have focused on the assessment of traditional measures of academic proficiency and do not assess a student's mastery of skills, such as the ability to apply knowledge to "real-world" problems. Critics say the movement has also failed to connect what students learn in high school with their work after school, thereby diminishing student engagement.

This realization has led to the resurgence of reforms that increase the rigor and relevancy of secondary education. One example is California's multiple pathways field, which seeks to prepare high school students for success in college and career by integrating rigorous academics with demanding career and technical education, comprehensive student support services and relevant work-based learning opportunities.

The Current State of California's Multiple Pathways Field

Multiple pathways programs in California have shown very promising results, demonstrating the ability to increase relevance without sacrificing rigor. Multiple pathways models have been shown to increase student attendance, motivation and engagement, as well as long-term earnings, particularly among at-risk men. Models have also demonstrated the promise of reducing high school dropout rates and increasing academic achievement and attainment.[4]

A constellation of actors has been working for decades to deliver integrated career and academic education, and is just now beginning to coalesce so that the field can deliver multiple pathways at scale in California.

Hundreds of multiple pathways academies and whole schools[5] are spread across the state. The dominant multiple pathways models in California are career academies and California Partnership Academies. Career academies are career-themed small learning communities with a college preparatory curriculum, and California Partnership Academies are career academies that receive targeted state funding. More than 600 career academies operate in California,

[2] School-based learning is a course of study that meets academic and vocational standards while encouraging career exploration. Work-based learning is a progressive set of workplace experiences, including mentorship and internships, that are coordinated with the school's curriculum. Connecting activities link students to employers, community service and other adult environments.

[3] Norton Grubb and Jeannie Oakes, "'Restoring Value to the High School Diploma: The Rhetoric and Practice of Higher Standards," October 2007.

[4] James Kemple with Cynthia Willner, "Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment and Transitions to Adulthood," MDRC, 2008; Denise Bradbury, et al., "A Profile of the California Partnership Academies 2004-2005," ConnectEd, March 2007; www.irvine.org/publications/iq/youth.shtml.

[5] Academies are a school-within-a-school model of a pathway program. Whole schools are pathway programs that encompass the entire school (i.e., wall-to-wall).

of which approximately 340 are California Partnership Academies.[6] California Partnership Academies are found in 25 percent of California school districts and serve approximately 40,000 students in grades 10 through 12.[7] More than 5 percent of students enrolled in these grades attend career academies.[8] Other multiple pathways models include whole schools, career pathways (a series of career-themed courses), career-themed majors and approaches that leverage Regional Occupational Centers and Programs to deliver integrated programs.

Interviews with members of the field reveal disagreements over whether *all* career academies, California Partnership Academies and ConnectEd model programs should be viewed as true to the multiple pathways approach. Some consider only those programs that provide students with a rigorous academic and technical curricula and high-quality work-based learning opportunities as being acceptable models, while others take a broader view.

Several leading actors in the field are helping to define the core practices of multiple pathways and to identify and disseminate best practices. The main actors are program implementers, community-based organizations, business-driven coalitions, technical assistance providers and researchers. The field receives strong support from leading policymakers and funders including the Irvine Foundation.

Leading Intermediaries and Technical Assistance Providers in the Field

Several intermediaries and technical assistance providers have played a significant role in the multiple pathways field in California:

Alliance for Regional Collaboration to Heighten Educational Success is a confederation of regional collaboratives that connects public schools with two- and four-year colleges, private-sector representatives and community-based organizations. Its objective is to improve student achievement to ensure California's future social, political and economic vitality.

Career Academy Support Network, based at University of California at Berkeley, is a research organization and technical service provider that focuses its work on career academies.

ConnectEd is a hub of practice, policy and research founded by The James Irvine Foundation to help scale multiple pathways in California. ConnectEd focuses on developing curricula for 15 career themes, building a network of schools that demonstrates the effectiveness of multiple pathways, and promoting policy development through analysis and coalition building.

National Academy Foundation is a national network of career academies with more than 500 schools in 40 states, 36 of which are in California. In addition to curriculum development, this network provides technical assistance and planning support to its member academies.

National Career Academy Coalition is a loose confederation of career academies. The Coalition provides technical assistance and convenes theme-based and regional coalitions to encourage the sharing of best practices.

[6] Career Academies Support Network database (September 2008).
[7] Gary Hoachlander et al., "A Profile of California Partnership Academies," ConnectEd, CASN, 2007.
[8] Estimate of approximately 5 percent is based on an average of 114 students for each of the approximately 340 California Partnership Academies and 290 non-California Partnership career academies, and approximately 1.5 million 10th-12th graders enrolled in the 2007-2008 class (California Department of Education: Education Demographics Unit, "Statewide enrollment by Grade" report).

Overview of Multiple Pathway Programs

	Career Academies	California Partnership Academies	ConnectEd Model Programs
Description	The career academy approach consists of three structural elements: • Small learning community, comprising a group of students within a larger high school who take classes together for at least two years, taught by a team of teachers from different disciplines • College preparatory curriculum with a career theme, enabling students to see relationships among academic subjects and their application to a broad field of work • Partnerships with employers, the community and local colleges to improve student motivation and achievement	California Partnership Academies are 10th- to 12th-grade career academies consisting of the following components: • Curriculum focused on a career theme and coordinated with related academic classes • Voluntary student selection process • Team of teachers who work together to plan and implement the program • Motivational activities with private-sector involvement to encourage academic and occupational preparation, such as integrated and project-based curriculum, mentor program, and exploration of postsecondary and career options • Workplace learning opportunities such as job shadowing and student internships	ConnectEd model programs consist of four core elements: • Academic core that prepares students to transition to the state's colleges and universities, as well as apprenticeship and formal employment training programs • Technical core of four or more courses that can give young people a head start on a successful career • Series of work-based learning opportunities including mentoring, job shadowing and internships • Supplemental services, including extra instruction, that help students master advanced academic and technical content
Number of programs	1,600+ nationwide; 600+ in California	Approximately 340 in California	16 in California
State funding	Approximately 50 percent of career academies in California are California Partnership Academies (see notation at right)	California Partnership Academies are state-funded career academies that can receive state grants of up to $81,000 per year per school along with matches from school districts and the business community	Approximately 33 percent of ConnectEd model programs are California Partnership Academies (see notation at left)

Source: California Department of Education, Career Academy Support Network, ConnectEd, National Career Academy Coalition.

Assessment of the Multiple Pathways Field

At the outset of this assessment, the Bridgespan Group started with two major questions:

- What is the definition of a field?
- What constitutes a strong field?

The term "field" is admittedly imprecise. For the purposes of this assessment, it has been defined as a community of actors who engage in a common set of core practices with a common goal for their work.

A field assessment framework was developed to structure the investigation – informing the types of questions asked in field interviews and the review of secondary literature – in order to help ensure that information captured about the multiple pathways field was consistent and thorough. Based largely on limited available research, the framework identifies characteristics of strong fields. This somewhat generic tool may prove helpful to analysts assessing the strengths of other fields. Figure 1 outlines the field assessment framework at a glance.

Using this framework, the research team hoped to better understand the multiple pathways field of today, and identify where it needs further development – so that it can be strengthened, scaled and sustained into the future.

Figure 1. Field Assessment Framework

Shared Identity
Community aligned around a common purpose and a set of core values

Standards of Practice	Knowledge Base	Leadership and Grassroots Support	Funding and Supporting Policy
• Codification of standards of practice • Exemplary models and resources (e.g., how-to guides) • Available resources to support implementation (e.g., technical assistance) • Respected credentialing/ ongoing professional development training for practitioners and leaders	• Credible evidence that practice achieves desired outcomes • Community of researchers to study and advance practice • Vehicles to collect, analyze, debate and disseminate knowledge	• Influential leaders and exemplary organizations across key segments of the field (e.g., practitioners, researchers, administrators, policymakers) • Broad base of support from major constituencies (e.g., students, parents, teachers, superintendents, industry)	• Enabling policy environment that supports and encourages model practices • Organized funding streams from public, philanthropic and corporate sources of support

Source: Adapted from National Service Learning Partnership and Edna McConnell Clark Foundation.

The multiple pathways field was then assessed against each of these measures of strength. Based interviews with more than 60 members of the field, a focus group of school district superintendents, interviews with a few prominent skeptics, a thorough assessment of the current research and feedback from a 24-member advisory committee, 12 findings emerged. The findings describe the current state of the multiple pathways field and are summarized below. Following this summary is a discussion of key barriers to advancing the field and recommendations for overcoming them.

Shared Identity

A shared identity is the foundation for any field of practice, without which individuals and organizations may work in isolation or at cross-purposes. A strong field includes practitioners who *affiliate* with a community that works toward a *common purpose* and supports a set of *core practices*. The multiple pathways field appears to be at a nascent stage in developing a shared identity.

Finding 1: Leaders in the multiple pathways field are aligned on the ultimate goal and the core elements that make multiple pathways programs effective.

Members of the field are highly aligned around a common purpose and goal. Unlike education reformers, who focus exclusively on increasing college access and readiness, or those who emphasize the need for more access to career technical education to prepare students for a 21st-century workforce, the multiple pathways field aims for all students to graduate from high school ready for success in both college *and* career.

Multiple pathways advocates do not focus on one group of students, such as those who are bound for four-year colleges or those who are at risk of dropping out of school. Rather, the field is working to ensure that all students graduate high school prepared to succeed in postsecondary education. As one policymaker stated, "What long-term success looks like to me is every student in California graduating college-ready with a skill set that equips them to make a real choice between going to college or going to the workforce."

"I don't see who would disagree: You need to integrate the rigor and relevance. The two need to come together."

— *Researcher*

"Every child deserves a great education that builds on their strengths. Within that, I believe that career and technical education with rigor in small learning communities is where we need to go."

— *Policymaker*

While high school completion is a critical milestone, those in the field also recognize that students need to acquire some level of education beyond high school in order to attain high-quality jobs. Therefore, the multiple pathways field is working to build clear links between high schools and postsecondary education and training, including technical training programs, community colleges, four-year colleges and apprenticeship programs.

Early in this research process, some policymakers expressed concern that the field was not clear about the *problem* that multiple pathways seeks to solve. One policymaker expressed it this way: "Multiple pathways is presumably the solution to some problem. We have lots of solutions chasing problems here. I want to start at what's the problem, and I don't think there is consensus in the field broadly defined as to what the problem really is."

However, when interviewees expressly asked to identify the problem and when research was targeted to do the same, most answers centered on the need to arrest the high school dropout rate and increase academic attainment. One superintendent pointed to "last week's dropout data," saying, "if that's not the example of the problem I don't know what is. Kids are lost…[but] with multiple pathways they can see connections and personal paths. It's motivating and relevant."

A number of interviewees said that the multiple pathways approach increases student engagement through the increased *relevance* of their studies while maintaining or increasing academic *rigor*. As they see it, the first step in helping students is to spark their interest. Multiple pathways is the hook that engages students in learning so that they have the motivation to complete a rigorous academic program. Successful implementations engage students based on their strengths and interests. As one policymaker put it, "Ultimately, the problem that multiple pathways is really trying to solve is relevance."

An implementer concurred by saying that multiple pathways is "making learning relevant, engaging kids and contextualizing their learning. When students are engaged, they are less likely to drop out of school and more likely to graduate from high school and go on to college."[9]

The research also found general agreement about the core elements of successful multiple pathways programs. First, such programs include a curriculum that combines rigorous academic and technical components. Second, they offer work-based learning experiences, which progress from offering career speakers to job-shadowing to full internships. These experiences aim to increase the relevance of classroom learning and help students form relationships with adults in a career field that interests them. And finally, programs are aligned with educational opportunities beyond high school, so that students have clear options after graduation, whether or not they decide to pursue more advanced or technical training in their field of focus.

[9] "Finding Relevance in High School Education," IQ: Irvine Quarterly, Summer 2008.

Finding 2: Members of the field do not agree on terminology or the definition of key concepts surrounding multiple pathways.

Although the field shares a common purpose, leading proponents describe multiple pathways from many perspectives. Some focus on practices and others on outcomes. Some see multiple pathways programs as preparing students for success in college and career. Others view them primarily as a way to solve the dropout problem, or as a strategy to increase workforce preparedness.

The field's name is also explained in different ways. Some practitioners describe "pathways" as the variety of career paths (such as architecture vs. construction management) that students could follow over their lifetimes. For some, the term "multiple" means that students should have the option to choose from multiple secondary education paths, including traditional comprehensive high school, career academies and academies without career themes. For others, it means students can select from a variety of industry-themed academies, such as health, engineering or information technology. Still others believe the term "multiple pathways" is synonymous with career academies and refers to high school programs that integrate academic and career technical education and provide work-based learning opportunities. Although there is work to establish a common definition of multiple pathways, including legislative efforts that define multiple pathways[10], there is not widespread awareness of or agreement on these definitions.

While some interviewees emphasized the lack of alignment around how to define multiple pathways, others argued that the problem was a more fundamental lack of clarity on how to define the field and draw its boundaries. As one program implementer described it, "We need clarity on what is and what isn't part of multiple pathways. [We need to] identify where other movements are a part of this and where they can connect." The absence of a clear, widely agreed-upon basic definition of multiple pathways has huge implications for the field as a whole. One funder described the challenge: "If you don't know what [multiple pathways] is, it's hard to advocate for what you want."

Finally, although members of the field generally agreed on the elements of successful pathways programs described above, several interviewees were unclear on whether and to what extent every element was required. For example, as noted earlier, some interviewees questioned whether California Partnership Academies were truly multiple pathways programs, arguing that only California Partnership Academies with rigorous academic and technical curricula and high-quality work-based learning should be considered so. Others believed California Partnership Academies were synonymous with multiple pathways programs.

[10] Examples of legislation defining multiple pathways include AB2648, which formally defines multiple pathways in the California Education Code; among other elements, the definition in AB2648 states that multiple pathways has four components: integrated core curriculum, integrated technical core, series of work-based learning opportunities and support services

Finding 3: Participants have low affiliation with the field.

Among those who see multiple pathways as a field, relatively few practitioners consulted see it as the primary or solitary field to which they belong. As one leader shared, "My field is literacy, but I'm also working in multiple pathways. … [Multiple pathways] is a developing field that needs a lot of development." A spokesperson from a coalition that supports multiple pathways agreed: "We are right on the border, maybe just past the point of forming as a field. We are [still] trying to generate awareness and buy-in."

Others are not sure that multiple pathways should be considered a field, but rather a strategy or an approach that is applicable and complementary to a number of education-reform efforts. Some see multiple pathways as a strategy that complements the efforts to improve students' college readiness and to make the "A-G"[11] University of California and California State University admission requirements the default curriculum for all students. As one member of a school board suggested, "Multiple pathways is a strategy to implement the A-G curriculum. Many organizations with different agendas think multiple pathways is a good idea and see part of their agenda connected to [it]." The leader of a grassroots community-based organization concurred: "The goal of preparing students for college and career resonates with [our] agenda. Multiple pathways is not a central framework for [us] but it doesn't contradict our vision. A-G is the central strategy and multiple pathways is helpful."

"I don't quite get the term multiple pathways. I don't know that I understand or like the term. … If it is advocating for strong career and college education for all, what's the 'multiple' part?"

— *Researcher*

On the other hand, some leaders see multiple pathways as a strategy to promote the evolution of career and technical education (CTE) programs. One industry leader noted that "in many places, career and technical education means multiple pathways," and a policymaker pointed out that "multiple pathways has struggled to differentiate itself from CTE." Among some interviewed, there was great concern that this confusion could cause multiple pathways efforts to fail.

Several interviewees thought that the lack of a common definition has allowed the field to create a "big tent" of broad-based support. But to increase the affiliation participants have with the field, interviewees still recommended seeking greater clarity, even if doing so risked driving participants away.

[11] A-G are the high school subject requirements for admission to a University of California (UC) or California State University (CSU) campus. Many believe that A-G is synonymous with college readiness due to the significant number of courses needed to satisfy A-G requirements.

Standards of Practice

The development of common standards of practice helps fields become professional. Strong fields have exemplary programs, agreement on best practices, organized training and professional development to support practitioners, and established processes and organizations to ensure the quality and fidelity of implementation.

The multiple pathways field is at an early stage in developing standards of practice. Members of the field reported promising demonstration models through a network of model pathways programs, but they said the field still lacks large-scale, systemwide demonstrations. In addition, the field does not have sufficient infrastructure to develop and support teachers and administrators and help organizations meet the growing demand for multiple pathways programs.

Finding 4: Exemplary programs have built awareness and buy-in from key constituencies. Many believe the next step is large-scale, systemwide demonstrations.

Interviewees consistently reported that site visits to model programs at the individual school level were the most effective way to demonstrate the promise of the multiple pathways approach. As one program implementer said, "Visits to model programs are more effective. This is what really convinces people." A policymaker agreed: "We've been fortunate to do site visits, and those visits have affected policy and awareness."

Witnessing concepts like an integrated curriculum and project-based learning in practice enabled skeptics to understand the core elements of multiple pathways. And interacting with students and teachers provided powerful testimony to the relevance and rigor of these programs in preparing students for success in college and career. Demonstration programs are playing a critical role in helping educators, policymakers, business leaders, students and parents observe the approach firsthand, dispel doubts about its feasibility and understand its effectiveness.

Those interviewed suggested that building more demonstration programs will spur growth in the field, showing key constituents that the multiple pathways approach works in their community and therefore creating awareness and buy-in. One leader of a community-based organization said, "This has to expand through model programs, model schools; people become aware and baptized when they see the local models." An implementer concurred: "Local models with proven success and teachers' testimonials [are needed] to overcome teachers' and parents' skepticism and resistance."

Several implementers shared that the field should learn from the lessons of other school reforms that grew too quickly and lost fidelity of implementation. One implementer shared a specific example of a reform that "accomplished the footprint, but not quality consistency." These implementers agreed that the multiple pathways field needed to invest in the development of processes and principles to ensure quality control.

While the multiple pathways approach has been successfully implemented at the school level, interviewees believed that the field needed to take the next step and demonstrate the approach at a large scale or at a systemwide level. These members of the field defined the level of scale needed as a district or county that provides its high school students with access to a wide range of industry options, such as those that correspond with California's 15 major industries[12]. Such implementations would demonstrate that the approach is not reliant on talented leaders alone. One policymaker pointed out, "People in this field are out-of-the-box thinkers – what happens when you do this model with more traditional practitioners?" And one implementer said, "[The approach must] prove success at the district, rather than just the school level. We need to demonstrate that this is not just about exceptional leadership."

Large-scale demonstrations would help identify pressure points in the model and the requirements for scaling programs. As one policymaker said, "Going to district would expose barriers at the policy level. Short of that you are operating on assumptions." Another program implementer agreed: "An essential next step is at the district level. There is evidence that you can have an academy or wall-to-wall school that works, but can you have choices [and] options within a district? We need to define how you implement across a district."

Finding 5: The supply of trained teachers, curricula and technical assistance is insufficient to support growing demand.

In order to expand, the multiple pathways field needs to develop the infrastructure to support teachers and school administrators. The implementation of multiple pathways programs requires a substantial change in how traditional high schools operate, as noted in a National Academy Foundation academic planning guide:

> *Administrators, counselors and teachers all have to be ready to change their practices. Scheduling has to be done differently. Curriculum needs to change. Employers, parents and other community members need to be involved, and have a strong role in the way the school functions. All this requires a lot of work and involves going through a difficult and sometimes contentious change process.*

Although leading members of the field are developing the infrastructure, many practitioners do not believe that the current capacity is sufficient to support growing demand. One program implementer shared that "the demand is greater than the supply of technical assistance right now. This is testimony to how fast [the field] is growing. Technical assistance needs to be more available. … Schools need help with finance, professional development, the bell schedule, curriculum materials."

[12] California's 15 major industries include (1) agriculture and natural sciences, (2) arts, media, and entertainment, (3) building and environmental design, (4) education, child development, and family services, (5) energy and utilities, (6) engineering, (7) fashion design, manufacturing, and production, (8) finance and business, (9) health science and medical technology, (10) hospitality, tourism, and recreation, (11) information technology, (12) manufacturing, (13) marketing, sales, and service, (14) public services, and (15) transportation.

One of the most frequently cited challenges was the limited supply of teachers who are trained to deliver multiple pathways components, such as a curriculum that connects challenging college-preparatory material to career-based themes and real-world applications. One researcher pointed out that "teachers are not trained to do integrated teaching. … They need to modify teaching and practices."

Some members of the field acknowledged the existence of quality professional-development programs though technical-assistance providers, and others noted the efforts to develop teacher-training programs through universities including California State University at San Diego. But many practitioners did not believe existing programs are sufficient to meet the demand for multiple pathways-trained teachers.

"We are at a nexus point in [our district]. … We have a lot of people saying, 'Yes, we want to do it, but we don't know how.' We need to help teachers and administrators to understand how to do multiple pathways."

— Program implementer

Members of the field also believed that the availability of high-quality, integrated curricula is insufficient to meet the demand of schools and businesses. Since teachers typically teach in isolation and have limited opportunity for joint planning time, off-the-shelf curricula offer illustrations of high-quality lesson plans and problem sets that teachers can adapt and build upon. Others interviewed said that curricula need to be developed to address all 15 major industries in California, because the interests of students and businesses vary greatly across the state. One implementer said, "We don't want to limit regions to the pathways that have been developed."

"There is enthusiasm, and the teachers at the career academies are excited to be there. Teachers are really invested in making it work with multiple opportunities — equally prepared for college and career. They have the desire but not the knowledge and skills."

— Program implementer

In addition, interviewees pointed out the need to support schools as they implement the structural and fiscal requirements of multiple pathways programs. Structural challenges they specified include block scheduling, common planning, partnership building and coordination with industry and postsecondary institutions. The support for fiscal requirements that interviewees cited as necessary includes understanding the true cost of pathways programs and providing guidance on obtaining public and private funding through categorical funds (e.g., California Partnership Academies, Regional Occupational Centers and Programs, the federal Perkins Vocational–Technical Education Act), startup and facilities funding (e.g., Proposition 1D), in-kind support from businesses and philanthropic grants. A leader of one community-based organization said, "More technical assistance and advisory capacity is needed to scale up."

Finally, to lead districts and schools through changes in structure, instruction and culture, administrators need training programs and support. An implementer shared, "[We] need to think about how we prepare administrators. … It is difficult to transition from traditional high schools to multiple pathways. Administrators need to know how to work with the business community and how to maintain school culture because students are spending time off campus." Another implementer said, "Cultural change as well as technical skill-set development are necessary to change instructional practice. … [An] outside trainer visiting for one day doesn't help much; you need to have buy-in by administration at the school and internal effort to do the professional development."

ConnectEd's Key Principles for Integrated Curricula

- Units are designed according to applied learning theory. They connect to students' lives; demonstrate the relevance of theoretical material through interesting, practical applications; and arouse students' curiosity with challenging problems.
- Classroom lessons address state and national academic standards and lead to high school graduation and success in postsecondary education.
- Each integrated curriculum unit addresses technical knowledge and skill standards that industry professionals have validated.
- Students work on "essential questions" that require mastering challenging academic and technical content and applying teamwork, critical thinking and problem-solving skills.

Source: ConnectEd.

Knowledge Base

Knowledge is the foundation upon which a field builds its practice. To be successful, a field must not only study the effectiveness of its approaches but also share best practices among practitioners and cultivate a culture of ongoing improvement. The purpose of the knowledge base is not just to collect knowledge for the sake of learning alone. A well-functioning field uses knowledge to improve programs on the ground and bring best practices to scale.

Bridgespan found that the knowledge base of the multiple pathways field has a solid foundation and is growing. Members of the field found existing evidence of program effectiveness encouraging, but they also believed that there was a need to develop, codify and disseminate best practices concerning work-based learning and program assessment. In addition, interviewees believed that few vehicles exist to facilitate knowledge sharing and collaboration.

Finding 6: School-level demonstration programs have generated promising evidence of success.

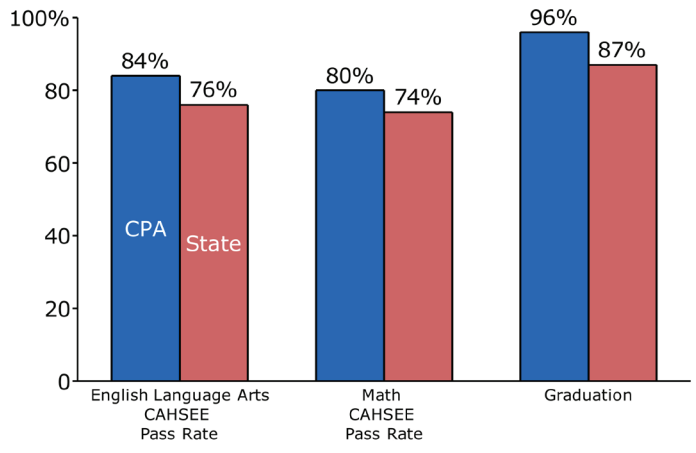
One policymaker said, "There is no lack of confidence in the field whether this is real and valid. There is admiration and support for this model." A business leader agreed: "For the majority of the business community, there is more than enough evidence."

MDRC[13] has published a series of random assignment studies about career academies over the last decade that indicates the approach improves outcomes for students, particularly for those most at risk of dropping out or underachieving. The MDRC studies examined a cohort of students who applied to nine average-performing career academies over 15 years. The studies compared the group of students who were selected and attended the academies (about 55 percent of students) with those who did not attend.[14] Compared with the control group, career academy students were more likely to have completed academic and career and technical education coursework and to have participated in work-based learning opportunities that included paid internships.

For at-risk students, attending a career academy increased the likelihood that they stayed in school, went to school more often and earned more credits toward graduation. After graduation, career academy students earned about $2,100 more per year than the control group. The earnings boost was even more pronounced among at-risk men, who earned about $3,700 more per year (more than $30,000 over the course of an 8-year follow-up period) and were more likely to be a custodial parent or live in stable family environments. Although important for further validation of the multiple pathways approach, the academy students and the control group did not have significantly different rates of high school graduation or postsecondary credential attainment.[15]

In addition, a study of California Partnership Academies by Career Academy Support Network and ConnectEd found that, compared with students statewide, those attending California Partnership Academies had higher attendance rates, performed better on standardized tests, were more likely to complete the A-G requirements of the University of California and California State University systems, and had higher graduation rates (see Figure 2).[16]

Figure 2. California Partnership Academies vs. Statewide Academic Achievement



Source: "A Profile of the California Partnership Academies," ConnectEd, CASN, March 2007.

Finally, an assessment of more than 2,100 students enrolled in eight ConnectEd-model multiple pathways

[13] MDRC is a firm that evaluates large-scale real-world policies.
[14] The MDRC studies used a random assignment design. The nine academies in the study were oversubscribed, with more interested students than could be accommodated. A lottery was held to determine who would attend the academies. Because of the random assignment, the groups of students were similar in both measured and unmeasured characteristics (e.g., motivation, perseverance). Therefore, any changes in student outcomes could be attributed with confidence to academies.
[15] James Kemple and Cynthia Willner, "Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment and Transitions to Adulthood," MDRC, 2008.
[16] Gary Hoachlander, et al., "A Profile of California Partnership Academies," ConnectEd, CASN, 2007.

programs found that all of the seniors during the 2006-2007 academic year graduated. Of those, 71 percent fulfilled the A-G requirements and the majority enrolled in postsecondary education programs. In addition, 82 percent of 10th-graders passed the English/language arts section of the California High School Exit Exam, compared with the statewide average of 77 percent.[17]

Despite these and other studies, members of the field regarded multiple pathways as promising rather than proven. Because the approach represents a significant change and is more expensive than traditional high school models, some practitioners believed that additional evidence is required to convince skeptics and change the status quo. They thought additional well-designed research is needed to prove that these programs increase academic achievement and graduation rates, and large-scale demonstrations are required to prove the feasibility of implementation at not only the school level, but at the district and county levels, as well.

Questions Frequently Asked About Multiple Pathways

Does multiple pathways promote a "college preparatory" curriculum?

Yes. Multiple pathways is designed to provide students with the preparation, skills and opportunity to pursue a full range of postsecondary options, including two- and four-year colleges and one-year certificate programs. In order to ensure that students have access to these options, pathways programs should meet the A-G requirements for admission to University of California and California State University systems.

Does multiple pathways promote career and technical education?

Yes. The combination of a "college preparatory" curriculum with rigorous, standards-aligned career and technical education courses is a key component of engaging and motivating students, preparing them for postsecondary options and giving them a head start toward a successful career.

What does "integrated academic and technical curriculum" mean?

Integration of curriculum occurs when teachers look for appropriate lesson plans and projects to incorporate academic concepts into technical courses or apply real-world concepts in academic courses. For example, when an algebra instructor asks students to calculate the number of 8 x 4 x 2½-inch bricks required to construct a 1,200-square-foot single-level home with 8-foot walls, the teacher is applying real-world concepts into an academic course. In pathways programs, integration of curriculum typically centers around a single industry theme, such as engineering.

[17] Seventy-seven percent of 10th-graders within eight ConnectEd demonstration sites passed the math section of the CASHEE, compared with 76 percent of sophomores statewide.

Finding 7: Research gaps are greatest in the development and dissemination of best practices and the measurement of student outcomes.

Interviewees consistently identified two major gaps in the evidence base that the field must overcome in order to achieve scale: (1) lack of evidence about best practices in delivering specific components of the multiple pathways approach; and (2) lack of understanding about how best to measure student achievement.

One researcher said, "We need an approach to tease out what matters. Why does this work? Is it small learning communities? Integrated curriculum? Applied learning? Work-based learning? Exposure to the business community? We need to be sure what the reason is that it works."

Additional research is required to understand which components of the model work well in preparing students for college and career. From this understanding, best practices can be established. One example practice requiring further research is the core practice of work-based learning. Programs offer a broad range of options, including industry speakers, job shadowing, mentoring, project-based learning, community service, group internships, virtual internships and paid individual internships. However, no clear definition of best practices or explicit knowledge exists to help determine which components are mandatory. One interviewee said, "There is still a lot of ignorance and lack of knowledge about what works in this model. For example ... does work-based learning need to be a full-fledged internship or can it be academic work for a day?"

"We need evidence on academic achievement, assessment on integrated curriculum and work-based learning, and assessment on skills."

— Program implementer

"The failure of integrated academic rigor and CTE in the mid-'90s was a result of state and national assessments in math and reading. Not math as it relates to engineering or business, just conventional math. … Tests developed by states were basic and did not apply to new materials and the real world."

— Researcher

"We need to think about an appropriate way of assessing multiple pathways. If we really think that this is the best way to teach academic courses, we shouldn't advocate for separate tests."

— Researcher

Another example concerns the core practice of providing students with direct connections to postsecondary education options. Multiple pathways programs offer students a variety of connections, including on-campus sessions with college recruiters and visits to campuses, programs at local two- and four-year colleges that align with a high school's chosen industry, and dual-enrollment or dual-credit options. As with work-based learning, members of the field are not aligned with regard to best practices for this component.

Members of the field also lack clarity about how best to measure student achievement in the multiple pathways model. Interviewees acknowledged the need for evidence that its core components result in improvements in current academic assessments, such as the California High School Exit Exam.

However, as multiple pathways is a fundamentally different approach to secondary education and instruction, the current standardized tests may not be adequate to measure the broader learning objectives of pathways programs. Members in the field believed that the current assessment systems need to be expanded to include both traditional measures of math and English proficiency and assessments of learning and thinking skills – problem-solving, contextual learning, teamwork skills – to evaluate the full benefits of multiple pathways. In conjunction with traditional assessment tools, these alternative assessments, such as authentic assessments that evaluate 21st-century skills[18], will better equip teachers, administrators, and district leaders to measure student achievement in multiple pathways more holistically.

Finding 8: The field has few formal mechanisms for sharing knowledge and collaborating.

The field boasts a well-established community of researchers. They are versed in the multiple pathways approach, have many years of experience in its assessment and are positioned to continue the field's advancement. The field also has a solid foundation of knowledge and an emerging perspective about its best practices. In addition, the field includes a growing group of practitioners who have deep experience and emerging expertise on the effective practices of multiple pathways and how to best implement the approach. Despite this growing level of expertise, practitioners believe the field needs better mechanisms to disseminate best practices.

"I think there is more we can do to share best practices like site visits, learning communities."

— Policy expert

"There is no shortage of best practices. The challenge is figuring out what it means for the local level. Right now there's no mandate for duplication of best practices."

— Business coalition leader

"We do need professional development, but you don't need an expert to lead this. You need people in the field having time to talk with each other and strong facilitators. You need strong anchors in the research that they can go back to. We need a common vocabulary."

— Program implementer

Many of those interviewed called for the creation of additional ways to share best practices. Possibilities include learning communities, a regular convening of organizations within the multiple pathways field, or a trusted resource (e.g., newsletter or an online forum). These options, it is thought, might foster ongoing collaboration and the continual development of new knowledge and research. Field members could build on the work and

[18] 21st century skills, as outlined by the Partnership for 21st Century Skills, are skills students need to be effective citizens and leaders, and include core academic skills (e.g., English, math, arts, global awareness), creativity, problem solving, critical thinking, collaboration, information and technology skills, and life and career skills.

lessons of others. Additionally, many people believed that involving program implementers and practitioners more in the research process would improve the dissemination of best practices.

Leadership and Support

To build and sustain a field, leadership and grassroots support is critical. Strong fields have influential leaders and exemplary organizations with a broad base of support from critical constituents.

This field assessment revealed that district, policy and business leaders share a growing support for the multiple pathways approach. Support and leadership from parents and students are similarly critical to success. While evidence of such support is emerging in discrete instances, there is no strategy for how to systematically bring the voices of parents and students across the state into the multiple pathways discussion. Those interviewed suggested that forming such a strategy will be essential to the field's advancement.

Finding 9: District, policy and business leaders increasingly support the multiple pathways approach.

Proof of interest at the district and policy levels can be seen in the growing number of career-themed California Partnership Academies across the state. Established by legislation in 1984 and supported by subsequent appropriations, California Partnership Academies have increased to number approximately 340 in more than 200 comprehensive high schools today.[19] Recently, the Legislature approved special funding to bring the total to nearly 450 California Partnership Academies.[20]

"You need district-level support, because most funding comes from the district level."

— *Researcher*

"Superintendents are already convinced about multiple pathways. … It's about convincing government officials. They're concerned about tracking."

— *Program implementer*

This growing interest is also reflected in conversations Bridgespan held with superintendents and policymakers. Reflecting on the relationship between California's high dropout rates and the lack of relevant curricula, one superintendent noted, "Right now it's like our high school kids are on an inner tube to nowhere. They don't see the relevance of their schoolwork. We are using a multiple pathways approach to create a 21st-century learning environment that is integrated with A-G as the default curriculum."

Local businesses and business coalitions were another community in which the field assessment uncovered significant local leadership and growing support for multiple pathways. One implementer noted, "Business and industry are facing a huge shortage of workers. They

[19] Denise Bradbury, et al., "A Profile of the California Partnership Academies 2004-2005," ConnectEd, March 2007.
[20] Coalition for Multiple Pathways (www.connectedcalifornia.org/coalition/existing_work_2.php)

Spotlight: Elk Grove Unified School District

The Elk Grove School District, located outside of Sacramento, helps realize its mission to prepare each student for college and career through 10 career technical academies and five career pathways at the district's eight comprehensive high schools. The district requires that all academies be certified and board-approved using national career academy standards. In addition, the district offers a Regional Opportunity Program in which interested students receive classroom instruction each week supplemented with four days of onsite training, in locations such as hospitals or local businesses, related to their school's curriculum.

Elk Grove's longstanding commitment and fidelity to the career pathways model has translated into results for students. For example, students at the 14-year-old Manufacturing Production and Technology Academy at Laguna Creek High School have higher attendance rates and grade point averages than others in their school. In addition, they outperform their peers in the district and the state on the California High School Exit Exam. The majority (87 percent) have attended two- or four-year colleges. Elk Grove's strong district leadership helps to ensure program fidelity, to make Regional Opportunity Program classes available to any interested high school student in the district and to marshal funding from partners including ConnectEd, which recently awarded the Manufacturing Production and Technology Academy a $200,000 implementation grant. Superintendent Steven Ladd explained, "We want to eliminate the achievement gap. … Project-based learning and multiple pathways helps students use all tools in their arsenal and helps us achieve that goal."

Source: Elk Grove Unified School District.

understand they need to reach back to K-12 and are willing to provide schools with internships for students and externships for teachers."

District and County Education Leaders: The multiple pathways approach is an entirely new way of teaching students. Teachers, administrators and district leaders must be bought into the programs completely to implement them well. These programs are also more expensive to start and run than traditional secondary schools. District instructional leadership and support can play a major role in fostering the necessary buy-in, and in starting and sustaining these programs within a portfolio of schools. In the words of one researcher, "Critical success factors … include a tremendous commitment to the model from both the top down and the bottom up, and a shared vision that this is a whole different way of dealing with students, not just a new curriculum." A technical assistance provider who is intentionally working with leaders at the regional level emphasized the importance of the district: "Local district leadership is important because the actors know each other and can come to agreement among themselves. They can fly below [the radar of] state politics and the entrenched battle between college prep and vocational education. It is a different conversation at the regional level because it is real people who are accountable to actual kids."

Policy Leaders: Key policy leaders in Sacramento are also likely advocates for multiple pathways. (For a discussion of why these leaders are critical and the role that state policy plays in supporting multiple pathways programs, see "Funding and Supporting Policy" section.)

"To capitalize on the opportunity posed by this election cycle you really need consensus between legislative leaders and the executive branch on what multiple pathways is, and proof that it improves the outcomes we care about."

— *Policymaker*

Growing support for the multiple pathways approach from policymakers came across in the majority of interviews that Bridgespan held during the field assessment. Representative comments included: "Within student-centered reforms, multiple pathways is running pretty hot. There is a collective sense that we need to revamp high schools." The broad appeal of a multiple pathways approach within the California Legislature can be explained by its positioning as a middle ground between the A-G college track and vocational education. "Legislators do not want to make binary choices," a policymaker noted. "Anything that can satisfy contending groups appeals to them." A growing legislative momentum around multiple pathways programs can also be seen in the recent increase of bills and appropriations related to advancing career and technical education.

Despite this growing support, several policymakers said the term multiple pathways did not resonate with most members of the Legislature. They believed the field needed to be clearer about the terminology and the problem multiple pathways addressed in order to build greater support among policymakers. Said one policymaker, "Most people in the Legislature do not understand the term multiple pathways. There is a lot of confusion. … There isn't a crisp message."

Business Leaders: Businesses have been key partners in the most successful multiple pathways demonstrations in California to date.

For example, in a recent analysis of work-based learning opportunities, WestEd researcher Svetlana Darche highlighted San Francisco's 17-year-old Build SF program, a partnership between the Architectural Foundation of San Francisco (a local industry organization), the San Francisco Unified School District and 24 professional firms in the Bay Area.[21] The Architectural Foundation plays an essential intermediary role by paying for the program director's salary, providing the facility and a variety of state-of-the-art technologies, and running the work-based learning component of the program. In addition, the foundation provides generous financial support to supplement district and Regional Opportunity Program funds. A Build SF employee noted, "This program allows kids to see people with passion for what they do and that creates a real connection for them." Without the Architectural Foundation's capital, relationships and years of hard work, the program would not have survived.

"With a workable collaborative of businesses to tie the curriculum of the school to the economic issues of that region … multiple pathways will be able to scale much more effectively."

— Policymaker

"There is a lot of power and leverage in bringing people together. Work like Ford's Partnership for Advanced Studies…brings all the players together, allowing individual work to be part of a bigger whole."

— Business coalition leader

[21] Svetlana Darche, "Work-Based Learning in California: Opportunities and Models for Expansion," WestEd unpublished report, June 2008.

Businesses across the nation have partnered with schools to provide work-based learning programs "because they motivate students to excel academically and equip them to succeed in their personal and professional lives," according to a study from the National Leadership Employer Council.[22] While companies typically participate in these programs for philanthropic reasons, the council found that employers average a two-to-one return on investment.[23] In addition, the study found that businesses benefit in ways that are not monetary, which include improved employee morale and productivity.

Several members of the field were concerned that businesses lacked the incentives to support the number of internships that would be required to scale up the multiple pathways model. Research from Thomas Bailey, Katherine Hughes and David Moore supports this concern. In their book, *Working Knowledge*, the authors write, "To expand the number of internships significantly beyond the current numbers may require reaching groups of employers who are not responding to philanthropic arguments." They conclude that considerable work would be required to recruit additional employers.[24]

To overcome this challenge, some interviewed cited the need for regional intermediary organizations, such as chambers of commerce, to recruit and train employers who can provide students with high-quality internship opportunities. Based on her research into work-based learning programs, WestEd's Svetlana Darche expressed agreement with this recommendation in a report she authored, writing, "Where schools and employers do not have the staff or communication channels needed for strong work-based learning connections to develop and flourish, intermediary programs can play an essential role in brokering the connections and placements and in monitoring the student experience."[25]

[22] "Intuitions Confirmed: The Bottom-Line Return on School-to-Work Investment for Students and Employers," National Leadership Employer Council, 1999.
[23] The National Leadership Employer Council examined eight companies and found that they earned $0.44 to $5.64 for every dollar spent on work-based learning programs.
[24] Thomas Raymond Bailey, Katherine L. Hughes and David Thornton Moore, *Working Knowledge* (New York: Routledge, 2004).
[25] Svetlana Darche, "Work-Based Learning in California: Opportunities and Models for Expansion," WestEd unpublished report, June 2008.

Finding 10: Support from parents and students is an important component of bringing multiple pathways to scale.

Parents and students generally support multiple pathways concepts when they are explained. One implementer noted, "Multiple pathways is an easy sell to parents: First of all, we've got the dropout rate; second of all, the program can help advance students toward meaningful employment and college. If they know the academic basics are there, then parents get it."

Local coalitions including the Los Angeles Partnership for Multiple Pathways have been successful in building public awareness and rallying support from parents and students within the Los Angeles Unified School District.[26] Leaders in the field believed that a concerted strategy is needed at the local level to mobilize parents and students who can be advocates for programs and policies that increase access to multiple pathways.

"Parents are big advocates. In our community … parents' support has not been the concern. Their primary objective is to first make sure their kid makes it through high school."

— Program implementer

"Students' interest … is very high because they see connection to the real world."

— Program implementer

"We haven't said enough about students. Student successes can tell the story for multiple pathways advocates."

— Funder

Support and leadership from parents and students builds pressure on local districts and political representatives to adopt and sustain multiple pathways approaches. As parents gain awareness of the programs, and as their children demonstrate increased proficiency and passion for learning as a result of the approach, more and more districts at the margin will adopt multiple pathways options.

The sentiment that parents instinctively "get it" was echoed at a series of parent focus groups held in Los Angeles for the Institute for Democracy, Education and Access in May 2008. One parent said, "I think the most critical issue is going to be employment. … Increasingly, the dropout rates are getting a lot younger … and a high school education isn't enough to really survive." About the current state of the school system, another parent said, "I am worried about the standard of the education, the bad teachers … about the safety of my child in his school." Once it was explained, the concept of multiple pathways resonated strongly with these parents. Parents said, "It's what high schools should be preparing people to do," and, "It gives the kids a lot of options to choose."

[26] Los Angeles Partnership for Multiple Pathways promotes multiple pathways expansion in the Los Angeles Unified School District by advocating for policies, implementing programs and building public awareness. Members of the partnership include ACLU of Southern California, Alliance for a Better Community, Applied Research Center, Community Coalition, Community Development Department, Hispanas Organized for Political Equality, Los Angeles Area Chamber of Commerce, UCLA/IDEA, UNITE-LA, United Way of Greater Los Angeles and Urban Education Partnership.

The resonance among parents for the approach and the possibility that it could stem the tide of dropouts is also reflected in a study of high school dropouts commissioned by the Bill & Melinda Gates Foundation.[27] The study surveyed 467 geographically, racially and economically diverse people ages 16 to 24. It found that while there was no single reason students drop out of school, a lack of rigor and relevance were consistently listed as major factors.

Almost half of students surveyed said that classes were not interesting.[28] "They make you take classes in school that you're never going to use in life," one student remarked. In addition, more than two-thirds of the dropouts surveyed said they did not feel motivated or inspired to work hard in school. Two-thirds said they would have worked harder if their high school had demanded more. And in direct support of a multiple pathways approach that combines the high expectations of academic rigor with real-world relevance, 81 percent of dropouts surveyed indicated that opportunities for real-world learning that make the classroom more relevant, such as internships, would have improved their likelihood of staying in school.

Spotlight: Construction Tech Academy in the Kearny High Education Complex

One of the most promising aspects of the multiple pathways approach is how it can reengage students who are struggling academically. At Kearny High in San Diego, one of those students was Daniel Robles, who didn't have much hope of making it through high school, let alone getting to college. He barely finished middle school, leaving with a 1.3 grade point average. "I wasn't interested in school," Robles recalled. "I was there because I had to be there."

Robles decided to attend Construction Tech Academy, hoping he would find something to do outside of his classes that appealed to his interest in building things. Construction was an integral part of Robles' traditional classes. The hands-on learning helped him excel academically, turning his 1.3 GPA into a 3.5 and above. He graduated in 2007 and is finishing his freshman year at UC San Diego, with a major in mechanical engineering.

"It was such a great way of learning for me," said Robles, 19. "Everything was hands-on. Everything had a purpose. It made me realize that you can't have one without the other. Even if I just wanted to be a carpenter, I really need to know mathematics and physics."

Source: The James Irvine Foundation.

[27] John M. Bridgeland, John J. Dilulio Jr. and Karen Burke Morison, "The Silent Epidemic: Perspectives of High School Dropouts," Civic Enterprises and Peter D. Hart Research Associates for the Bill and Melinda Gates Foundation, March 2006.

[28] Greg Toppo, "Dropouts Say Their Schools Expected Too Little of Them," *USA Today*, March 1, 2006.

Funding and Supporting Policy

Adequate financial resources and an enabling policy environment can create opportunities for a field to develop and advance its practices. Strong fields benefit from and help build systemic supports and organized funding streams that encourage and sustain core practices.

A 10-point policy framework from ConnectEd and the work of the Policy Committee of the Coalition for Multiple Pathways are beginning to shape a field-wide policy agenda.[29] And while a handful of leading policymakers are supportive of multiple pathways and this emerging policy work, those interviewed said that this support has not yet translated into an overarching policy framework or dedicated funding for multiple pathways. To support their work at the local level multiple pathways innovators and entrepreneurs have cobbled together the necessary funding. But conversations with these actors made it clear that reaching the next level of scale will be difficult without incentives and supports for those who are less intrinsically motivated to move in this direction. Broad statewide adoption is highly unlikely without new policies and funding streams.

Finding 11: Despite policy challenges, innovators and entrepreneurs have been able to implement multiple pathways programs.

In interviews with more than 60 individuals working in all areas of the field, these professionals repeatedly expressed that policy is not an obstacle to individual program implementation at the district or school level. As one educator characterized it, "Policy and other circumstantial issues are important but not critical at this stage."

While there are no policy restrictions that make it particularly difficult for schools or districts to adopt multiple pathways, there are some policies that make it more difficult to implement, such as the challenge of getting courses that blend career technical education and academic skills approved for A-G requirements, narrow school accountability measures that create few incentives for schools to pursue approaches like multiple pathways, and current teacher credentialing options that do not adequately prepare teachers for success in multiple pathways schools. Interviewees also said that requirements specifying the amount of time students spend in their seats and liability concerns make some schools wary of including work-based learning in their curricula. Obstacles like these make multiple pathways less attractive to district and school administrators who are weighing the benefits and costs of pursuing the approach.

One of the most frequently cited barriers to implementation are policies set by the University of California's Board of Admissions and Relations with Schools, which determines what constitutes a college-preparatory curriculum.[30] The Board's restrictions make it difficult

[29] The 10-point policy framework is set forth in "Expanding Pathways: Transforming High School Education in California," by ConnectEd.

[30] The Board of Admissions and Relations with Schools sets the requirements for the University of California system, and the California State University system has also adopted these requirements. As a result, A-G effectively sets the bar as the definition of "college readiness" in California.

for courses that include hands-on and project-based learning to get certified as A-G (college-preparatory) courses. With limited instructional time in school, students sometimes face a forced choice between taking college-preparatory courses and taking career-related technical education courses. Multiple pathways programs, which try to bridge the two realms, can find it particularly difficult to operate in this type of environment.

In addition, current accountability standards pose challenges to schools that implement the multiple pathways approach. Accountability measures that focus solely on Academic Performance Index score improvement and student performance on standardized assessments, and that exclude measures of students' readiness for college and career, make multiple pathways a less attractive option for district- and school-level administrators. As one implementer suggested, "If the district is in district improvement, they believe they can't focus on efforts like this."

Others we interviewed talked about the limitations of current teacher-credentialing requirements. Multiple pathways emphasizes the integration of academic and career technical education, while the current credentialing system requires that teachers either pursue single-subject credentials or a career-technical credential. Teachers therefore come into multiple pathways settings unfamiliar with the integrated skills they need to succeed, which puts the burden of training and professional development on schools and districts.

Finally, one of the core components of multiple pathways is work-based learning. Through this component, students get the opportunity to integrate classroom learning with workplace skills, gain a better sense of the career path they might pursue and connect with adults in careers that interest them. Most multiple pathways programs include a relevant career-themed internship during the summer between students' junior and senior years. Participation in work-based learning during the regular school year is more difficult due to seat-time requirements, which regulate the amount of time that students must spend in classrooms in order for schools to receive full Americans With Disabilities Act funding. Limitations on schools' liability insurance, which may not cover students who work off campus, also hinder work-based learning during the school year.

While none of these policy issues has obstructed school-level adoption at this stage, members of the field cite them most frequently as obstacles that can make implementation more challenging.

Finding 12: Few systematic incentives exist for large-scale or district-level program adoption, so implementation requires creativity and persistence to cobble together the necessary funds.

Exemplary programs prove it is possible to fundraise from private and public sources to cover the cost of planning and transition to the multiple pathways model. Many of the educators consulted have been able to find additional resources through federal funds that support small learning communities, state funds that support California Partnership Academies, or local funding from philanthropy and area businesses. As one implementer suggested, "Multiple streams of funding are available. There's a lot of money, but you need a grant writer to access it." A state

policymaker agreed: "There's a lot of discretionary money. If local school districts really care … they can find the dollars." In California, the Partnership Academies funding and supporting legislation has been a strong positive force for those in the multiple pathways field.

Likewise, individual programs have been able to establish effective advisory boards that include business leaders. These boards have provided expertise, as well as resources, to support implementation. Several schools cited examples of how they had received support from local business partners to cover the cost of equipment or facilities at the outset of their programs. Some in the field pointed out the opportunity to learn from other reform movements, such as the smaller schools movement, which might offer lessons in how to overcome the challenges associated with transitioning from traditional high schools to innovative learning environments.

Although innovative schools have been able to cobble together the funds required to implement a multiple pathways approach, it is uncertain how many more schools could achieve this goal. For example, California Partnership Academies funds have been critical for schools implementing the multiple pathways approach, but the legislation provides for only approximately 340 schools and is capped at $81,000 per school. These programs serve fewer than 2 percent of high school students in the state.[31] Recently, the Legislature approved special funding to bring the total to nearly 450 California Partnership Academies programs.[32]

Similarly, businesses have been critical partners in many multiple pathways programs, but it's unclear whether business will come to the table to support implementation at the district, regional or state levels. Many people interviewed said the current public and private funding model is not sustainable or scalable. It takes a good deal of dedication, talent and time for educators to assemble the funding and other resources required to support quality implementation. Existing hurdles are likely too high for many more educators to surmount at this stage without greater incentives and supports.

Another challenge is that no one knows how much more the multiple pathways model costs than a traditional comprehensive high school approach. Multiple pathways programs today take many forms, with a range of costs associated with different designs. Some programs are implemented with few additional costs; others have much more robust financial models.

[31] Estimate of approximately 2 percent is based on an average of 114 students for each of the approximately 340 California Partnership Academies and approximately 2.0 million 9th-12th graders enrolled in the 2007-2008 class (California Department of Education: Education Demographics Unit – Statewide enrollment by grade report).
[32] Coalition for Multiple Pathways (www.connectedcalifornia.org/coalition/existing_work_2.php).

More important, to the extent of existing research consulted, there has not been a concerted effort to document the additional incremental costs of using this approach. Repeatedly, those interviewed or engaged in focus groups said that the incremental cost of the model is 10-20 percent above the cost of traditional comprehensive high schools, but these numbers were not verified. Information clarifying the additional funds required to implement multiple pathways would be invaluable, enabling schools and districts to know what they are committing to.[33]

Multiple pathways programs appear to be a strong option for many students. The combination of academic rigor and real-world relevance has helped youths stay in school, increased student engagement and boosted long-term earnings.

The multiple pathways field has significant momentum, as evidenced by the steady growth of pathways programs, promising evidence of a positive impact on student outcomes, and a supportive group of influential policymakers and exemplary organizations. However, when the field was assessed against common measures of strength, it appears to be at an early stage of development. Multiple pathways currently bears a closer resemblance to an effective movement with the building blocks in place to become a strong field.

Based on assessment findings and the identification of a set of key barriers to advancing the field, the following three recommendations and supportive actions steps are offered.

Recommendation #1: Develop a clear, precise definition of multiple pathways, messaging aligned with that definition and a quality-control system to distinguish high-fidelity implementations.

Members of the field are not aligned about the definition of multiple pathways and the problem it seeks to solve. This lack of cohesion has helped the growth of the field by making it more inclusive and enabling participants to develop their own customized definitions. But the absence of clear boundaries has produced a relatively low or uncertain level of affiliation with the approach.

Although participants generally agreed that multiple pathways programs should contain a rigorous combination of academic and technical curricula, work-based learning opportunities, and connections to postsecondary options, the field lacked consensus on whether these components are mandatory or optional. Participants also disagreed on the details of implementation, such as

[33] As is demonstrated in *Dollars and Sense: The Cost Effectiveness of Small Schools*, the 2002 report by the KnowledgeWorks Foundation, there is a flaw in traditional cost comparison methodologies. Focusing solely on cost per student negates cost external to the school system (such as costs for dropouts or under-prepared students). Some members of the multiple pathways field believe shifting to a cost per graduate focus would show that multiple pathways costs less than traditional education.

how to implement and how much to implement each component. An imprecise definition of the approach limits the field's ability to ensure the fidelity of program implementation. Fidelity to the model is critical to making sure that all students receive the instruction, support and opportunities that have led to increases in academic proficiency, graduation rates and future income.

The concern was raised that clearly defining multiple pathways could result in a narrowing of the field and a loss of supporters. Still, it seems an important step, signaling the field's maturity. This tradeoff may be worth the ability to build true affinity within the field and to ensure fidelity in program implementation.

Action Items

To coalesce the field and overcome this challenge, *a group of leaders can convene and develop a clear and consistent definition and messaging for multiple pathways.*

First, the group should address the multiple pathways terminology. Based on interviews, to the field may consider modifying the terminology in order to differentiate between the goal of multiple pathways (preparing students for success in college and career) and models that incorporate the core components of a multiple pathways program (such as career academies).

Second, the group should define the mandatory components of multiple pathways programs. It should also consider developing a certification like the Good Housekeeping Seal of Approval to recognize high-quality multiple pathways programs and help ensure fidelity of implementation.

Third, the field needs to be clear about its relationship with the college preparatory and career and technical education fields. Based on interviews, multiple pathways appears to be aligned with both fields. Multiple pathways comprises college preparatory programs that satisfy the A-G requirements for admission to the University of California and California State University systems. In addition, pathways programs require students to complete a series of rigorous career and technical education courses.

Actions Now Underway

The Neimand Collaborative, a public-interest communications agency, has been commissioned to develop naming and messaging recommendations for the field. The agency's preliminary recommendations were discussed and debated by field leaders convened by The James Irvine Foundation in November 2008. Final recommendations and plans are to be shared with field leaders in 2009.

The California Coalition for Multiple Pathways has established a policy working committee that is currently at work on a policy agenda for the field.

Fourth, the group should come to agreement about the problem they are trying to solve. Effective multiple pathways programs make school relevant for students by connecting academics with real-world applications and answering the question, "Why do I need to learn this?" By solving the relevancy problem, multiple pathways increase student engagement and, therefore, have the potential to improve academic proficiency, reduce the dropout rate and better prepare students for success in college and career.

Finally, the group should be aligned around the ultimate goal of multiple pathways in California. Members of the field agree that every student benefits from a rigorous and relevant high school education. They favor a goal of statewide adoption that makes multiple pathways programs available to all students in the state who believe they would benefit from the approach.

Recommendation #2: Establish large-scale, systemwide demonstrations.

Garnering additional support from district and school leaders will require a clearer link between the multiple pathways approach and improvements in student academic achievement on state standardized tests, as mandated by federal accountability laws like No Child Left Behind. One program implementer said, "Policymakers care about the achievement gap. We have to show that multiple pathways makes a difference on this."

The evidence supporting multiple pathways is promising. Site-level demonstrations have shown increases in student attendance, motivation and engagement. Research has demonstrated that the approach leads to increased long-term earnings. While studies have shown that students in multiple pathways programs achieve academic outcomes such as high school completion rates of over 90 percent and postsecondary degree attainment of 50 percent, when compared with a randomly assigned control group, these results are inconclusive. This is presumably due to the higher motivation levels students experience as they pursue multiple pathways programs.

The following comments are representative of a broader sentiment about the challenges of securing widespread district support: "Most of our challenges have come from districts. If the district or any of its schools are in improvement status, they believe they can't focus on efforts like this." Another program implementer noted, "Right now schools are so focused on getting a 5 percent increase in their Academic Performance Index that they are not focusing on anything else."

Evidence indicates that the links between the multiple pathways approach and improved academic outcomes are becoming clearer. In the interviews, it was widely acknowledged that "more and more districts are coming to the table" as districts learn that multiple pathways can contribute to both higher test scores and completion rates. But there is work to do before additional districts will come onboard. The field must prove that multiple pathways improves test scores and prepares students for college and career.

Districts and schools require significant support to successfully implement multiple pathways programs. To provide this support, the field needs to build upon the capability and capacity of existing technical assistance providers and training programs. In addition, districts and schools will require a supply of trained teachers, administrators and counselors, as well as partnerships with business. Following are descriptions of these assets.

Supply of trained teachers, administrators and counselors

A critical component of successful implementation is the supply of trained teachers capable of delivering multiple pathways instruction. To prepare teachers to deliver high-quality

instruction, special emphasis must be placed on ensuring that teachers receive the proper training, professional development, administrator support and planning time. In addition, teachers require high quality off-the-shelf integrated curricula and professional development opportunities (e.g., summer institutes, workshops, externships and learning communities) where they can receive training in team teaching, developing integrated and relevant real-world curricula and collaborating with industry to provide students with work-based learning opportunities.

School administrators need leadership development programs and learning communities to help them coach staff to collaborate within teams, develop curricula and establish partnerships with industry and colleges. Administrators must also receive training in the fiscal and structural changes required to implement pathways programs, such as obtaining public and private funding and modifying schedules.

In addition, teachers, school counselors and administrators require guidance on how to complement classroom learning with real-world experiences. They need handbooks that provide detailed examples of a broad range of "at school" and "in the workplace" work-based learning options, including industry speakers, job shadowing, mentoring, project-based learning, community service, group internships, virtual internships and paid individual internships. Also, to help schools provide students with high-quality internships, schools need technical assistance to train them to identify and recruit business and labor partners and fund the programs.

Partnerships between schools and businesses

Businesses have been key partners in the most successful multiple pathways demonstrations in California to date. However, there is a lack of intermediaries with the expertise to connect and support partnerships between schools and businesses at scale. This critical gap in the field must be filled.

Intermediaries, such as chambers of commerce or community-based organizations, can fill this gap by providing the experience, expertise and tools to facilitate partnerships between businesses and schools and make work-based learning placements available to students. A study by WestEd found that intermediaries can "play an essential role in brokering the connections and placements [with local businesses] and in monitoring the student experience." The study also noted that intermediaries can play a crucial role in providing capacity to support the scaling of pathway programs: "While it is no doubt possible to create a high-quality work-based learning program without a third-party organization's assistance, it would be difficult to create one that would survive personnel shifts over time, and even more difficult to create one with much capacity for growth."[34]

In addition, to ensure that students have high-quality work-based learning experiences, schools and intermediaries must provide businesses with clear guidelines on the roles, tasks and responsibilities of mentors and employers for activities like job shadowing, mentoring and

[34] Svetlana Darche, "Work-Based Learning in California: Opportunities and Models for Expansion," WestEd unpublished report, June 2008.

internships. Mentors and employers also need training to understand the skills and knowledge students should develop through participation in these activities and how best to coach and provide feedback to adolescents. In addition, business and labor need to be aware of the time, costs and incentives for participating in these programs.

Action Items

In order to make multiple pathways programs accessible to any high school student in California who needs it, *investments are needed to develop systemwide models that demonstrate the feasibility and impact of multiple pathways at a district or county level.* Successful demonstration at the district or county scale is a key way to trigger statewide adoption. It would provide the proof points required to encourage more school district leaders to adopt the approach and convince additional policymakers to support multiple pathways program legislation.

Leaders in the field should target and support a select number of districts or counties that are willing to implement a portfolio of multiple pathways programs that enables high school students within their region to choose from a large selection of industry pathways. To help ensure success, each district or county should begin with a year of planning, complemented with technical assistance, in order to develop an implementation plan, train administrators and teachers, and develop industry curricula. During the planning stage, clear success criteria and learning objectives should be established. At a minimum, the learning agenda should capture the requirements for district-level implementation, including human capital, funding, structural and policy requirements.

Actions Now Underway

- ConnectEd has launched an effort to pilot multiple pathways at a systemwide scale (more than six pathways programs per district) in six to eight districts in California. Responding to a request for proposals, 27 districts submitted proposals for financial and technical support for planning. Ten were selected by a committee of field leaders to receive help. Planning is underway and implementation is expected to start in fall 2009.
- San Diego State University has recently initiated an effort to develop teacher training programs focused on multiple pathways within schools of education across the CSU system.
- A taskforce of technical assistance providers including ConnectEd, National Academy Foundation, and Career Academy Support Network, is developing a collective plan to support district-level multiple pathways implementations.
- ConnectEd and other technical assistance providers have begun development of a certification program for multiple pathways schools.

A crucial prerequisite for successful large-scale systemwide demonstrations is to build the infrastructure to support implementation and ensure program fidelity. Investments are needed to build:

- The capability and capacity of technical assistance providers to support district- or county-level implementations
- Professional development and training capacity to generate an ample supply of teachers and guidance counselors for the programs
- Development of curricula that teachers can customize in all 15 major industries
- Tools and regional intermediaries to support high-quality work-based learning
- Processes and resources to assess and certify the fidelity of pathways programs

In addition to proving the feasibility of implementing multiple pathways at scale, the field needs to demonstrate that this approach improves academic achievement and attainment. To accomplish this, the field needs to invest in the collection and assessment of key student outcomes like performance on state standardized tests, graduation rates and college-enrollment levels.

Recommendation #3: Work to increase state funding and create more supportive policies that would facilitate broad adoption.

While interviewees were generally optimistic about the potential for continued funding for school-level demonstrations, most recognized the need for policy change that would create additional resources to support the model at broader scale. An intermediary that supports schools in using a multiple pathways approach recognized the importance that funding plays in getting schools to adopt the model: "People are very practical. They get [multiple pathways] and love it. But it requires common planning time, co-teaching, cohorts of students and alignment of standards. And until you tell them that there are resources to support this, they [don't think] … this can happen."

Given the significant barriers to implementation, as well as the challenges related to assembling the funds required to support the model, it seems greater scale may be possible only if more significant financial incentives can encourage others to tackle and overcome these hurdles. This support will help schools and districts to overcome the many obstacles to implementing multiple pathways, such as:

- Obtaining additional public and private funding to support implementation (e.g., training, equipment, facilities, work-based learning)
- Creating master schedules that accommodate block classes and keep cohorts of students and teams of teachers together
- Integrating academic and career themes with a stronger emphasis on project-based and hands-on learning
- Creating and sustaining strong advisory boards that engage the business community
- Finding an adequate number of high-quality environments for students to participate in work-based learning

Educators said districts and schools often meet any new approach to teaching and learning with resistance, while others spoke about the "reform fatigue" that plagues many people who see multiple pathways as just another effort that will, like others, soon pass.

Action Items

To facilitate the statewide adoption of the multiple pathways approach, *leaders within the field need to work together to develop a focused state-level policy agenda and build constituencies to support and advocate for the agenda.*

District-level demonstrations offer an ideal opportunity for the field to develop its policy agenda. Tracking the requests that demonstration districts submit to the Board of Education to waive sections of the education code will allow the field to understand the policy changes that give schools the flexibility to fund and implement pathways programs, such as ways to allocate categorical funding and manage seat-time requirements. The field can also learn about funding requirements as leaders inside the same district examine the incremental cost of multiple pathways programs compared with traditional schools.

Actions Now Underway

- Field leaders convened in November 2008 and discussed how districts involved in the systemwide demonstrations (noted previously) could provide building blocks for advocacy of state-level policies that support multiple pathways. A political strategy is being developed by ConnectEd and Irvine building on their recommendations.
- The California Coalition for Multiple Pathways has established a policy working committee that is currently developing a policy agenda for the field.

In addition, demonstration districts are important places to build a strong constituency that can advocate for funding and policies to expand multiple pathways. During the district-planning phase, the field should develop a communications strategy to target and build awareness and buy-in among key constituent groups within districts.

Finally, the field should work closely with policymakers and the State Board of Education to develop a pilot project that evaluates the effectiveness of multiple pathways. This collaboration includes working with the Board of Education to define the evaluation process, data-collection requirements and reporting guidelines. Based on evaluations of the demonstration districts, this pilot project could result in policies that fund and support the expansion of multiple pathways programs.

* * *

The multiple pathways approach is one of the most promising solutions available to address the lack of academic and workforce preparedness among today's students, as well as the challenge of engaging young people who do not find school relevant. By making learning relevant, multiple pathways increases student engagement and thereby has the potential to improve academic proficiency, reduce the dropout rate and better prepare students for success in college and career. Better understanding and aligning the field in which this work takes place may be its best hope for success.

Appendix A: Advisory Committee

Veronica Melvin, Executive Director, Alliance for a Better Community

Don Shalvey, CEO, Aspire Public Schools

Jack Scott, Chancellor (and State Senator), California Community Colleges System

Rick Miller, Deputy Superintendent, California Department of Education

Lee Angela Reid, Consultant, California State Senate Office of Research

Patricia Rucker, Legislative Advocate, California Teachers Association

Jay Schenirer, Education Policy Advisor, Capital Impact

Denise Fairchild, President and CEO, Community Development Technologies Center

Steve Patrick, Senior Program Officer, Special Initiatives
Greg Sommers, Senior Program Officer, Education
Bill & Melinda Gates Foundation

Anne Stanton, Program Director, Youth Program
Daniel Silverman, Director of Communications and Corporate Secretary
The James Irvine Foundation

Milton Chen, Executive Director, George Lucas Educational Foundation

Robert Ivry, Senior Vice President, MDRC

J.D. Hoye, President, National Academy Foundation

Scott Himelstein, Director of Career Technical Education Initiative, San Diego Chamber of Commerce

Nancy Farnan, Director, School of Teacher Education, San Diego State University

Mike Kirst, Professor, Stanford University

David Rattray, President and Executive Director, UNITE-LA

Jeannie Oakes, Director of ACCORD and IDEA
Marisa Saunders, Postdoctoral Fellow
UCLA

Appendix B: Interviewees and Focus Group Participants

Organizations	Participants
ACME Network	Deborah Brooks, President
Alliance for a Better Community	Veronica Melvin, Executive Director
ARCHES	Diane Siri, Director Dennis Galligani, Director
Build SF	Alan Sandler, Executive Director Will Fowler, Program Director
California Board of Education	Theodore R. Mitchell, President
California Community Colleges System	Jack Scott, Chancellor (and State Senator)
California Department of Education	Rick Miller, Deputy State Superintendent Jack O'Connell, State Superintendent
California State Assembly	Karen Bass, Speaker-elect Rick Simpson, Deputy Chief of Staff Loni Hancock, Assemblyperson
California State Senate	Susanna Cooper, Principal Consultant Darrell Steinberg, Senator
Career Ladders Project	Linda Collins, Executive Director
Career Academy Support Network	Charles Dayton, Coordinator
Center for Applied Research and Technology	Susan Fisher, COO
Coachella Valley Economic Partnership	Kim McNulty, Program Manager Ernesto Rios, Program Director, Outreach Specialist Sheila Thornton, Healthcare Industry Counselor Yvonne Villalobos, Assistant Program Manager
Community Development Technologies Center	Denise Fairchild, President and CEO
ConnectEd	Gary Hoachlander, President
East San Gabriel Valley ROP	Laurel Alder, Superintendent
Ed Trust West	Russlyn Ali, Executive Director
Elk Grove Unified School District	Steven M. Ladd, Superintendent
Ford Motor Company	Cheryl Carrier, Program Director
Fresno Unified School District	Michael E. Hanson, Superintendent
Get Real	Jack Stewart, Chairman
Health Professions High School	Matt Perry, Principal
Health Professions High School	Marla Clayton, School Improvement Coordinator
Kearny High School — Construct Tech Academy	Glen Hillegas, Principal
Long Beach Unified School District	Christopher Steinhauser, Superintendent
Los Angeles Unified School District	Monica Garcia, President Richard Alonzo, Superintendent, Local District 4 Ray Cortines, Senior Deputy Superintendent
Los Angeles Trade Tech College	Marcy Drummond, Vice President/ Academic Affairs
George Lucas Educational Foundation	Milton Chen, Executive Director
Mayor's Partnership for L.A. Schools	Marshall Tuck, CEO
MDRC	Robert Ivry, Senior Vice President
National Academy Foundation	J.D. Hoye, Executive Director
Office of the Secretary of Education	Scott Hill, Undersecretary
Overfelt High School	Vito Chiala, Vice Principal
Pasadena Unified School District	Edwin Diaz, Superintendent
San Bernardino County	Herbert Fischer, County Superintendent
San Joaquin County Office of Education	Catherine Kearney, Director
Teachers College, Columbia University	Thomas Bailey, Professor and Director Katherine Hughes, Professor and Director
UNITE-LA	David Rattray, President and Executive Director
University High School	Nathaniel Max Rock, Head of Academy of Engineering
UC Berkeley	Norton Grubb, Professor of Education David Stern, Professor of Education
UC Santa Barbara	Russell Rumberger, Professor of Education, Director of California Dropout Project
Vallejo City Unified School District	Mary Bull, Ph.D., Superintendent
Valley High School	Michael Parra, Assistant Principal
WestEd	Svetlana Darche, Director
Whittier Educational Foundation	Ron Whittier, Head

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Appendix D: Profile of the Multiple Pathways Community

The multiple pathways community consists of organizations working toward the goal of having all students in California graduate from high school prepared for college and career. The community is providing, supporting or advocating for a set of common practices, which include rigorous and integrated college and career preparation, support services and a connection to postsecondary education. Inside the community, organizations are working within eight primary categories to advance a common purpose and practices. The primary field categories are:

- Program implementers and districts
- Technical assistance providers
- Businesses and labor organizations
- Teacher professional development providers
- Community-based organizations
- Policymakers
- Funders
- Researchers

Following, five of these categories are further described by the types and examples of organizations working within them, the nature of their work and the reason behind it.[35] The purpose of profiling representative organizations in these categories is to offer insight into the work taking place across all dimensions of California's multiple pathways community, to celebrate and profile outstanding work, and to foster community building. In line with the recommendations presented in this paper, many of the organizations described are working to demonstrate successful models at the district and regional level, supporting local implementations, and building out the knowledge base in best practices for work-based learning and the measurement of student outcomes in academic achievement.

Program Implementers and Districts

Who: Secondary schools, school districts and postsecondary options aligned with the vision that every student will graduate from high school prepared for college and career.

How: Provide a high school experience with rigorous and integrated college and career preparation, academic and social supports, and a connection to postsecondary education. What these programs look like in practice can differ in the specifics, but their vision and the broad strokes of their model, as outlined above, are the same.

[35] The rationale for excluding researchers, policymakers and funders from this description is twofold: 1) the viewpoints of policymakers and researchers are captured within the main body of the paper; and 2) it is not appropriate to attribute findings to individual policymakers, researchers and funders for reasons of confidentiality.

Why: In addition to providing students with increased relevance, a rigorous education, and improved career and educational outcomes, program implementers across the state are providing legislators, funders, schools, students and parents with examples of what multiple pathways programs look like in practice, evidence of the impact they have on students and best practices for taking programs to scale.

Organizations Profiled:

Name	Description	Contact
Career Ladders Project, California Community Colleges	• This project works to strengthen the role of community colleges in providing educational and career advancement opportunities for Californians. • Through research, policy initiatives and strategic assistance to colleges and their workforce development partners, the Career Ladders Project works to foster "career ladders" in California. • Recent projects include work on regional career pathway systems in such sectors as energy, biotechnology, healthcare, education and public service, as well as support to the Career Advancement Academies statewide demonstration project, which connects underprepared young adults to high-wage careers in the East Bay, Los Angeles and the Central Valley.	Address: 678 13th Street, Suite 200, Oakland, CA 94612 Web: www.careerladdersproject.org Phone: (510) 268-0566

Los Angeles Trade Technical College	• This college has offered concurrent enrollment programs and courses for several decades. Within the last five years, the college has taken a more proactive role in the development and implementation of an integrated and systematic K-16 system with local educational institutions.
	• The college has a model Success in Technical and Professional Pathways Program, offered through its Bridges to Success Center, that is focused on three major areas, each with multiple programs and approaches:
	  • Concurrent enrollment in college and career preparatory programs
	  • Four-year articulated partnerships
	  • Work experience through business and community partnerships
	• The college serves 4,000 middle and high school students from 50 schools. It began as a way to bring high school students to the community college campus, but now it offers courses on high school campuses.
		Address: 400 West Washington Blvd., Los Angeles, CA 90015
		Web: www.lattc.edu
		E-mail: DrummoMJ@lattc.edu
		Phone: (213) 763-7000
		Fax: (213) 763-5393

Mayor's Partnership for L.A. Schools	• This is a first-of-its-kind collaboration between the City of Los Angeles and the Los Angeles Unified School District. It was incorporated in November 2007 and has been designated as a 501(c)(3) entity. Core values for partnering schools include empowering teachers and principals; engaging parents and the community; and providing students with clean, safe and small schools. • Under the partnership, each school will draw up comprehensive plans outlining the vision and goals for improving student achievement and the specific benchmarks for measuring that achievement. The plans will be made public and parents will receive an annual "report card" measuring a school's progress. The schools will serve as models of reforms whose best practices will be shared with the district's Innovation Division for Educational Achievement (IDEA), and replicated throughout the district.	Address: Office of Mayor Antonio R. Villaraigosa, 200 N. Spring Street, Room 303, Los Angeles, California 90012 Web: www.partnershipla.org E-mail: evangelina.ramos@lacity.org Phone: (213) 978-0600 Fax: (213) 978-0655

TechFutures, Whittier Educational Foundation	• The Whittier Educational Foundation started the TechFutures program in 2000 to bring career options to under-resourced, at-risk youth through technical skills training. TechFutures provides planning and support for vocational-skills training programs within public high schools.
	• The pillars of the TechFutures program are:
	  • Deep technical training in the newest areas of Internet applications
	  • A professional, disciplined, businesslike approach, with strict rules on attendance, behavior and commitment to the program mission
	  • Application of skills in a real-world work environment through paid internships in local industry
	• Since its startup with a class of 24 students at El Cerrito High School, the program, now in its eighth year, has evolved to become a career academy within the West Contra Costa School District, with more than 300 students at two high schools, El Cerrito High and Kennedy High.
		Address: 3020 El Cerrito Plaza, #145, El Cerrito, CA 94530
		Web: www.techfutures.org
		E-mail: ron@techfutures.org
		Phone: (510) 528-7088

Technical Assistance Providers

Who: Nonprofit and intermediary organizations that help schools and districts to implement their multiple pathways models with fidelity and provide professional development for school staff.

How: Contract directly with, or disseminate best practices to, implementing schools and districts. The focus of technical assistance providers is the collaboration between the school and the larger community, the development of local advisory boards, the creation of a curriculum that integrates career relevance and college-preparatory rigor, and the provision of ongoing professional development for administrators, teachers and counselors.

Why: Multiple pathways programs represent a fundamental restructuring of the high school experience. Teachers and administrators often need support and coaching to successfully implement integrated, industry-themed and project-based models. In addition, many require support to involve the community and business leaders in a productive way.

Organizations Profiled:

Name	Description	Contact
Alliance for Regional Collaboration to Heighten Educational Success	• The Alliance is a voluntary confederation of regional collaboratives whose sole purpose is to improve student success and close the achievement gap among groups of students. The goal is greater student academic achievement, opportunity and equity in California. • This is a voluntary confederation of affiliates that come together to focus on the issues facing schools in a local region. Affiliates include educational institutions of all levels, statewide programs, efforts funded by foundations, current collaboratives, community-based organizations, businesses, foundations and others concerned about quality education.	Web: www.arches-cal.org E-mail: info@arches-cal.org
ConnectEd: The California Center for College and Career	• The James Irvine Foundation founded ConnectEd as a hub for innovative practice, policy and research to expand the number of education pathways that prepare California students for college and career. ConnectEd advances the role that academically rigorous career and technical education plays in reforming California's high schools so that more students master the knowledge and skills they need to succeed in tomorrow's economy. • ConnectEd supports the development of multiple pathways high school curricula, provides technical assistance to schools and districts, develops evaluation tools, and works to build an alliance of partners dedicated to transforming how California's high schools prepare young people for college and career. In addition, ConnectEd convenes the Coalition of Multiple Pathways, a statewide alliance of education, industry and community organizations that are improving California's high schools and preparing students for both postsecondary education and career — not just one or the other.	Address: 2150 Shattuck, Suite 1200, Berkeley, CA 94704 Web: connectedcalifornia.org E-mail: Info@ConnectEdCalifornia.org Phone: (510) 849-4945

Career Academy Support Network	• This network, founded in 1998, is a center based at UC Berkeley. Housed in the Graduate School of Education, the center focuses on high school reform and, in particular, supports the growth and improvement of small learning communities and career academies. • The center is supported by foundation grants and also contracts directly with high schools and districts, providing professional development for teachers, counselors and administrators, as well as conducting evaluations of smaller learning communities/ academies. The center's Web site (casn.berkeley.edu) also contains valuable links to free resources and downloadable guides, handbooks and useful forms for administrators. • The center has conducted a number of studies of career academies and advised those of others. It has also served as the third-party evaluator for 14 small-learning-communities grants from the U.S. Department of Education, involving 30 high schools in five states, most of which employ the career academy approach.	Address: Graduate School of Education, UC Berkeley, Berkeley, CA 94720-1670 Phone: (510) 643-5748 Fax: (510) 642-2124 E-mail: ask_casn@berkeley.edu Web: casn.berkeley.edu
National Academy Foundation	• The National Academy Foundation was created as a partnership between business leaders and educators to address the need to prepare students for professional careers. The Foundation sustains a nationwide network of more than 500 career-themed academies that are organized as small learning communities. Academy themes include finance, hospitality and tourism, information technology, and engineering. • The Foundation's academies are two- to four-year programs that operate as a "school within a school." Each academy has 30 to 60 students. In addition to studying a career-themed curriculum, each student participates in a local internship to obtain real-world experience that directly supports classroom learning. • These academies operate in 40 states and the District of Columbia.	National Office Address: 39 Broadway, Suite 1640, New York, NY 10006 Phone: (212) 635-2400 California Office Address: 2150 Shattuck Avenue, Suite 1200, Berkeley, CA 94704 Phone: (916) 296-4131 Web: www.naf.org

Business and Labor Organizations

Who: Chambers of commerce, regional and local business coalitions, labor organizations, and individual companies that work with secondary and postsecondary schools to prepare students with the skills required in 21st-century workplaces.

How: Provide work-based learning options for students and teachers, provide feedback on (and in some instances create) the curricula being implemented, and mobilize community support for implementing multiple pathways programs in a region. Additionally, some organizations provide direct technical assistance and funding.

Why: Businesses and labor organizations recognize the growing need for employees with 21st-century skills, such as creativity, the ability to work in teams, critical thinking and self-direction. They also recognize that the K-12 educational system is currently falling short in teaching these skills and that opportunities exist for education and industry to partner with schools and districts to ensure that students graduate prepared for college and career.

Organizations Profiled:

Name	Description	Contact
Alliance for Education, San Bernardino County	• This San Bernardino County partnership includes business, labor, government, community and education leaders. The goal of the alliance is to produce an educated and skilled workforce. Working in collaboration with all stakeholders, and partnering with the P-16 Council, San Bernardino County and smaller learning community schools, the alliance has the potential to reach more than 61,000 students in its initial phase. • The alliance has three interrelated subcomponents: Education P-16, Family Involvement, and Economic and Workforce Development. • The Education P-16 system component works to strengthen a standards-based, academically rigorous curriculum, preschool through university, while at the same time integrating relevant, hands-on, authentic learning opportunities provided through business and community partnerships. Initial work has begun with the smaller learning communities high schools and feeder schools. A collaborative effort between education and business, labor, and community partners is also under way in each region to begin pilot programs in science, technology engineering and mathematics (STEM) curricula.	Address: San Bernardino County Superintendent of Schools, 601 North E Street, San Bernardino, CA 92410-3093 Web: www.sbcalliance.org Phone: (909) 386-2636 Fax: (909) 386-2667

Coachella Valley Economic Partnership, Career Pathways Initiative	• This partnership between the business community, elected leaders and educators provides the youth of the Coachella Valley region of Riverside County with access to career opportunities and experiential learning; access to more diverse and higher-paying jobs, as well as internship and mentorship programs; and incentives for staying in school and attending college that are tied to expanded local jobs and careers. • To provide local youth with these opportunities, the partnership has developed three industry councils: arts media and entertainment, advanced technology, and healthcare. In addition, the partnership is seeking to vertically integrate the K-12, community college and university systems.	Address: 73-710 Fred Waring Drive, Suite 106, Palm Desert, CA 92260-2574 Web: cvep.com/careerpathways CPI Phone: (760) 863-2524 CPI Fax: (760) 863-2540 E-mail: yvillalobos@rivcoeda.org CVEP Phone: (760) 340-1575 CVEP Fax: (760) 340-9212 CVEP Toll Free: (800) 596-1007
Ford Motor Company, Partnership for Advanced Studies	• This academically rigorous, interdisciplinary curriculum and program provides students with content knowledge and skills necessary for future success — in such areas as business, economics, engineering and technology. The project-based program offers a series of modules that links learning in traditional academic subjects with the challenges students will face in postsecondary education and with the expectations of the workplace they will face as adults. • These links are forged through communitywide, cooperative efforts and innovative partnerships that join local high schools, colleges and universities together with businesses. Through coordinated real-world learning opportunities, the Partnership for Advanced Studies provides experiences to help students make decisions about their future education and careers. The program also provides technical assistance, professional development for teachers and administrators, and funding. The Ford Next Generation Learning Communities program is rolled out in tandem with the Partnership for Advanced Studies curriculum in order to help communities align resources and support around the scaling of successful career academy networks. • The program is implemented at the district level and above. Currently the program is located in 26 states. Geographic focus areas include: California, Texas, Florida, Tennessee, New York, Ohio and Chicago.	Web: www.fordpas.org/ E-mail: info@fordpas.org. Phone: (888) 338-3267
San Diego Regional Chamber of Commerce	• This nonprofit business advocacy group is committed to providing broad-based economic value for its members by optimizing their competitive viability in the regional, national and global marketplace. • The chamber's Career Technical Education Initiative is working to develop a network of technical education opportunities for the San Diego region's future workforce.	Address: 402 West Broadway, Suite 1000, San Diego, CA 92101 Web: www.sdchamber.org Phone: (619) 544-1300

UNITE-LA	• This nonprofit intermediary was established in 1998 to lead education-reform and workforce-development initiatives designed to benefit the second-largest school district in the United States: Los Angeles Unified School District. UNITE-LA's mission is to promote and support an effective public education system in Los Angeles, emphasizing business and community partnerships with schools, so that all students have access to education and training opportunities preparing them for high-skill, high-wage employment in a fulfilling career of choice, and so that the region's economy and community thrives as a result. UNITE-LA staff helps local schools to form business partnerships, implement innovative reforms and solicit work-based learning opportunities for students.
	• UNITE-LA and its close collaborators and affiliates, including the Los Angeles Area Chamber of Commerce and L.A. Youth at Work, conduct activities and services for students, teachers, administrators and parents. Its programs include:
	  • College and Career Success Network and Schools
	  • College and Career Convention
	  • Groundhog Job Shadow
	  • Los Angeles Cash for College Financial Aid Workshops
	  • Principal for a Day/Executive for a Day
	• Longitudinal studies document UNITE-LA's involvement in and support for small-schools and small-learning-community models, as well as school-to-career and career academies.
		Address: Los Angeles Area Chamber of Commerce, 350 S. Bixel St., Suite 160, Los Angeles, CA 90017
		Web: www.unitela.com
		Phone: (213) 482-3987

Teacher Professional Development Providers

Who: Nonprofit and government organizations working to create alternative teacher credentialing for multiple pathways programs.

How: Create innovative programs to train new and currently in-service teachers in promoting student success in a project-based and career-theme-based learning environment.

Why: California faces an enormous shortage of qualified teachers; in addition, a generation of teachers is about to age out of the system. Traditionally certified teachers do not have a foundation in the practical industry knowledge that multiple pathways programs require, and industry practitioners who want to teach in these programs typically do not have the academic training or credential that is necessary to teach in high schools. Innovative credentialing programs are required to overcome the current challenges in the teacher pipeline overall, and specifically in the insufficient supply of teachers trained to implement multiple pathways programs.

Organization Profiled:

Name	Description	Contact
San Diego State University's School of Teacher Education	• The School of Teacher Education offers a wide variety of academic programs, ranging from undergraduate studies to advanced degrees. • Students can enroll in the Innovative Schools Partnership: Multiple Pathways Cohort to earn a single subject credential. This cohort focuses on innovative practices and schools in which rigorous academic work and career technical education come together to prepare all students for success in college and career. • Participants in this cohort will be prepared to teach in both traditional and multiple pathways schools and programs.	Address: 5500 Campanile Drive, San Diego, CA 92181-1153 Web: edweb.sdsu.edu/STE Phone: (619) 594-6131
San Joaquin County Office of Education	• This regional agency has a mission to provide educational leadership, resources and services to help school districts to be effective facilities of learning for all students. The agency coordinates four teacher-development programs, which provide professional-development workshops, mentoring programs, job-placement assistance, and other resources to aspiring and novice educators. It has a planning grant to develop a training program for multiple pathways and career academy programs. • In the absence of a "multiple pathways" credential, the San Joaquin County Office of Education is piloting a dual authorization program to enable teachers to get both single-subject and career-technical-education credentials.	Web: www.sjcoe.org/teacherdev Phone: (209) 468-9155

Community-Based Organizations

Who: Nonprofit or government-affiliated organizations working to advocate for and improve the rigor and relevance of the education that local students receive.

How: Partner with local business and education leaders, teachers, parents and students to increase the relevance and rigor of education. Often, these organizations convene diverse stakeholders, provide technical assistance and implement programs to achieve their goals.

Why: These organizations are uniquely positioned to bring together many different stakeholders within a community and to form partnerships and solicit work-based learning opportunities for students.

Organizations Profiled:

Name	Description	Contact
ACME Network	• This nonprofit organization overcomes geography and socioeconomics to connect diverse classrooms with the expertise of animation industry professionals, so as to engage students in the visual arts, supply an authentic career connection and strengthen interdisciplinary understanding. • The program features a scaled, sustainable "pay-it-forward" mentoring community in which feedback from experts is earned by mentoring others. College students mentor high school students in animation to earn access to professional critique and guidance through the ACME Web-based network. ACME serves a continuum of learners, including individuals interested in learning more about animation and classroom programs in middle schools, high schools, after-school programs, colleges and universities. Live videoconference telecasts link animators from their studios to sets of classrooms each week. Teachers and after-school coordinators learn from their students' performances and the feedback work receives. More than 1,000 ACME member students have become professionals in art and animation from classes that had not taught animation prior to joining ACME. Professional artists from more than 60 studios, representing all aspects of the animation business, volunteer their time to guide students online and on-air with honest feedback on posted work. • The Acme Network operates extensively in California and serves classrooms in eight other states.	Address: 1201 West Fifth Street Suite T-200, Los Angeles, CA 90017 E-mail: info@theacmenetwork.org Phone: (213) 240-5980
Alliance for a Better Community	• This nonprofit organization promotes equity for Latinos in education, health, economic development and civic participation throughout the Los Angeles region. • In its education work, the Alliance is involved in a variety of efforts aimed at improving local schools, ensuring excellence and equity in education for all students, and promoting career and college-oriented learning in Los Angeles. The Alliance prioritizes policies that address rigorous curricula, school-community collaboratives, parent engagement, small learning academies and the current dropout crisis. The Alliance is committed to ensuring that youth are offered a quality education that will prepare them to succeed in universities and the 21st-century workforce. • The Alliance's education work focuses on the Los Angeles Unified School District. It is the leading organization of both the Belmont and Valley Education Collaboratives, which aim to stimulate school accountability, promote collaboration and offer a network of support services to ensure effective implementations that address the need for college-preparatory coursework, dropout intervention strategies, and the development of smaller learning communities.	Address: 350 South Bixel Street, Suite 180, Los Angeles, CA 90017 Web: www.afabc.org E-mail: info@afabc.org Phone: (213) 250-0052

Build San Francisco Institute (Build SF)	• Build SF is a half-day high school program for students interested in design, construction, engineering and architecture. It is a community educational partnership, involving the Architectural Foundation of San Francisco, the San Francisco Unified School District and more than two dozen major San Francisco firms. • Build SF offers fully accredited courses in architectural design and urban sociology. Students work on real problems using the tools professionals use, including such state-of-the-art software programs as Autodesk 3D Studio Max and Autodesk Revit. In addition, the Institute provides its students with mentors from major San Francisco architecture, engineering, construction and interior design firms, as well as key civic agencies. Students may earn up to 15 units of high school credit each semester. All credits earned appear on the students' high school transcripts and are approved by the University of California for college admission. • Build SF is located in San Francisco and is offered to San Francisco Unified School District high school juniors and seniors.	Address: 706 Mission Street, Second Floor, San Francisco CA 94103 E-mail: info@afsf.org Phone: (415) 618-0877

Community Development Technologies Center (CDTech)	• CDTech is a nonprofit community development research and technical assistance organization affiliated with the Community and Economic Development Department at Los Angeles Trade-Technical College. Its mission is to build livable and economically viable communities throughout Greater Los Angeles.
	• This is accomplished through a variety of capacity-building and direct-service programs for residents, businesses and community-serving institutions. Programs are designed to:
	  • Expand the capacity of grassroots leaders to effect change
	  • Increase job and economic opportunities for low-income residents
	  • Strengthen the economic base of the neglected communities of greater Los Angeles
	  • Foster new ideas, approaches and partnerships for community and economic change
		Address: 520 W. 23rd Street, Los Angeles, CA 90007
		Web: www.cdtech.org
		E-mail: info@cdtech.org
		Phone: (213) 763-2520
		Fax: (213) 763-2729

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