

# EXPANDING ACCESS, CREATING OPTIONS: HOW LINKED LEARNING PATHWAYS CAN MITIGATE BARRIERS TO COLLEGE AND CAREER ACCESS IN SCHOOLS AND DISTRICTS



# Executive Summary

California's high schools have fallen short of achieving the fundamental goal of graduating all students prepared for college and career success. Especially troubling is the fact that our state's Latino, African-American and low-income students—who represent the majority of California's K-12 population—are less likely to achieve college and career readiness than their more advantaged peers. In The Education Trust–West's July 2011 report, *Unlocking Doors and Expanding Opportunity: Moving Beyond the Limiting Reality of College and Career Readiness in California High Schools*, we documented the lack of opportunity so many students have to successfully prepare themselves for college and career.

"Linked Learning" (formerly known as "Multiple Pathways") is a high school reform effort that, according to its proponents, connects a rigorous college and career preparation curriculum with work-based learning experiences and student-centered services to ensure students are both career *and* college ready. Early evidence suggests that well-implemented pathways prepare high school students for career and a full range of postsecondary options that includes four-year college or university.

In this report, we present our findings from a two-year study examining the Linked Learning approach. We studied how Linked Learning is shaping student experiences, and the extent to which it is helping to eliminate achievement and opportunity gaps for students of color and for students from low-income families.

At the school level, we find that certified Linked Learning schools:

- Embrace six common practices that contribute to student success
- Mitigate or eliminate six traditional high school barriers to student access and success in college-preparatory coursework
- Have achieved high graduation rates for all students, but mixed results on other measures of academic achievement

At the district level, we find that three districts in the Linked Learning District Initiative (LLDI) included in our study have made notable progress in implementing a number of successful school-level approaches. However, there is considerable variation in the implementation of these practices, which suggests a need for continued vigilance around establishing core goals and best practices.

Overall we find that the Linked Learning approach, when implemented with fidelity, shows promise in achieving its goal of providing expanded and equitable access to rigorous college and career preparation.

# Expanding Access, Creating Options:

## How Linked Learning Pathways Can Mitigate Barriers to College and Career Access in Schools and Districts

BY JEANNETTE LAFORS AND TAMEKA MCGLAWN

How well are California high schools meeting the challenge of preparing students for success in college and career? Over the past five years, the Education Trust–West (ETW) has examined tens of thousands of high school transcripts in an effort to answer this question. Our research has led us to two primary findings. First, levels of college readiness are far too low across the board, and especially low for low-income students and students of color. Second, students who are unprepared for college are also unlikely to be meaningfully prepared for careers.<sup>1</sup>

These outcomes can be traced to specific barriers, including the longstanding practice of “academic tracking.” Low-income, African-American and Latino students are more likely to be tracked away from higher level academic coursework and into remedial courses and career and technical education (CTE) courses that lack rigor. Students in so-called “career preparation” tracks are often doubly disadvantaged because their coursework is often scattershot, with a course here and there, rather than a sequence aligned with a specific career path. As a result, they graduate from high school prepared for neither college nor career.

According to its proponents, the “Linked Learning” high school reform initiative is designed to address these inequities and achieves its goal through four key components: (1) a college-preparatory curriculum, (2) a coherent sequence of rigorous career-related coursework, (3) work-based learning experiences, and (4) student support services. Linked Learning is not a type of school, nor is it an off-the-shelf program. Linked Learning, they argue, is an approach to teaching and learning that can be implemented through several different high school models, including small learning communities; career academies; charter schools; and small, themed high schools in traditional school districts. The core idea of the Linked Learning approach is to provide students with a pathway of coursework in specific career

fields (such as healthcare, architecture, and performing arts) that prepares them for a full range of postsecondary education options including a four-year college or university.

In this report, we peer inside the doors of four certified Linked Learning schools and describe what students are experiencing, as told both by the students and other school community members.<sup>2,3</sup> We describe the key attributes of the schools and highlight ways in which they have eliminated or diminished barriers to college and career readiness found in typical California high schools. Next, we examine academic data and student transcripts to determine how well Linked Learning is closing opportunity and achievement gaps. After identifying promising practices and areas of challenge in the schools, we turn to three districts implementing Linked Learning districtwide as part of the Linked Learning District Initiative (LLDI). Drawing upon stakeholder interviews and analysis of district practices and policies, we examine the extent to which these three districts are effectively scaling the Linked Learning approach as efforts to expand Linked Learning are underway through California’s Linked Learning Pilot Program and other programs nationwide.<sup>4</sup>

Based on our analysis, we find that each of the four schools employing the Linking Learning approach: (1) embraces common practices designed to contribute to student success; (2) mitigates or eliminates traditional high school barriers to students completing the college preparatory coursework necessary for admission into a four-year public university in California;<sup>5</sup> and (3) enables students to graduate at higher-than-typical rates, but demonstrates mixed results on standardized assessments of academic achievement.

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At the district level, we find that the Linked Learning reforms appear to replicate a number of the successful school-level approaches. However, there is considerable variation in the implementation of these practices, which suggests a need for continued vigilance around establishing core goals and implementing best practices of Linked Learning. At both the school and the district level, the Linked Learning approach shows promise in achieving its goal of providing expanded and equitable access to rigorous college and career preparation.

## ABOUT OUR RESEARCH

The purpose of our research was two-fold. First, we sought to understand what is happening in certified Linked Learning schools. What are the key attributes of these schools? Does the Linked Learning approach help tear down barriers that too often prevent high school students from taking and succeeding in college and career-related coursework? Second, we wanted to know how well Linked Learning is being implemented at the district level. Are positive practices identified at the school level being replicated?

To answer these questions, we studied four Linked Learning schools and three school districts.

## FOUR CERTIFIED LINKED LEARNING SCHOOLS

We studied four Linked Learning schools (referred to as Schools A, B, C, and D for confidentiality reasons). They vary in size, from 400 students to 1,400 students. Three of the four schools offer full-time, four-year high school programs; each is organized around a different career theme, including health, engineering, and digital media arts. The fourth school offers a half-day, two-year program for students to delve deeply into a career pathway of their choice while they continue to take additional courses at their “home” high school.

At the same time, there are commonalities among the four sites. Students are grouped into learning communities that do not exceed 500 students, and each school has a higher percentage of low-income, African-American, and Latino students than is found across the state (see Figure 1).<sup>6</sup> And each, despite distinct origins and histories, was identified as a demonstration model site and is Linked Learning “certified.” According to this certification, the schools meet rigorous standards, assuring that they offer clear college and career pathways, an engaging and interdisciplinary student learning environment, challenging academic and technical content and work-based learning experiences, strong student support services, a high level of district support, and an evaluation process that drives continuous improvement. Furthermore, each of these schools attracts droves of educators, researchers, and policymakers seeking to learn more about their approach.

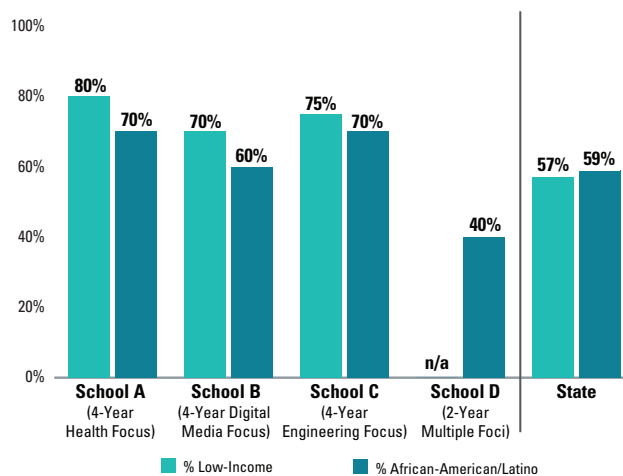
## LINKED LEARNING TERMS

The terms “school,” “site,” “academy,” and “pathway” are used interchangeably in this report to identify the types of Linked Learning settings examined in our study.

A Linked Learning certified pathway can employ any appropriate delivery model and has received a status of “certified” or “model” through a pathway quality review within the past three years.

Source: Internal documentation from the Linked Learning District Initiative Data Advisory Committee, December 2011.

**FIGURE 1: Demographic profiles of California Linked Learning schools, 2010-2011**



Source: California Department of Education, 2012. \*Data for School D is from 2008-2009.<sup>7</sup>

## THREE SCHOOL DISTRICTS SCALING THE LINKED LEARNING APPROACH

In addition to the four schools introduced above, we studied three school districts, one of which houses School A.<sup>8</sup> Like the schools in our study, the districts are quite different from each other. Two are urban, the other rural. They range in size and have different student populations. Together, these districts enroll nearly 110,000 students, and like the schools we studied, serve higher percentages of low-income, African-American, and Latino students than most other school districts in the state.

The three districts we studied are engaged in the California Linked Learning District Initiative (LLDI), a nine-district, large-scale demonstration managed by the independent nonprofit ConnectEd: The California Center for College and Career and funded by the James Irvine Foundation. These nine districts have committed to developing and rolling out a comprehensive implementation plan to expand high-quality Linked Learning options for their students. In support of this goal, the districts began receiving financial support, technical support, and coaching as early as 2008 to 2009.

## DATA COLLECTED

From the schools in our sample, we collected stakeholder input, artifacts (including program descriptions, master schedules, course catalogues, graduation requirements, and bell schedules), and student transcript data. We augmented this with publically available student outcome data. From the districts in our sample, we collected input from technical assistant providers, community stakeholders, and district administrators as part of multi-day district site visits. (See Figure 2 for a summary of data collection activities by stakeholder group.)

Because this study aimed to examine student experience and the implementation of the Linked Learning approach, stakeholder feedback was extensive and included:

- **FOCUS GROUPS:** We conducted multiple focus groups at each school with school faculty (counselors, school administrators, and teachers), external partners, parents, and students. In these focus groups, we asked each group to share experiences with Linked Learning and their perceptions of the approach.
- **SURVEYS:** Focus group participants completed short surveys to capture stakeholder beliefs, attitudes and experiences related to college and career preparation; and school administrators completed a more extensive survey that also covered: budget, curriculum and instruction, student supports and safety nets, human resources, professional development, facilities, special needs populations, and CTE courses. In total, we surveyed 112 students, 26 parents, and 67 faculty members including 58 teachers.
- **INTERVIEWS:** Interviews with district leaders, technical assistance providers, and community-level stakeholders allowed us to explore district-level progress, challenges, and strategies for improvement.

Student outcomes are just as important as the student experience. Therefore, we took a hard look at the evidence from extant attainment and achievement data and from student transcripts.

- **STUDENT OUTCOME DATA:** We reviewed rates of graduation, courses completed as part of the University of California (UC)'s "a-g" subject requirements, and student achievement data from the California Department of Education from 2008 to 2012, with a particular focus on the most recently available data for African-American, Latino, and low-income students. Because the organizational structure of one of the four schools we studied does not allow for aggregate reporting of its student results, we relied on other extant data. Additionally, some student outcome measures were only available in particular years (for example, high school cohort graduation data for 2009 to 2010 and 2010 to 2011), which limited our findings to single data points rather than trends over time. Finally, because the schools did not all open in the same year, student outcomes in a given year represent a different point in the maturation of each school.
- **TRANSCRIPTS:** We reviewed electronic transcripts from one cohort of seniors from three schools to determine the extent to which they had access to and success in college preparatory coursework during high school. Not all of the transcripts came from the same year, and we were unable to obtain transcript data for the fourth school. Furthermore, our analysis does not distinguish among students who enrolled in school for the entire course of study from those who enrolled later from other schools.

**FIGURE 2: Summary of data collection activities**

Data Collection	SCHOOL-LEVEL STAKEHOLDERS						DISTRICT-LEVEL STAKEHOLDERS		
	STUDENTS	PARENTS	TEACHERS	COUNSELORS	SCHOOL ADMIN.	EXTERNAL SCHOOL PARTNERS	TECHNICAL ASSISTANCE PROVIDERS	COMMUNITY STAKEHOLDERS	DISTRICT ADMIN.
	Focus group + survey + transcripts + achievement data	Focus group + survey	Focus group + survey	Focus group + survey	Focus group and/or interview + extended survey	Focus group	Interviews	Interviews	Interviews
School A / District 1	●	●	●	●	●	●	●	●	●
School B	●	●	●	●	●	●			
School C	●	●	●	●	●	●			
School D	○	●	●	●	●	●			
District 2							●	●	●
District 3							●	●	●

○ Signifies no transcripts and some missing achievement data

## PART 1: FINDINGS FROM THE FOUR SCHOOLS

Data gathered through our surveys, interviews, focus groups, transcript analysis, and extant data analysis led us to three key findings. These four schools each:

1. Embrace common practices that contribute to student success
2. Mitigate or eliminate traditional high school barriers to student access and success in college-preparatory coursework
3. Enable students to graduate at higher-than-typical rates, although they demonstrate mixed student achievement results

Each of these findings is discussed in more detail below.

### FINDING #1: SCHOOLS EMBRACE COMMON PRACTICES DESIGNED TO CONTRIBUTE TO STUDENT SUCCESS.

As we walked the halls of these schools, spoke with students, watched teachers in action, and sat down with administrators, it became clear that these sites had many things in common.

Six themes emerged from stakeholder reports:

1. A culture of high expectations
2. Rigorous and integrated academic and technical curriculum
3. A commitment to postsecondary readiness
4. Positive and personalized relationships and supports
5. Adult collaboration in support of the Linked Learning approach
6. Programs and policies aligned to school goals

Each of these six themes is explored in more detail below.

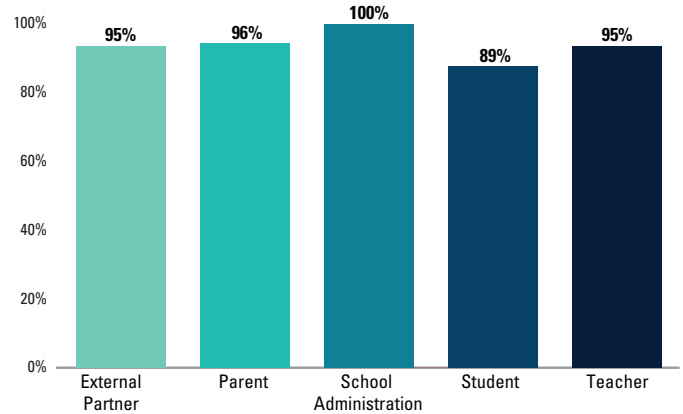
### A CULTURE OF HIGH EXPECTATIONS

*"We speak a language of high standards and we speak a language of constantly pushing to new levels of achievement with all students."*  
-Teacher

A culture of high expectations permeates these schools. Survey and focus group data from students, parents, teachers, and community members indicate the presence of supportive learning environments with high expectations for student success. Stakeholders indicated that the focus on academic success is pervasive, regardless of a student's racial or socioeconomic background. And, staff members generally expressed

the belief that it is their job to prepare all students to be successful in college and career. These stakeholder perceptions reflect the fact that nearly all students are subject to the same college and career-preparation expectations.

**FIGURE 3: Percentage of respondents who Agree or Strongly Agree:**  
*"The staff at our school believes that all students can be successful in high school, college and careers regardless of their background."*



Source: ETW survey data. (Question varied slightly for some groups.)

### RIGOROUS AND INTEGRATED ACADEMIC AND TECHNICAL CURRICULUM

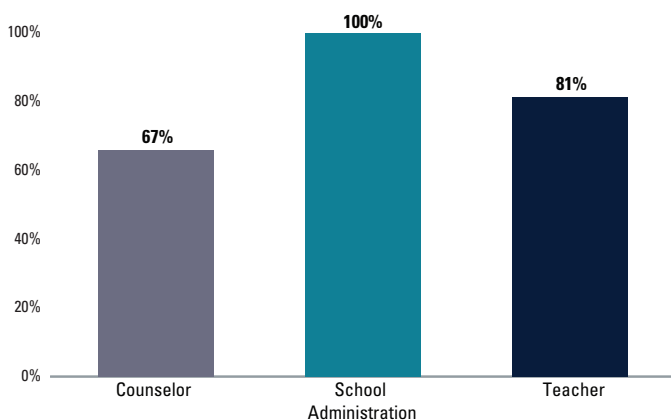
*"I've never seen a team of teachers refuse to budge on the standards they hold students to as unyielding. We have a huge impact on how students perform and how we get them to perform."* -Teacher

The Linked Learning schools offer students rigorous, coherent, aligned, and integrated academic and technical education. Each school offers purposeful course sequencing, career-based pathway development, academic standards articulation from grade to grade, project coordination, and/or work-based learning opportunities. While the schools offer integrated college and career learning experiences in different ways, all core courses engage students in project-based learning, authentic problem solving, and workplace situations. In one school, for example, sophomores participate in an interdisciplinary project to learn about forensic science (the collection and analysis of evidence to solve crimes) and apply their understanding by creating a multimedia game (using Adobe Flash) to teach middle school students how to solve a crime. Students access resources from a community college, a local medical examiner, district attorney, and law enforcement officials. They share their projects with middle school

students, and enter their games into a competitive industry-sponsored showcase of student work.

While we encountered compelling examples of rigorous and integrated learning experiences within the Linked Learning schools—such as the forensic science project described above—other learning experiences seemed to fall short. This observation is consistent with our findings from focus groups and surveys. Stakeholders voiced different perceptions of course rigor from school to school, raising questions about how consistently students within and across programs are challenged with rigorous content (see Figure 4). As one teacher shared, “We need to get a lot closer to the ‘all’ with college readiness, especially in mathematics and writing.” Furthermore, while teachers indicated they integrate both college and career knowledge and skills into their teaching, stakeholder groups agreed that the integration of career-related content into academic courses is weaker.

**FIGURE 4: Percentage of respondents who Agree or Strongly Agree: “All students at our school are provided with a rigorous college and career- prep curriculum.”**



Source: ETW survey data. (Question varied slightly for some groups.)

## A COMMITMENT TO POSTSECONDARY READINESS

*“We tell them, ‘No slacking off your senior year; you are expected to work really hard until you graduate.’”*  
—Teacher

For the most part, students, parents, and staff in each of the Linked Learning schools were highly knowledgeable about college and career options. The commitment to college and career preparation for all students is foundational to each of the schools. Students and parents strongly agreed that students have the opportunity to research college and career options at school. Teachers indicated that counselors visit

their classrooms to motivate students and provide them with postsecondary information; these counselors also offer small group sessions and meet with upper-division students (11th and 12th graders) one-on-one to ensure they are knowledgeable about their future options.

Many students at these certified schools have visited college campuses and taken college courses at their local community college through “dual enrollment” programs that grant them postsecondary credits and build their resolve to pursue college after graduation. In addition, most if not all students can access a wide range of career-relevant college courses, apprenticeships, and internships that expose them to career options, inform them about the knowledge and skills they need to be successful in a given industry sector, and help them acquire college credits while still in high school.

**72% OF STUDENTS AGREE OR STRONGLY AGREE:**  
*“I know a lot about college and career planning.”*

The schools’ commitment to college and career preparation does not end when students graduate. The schools have made efforts to track their students after graduation in order to measure attainment outcomes and inform program development. These practices, however, are not yet comprehensive or systematic, in part because California has not had a data system in place that tracks students after graduation and provides critical student outcome information to inform practices and improve their impact.

## POSITIVE AND PERSONALIZED RELATIONSHIPS AND SUPPORTS

*“All the teachers here really care. And no matter if you are in their class or not, they are still going to help you because they care.”*  
—Student

*“They take care of our kids like they are their own.”* —Parent

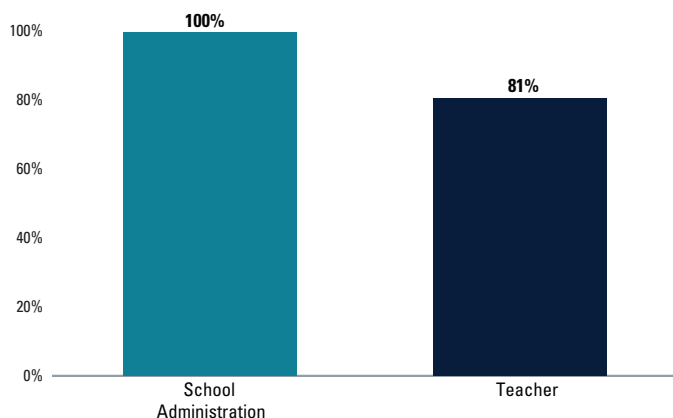
The students and parents we surveyed in each of the four Linked Learning schools overwhelmingly believed that their schools foster positive relationships, and parents feel respected and included by school faculty. Further, parents are happy with the level of individual attention each student receives.

Several structures and practices contribute to this personalized environment. One is the use of “cohort scheduling,”

where groups of students progress through the same set of classes together in a given year. This type of scheduling not only ensures that all students have access to the same college and career-preparation offerings, but it also contributes to students' connection to their peers and teachers. In addition, teachers at most of the schools reported that having longer blocks of time to teach courses—along with an advisory period—enables them to provide all students with additional learning opportunities and personalized attention.

As part of our study, we also found that these four schools offer a range of personalized, systemic supports to ensure that all students can be successful. These supports include: tutoring; weekly progress reports; on-line services to track student progress; Web-based recovery courses; targeted support courses before, during, and after school; and curriculum adapted to students' needs. Finally, because each school serves fewer than 500 students (who are organized into smaller groups by grade level and/or focus area), school staff can focus on each individual student's needs.

**FIGURE 5: Percentage of respondents who Agree or Strongly Agree:** "Students who need additional support are provided with proper interventions to ensure college and career readiness."



Source: ETW survey data.

## ADULT COLLABORATION IN SUPPORT OF THE LINKED LEARNING APPROACH

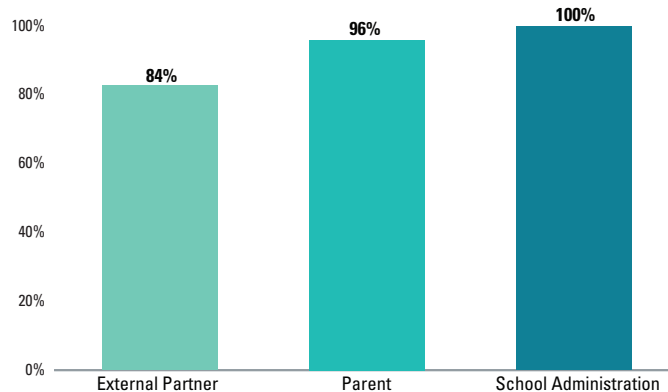
*"There is so much collaboration at this school; we collaborate with the Resource Specialist, by grade level, with our industry partners, with the leadership team, and by department."*  
**–Teacher**

Each of the four schools began with founding leaders who embraced the Linked Learning approach. While articulating a clear vision for the school community, they also established

structures, procedures, and systems to support quality Linked Learning implementation within a distributed leadership model, where school leadership is shared through inquiry, dialogue, and partnership rather than defined through position or roles.

Teachers consistently reported that they feel valued and empowered to be leaders at the schools. They laud supports such as common planning time that enables partnerships between the school and leaders from businesses, industries, and the community—partnerships that are critical in order for the schools to offer real-world learning experiences. Teachers also reported that their schools encourage collaboration among faculty members, including teachers and support staff, which allows them to develop and deliver rigorous, integrated curriculum with supports that ensure student success.

**FIGURE 6: Percentage of respondents who Agree or Strongly Agree:** "The entire staff at our school believe that it is their job to prepare students to be successful in both college and career."



Source: ETW survey data. (Question varied slightly for some groups.)

## PROGRAMS AND POLICIES ALIGNED TO SCHOOL GOALS

Any successful system, including a school, must align its daily work to its overarching goals. The schools we studied maintain a clear purpose and set of goals that drive almost every aspect of the Linked Learning approach and design. This means that time is spent purposefully, staff are assigned in ways that can optimize student learning, and policies and procedures are developed to help everyone draw closer to the goal of preparing every student for college and career success. In these schools, it is clear that the details matter.

Across all four schools, for example, parents demonstrated awareness of the schools' grading policies. Syllabi provided for each course include detailed information about course requirements and grading, and each school uses rubrics for student performance on all project-based learning activities. Makeup policies for missed work are not arbitrary, and students in two of the schools who do not pass an a-g course with a "C" grade or higher are encouraged, if not required, to retake the course.

## FINDING #2: SCHOOLS MITIGATE OR ELIMINATE TRADITIONAL HIGH SCHOOL BARRIERS TO STUDENT ACCESS AND SUCCESS IN COLLEGE-PREPARATORY COURSEWORK.

*“There is never a time when the students aren’t first here.” -Teacher*

*“We align the resource...we decide here how we’re going to use it, and we discuss it.” -Teacher*

With these promising practices in place, each of the four schools has mitigated or eliminated barriers to college preparatory (a-g) course access and success often seen in traditional California high schools. In our previous work in schools and districts, ETW has identified practices and policies that prevent low-income students and students of color from accessing college-preparatory coursework.<sup>9</sup> Often master schedules and placement policies keep these students out of the most rigorous courses. Typical grading practices cause many students to graduate from high school ineligible for UC or CSU. Too few high schools provide the systematic interventions students really need. Many school systems have poor communication between the middle and high school levels. The senior year is often not rigorous enough. And, as mentioned earlier, academic tracking is widespread. These obstructive practices and policies were not seen in these schools. In Table 1, we compare and contrast typical practices found in California high schools with those found in the four Linked Learning schools.

## FINDING #3: SCHOOLS ENABLE STUDENTS TO GRADUATE AT HIGHER-THAN-TYPICAL RATES, BUT DATA ON STUDENT ACHIEVEMENT OUTCOMES IS MIXED.

While the evidence gathered through focus groups, interviews, and surveys point toward many promising practices, are these practices contributing to positive student outcomes? We turn to that critical question by drawing upon publicly available achievement and graduation data, before closely examining student transcript data.

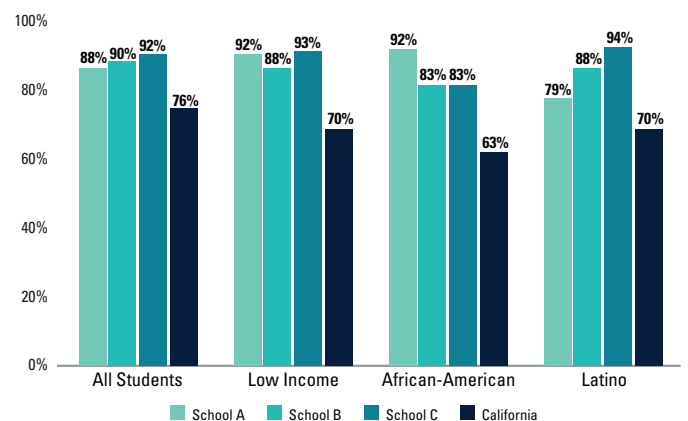
In general, these schools outperform their surrounding districts and the state as a whole when it comes to graduation rates. When it comes to standardized measures of academic achievement, the outcomes are varied. To be sure, a preferred comparison group would be a set of similar students who attended other, non-Linked Learning schools. However, that is outside the scope of this implementation study and is being taken up by other researchers.<sup>12</sup> Regardless, our finding—that graduation rates are higher than typical in these schools while academic achievement is not—is consistent with the previous research on career academies.<sup>13</sup> See Table 2 for a summary of results in the three schools for which state and district comparisons are available.

Here, we examine each of these data points in turn.

### GRADUATION RATES

Each school has high four-year graduation rates, overall and by student subgroups, especially when compared with its surrounding district and the state (see Figure 7).<sup>14</sup> For example, at School C, more than 90 percent of all students, low-income students, and Latino students graduated within four years, and more than 80 percent of African-American students graduated on time as well. By contrast, in the surrounding district, just 80 percent of low-income students and 78 percent of Latino students graduated on time. Statewide, the rates are even lower (that is, 70 percent of low-income and Latino students, and 63 percent of African-American students, graduate within four years).

**FIGURE 7: High school graduation rates for students by school with state comparisons (2010-2011)**



Source: California Department of Education.

**TABLE 1: How Linked Learning schools address traditional barriers to A-G course access and success**

	<b>WHAT WE TYPICALLY SEE IN CALIFORNIA HIGH SCHOOLS</b>	<b>FOUR CERTIFIED LINKED LEARNING SCHOOLS</b>
MASTER SCHEDULE AND PLACEMENT	Master schedules limit a-g and CTE-sequenced courses to only a portion of the student population. Electives are offered that do not fulfill a-g and career-preparation requirements.	All students take the same college and career-preparation requirements, with time strategically organized to ensure students are not tracked out of the courses they need. Students are expected to complete a-g coursework by graduation, and career requirements are embedded in their program of study. Few electives are offered, and those available meet college preparatory, or a-g requirements. Therefore, students are rarely confused about course selection.
GRADING PRACTICES	Many students fail to remediate “D” or “F” grades, even though the UC and CSU systems require at least a “C” in each course. Just one “D” or “F” during a student’s high school career can bar access to college. However, districts do not always allow students to retake courses, especially if a “D” grade was awarded—which many districts regard as a passing mark.	The schools articulate clear expectations for students, use rubrics to assess student work, and provide ways for students to make-up work and retake courses. To pass a course at two schools, students must earn a “C” grade or better; students achieving less than a “C” fail the course and must remediate their grade.
SYSTEMATIC INTERVENTIONS	There are few opportunities for remediation or interventions that can prevent students from falling behind. The most common intervention for students failing a high school graduation course is to retake the course.	Students who struggle are identified early and receive varied supports based on their individual needs. While the standards for mastery are not flexible, individualized supports help each student meet those standards. Supports include Web-based recovery courses, weekly progress reports, before and after school courses, tutoring, mentoring, an advisory period, and targeted support classes.
IMPROVING COMMUNICATION BETWEEN SCHOOL LEVELS	Elementary, middle, and high school educators rarely share information across grade spans, contributing to inconsistent standards and expectations as students matriculate within the system. This also prevents teachers from accessing critical information about incoming students. High schools rarely have robust, sequenced curriculum goals across grade levels, and their teachers rarely share student achievement and attendance information with one another. <sup>10</sup>	Students experience a coherent and progressive curriculum as they move from lower division (9th/10th) to upper division (11th/12th) grades. This is due, in part, to: (1) efforts to clarify academic standards within and across grade levels, (2) analysis of student performance data, (3) effective student support systems, and (4) collaboration among teachers across grade levels—allowing them to coordinate courses and interdisciplinary projects across the four-year high school curriculum.
SENIOR-YEAR RIGOR	Students in 12th grade often fail to take rigorous courses once they meet high school graduation requirements or minimum college entrance requirements, even though research tells us that students are more likely to excel and persist in college when they take rigorous capstone classes as seniors. <sup>11</sup>	Students are encouraged to take additional recommended a-g courses, including a third year of lab science, a fourth year of mathematics, and a third year of world language. Seniors also have additional requirements such as exhibitions, portfolio defenses, exit interviews, capstone courses, and internships. Many seniors are concurrently enrolled in college-level courses at their local community college.
TRACKING	Students are often placed into one of two common tracks: a college-preparatory track or a “regular” track aligned to less rigorous high school graduation requirements. Low-income, African-American, and Latino students are disproportionately represented in a lower track while white and Asian students are disproportionately represented in college-preparatory, honors, or other advanced courses. If students start high school in a non-college-preparatory track, they rarely move up, even when they perform at high levels. Conversely, if they start in a college-preparatory track and struggle, they tend to be permanently dropped down into a regular track.	All students are expected to take college-preparatory courses. In their recruitment efforts, the schools reach out to students traditionally underrepresented in particular fields such as science, technology, engineering, and math with the support of student ambassadors and industry partners.

**TABLE 2: Summary of student outcomes in Linked Learning schools, as compared with surrounding district and California as a whole**

		AS COMPARED WITH STATE			AS COMPARED WITH DISTRICT			
		School A	School B	School C	School A	School B	School C	
GRADUATION	COHORT GRADUATION RATE	All Students	+	+	+	+	+	+
		African-American	+	=	+	+	+	+
		Latino	+	+	+	+	+	+
		Low-income	+	+	+	+	+	+
A-G GRADUATION RATE	All Students	=	=	-	-	+	=	
	African-American	-	=	-	-	-	-	
	Latino	=	+	=	=	+	=	
ACHIEVEMENT	CAHSEE - MATH (% PASSING)	All Students	=	=	=	=	=	=
		African-American	-	-	+	=	-	-
		Latino	+	+	+	+	+	=
		Low-income	+	+	+	+	=	+
CAHSEE - ELA (% PASSING)	All Students	+	+	=	+	+	=	
	African-American	-	+	=	+	+	-	
	Latino	+	+	+	+	+	+	
	Low-income	+	+	=	+	+	=	
CST - 11TH GRADE ELA (% PROFICIENT + ADVANCED)	All Students	-	+	-	=	+	-	
	African-American	-	n/a	n/a	=	n/a	n/a	
	Latino	+	-	=	+	+	=	
	Low-income	+	-	=	+	+	-	
CST - ALGEBRA II (% PROFICIENT + ADVANCED)	All Students	-	-	-	-	-	-	
	African-American	-	-	-	-	-	-	
	Latino	-	-	-	-	=	-	
	Low-income	-	-	-	-	=	-	
EAP - MATH (% COLLEGE READY)	All Students	-	=	-	-	=	-	
EAP - ENGLISH (% COLLEGE READY)	All Students	-	=	-	=	-	-	

Symbols represent school-level student performance in relation to statewide and districtwide peer performance: - less well than + better than or = about the same (within 3%)

Source: California Department of Education (using 2012 achievement data and 2011 graduation data). This data for School D is not reported to the CDE.

## FOUR-YEAR COLLEGE ELIGIBILITY: A-G ACCESS AND SUCCESS

While more students are graduating from the Linked Learning schools, it is reasonable to ask how well prepared they are for the future. Because the schools are focused on assuring their students are prepared for the full range of postsecondary educational opportunities—and because, in California, access to a four-year college depends on completing the a-g course sequence—it is important to understand how many graduates successfully completed those courses. Unfortunately, available data do not paint a clear picture.

Every year, California high schools report the percentage of their high school graduates who have successfully completed all 15 a-g required courses with passing grades (that is, with grades of “C” or better). Data from the schools between 2008 and 2011 indicate that School B’s a-g success rates have fluctuated but generally improved over time (and kept apace of the district and state). At the same time, a-g success rates for Schools A and C have dropped significantly over time (and have lost ground relative to the state). As previously noted, School D does not report a-g data. Despite the overarching goals of each of these schools that all students graduate eligible for admission to a four-year state university, our data analysis shows a-g success rates fall short of that goal.

However, through many years of research and analysis involving self-reported a-g data, ETW has found that this indicator is not always accurate or reliable. With that in mind, we conducted our own analysis of actual student transcript data.

## STUDENT TRANSCRIPTS: A CLOSER LOOK AT COLLEGE READINESS

In order to better understand the success of Linked Learning as it relates to college readiness for students, we reviewed individual student transcript data from three of the four schools for course-taking patterns. We sought to determine both how often students are enrolling in a-g college preparatory coursework required for university admission, and how often they passed those courses. Figure 8 shows both the percentage of students who enrolled or “accessed” all of the college-preparatory courses needed for university admission, along with the percentage of students who successfully passed those courses with a grade of “C” or better.

As part of this review, we found that our transcript analysis yielded different results than the data the districts reported to the CDE. Specifically, School A reported that roughly 25 percent of one racial subgroup of students successfully completed a-g courses, while our transcript analysis indicated

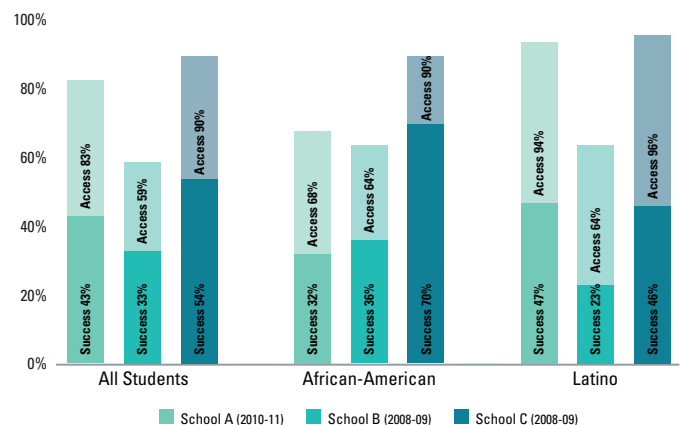
## WHAT HOLDS STUDENTS BACK? DETAILED COURSE-TAKING ANALYSIS REVEALS CRITICAL PATTERNS AND TRENDS

Our look at student access to and success with a-g eligibility details problem areas preventing students from successfully completing the a-g course sequence. Among Linked Learning students who took all the necessary a-g courses, between 30 and 50 percent of them missed a-g eligibility in just one subject area. English language arts (ELA), social studies and math were the most common single-subject area barriers for student success. For example, nearly half (46 percent) of students at School C missed successfully completing the a-g course sequence because they did not pass all the required courses with a “C” grade or higher. Among this group, 80 percent missed a-g eligibility because they did not pass all their required ELA courses.

Some students, however, failed to even take the necessary courses. World language courses were the most commonly missing on student transcripts. Thirty-three percent of students at School C, 63 percent of students at School A, and 88 percent of students at School B did not take required courses in world language. When students did have access, course failures in world language were rare. Similarly, if students took visual and performing arts and electives courses, they were very likely to pass those courses.

In contrast, science access and success was remarkable. In no instance did a student lack science courses needed for a-g success, and less than 2 percent of all students failed to complete their science requirement across three schools.

**FIGURE 8: Student college preparatory course access (enrollment) and success rates by school<sup>15</sup>**



Source: ETW analysis of student transcripts.

nearly 50 percent achieved a-g success. Likewise, School B reported less than 10 percent of one subgroup had achieved a-g success when nearly double that amount did based on our review of the transcripts. We also found that School C reported 15 percent fewer students overall achieved a-g success than our transcription analysis revealed.

Our transcript analysis also revealed that students at these schools had much higher rates of access to a-g courses than other high schools ETW has studied in the past; that is, students at these schools enrolled in a-g courses more frequently. At two schools, more than 90 percent of Latino students enrolled in all the courses necessary to be a-g eligible, and nearly 50 percent earned the grades needed to successfully complete the course sequence. In many schools and districts we have studied over the past five years, less than 50 percent of Latino students have access to a-g courses and less than 15 percent complete the entire course sequence.

By improving student persistence through high school and increasing rates of a-g course taking, these schools are providing their students with a broader range of postsecondary options than typical high schools. These benefits are even more pronounced for the low-income, African-American and Latino students who comprise more than 60 percent of their student populations.

While these Linked Learning schools are exceeding the district and state averages on the whole, our analysis suggests they need to do more to close both access and success gaps for their students in alignment with the vision that all students graduate both college and career ready. Specifically, according to our transcript analysis, only 23 percent of Latino students at School B successfully completed a-g, and only 32 percent of African-American students at School A did so. While the gap may be due in part to district policy (which allows students to transfer and graduate with “D” grades), the fact remains that large percentages of students struggle to pass all their a-g courses with “C” grades or better.

### **MORE TO LEARN: CAREER-READINESS**

Student transcripts also reveal a range of CTE courses, but it is difficult to know whether completion of these classes qualifies students to be “career prepared” in the way that a-g course completion can make a student college eligible. While the CSU and UC systems have agreed upon a set of course requirements for eligibility, few industry sectors have similar course requirements. And, while the state has defined “career pathways” as sequences of CTE courses in 15 major industry sectors,<sup>16</sup> these are merely guideposts, not required standards. California has

### **STILL NEEDED: A STANDARD DEFINITION OF CAREER READINESS**

California has yet to adopt an official definition of career readiness, though other states have done so. One definition that has gained traction nationally is offered by Achieve, the non-profit education reform organization based in Washington, D.C. Achieve launched the “American Diploma Project Network,” which aims to define the notion of college readiness within the following framework:

“College and career readiness means that a high school graduate has the knowledge and skills in English and mathematics necessary to qualify for and succeed in entry-level, credit-bearing postsecondary coursework without the need for remediation—or put another way, a high school graduate has the English and math knowledge and skills needed to qualify for and succeed in the postsecondary job training and/or education necessary for their chosen career (i.e., community college, university, technical/vocational program, apprenticeship, or significant on-the-job training).”<sup>19</sup>

not adopted a standard definition nor any standard metrics for career readiness—a void we hope can be filled.

Based on our transcript analysis, all of the graduates of School C completed a career pathway comprised of a state-defined sequence of courses.<sup>17</sup> In the other three schools, instruction is organized differently. Career content is integrated into core a-g academic courses and often aligned with college-level courses in community college dual enrollment programs. This content is sequenced to demand and support increasing levels of student knowledge, skill, and application in specific careers. In schools A, B, and D, students are expected to acquire and demonstrate career-readiness in myriad ways, ranging from specific course requirements, interdisciplinary projects and exhibitions, senior projects, workplace learning experiences, portfolios, internships, and community service. In these three schools, most students completed a full a-g sequence of courses while also accessing a rich array of career-preparatory experiences. The state has funded efforts to increase the number of a-g approved courses that integrate career and college preparation. As part of this effort, the University of California Office of the President created the University of California Curriculum Integration (UCCI) Institute to support the development of a-g approved courses that blend career and college preparation, and more than 10,800 courses are already approved.<sup>18</sup>

Overall, career-readiness preparation is varied and difficult to measure. Additional efforts are needed to provide a clearer picture of career readiness in California high schools. Chaptered legislation outlined in California State Senate Bill 1458 (SB 1458) called for such efforts currently underway to define and measure college and career readiness with new sets of indicators.

## ACHIEVEMENT

As part of our analysis of student transcripts, we also found that test results for the Linked Learning schools are variable. We analyzed student performance data on key standardized assessments used for school accountability, including the California High School Exit Exam (CAHSEE), selected California Standards Tests (CSTs), and the Early Assessment Program (EAP) to gauge student performance for the current year and over the previous three years. Regardless of the potential causes, the schools are producing mixed results on standardized assessments.<sup>20</sup> For example:

- **CAHSEE:** Every California student must pass the exit exam in order to graduate. First-time passing rates can tell us how many students are able to demonstrate basic academic proficiency in 8th grade math and 10th grade reading.<sup>21</sup> Latino and low-income students at the three schools with test data outperformed their state and district peers on the CAHSEE English Language Arts (ELA) and math tests in 2012. However, first-time pass rates on the CAHSEE have declined from 2009 to 2012 for African-American students, and they now trail their district peers in CAHSEE math pass rates. In these schools, between 62 and 73 percent of African-American students passed the math exam.
- **CST:** For the past three years, the schools have improved their performance on the 11th grade ELA standards-based assessments, overall and for African-American, Latino, and low-income students.<sup>22</sup> At School B, students achieved 20 percentage point gains in proficiency rates from 2010 to 2012 on ELA CSTs, outperforming their district and state peers in every subgroup in 2012. Never-

theless, fewer African-American students at School A and School C reached proficiency on the 11th grade ELA CST as compared with their district and state peers. In math, despite the fact that students generally improved on the Algebra II End-of-Course exam (up between 4 to 9 percent over the past three years), all student groups except Latino students at School B trailed their district and state peers.

- **EAP:** The EAP determines whether students qualify to enroll in credit-bearing courses (are “college-ready”), or must take and pass remedial courses before they can advance to credit-bearing courses through augmented assessment items on the CST for the 11th grade English and math tests (Algebra II and Summative math). Over the previous three years, students at the three schools have participated in the ELA EAP at higher rates (around 98 percent) but the percent of students deemed “college ready” is still quite low (fewer than 25 percent of participating students achieved “college ready” distinction). In math, the percent of participating students ranges from 51 to 100 percent in 2012, but less than 15 percent earned “college ready” status in mathematics. Students do not consistently perform better than their state and district peers across all three schools.

In summary, the high school graduation rates are consistently higher for Linked Learning pathway students than their state and district peers, and Linked Learning students may access a broader range of postsecondary options than students at more typical high schools. While some student achievement data is stronger for Linked Learning students in this study (for example, CAHSEE and ELA CSTs), it is significantly weaker on others (Algebra II CST and EAP data). Other measures of student achievement related to college and/or career readiness remain elusive, but efforts to define and track these indicators are underway. As the field continues to evolve, each of these schools continues to enact practices to advance student college and career preparation, providing critical cases for other schools and school systems to learn from.

## PART 2: IMPLICATIONS FOR DISTRICT-LEVEL IMPLEMENTATION

Linked Learning certified schools, including the four studied here, offer powerful lessons and promising practices for other schools and school systems to replicate. These lessons are needed urgently, as Linked Learning is scaling rapidly. Nine California districts have adopted the Linked Learning approach as their primary high school reform strategy and believe it will improve student achievement, motivation, and college and career preparation. While the districts did not begin their efforts at the same time, nor adopt the same implementation plans to expand Linked Learning, district leaders have leveraged opportunities to learn from experts and from one another. This effort has become known as the Linked Learning District Initiative (LLDI).

In this section, we examine how well three of these districts are implementing and scaling the six effective practices we identified in the certified Linked Learning schools: (1) a culture of high expectations, (2) rigorous and integrated academic and technical curriculum, (3) a commitment to postsecondary readiness, (4) positive and personalized relationships and supports, (5) adult collaboration in support of the Linked Learning approach, and (6) programs and policies aligned to school goals. In studying how well these districts are implementing these practices—while also ensuring systemic quality, rigor, and equity—we found both areas of promise and ongoing challenges.

### ESTABLISHING A CULTURE OF HIGH EXPECTATIONS AT THE DISTRICT LEVEL

Like the schools in this study, districts can establish high expectations for students in both academic and career-related content at every grade level. They can create rigorous graduation standards that align to a-g requirements and can offer equitable access to high-quality certified Linked Learning pathways.

In the three districts, we found that leaders are effectively communicating expectations and ensuring access to quality pathways. However, we also found that work is still needed to overcome systemic inequities.

#### AREAS OF PROMISE:

- Districts are communicating expectations that all their students must be prepared for college and career as evidenced by their visions and missions, communication outreach, and strategic plans; each district has

passed a policy related to a-g completion, high school graduation requirements, or their vision of what a graduate should demonstrate in order to be college and career ready.

- One district, in partnership with its local community college and university, has communicated with all students, parents, and faculty about what knowledge and skills students must develop in order to be successful at the postsecondary level.
- Districts have increased the number of certified Linked Learning pathways to increase the number of students accessing Linked Learning, with as many as five recently certified pathways in one district; and they have used data to determine how equitably students have access to particular pathways.
- Districts are offering more a-g courses and more a-g career and technical courses than ever before, in particular within Linked Learning pathways.

#### AREAS OF CHALLENGE:

- Districts have not gone far enough to eliminate lower level graduation requirements, the practice of academic tracking, and master schedules driven by adult needs rather than student needs. One district requires students to pass all a-g courses with a “D” or better, and the other two do not require students to take all the a-g required courses. In both cases, students can fall short of a-g requirements if they merely meet graduation requirements.
- Inadequate data systems prevent districts from accurately flagging student pathway participation and charting student progress—preventing school and district leaders from adequately evaluating the impact of particular interventions and supports. Missing data prevents district leaders from assessing how equitably students have access to and succeed in college and career-preparation opportunities.

### OFFERING RIGOROUS AND INTEGRATED ACADEMIC AND TECHNICAL CURRICULUM AT THE DISTRICT LEVEL

The schools we highlight in this report emphasize project-based learning, and they offer students opportunities to solve problems and apply academic knowledge in real-world ways. Faculty acknowledge that while the Linked Learning instructional approach fosters engagement and deep learning for

both students and adults, it demands specialized knowledge, sophisticated teaching strategies, and collaboration—three things often absent in other schools.

Can these knowledge bases and practices be effectively scaled districtwide? While it is too early to tell, these three districts are trying to do so. It is promising that these districts are intentionally building a Professional Learning Community of leaders focused on Linked Learning. However, these leaders also continue to face resistance and retention issues.

### **AREAS OF PROMISE:**

- Districts are leveraging an expanding network of colleagues and resources to support them in articulating a vision for Linked Learning, providing necessary structures to develop high-quality Linked Learning instruction, and cultivating a professional culture in which to engage in ongoing program improvement. The Linked Learning pathway quality review and certification process help clarify expectations.
- Linked Learning has spurred district leaders to identify previously hidden equity gaps and set goals around equitable access to coursework.
- Linked Learning has prompted districts to examine teaching and learning practices and make positive instructional changes in their pathways and schools.
- District leaders and staff praise the support they have received from both internal and external coaches offered through the initiative. Through these collective and individualized supports, districts have been able to coordinate efforts as they implement the initiative.

### **AREAS OF CHALLENGE:**

- District leaders continue to face resistance from faculty and school community members who do not wish to change their beliefs, expectations, and practices to enable a more rigorous and engaging curriculum that integrates technical education. Leaders struggle to find ways to provide both pressure and support to educators who require significant growth in order to be effective teachers, even apart from the additional teaching demands in the Linked Learning context.
- Not all students have access to high-quality, work-based learning programs. Practitioners admit it is difficult to provide all students with meaningful work-based learning experiences connected to the academic and technical core. And although these opportunities exist in each of the districts, their quality is inconsistent, and they are not always serving students equitably. Further, they are often not well integrated with classroom instruction.

## **BUILDING A COMMITMENT TO POSTSECONDARY READINESS AT THE DISTRICT LEVEL**

Just as the schools in this study embrace a commitment to college and career readiness, so too must the district. Most importantly, districts can set the tone districtwide by communicating clear expectations for postsecondary readiness. In addition, it is important to ensure the integration of the Common Core State Standards, cultivate partnerships with industry and community partners, and provide robust data systems to track students after high school.

In our district-level research, we were encouraged to hear of the strategic planning efforts of all three districts in support of Linked Learning and postsecondary readiness. Districts face the ongoing challenge, however, of providing all students with consistent access to quality school programs. And, they continue to lack meaningful metrics and good data by which to measure their success.

### **AREAS OF PROMISE:**

- District leaders are constantly assessing the rigor of both the academic and the career and technical aspects of students learning experiences. They are also developing strategies to improve student postsecondary readiness.

### **AREAS OF CHALLENGE:**

- Districts struggle to develop and communicate a well-articulated vision for college and career preparation that spans the K-12 continuum and ensures students are progressively challenged at each grade level.
- Measuring and scaling the career readiness component districtwide continues to be a significant challenge given the lack of valid and reliable metrics.

## **DEVELOPING POSITIVE AND PERSONALIZED RELATIONSHIPS AND SUPPORTS AT THE DISTRICT LEVEL**

While individual student needs must be addressed at the site and classroom levels, districts can create conditions that help schools build positive relationships and offer personalized supports. Districts should: (1) set the expectation that every student can succeed, (2) allow for expanded and flexible use of learning time, (3) encourage teachers to work together to collectively address students' needs, and (4) create systems that allow educators to assess and monitor student progress—

and then determine what type of instruction or intervention would be most effective for each student. Students and parents should also be able to access relevant information in order to support student goals.

Each of the three districts is building promising systems and programs that facilitate student access to personalized supports and adults in the community. However, the districts face challenges with the demands of change and with building new assessment strategies.

### AREAS OF PROMISE:

- Districts are asking successful Linked Learning pathway leaders to participate in professional learning communities and cross-functional teams, so that the district is learning from the existing schools and their successful programs.
- As districts develop new pathways, they are deliberately designing them to enhance and support more personalized learning environments for students.
- Districts are developing more relationships with the community, which has expanded student access to interdisciplinary project-based learning and supportive relationships with caring adults.
- Districts are providing a range of districtwide supports and interventions such as student study teams, personal tutors, and some on-line programs designed to meet specific student needs.

### AREAS OF CHALLENGE:

- Many adults are not ready to shift their roles, instructional strategies, or programs in ways that allow for authentic interaction with students.
- Teachers need more help in diagnosing and addressing students' learning needs. Inconsistent and uncoordinated district assessment practices mean that students are not always assessed on what they are learning, and teachers lack the time and support needed to process the results and make instructional adjustments.

## FOSTERING ADULT COLLABORATION IN SUPPORT OF THE LINKED LEARNING APPROACH AT THE DISTRICT LEVEL

In the four schools we studied, stakeholders told us that their school leaders set a clear vision and rally their faculty around that vision. Similarly, district leaders must

share a vision for Linked Learning with district and site staff, as well as the broader school community. District leaders must collaborate with community partners who are critical to Linked Learning's success. And, they ought to establish leadership teams that can guide and monitor the progress of the district's implementation plan and work with schools to ensure the development of high-quality pathways. Part of this effort requires recruiting, developing, distributing, and retaining top talent at every level in the system.

These districts have successfully expanded stakeholder "buy-in," but coalitions and team development are not consistently strong.

### AREAS OF PROMISE:

- Each district has developed coalitions of stakeholders from the district, businesses, postsecondary institutions, and the surrounding community.
- Each district has strengthened its cross-functional Linked Learning leadership team—due in part, districts tell us, to their participation in the Linked Learning Leadership Residencies and Summer Institutes. District-level strategic plans emerging from these teams are becoming increasingly more attentive to equity.

### AREAS OF CHALLENGE:

- There is considerable variation in the practices each district has employed to develop both broad-based coalition and cross-functional leadership teams; and they differ in how effective their efforts are in each area. Organizing multiple systems and coordinating their efforts proved to be a challenging task for some districts.

## DEVELOPING PROGRAMS AND POLICIES ALIGNED TO DISTRICT GOALS

While it is fairly natural for Linked Learning academy leaders to align their programs and policies to their schoolwide vision for college and career readiness, this is a bigger shift for districts to make. Many are embracing Linked Learning as a new reform strategy, and as such, have to move staff time and attention, financial resources, and school supports from old areas of focus into this new priority area. While each of the districts is making promising progress, the shift is proving to be slow going, with entrenched practices and policies further slowing the effort.

## AREAS OF PROMISE:

- Each of the three districts has enacted at least one policy that explicitly supports building a system of Linked Learning, such as strengthened high school graduation or a-g requirements.<sup>24</sup>
- Following ConnectEd's framework for systemwide implementation of the Linked Learning approach, each of the districts is working to align its resources, assessments, and professional learning opportunities to goals related to Linked Learning. However, there is much work to be done here (see 'Areas of Challenge' below).

## AREAS OF CHALLENGE:

- District-level policies and programs do not yet demonstrate a pervasive commitment to Linked Learning. There are few stated educational objectives related to Linked Learning and professional development. Also scheduling and resource allocation do not yet work in support of broadening student access to Linked Learning.
- Even when districts are successful in recruiting and developing teachers with the knowledge and skills to implement Linked Learning, they struggle to protect these teachers from seniority-based layoffs or transfers due to constraints in state law and local union contracts.

## ADDITIONAL CHALLENGES TO SCALING LINKED LEARNING DISTRICTWIDE: DATA AND SUSTAINABILITY

As mentioned throughout this report, the district has a proactive role to play in ensuring educators, parents, and students have access to accurate, timely, and relevant information to inform student placement, progress, and outcomes. While system infrastructures housing student information can be costly and challenging to adjust, the opportunity costs are greater when district leaders, principals, teachers, and students do not have access to or use critical information to drive their efforts. Current systematic efforts within the LLDI present opportunities for districts to build their individual and collective capacity to assess students' college and career-preparatory outcomes, but a deliberate and consistent effort is required to sustain them.

The Linked Learning approach requires strategic financing to sustain the types of services and activities that students and adults need to engage in the approach. While the costs to start and operate an academy vary depending on the model implemented, academy leaders consistently emphasized the need to: (1) facilitate site-based budgetary decision making, (2) engage in strategic allocation of existing resources, and (3) utilize creative resourcing with business/industry, community, and other partners. Despite the fiscal implications of Linked Learning, leaders at each of our featured schools and LLDI districts have found innovative ways to ensure fiscal solvency while maintaining efforts to improve overall program quality.

Despite pressing economic challenges, these districts have continued to invest in implementing the Linked Learning approach. LLDI districts are making steady progress towards the goal of developing systems to support and sustain pathways, but they must remain committed and focused on scaling successful implementation of Linked Learning and avoid diluting their efforts across too many initiatives.

## CONCLUSION

The days when high schools could be content with preparing some students just for college and others just for work have come and gone. High schools must change so that all students exit with opportunities to go on to college and other postsecondary education. The Linked Learning approach does not guarantee postsecondary success. However, it is clear from our research that when implemented with fidelity, the approach provides students with expanded access to postsecondary opportunities in college and career than students in traditional high schools we have previously studied. As with any high school reform initiative, the scaling from demonstration models to broad implementation is an ongoing process accompanied with challenges and opportunities. As district leaders seek to scale the approach and communities grapple with the equity implications of this initiative, they should continue to assess their implementation and that of their schools against the best practices of certified Linked Learning schools. Their successful efforts to transform the education and lives of their students continue to provide a template for districts and schools throughout California and across the nation.

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## NOTES

1. Education Trust–West, “Unlocking Doors and Expanding Opportunity: Moving Beyond the Limiting Reality of College and Career Readiness in California High Schools” (Oakland: Education Trust–West, 2011), <http://www.edtrust.org/west/publications>.
2. ConnectEd: The California Center for College and Career developed and piloted the Linked Learning certification process in 2010 and continues to refine it. It is now referred to as the Linked Learning pathway quality review and certification process. ConnectEd, established in 2006, is a nonprofit organization established to lead and support the development of Linked Learning as a model approach to high school improvement. Certification criteria can be found at: <http://www.ConnectEdCalifornia.org>.
3. Three out of four school-level sites we studied are independent schools where all students at the school experience the same career-themed pathway in a full-time program. Students at the fourth school participate in one of multiple career-themed pathways offered in a half-day program before or after a half day at their “home” school.
4. The Linked Learning Pilot Program is an initiative to develop and support districtwide systems and policies for the delivery of Linked Learning. Assembly Bill 790 authorized the California Department of Education (CDE) to administer the pilot program, which includes 63 districts and county offices of education serving approximately 600,000 high school students. This pilot builds on the work of the California Linked Learning District Initiative (LLDI) and offers technical assistance and other supports to advance districtwide planning and implementation.
5. To be eligible to apply to a four-year public university in California, students must take a minimum set of 15 college-preparatory courses known as the “a-g” courses and pass each of them with a “C” grade or higher. For more information visit: <http://www.ucop.edu/agguide>.
6. Schools A, B, and C serve higher percentages of students of color and low-income students than the districts in which they are located. School D serves a higher percentage of students of color and low-income students than one, but not both, of the districts that contribute to its student body.
7. Revealing the source for this data will reveal the school by name. School D does not collect free and reduced-priced meal information, but that does not suggest that they do not serve students from low-income families.
8. There were nine districts in the Linked Learning District Initiative in 2010 to 2012. Only one of the Linked Learning schools selected for this study was in an LLDI district in 2010 to 2012; however, our district-level analysis included three of the nine LLDI districts from that same timeframe.
9. Education Trust–West, “Unlocking Doors and Expanding Opportunity”, 4-5.
10. Milbrey W. McLaughlin and Joan E. Talbert, *Professional Communities and the Work of High School Teaching* (Chicago: University of Chicago Press, 2001), 124-30.
11. Clifford Adelman, *The Toolbox Revisited: Paths to Degree Completion From High School Through College* (Washington D.C.: U.S. Department of Education, 2006), 26-36.
12. Preliminary results will be available in spring 2013.
13. See, for example, Charles Dayton, Candace Hamilton Hester, and David Stern. “Profiles of the California Partnership Academies 2009-2010” (Career Academy Support Network and the California Department of Education, 2011) and Beverly Farr et al, “Evaluation of the Demonstration Sites in the ConnectEd Network” (Berkeley, CA: MPR Associates, 2009)
14. High school graduation, a-g success, and student achievement data for 2010-2011 were available for School A, B, and C for this study. A previous study reports School D students had a high school graduation rate that exceeded that of their district peers. The high school graduation cohort rate is calculated by determining how many students who were first-time ninth-graders in 2006-2007 graduated in the Class of 2012 using data from the California Longitudinal Pupil Achievement Data System (CALPADS). Source: California Department of Education: <http://www.cde.ca.gov/nr/ne/yr11/yr11rel54.asp>.
15. Our transcript analysis does not capture all the options for students to fulfill their a-g course requirements. While students may have met their a-g requirements through alternate means such as dual-enrollment courses at local colleges or qualifying achievement test scores, this data did not appear on student high school transcripts and we did not include it. There may also be a small percentage of integrated courses that was not included in our analysis, suggesting student access and success data could potentially be higher than presented.
16. These defined course sequences are part of the state’s framework for career and technical education that includes more than just the curriculum-based course standards.
17. California Department of Education, *Career Technical Education Framework for California Public Schools Grades Seven Through Twelve* (Sacramento, CA: California Department of Education, 2007), <http://www.cde.ca.gov/ci/ct/sf/documents/cteframework.pdf>.
18. California Department of Education, Career and College Transition Division, “California High School Career Technical Education Courses Meeting University of California ‘a-g’ Admission Requirements for 2011-12” (Sacramento, CA: California Department of Education), 12. More than 10,800 UC a-g approved CTE courses were documented across California schools in 2012. See <http://www.ucop.edu/agGuide/ag/cte>.
19. Achieve, Inc., <http://www.achieve.org/college-and-career-readiness>.
20. Disaggregated student data for School D was not available for this report, but previous analyses using 2008 data report students exceeded the state average of students scoring proficient on the 11th grade ELA CST, while students taking the Algebra II CST achieved a proficiency rate well below the state average.
21. Human Resources Research Organization, “Review of the Appropriateness of the California High School Exit Exam Content Standards for High School Accountability” (Sacramento, CA: California Department of Education, April 2006). This report identifies the grade levels of standards assessed on the California High School Exit Exam (CAHSEE). In addition, the California High School Exit Exam (CAHSEE) Blueprints for math and English Language Arts (available at <http://www.cde.ca.gov/ta/tg/hs/documents/bpmath03.pdf> and <http://www.cde.ca.gov/ta/tg/hs/documents/bplangarts03.pdf>) indicate students are assessed on math standards that focus on 8th grade general math standards but also include a limited number of Algebra I standards. The English Language Arts standards include 9th and 10th grade standards.
22. Based on a comparison of 11th grade students in different years, not based on longitudinal data of students over time.
23. Lindsey Stuart, Alexandra Alyward, and Jeannette LaFors. “Catching Up to the Core: Common Sense Strategies for Accelerating Access to the Common Core in California” (Oakland, CA: Education Trust-West, 2012). The Common Core State Standards (CCSS) are a set of academic content standards that aim to define the knowledge and skills students should achieve in order to graduate from high school ready to succeed in entry-level, credit-bearing academic college courses and in workforce training programs. More than 45 states and the District of Columbia adopted the CCSS by fall 2012.
24. LLDI districts are expected to enact at least one policy that explicitly supports building a system of Linked Learning; see: <http://www.ConnectEdCalifornia.org>.

