Exploring the Educational, Labor Market, and Civic Trajectories of Young Adults who Attended Linked Learning Pathways

SURVEY and INTERVIEW FINDINGS

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Introduction

Through an approach to schooling called Linked Learning, many high schools throughout California are seeking to stem the tide of high school dropouts and a lack of college and career preparedness among graduates. Linked Learning gives **all** students access to the experiences and conditions they need to grow as learners and be prepared for college, career, and civic life. To achieve this goal, Linked Learning brings together rigorous academics, a challenging theme-based or career-based curriculum (e.g., health professions, technology, global studies) and an opportunity to apply learning through real-world experiences.

Linked Learning is delivered through widely varied "pathways" shaped by existing school structures and capacity, local opportunities for partnerships and support, and the skills and backgrounds of instructional staff. Pathways vary in their theme or career focus, how they organize coursework, the extent to how much time students spend on and off campus, their relationships with two- and four-year colleges, and their partnerships with community organizations, businesses, and industries.

This study explores the postsecondary educational attainment, employment, and civic engagement of graduates of select Linked Learning sites. Juxtaposing analyses from three data sources, we find that, on average, students who attend Linked Learning high schools graduate at higher rates than students statewide. This is remarkable in itself, but even more so given that Linked Learning schools enroll greater numbers of students from groups at risk of not graduating. Moreover, Linked Learning alumni are more likely to attend a postsecondary institution (two-year or four-year) versus not attend college at all compared to the random sample. However, we also found that attending a Linked Learning school does not increase the likelihood of employment for recent graduates or protect some of them from becoming disconnected altogether (i.e., neither in school nor working). Neither did attending a Linked Learning school increase the chances that recent graduates would become engaged in their communities.

Participating Linked Learning sites were identified as part of a 2008 study conducted by UCLA's Institute for Democracy, Education, and Access (UCLA IDEA) that examined the challenges and the effective practices, strategies, and structures utilized by schools committed to the implementation of the approach.[1] (See Appendix A for a description of study sites.) This study compares recent alumni from participating sites with a representative sample of young adults across California. The primary goals of the study were to understand how pathways shape participants' postsecondary enrollment and degree attainment, employment, and civic engagement trajectories.

Using a mixed-methods approach, our analyses were guided by the following empirical research questions:

- What are the current patterns of postsecondary (PSE) school enrollment, degree attainment, employment, and civic engagement among Linked Learning alumni?
- How do these patterns compare to California's diverse 18- to 26-year-old adult population?
- What are some of the positive influences and challenges that Linked Learning graduates encounter in their efforts to complete PSE degrees? In meeting occupational expectations? And in participating in civic life?
- How, if at all, do school resources and opportunities mediate the postsecondary educational, employment, and civic engagement outcomes of Linked Learning alumni?

Rationale

In 2008, the publication of *Beyond Tracking: Multiple Pathways to College, Career and Civic Participation* provided considerable evidence about the potential of Linked Learning.[2] The book spoke to the promise of the approach through its capacity to meet the learning needs of a diverse student population and its responsiveness to society's need for a productive workforce, engaged citizenry, and future leaders. The publication made clear that, if fully implemented, Linked Learning could improve school achievement, high school graduation rates and access to higher education; increase the educational and work opportunities for vulnerable students; and prepare California's population of young people for responsible participation in public life. Implemented fully, it could also respond effectively to demographic shifts and address California's future economic challenges.

The evidence provided in *Beyond Tracking* is largely based on the extensive research of career academies and/or other programs that link an academic curriculum with a career theme. Indeed, the authors make clear that Linked Learning is not a new idea, nor are the many strategies used to implement its core components (e.g., small, personalized learning communities, hands-on, project-based learning, collaborative practices, work-based learning, etc.). Career academies, for example, have been providing students access to multi-year programs of integrated study for more than 40 years.[3] Although career academies offer but one structure and example for implementing and integrating college-preparatory curriculum with a career theme, it is a well-researched approach that reflects the potential of Linked Learning.

A number of comparison group evaluations of career academies have shown a positive impact on academic outcomes such as high school attendance, credits earned, grade-point averages, and graduation rates.[4] In addition, comparison evaluations suggest that career academies have a positive effect on students' postsecondary opportunities, including increased college attendance and increased earnings.[5] Unfortunately, these studies cannot eliminate the possibility that these effects are attributable to characteristics of students who choose to attend career academies. A random-assignment evaluation of career academies, conducted by MDRC, addresses this question of selection bias. This evaluation confirmed the positive outcomes found in previous studies, especially for students who entered programs at high risk of dropping out. In addition, the MDRC study suggested academies provide students with career awareness and development experiences both in and outside school. Importantly, findings provide evidence that participation in career academies increased postsecondary employment rates and earnings without reducing the opportunity for college-going or further educational attainment.[6] Unfortunately, these evaluations cannot determine if or how specific components of the model impact these outcomes.

Since 2008, a growing number of schools have adopted Linked Learning and a series of studies/evaluations of the approach have followed. A study conducted by MPR Associates, *Making Progress Through California Multiple Pathways,* explored the outcomes of the ConnectEd Network of Schools. A study of Network schools (16 sites) found that high school graduation rates and A-G completion rates of Network sites exceeded the state average. However, the varying structures of the sites and varying levels of fidelity to the core components of Linked Learning made it difficult to discern the impact of Linked Learning and the relationship between Linked Learning and outcomes. Findings have been used to develop high-quality Linked Learning programs and create a Linked Learning certification process.

In 2009, through the California Linked Learning District Initiative, The James Irvine Foundation began support of nine demonstration districts to develop systems of pathways that would expand access to all high school students. The Initiative serves as a means for the Foundation and Linked Learning advocates to further develop and refine the Linked Learning approach and to better

understand its effectiveness. Each participating district is in the process of developing between six and eight high-quality Linked Learning pathways. The evaluation of the Initiative, conducted by SRI International's Center for Education Policy, will assess the impact of Linked Learning on student outcomes. During year one and two of the Initiative, SRI International has focused on documenting early implementation efforts of the systems of Linked Learning pathways in participating districts. It has delayed the assessment of student outcomes until students have experienced multiple years of their pathway programs.[7]

How best to measure student outcomes is an on-going topic of debate. Criticism surrounds current narrow measures of an effective education that focus on improving test scores and do not hold schools, districts, or states accountable for improving high school graduation rates or students' preparation for college and career. "Measures of student proficiency are based on inconsistent and low state standards and often measure basic math and reading skills, not the students' levels of preparation for college and the workforce."[8] In recent years, lawmakers have proposed some changes to the current accountability system to de-emphasize the use of test scores and incorporate measures of college and career readiness. However, there is no consensus regarding how best to measure college and career readiness and schools' effectiveness in successfully providing this preparation.

A study of the Center for Advanced Research and Technology (CART), a high school located in Clovis that uses a Linked Learning approach, provides evidence that Linked Learning can lead to higher levels of two-year college enrollment. The seven-year study found that participation in CART's program increased the community college entrance rate by 11 percentage points—71 percent for CART students compared with 60 percent for a demographically similar group of non-CART students. Because of CART's unique features (e.g., half-day program, one or two year program, students do not graduate from CART, but from their "home school," etc.), it is important to discern the impact of Linked Learning on these positive outcomes, from other influences such as "home school" factors and student characteristics.

UCLA IDEA's recent study of the implementation efforts of 10 sites committed to implementing the core components of Linked Learning uncovers some shared strategies and practices that effectively guide students to high school graduation prepared for college, career, and civic participation.[9] Indeed, interviews and survey findings identified an impressive level of readiness for a wide range of postsecondary pursuits. In particular, the study recounts the stories of students who entered a pathway unprepared for the challenges of high school, yet graduated four years later eager to attend a postsecondary institution and/or pursue a particular career. However, the study does not follow these students beyond high school graduation. As such, the study cannot shed light on the long-term impact of attending a Linked Learning pathway.

The present study seeks to add to the growing body of knowledge on the impact of Linked Learning on student outcomes. Using a telephone survey and in-depth interviews, we explore the postsecondary educational, labor market, and civic outcomes of young adults who participated in Linked Learning while in high school. The findings, described below, allow us to compare the outcomes of Linked Learning alumni with a demographically similar sample of young adults across California, and thereby begin to shed light on the impact of Linked Learning on students' trajectories.

Methods

Our analysis of Linked Learning alumni is based on telephone surveys of 500 graduates from nine pathways.[10] Most Linked Learning alumni in our sample graduated between 2006 and 2010, but 4% (22 students) graduated in 2011. The comparison group comes from a larger study of randomly selected sample of young adults, ages 18-26, who participated in a telephone survey for the California Young Adult Study (CYAS)[11] conducted by UC/ACCORD All Campus Consortium on Research for Diversity. For the purpose of this study, we rely on a randomly selected CYAS sample of 1,175 public high school graduates from the classes of 2006-2010.

We conducted descriptive analysis of high school experiences and postsecondary trajectories for the Linked Learning survey respondents and the random sample. Regression analysis was then conducted to control for demographic and other factors in comparing the experiences of Linked Learning students to those of the random sample. In-depth follow-up interviews were conducted with a subsample of 50 Linked Learning survey participants. Interviews allowed us to interpret and explore the causal mechanisms underlying survey findings.

See Appendix B for a detailed discussion of the study's methodology.

Findings

Graduation Rates

A comparative analysis of high school graduation rates revealed that students attending participating Linked Learning schools graduate at a higher rate than students attending California public high schools. Across participating Linked Learning sites, 83% of students who entered as freshmen graduated in 2010 compared to 75% statewide. Similarly, in 2011, approximately 85% of students who entered as freshmen four years earlier graduated compared to 76% of students statewide. These differences in graduation rates are even more pronounced when we compare subpopulations of students. Analysis of 2010-11 data shows that participating Linked Learning sites served a higher percentage of underrepresented youth: Approximately 59% of students attending participating Linked Learning pathways were Latino, compared to 49% of high school students statewide; 12% of Linked Learning students were African American, compared to 7% attending public schools statewide. Similarly, 16% of students attending participating Linked Learning pathways in 2010-11 were white, compared to 28% of high school students statewide.[12] Statewide graduation rates in 2010 for Latino and African American students were substantially lower than the overall statewide rate at 68% and 61%, respectively (70% and 63% in 2011, respectively).

Descriptive Statistics

The tables below provide descriptive statistics for the CYAS random sample and the Linked Learning sample. CYAS random sample survey descriptive findings are weighted, and therefore results are representative, demographically, of 18- to 26-year-old public high school graduates who attended school in California before age 17.

While the Linked Learning sample is representative, demographically, of the larger sample of California public high school graduates, age 18-26 (as shown in **Table 1**) there are important differences that we identified and grappled with. For example, the Linked Learning sites had higher rates of graduation rates than the statewide average. These differences in graduation rates may cause comparability issues that may understate the effects of Linked Learning. The Linked Learning sample includes students who may not have reached graduation had they not attended the participating site.

TABLE 1: Sample Descriptions

	Random Sample		Linked Learning	CART	CPA	CTA	DMD	HTLA	LASGS	LIFE	MW	NT
Age												
Average Age	20.2		20.5	20.3	21.1	20.8	21.1	19.8	19.5	20.5	20.7	20.8
Gender												
Male	48%		52%	59%	44%	68%	47%	64%	38%	42%	43%	55%
Female	52%		48%	41%	56%	32%	53%	36%	62%	58%	57%	45%
Race												
Latino	43%		46%	36%	24%	52%	33%	40%	96%	66%	46%	27%
White	34%		23%	42%	8%	16%	22%	46%	0%	4%	11%	39%
Asian/Pacific Islander	12%		13%	9%	12%	18%	25%	8%	4%	16%	11%	18%
Black	7%		12%	4%	46%	10%	16%	0%	0%	12%	22%	12%
Other	3%		6%	9%	10%	4%	4%	6%	0%	2%	11%	4%
Immigrant generation												
1st generation	15%		18%	12%	12%	28%	24%	24%	18%	26%	15%	14%
2nd generation	39%		44%	37%	24%	46%	47%	42%	80%	64%	48%	20%
3rd+ generation	46%		37%	51%	64%	26%	29%	34%	2%	10%	37%	67%
Socioeconomic status												
Raised by parent with a college degree	36%		25%	32%	32%	22%	18%	42%	4%	6%	33%	29%
Parents owned home while in high school	64%		55%	78%	50%	36%	43%	68%	14%	46%	59%	75%
Low-income as a teenager	39%		64%	45%	66%	76%	65%	64%	92%	82%	63%	41%
Received government assistance in last year	11%		15%	14%	32%	12%	10%	8%	26%	20%	9%	10%
Had problem paying utility bills in the last year	16%		16%	14%	20%	22%	10%	12%	18%	20%	15%	14%
Sexual Orientation												
Heterosexual or straight	94%		92%	94%	92%	96%	90%	92%	94%	92%	85%	90%
Criminal record												
Has criminal record	6%		5%	7%	12%	8%	2%	0%	4%	6%	0%	2%
Sample Size	2200		500	102	50	50	51	50	50	50	46	51

Indeed, in-depth interviews with administrators and teachers at participating Linked Learning sites indicate that one of their primary goals is to ensure all students who enter as 9th graders graduate from high school and graduate prepared for life beyond. One administrator shared, for example, that school success is gauged by their ability to *"keep students here from their freshman year through their senior year, we keep them engaged and interested and motivated. ... These students are prepared to have a choice when they graduate to go into any area that they choose."*[13] The study may have yielded different results if alumni from Linked Learning programs were compared with students across the state who began high school (whether or not they graduated from high school) versus high school graduates only.

The higher (8-9% greater) high school graduation rate among Linked Learning sites compared to the graduation rate statewide is especially noteworthy given that the participating Linked Learning sites serve a higher proportion of Latino, African American, low-income, and male students than the rest of the state. All of these subgroups have higher than average dropout rates. As Table 1 demonstrates, the Linked Learning sample is comprised of fewer white students (23% vs. 34%), and more black (12% vs. 7%), and Latino students (46% vs. 43%). The Linked Learning sample is also comprised of a significantly larger percentage of students from low-income backgrounds (64% vs. 39%), and a greater number of males (52% vs. 48%).[14]

A number of between pathway differences were identified in the sample descriptions. In particular, Table 1 demonstrates distinct pathways attract different populations of students. Construction Tech Academy (CTA), High Tech Los Angeles (HTLA), and the Center for Advanced Research and Technology (CART) enroll a higher percentage of males than females. For example, in 2009-10, 76% of the student body enrolled at CTA (grades 9-12) was male. The sample for CTA is reflective of the population served: 68% of the sample was male, and 32% was female. Similarly, the Los Angeles School for Global Studies (LASGS) serves a higher percentage of Latinos than other Linked Learning sites and the state average. This is reflected in the LASGS sample.

High School Experiences

Table 2 provides descriptive statistics illustrating participants' high school experiences based on survey responses. Results indicate that Linked Learning students are more likely to experience job placement or internship opportunities while in high school compared to their counterparts in the larger sample of California students (53% compared to 17%). As expected, a few of the Linked Learning sites had more developed internship/work experience programs as demonstrated by survey responses. At Life Academy, 84% of the sample indicated they had participated in an internship (all juniors and seniors at Life are required to participate in an internship), and at MetWest, 98% indicated their participation in a work-based experience (at MetWest, all students grades 9th through 12th, participate in an internship). In contrast, only 12% of CART students indicated they participated in such programs.

Interestingly, only 27% of Linked Learning students indicated that they had participated in Career Technical Education (CTE) or Regional Occupational Program (ROP) classes compared to 33% of the larger sample. Given our knowledge of the schools and the curricula offered, these results are not altogether surprising. In particular, the Linked Learning schools in our study aimed to blur the distinctions between CTE and academic courses offered, hence students may not be able to distinguish between these courses. Further, some courses are not readily identified as CTE courses (for example, only 43% of DMD alumni identified their media courses as CTE courses while 70% of alumni from CTA identified their construction, architecture or engineering courses as CTE).

TABLE 2: High School Experience

	Random Sample		Linked Learning	CART	CPA	CTA	DMD	HTLA	LASGS	LIFE	MW	NT
Participation in School-Based Programs	(weighted)											
College Outreach Program	17%		25%	11%	38%	34%	59%	5%	20%	22%	26%	18%
Job Placement/Internship	17%		53%	12%	80%	46%	16%	96%	46%	84%	98%	49%
Career/Tech Education or ROP classes	33%		27%	32%	24%	70%	43%	12%	18%	12%	4%	22%
English as a Second Language	16%		17%	13%	16%	26%	22%	2%	30%	22%	9%	16%
Special Education	7%		5%	3%	6%	4%	8%	4%	2%	8%	15%	2%
AP/Honors/IB	57%		41%	41%	52%	40%	47%	62%	30%	52%	20%	27%
Received mostly A & B grades	52%		46%	45%	44%	50%	39%	44%	38%	58%	57%	39%
Suspended or expelled	17%		11%	6%	22%	16%	4%	4%	18%	8%	20%	8%
Had a mentor while in high school	65%		73%	71%	88%	68%	53%	80%	70%	70%	91%	73%
Extra-curricular Involvement												
Participated in extra-curricular activities	89%		88%	86%	90%	88%	88%	84%	92%	78%	93%	90%
After school	54%		60%	55%	54%	70%	59%	66%	68%	60%	70%	47%
On the weekends	40%		40%	47%	42%	32%	33%	48%	40%	26%	43%	37%
Participated in organization that made a difference	44%		50%	43%	46%	44%	45%	36%	70%	56%	74%	43%
School-based organization	29%		31%	25%	32%	28%	35%	32%	38%	44%	26%	27%
Religious organization	9%		8%	15%	4%	12%	8%	4%	8%	2%	7%	6%
Community organization	31%		38%	25%	40%	34%	29%	30%	50%	46%	74%	33%
Political organization	5%		13%	5%	20%	4%	0%	4%	20%	20%	43%	8%

Seventy-three percent of Linked Learning students compared to 65% of the larger population indicated having a mentor of some sort while in high school. And, a larger percentage of Linked Learning students reported they were involved in afterschool activities, compared to the random sample. Pathways' focus on relationship-building between adults and students (both on site and off) and small size contribute to these findings.

A greater percentage of Linked Learning alumni compared to the CYAS random sample indicated that they had participated in an "organization that made a difference" (50% compared to 44%). We found that alumni from pathways with well-developed internship or work-based programs were especially likely to identify their participation in an organization that makes a difference; specifically, 74% of alumni sampled from MetWest and 56% of students from Life Academy claimed participation in such organizations. Seventy percent of alumni from LASGS also identified participation, with the greatest percentage indicating involvement with a community organization (50%). These findings are of interest as LASGS' internship or job-placement program is limited given budget and resource constraints.

Postsecondary Experiences

Table 3 reports on respondents' postsecondary and employment experiences. Fewer students from the Linked Learning sample compared to the random sample reported that they were out of high school and had not attended (or were not attending) a postsecondary institution (12% versus 22%).

Linked Learning alumni and comparison group respondents enrolled in community college at approximately the same rate (40%). Linked Learning students, however, were more likely than the random sample to have enrolled in a four-year college at some point after high school graduation (43% versus 34%). Across Linked Learning sites, we see a variation in the proportion of students ever enrolled in a four-year college. Nearly three-fourths of HTLA respondents attended a four-year college, and 70% of MetWest alumni indicated they had enrolled in a four-year college. In contrast, DMD respondents appeared to be enrolling in four-year colleges at lower rates than the random sample.

For those students currently enrolled in a PSE program, Linked Learning students reported greater access to some postsecondary institutional resources than students from the larger sample. In particular, Linked Learning alumni indicated greater access to assistance with financial aid forms (39% versus 29%) and tutoring (47% versus 36%).

There were no differences between the random sample and the Linked Learning sample with regard to expectations to receive a four-year college degree. Both samples overwhelmingly indicated that they expected to earn a four-year college degree (over 80% of alumni sampled).

Descriptive statistics also provide a general sense of employment outcomes. Students from the Linked Learning and random sample are just as likely to have experienced employment or be currently employed. However, Linked Learning students are more likely than the larger sample to be involved in job training outside of school. The lack of differences in employment outcomes may be attributed to the young age of the samples (average age is 20.5 for Linked Learning sample and 20.2 for random sample). It also may reflect the conflating influence of college attendance: full-time college students may not be in the labor force and part-time college students may be working part-time.

Table 3 demonstrates that students from particular Linked Learning pathways are more likely than students from the random sample to have experience in the workplace. Ninety-four percent of CTA alumni, compared to 84% of the random sample, indicated they had held a job. And, 64% of CTA alumni indicated they were currently working for pay, compared to 55% of the random sample.

Table 3: Postsecondary and Enrollment Experiences

	Random Sample		Linked Learning	CART	CPA	CTA	DMD	HTLA	LASGS	LIFE	MW	NT
Postsecondary Educational Enrollment	(weighted)											
No voc/college	22%		12%	24%	10%	16%	14%	0%	14%	10%	9%	4%
Voc Ed Program only	4%		4%	5%	4%	4%	4%	2%	8%	6%	4%	2%
Ever enrolled in Community College (but not 4-year)	39%		40%	40%	46%	40%	59%	24%	38%	36%	17%	55%
Ever enrolled in four-year college	34%		43%	31%	40%	40%	24%	74%	40%	48%	70%	39%
Access to PSE Institutional Resources (if ever enrolled in PSE)												
Academic counseling	51%		58%	48%	60%	45%	47%	70%	66%	67%	67%	63%
Career counseling	34%		37%	30%	53%	41%	34%	28%	45%	38%	40%	35%
Job search	22%		21%	13%	38%	20%	20%	30%	18%	13%	23%	20%
Internships	20%		24%	13%	27%	30%	16%	24%	23%	42%	30%	27%
Filling out financial aid forms	29%		39%	37%	42%	41%	38%	36%	45%	40%	44%	35%
Services for Disabled	6%		9%	8%	16%	5%	4%	10%	9%	7%	9%	14%
Tutoring	36%		47%	32%	47%	55%	40%	54%	59%	58%	58%	37%
Transfer services (CC students only)	33%		34%	35%	35%	39%	31%	40%	26%	29%	36%	36%
Has received financial aid	58%		63%	65%	60%	73%	59%	56%	80%	57%	72%	43%
Expects to obtain a four-year college degree	82%		81%	82%	80%	76%	63%	98%	84%	76%	87%	80%
Qualifications required for job expected by age 30												
4-yr college degree	66%		62%	68%	44%	66%	43%	70%	72%	60%	70%	59%
Vocational Certification (no BA)	13%		15%	12%	26%	18%	22%	2%	10%	24%	9%	14%
No requirements	16%		17%	15%	20%	14%	25%	22%	12%	8%	17%	20%
Don't know	5%		7%	6%	10%	2%	10%	6%	6%	8%	4%	8%
Employment												
Ever had a job	84%		82%	79%	90%	94%	90%	80%	58%	76%	93%	76%
Average age at first job (if ever employed)	17.1		17.2	17.2	16.8	17.2	17.2	17.5	17.5	17.1	16.8	17.2
Ever worked full time	57%		56%	48%	60%	62%	70%	46%	45%	61%	49%	67%
Average age at first FTE job	18.4		18.5	18.6	18.7	18.0	19.0	18.1	18.0	18.4	18.8	18.5
Currently working for pay	55%		53%	58%	50%	64%	63%	52%	26%	46%	59%	57%
If employed, employer provides health insurance	25%		27%	25%	48%	45%	35%	4%	23%	23%	15%	21%
Involved in job training outside of school	15%		22%	14%	40%	20%	18%	16%	30%	32%	20%	18%
Out of school, out of work, & no B.A.	14%		10%	6%	14%	6%	14%	6%	20%	8%	9%	10%

Sixty-three percent of DMD alumni also indicated they were currently employed. In contrast, approximately one-quarter of LASGS students indicated they were currently working for pay. Linked Learning alumni earn slightly less in the labor market than the random sample ($11.35/hour versus $12.59/hour). Graduates from some schools get paid better than others. The average wage of students from Life Academy, for example, was $15.59 per hour.

The last set of figures show that there is a slight difference between samples in the likelihood of being out of school (in any type of educational program)[15] and out of work, and also lacking a bachelor's degree. The current economic crisis has certainly impacted the trajectories of alumni from both samples and has contributed to this sizeable contingent of disconnected young adults: 10% of the Linked Learning sample indicated that they were not enrolled in school, out of work, and had not attained a four-year degree compared to 14% of the random sample.

Civic Engagement

Although preparation for civic life after high school graduation has not been emphasized as an expected outcome for Linked Learning in general, we asked survey respondents a series of questions that gauged civic and political participation since high school graduation. Based on our time spent at participating Linked Learning sites, we observed that many pathways provide opportunities for students to engage with the community in ways traditional schools do not. Internships with local business, industry and community partners, and projects that focus on identifying and meeting community needs were commonplace across a number of sites. All participating sites also fostered the development of civic skills, such as working collaboratively, listening, sharing opinions, and problem-solving. Further, a number of pathways that were included in the UCLA IDEA implementation study made explicit the importance of readying students for community and civic engagement. **Table 4** reports on study respondents' civic engagement within 12 months of completing the survey. Overall, results show that Linked Learning students do not exhibit higher levels of civic engagement than those students from the larger sample. Neither sample indicated a high level of organizational membership, and more than half of each sample reported that they did not volunteer in the last 12 months. However, both samples agreed strongly that there are issues in the community that they care deeply about (over 85% of each sample). As alumni mature, complete postsecondary plans, and settle into a career, we anticipate that they will exhibit higher levels of civic and political engagement. Indeed, almost a third of both samples indicated that they shared perspectives on social or political issues online, and 38-39% of the samples voted in their November 2010 election—activities that do not require the same level of time commitment. Not surprisingly, at pathways where students are expected to connect their learning to community needs (via internships or projects), over 90% of the sample indicated they cared deeply about issues affecting their community (CPA, HTLA, LASGS, Life and MetWest). It is noteworthy that 50% of the CPA sample indicated they shared their perspectives online (compared to 30% of the random sample). HTLA respondents tended to volunteer less than those in the random sample, but they were also more likely to share a political perspective online. Additionally, CART respondents were less likely to engage in protest, while LASGS, MetWest and Life Academy alumni were more likely to protest. This may be explained by regional differences—there may be more opportunities (and fewer costs) to join or engage in protest in Oakland and Los Angeles versus in the Fresno/Clovis region.

Table 4: Current Civic and Political Engagement

	Random Sample		Linked Learning	CART	CPA	CTA	DMD	HTLA	LASGS	LIFE	MW	NT
Organizational Membership and Participation	(weighted)											
Belongs to an organization	30%		29%	33%	32%	42%	12%	44%	18%	24%	33%	22%
Belongs to a school-sponsored organization	17%		15%	13%	16%	24%	6%	32%	6%	14%	24%	8%
Belongs to a religious organization	10%		9%	18%	6%	14%	6%	6%	2%	8%	9%	2%
Belongs to a community-based organization	20%		18%	19%	20%	26%	8%	28%	12%	16%	26%	10%
Belongs to a political organization	5%		7%	2%	10%	8%	0%	16%	6%	8%	15%	6%
Helps make decisions for an organization	20%		18%	22%	20%	20%	6%	26%	12%	18%	26%	14%
Helps with outreach for an organization	25%		22%	28%	22%	34%	6%	32%	16%	20%	22%	16%
Invitations to participate												
Invited to volunteer	44%		45%	43%	48%	48%	33%	60%	40%	48%	59%	33%
Invited to get involved in a political issue	27%		25%	16%	40%	22%	10%	40%	16%	28%	35%	25%
Civic and Political Engagement												
How often have you volunteered in the last 12 months?												
Very often	10%		8%	8%	10%	10%	2%	6%	8%	10%	15%	6%
Somewhat often	21%		19%	18%	18%	18%	18%	24%	18%	20%	22%	18%
Not very often	17%		15%	21%	22%	14%	14%	10%	4%	14%	11%	18%
Did not volunteer	52%		58%	54%	48%	58%	67%	60%	70%	56%	52%	59%
Worked on an issue affecting own community	27%		22%	21%	30%	22%	12%	20%	18%	30%	35%	18%
Shared perspective on social or political issue online	30%		32%	27%	50%	24%	31%	48%	16%	28%	39%	31%
Participated in a march or rally	14%		17%	7%	10%	8%	8%	26%	30%	28%	37%	8%
Voted in the November 2010 election	39%		38%	37%	38%	38%	31%	46%	18%	34%	54%	51%
Agree/strongly agree with the following:												
There are issues in your community that you care deeply about	85%		89%	86%	94%	80%	76%	94%	92%	88%	98%	90%
You believe you can make a difference in your community	86%		88%	91%	98%	76%	75%	96%	86%	84%	96%	90%
You feel connected to others working to improve society	74%		77%	73%	86%	73%	73%	80%	74%	82%	80%	73%
In the USA everyone has an equal chance to succeed	71%		69%	79%	52%	78%	74%	66%	82%	45%	50%	78%
Raised by parent who followed government and public affairs	52%		47%	53%	52%	52%	31%	68%	18%	32%	43%	67%

Predictors of Postsecondary Trajectories

The preceding discussion demonstrates that students attending Linked Learning pathways are more likely to graduate from high school. Descriptive statistics suggest that students' postsecondary trajectories are influenced by their high school educational experience. In particular, students who graduate from a Linked Learning pathway are more likely than the comparison group to attend a four-year college. The previous discussion, however, does not account for sample differences. The age of respondents, ethnic/racial background, nor the fact that Linked Learning students tend to disproportionately come from lower socioeconomic backgrounds are not taken into consideration. With this in mind, we created a series of logistic regression models in order to compare the experiences of Linked Learning students with those who are the same age and come from similar backgrounds. Our findings substantiate many of the descriptive statistics and provide further detail about how high school experiences (attending a Linked Learning pathway) and background characteristics can influence trajectories and postsecondary outcomes. Based on these analyses, we found the following:[16]

- Linked Learning alumni are more likely than students in the random sample to attend some postsecondary education (either community college or a four-year institution) versus no college at all or vocational education.

- There is no statistically significant difference between Linked Learning alumni and the random sample in the likelihood of being currently employed.

- Among those who work, there is no difference between the Linked Learning alumni and the random sample in the likelihood of having employer-provided health insurance.

- There is no statistically significant difference between Linked Learning alumni and the random sample in the likelihood of being out of school, out of work, and without a bachelor's degree.

- Linked Learning alumni who participated in a work-based experience while in high school were more likely to attend some postsecondary education, compared to students in the random sample who participated in a work-based experience. However, participation did not predict better employment outcomes for the Linked Learning sample.

Postsecondary Education Enrollments and Employment

Table 5 shows results for postsecondary educational enrollments and employment for graduates of the classes of 2006 to 2010. Controlling for having a college-educated parent, coming from a low-income background (measured by free and reduced-price lunch eligibility while in high school), race, gender, and age, we found that Linked Learning alumni are 55% more likely to attend some form of postsecondary education versus no postsecondary education than the random sample. We conducted additional analyses to explore the various postsecondary pathways (four-year, two-year, vocational education, or no postsecondary) pursued by Linked Learning graduates compared to the random sample. Using a multinomial regression model that allows us to account for various postsecondary pathways, we were able to identify differences in trajectory patterns between the samples. When separately comparing each of the possible PSE outcomes, we found that Linked Learning graduates are more likely to attend a four-year postsecondary institution versus no postsecodary education at all.[17] There are no statistically significant differences in community college or vocational education enrollments versus not attending any PSE at all.

Table 5: Logistic Regression Results for Internships and Postsecondary Education Outcomes

	Enrollment in PSE (2-yr or 4-yr College)		Currently Employed		Employer-Provided Health Insurance		Out of School, Out of Work & no B.A.	
Linked Learning Graduate	1.554 (0.256)	**	0.913 (0.105)		0.963 (0.168)		0.880 (0.167)	
Has Parent with college degree	3.053 (0.687)	***	0.907 (0.118)		0.700 (0.137)		0.376 (0.107)	**
Low-income background ❖	0.728 (0.124)	+	0.629 (0.077)	***	0.852 (0.157)		1.747 (0.374)	**
Under-represented ❖❖	0.802 (0.133)		1.054 (0.123)		1.532 (0.274)	*	1.400 (0.289)	
Male	0.719 (0.105)	*	1.128 (0.119)		1.679 (0.269)	**	1.167 (0.206)	
Age	1.032 (0.051)		1.156 (0.041)	***	1.243 (0.065)	***	1.079 (0.063)	

❖ Based on Free and Reduced-Priced Lunch Eligibility

❖❖ Underrepresented students are Latino, African American, and American Indian students. These students are underrepresented in the University of California system.

***p<.001, **p<.01, *p<.05, +p<.10

While not shown here, additional models that accounted for different high school experiences (e.g., college access, CTE classes special education, suspension, English as a Second Language, CAHSEE preparation, etc.) were also tested. Overall, students who participated in particular high school programs did not appear to experience advantages over the random sample in terms of postsecondary outcomes. However, two important exceptions were identified.

First, Linked Learning alumni who participated in an internship or other work-based experience while in high school were more likely to attend a two- or four-year college versus no PSE, compared to graduates who participated in internships at non-Linked Learning schools. When we restrict our analysis to students who participated in work experience while in high school, we find that graduates from Linked Learning pathways were 1.8 times more likely to enroll in a two-year college and 4 times more likely to enroll in a four-year college versus no college at all, compared to students in the random sample who indicated they had participated in work-based experiences.[18] These findings reflect the goal of Linked Learning pathways to connect work-based learning to career and college preparation for all students (versus the practice of assigning work-based learning to those students who are perceived to be non-college bound).

Similarly, an examination of enrollment in honors, Advanced Placement (AP), or International Baccalaureate (IB) courses while in high school identified differences in the likelihood of enrolling in PSE. Overall, students who are enrolled in honors/AP/IB courses have much higher chances of enrolling in college compared to students who are not enrolled in these courses, regardless of whether they are enrolled in a Linked Learning pathway. However, non-honors/AP/IB students attending Linked Learning schools tend to enroll in four-year colleges at higher rates compared to non-honors/AP/IB students in the general population. Linked Learning students in non-honors/AP/IB courses are 1.5 times more likely to enroll in a two-year college and 3 times more likely than similarly tracked students from the random sample to enroll in a four-year college.[19] As most Linked Learning sites are committed to providing a detracked curriculum and offer a limited number of AP offerings, this finding is significant. Indeed, Linked Learning students are half as likely as students in non-Linked Learning

schools to enroll in honors/AP/IB courses, controlling for having a college-educated parent, coming from a low-income background, race, gender, and age. (See Table 2 for AP/Honor/IB enrollment rates for each sample.)

Regression results suggest that there are no differences between Linked Learning alumni and the random sample in the likelihood of being employed or having employer-provided health insurance. Controlling for postsecondary enrollment did not yield any differences between the Linked Learning sample and the random sample.

As discussed above, our findings regarding employment outcomes must consider the economic climate. Because this study focuses on students who graduated during the Great Recession (between 2006 and 2010), it may be too early to assess the impact of Linked Learning on the employment trajectories of participants. Further, the age of students in the sample, combined with the positive difference in college enrollment also plays a role in these employment outcomes.

We also explored whether there were any differences between Linked Learning alumni and the random sample in the likelihood of being out of school (in any time of program) and out of work. We found no differences between the two groups.

Civic Engagement

With regard to civic engagement outcomes, we found that there is no difference between the Linked Learning students and students from the random sample in the likelihood of volunteering, working on a community issue, sharing a political perspective online, and protesting after controlling for parental educational attainment, low-income background, and having a politically engaged parent. As the discussion below will illuminate, these particular civic engagement outcomes, however, do not capture the wide range of methods Linked Learning graduates have applied their knowledge, skills, and abilities to engage with and contribute to their community.

Interview Data Analysis and Findings

Survey comparisons of trajectories are incomplete for the following reasons: 1) Linked Learning pathways graduate more students than the average California public high school; 2) survey findings do not allow us to look beyond a particular time frame. As such, we cannot know what these trajectories will look like in 3-5 years and if/how they will begin to diverge; and 3) evidence based on survey findings present a snapshot that does not fully capture the way graduates are engaged in postsecondary institutions and the workplace. Qualitative data offers a richer sense of social practices that Linked Learning graduates have been engaged in since high school graduation and how these practices can begin to point towards effects.

To interpret and explore the causal mechanisms underlying survey findings, semi-structured interview data was used. Interviews examined how youth make sense of their experiences in high school, postsecondary schooling, the labor market, and civic engagement. A total of 50 Linked Learning students from the sample were interviewed. Given the limited number of interviews we would conduct, we identified students from the pool of willing interview participants who shared the following characteristics: indicated that they had participated in an internship or work-based experience while in high school; and indicated they had enrolled in a postsecondary institution after high school graduation. Our goal was to identify a group of alumni that had access to real-world experiences in high school (a core component of Linked Learning) and were working towards degree attainment. The final sample was based on interviewee availability. **Table 6** provides descriptive statistics for the Linked Learning interview sample. As reflected in Table 6, we had greater success contacting students from more recent graduating classes (2010). Approximately one-third of the interview sample graduated in 2010.

Table 6: Interviewee Descriptions

	Frequency		Percent
Year of High School Graduation			
2006	6		12%
2007	8		16%
2008	9		18%
2009	8		16%
2010	17		34%
2011	2		4%
Race			
Latino	20		40%
White	9		18%
Asian	9		18%
Pacific Islander	1		2%
Arab/Middle Eastern	3		6%
Black	5		10%
Other	2		4%
Multi-Racial	1		2%
Gender			
Male	28		56%
Female	22		44%
Internship/Work Experience			
No	21		42%
Yes	29		58%
PSE Current Enrollment Status			
Community College	13		26%
Four-year/Completed BA	37		74%
Highest Degree Completed			
High school diploma	42		84%
Vocational/trade school certification	2		4%
AA degree	3		6%
BA degree	3		6%
Has Parent with BA Degree			
No	30		60%
Yes	20		40%
TOTAL	50		100%

Given the small sample of interviewees from each of the participating Linked Learning sites, we cannot make any generalizations about the high school experiences or trajectories of alumni of particular sites and/or make comparisons between sites.

The High School Experience

Linked Learning graduates interviewed were overwhelmingly positive about their high school experience. When asked about what they would have done differently in high school or how their high school could be improved, responses were not surprising. Many students indicated that they wished "they had studied harder," or "gotten better grades." Other students lamented that they missed out on some experiences afforded to students attending large comprehensive high schools, like sports. Most students, however, discussed the advantages of attending a pathway. In particular, Linked Learning alumni discussed the opportunity to get to know teachers and vice versa.

"There was that sense that I know the teachers and the teachers know the students aside from academic work. ... I liked that a lot because I think I needed that push from teachers."

Indeed, the topic of personalization and having both academic and social needs attended to by adults within the school setting was emphasized by almost all alumni. A student from CART commented that the extended periods assisted in building these relationships, "*it was a longer class so they had more time to bond with the students, and I think that helped us learn better. … It was more comfortable to engage with the teachers and be on track with what they had to say and what they taught. So I feel they were more student-oriented.*" A number of students commented that they continue to keep in touch with teachers from the high school. Feeling cared for made an impact on Linked Learning alumni.

College and Career Preparation

Linked Learning graduates shared that they felt their high school experience prepared them for college and career. All students interviewed, as demonstrated in Table 6 above, enrolled in either a two-year or four-year postsecondary institution after high school graduation. According to these students, the pathways' instructional strategies and curriculum prepared them for this next step in life. For example, a student from Life Academy commented that the integration of health and bioscience into the curriculum increased the rigor of the curriculum and prepared her for college: "*I feel [the classes] challenge you. … You have to pay attention and have to learn in order to pass the classes. So you learn more than if you're just taking a [non-integrated] science class.*" Practices, such as theme integration, cross-curricular integration, project-based learning, real-world applications (including work-based experiences), and authentic assessments, were identified by students as assisting them in effectively learning the content, achieving academically, and preparing them for two- or four-year colleges. A student from HTLA shared, "*most of [my friends] went to college, and they all said that even though, at the time, it was difficult—the projects we had to do really prepared them for college.*" Another student reported that in his particular major in college, "*we have a lot of pair work, so the whole presentation project emphasis in high school prepared me for that.*" For many alumni, they see the acquisition of these skills as providing them with an "advantage" in their academic courses: "*We have to give a lot of presentations… I've been doing presentations all throughout my high school career. So honestly, it's the easiest thing. You can incorporate so many aspects of it. You can put in a PowerPoint or make a movie or do something. And I know how to do all of that, so I think it gives me an advantage."*

> ***"I think that working in groups is a big thing here at Cal Poly and I notice a lot of people are still not very comfortable working in a group, but we went through high school having to work in groups. We're definitely a lot more used to It. The presentations we would have to do for our group projects helped you to be able to speak in front of other people, also to know how to dress for stuff like that."***

In addition to mastering the necessary content and skills that assisted students in college, Linked Learning alumni also shared that they learned to navigate new settings and seek assistance needed to ensure success. For example, one student commented that although her college classes are more "individual," the projects and group activities she participated in while in high school "*help[s] me out, because I have the potential to talk to people, and tell them to make a study group."* Another student shared, *"I had a leadership role [in high school]. I felt confident and I was able to give advice. And now I give advice to students as an RA here at UCR. I'm able to provide my residents with academic support and give them ideas and also tips on how to maintain a good GPA."* One student's response reflected the sentiments that many shared, "*I wouldn't be [as] invested in my education or invested in other activities that I am involved with now. I think I would probably be introverted rather than extroverted because I know I'm confident to speak to anyone. But also I probably would not know how to use resources.*"

Alumni indicated that they would have been better prepared for college if they had greater access to advanced-level work such as Advanced Placement courses. While students discussed having access to college courses at the local community college, a number of students felt they did not take advantage of this opportunity, or felt that the college course(s) did not provide them with the same "competitive edge" an AP course can provide. For example, one student shared, "*We only got offered college courses—we didn't have honors classes or AP classes. So that was not really good, because a lot of colleges ask for that in your application.*" This same student goes on to share that, overall, he appreciated course offerings because "*every student was in the same level, so it was not like a student would be less than others. I liked that.*"

Students shared how these skills were also applied in the workforce. Students indicated that they learned a range of career preparation skills such as how to communicate effectively, present, collaborate or work in teams, and problem solve and have put these skills to use in a wide range of settings since high school graduation. As one student summarized, *"Well, there's the academic portion and then there's the social portion that exceeded my expectations ... being able to work in a group and … figure out the kind of skills that you possess. So you're like, okay, I'm a good leader or in this situation, I'm not very good at videos, but if this person is, we could make a good team. So good collaborative skills was definitely something that worked."*

"All the group projects we did simulated the whole workforce and creative process that most other schools don't teach. [Other students] don't understand how to create a project from just an idea to become reality, and that's what most jobs entail."

A graduate from CART shared, "*I'd say it helped me analyze problems in a more efficient way within my life. It taught me the skills that I needed when presented with a problem—just to take a step back, look at it and try to come up with a solution for it. It kind of allows you to take a step back and just think about it for a second rather than just attacking.*" Another student shared, "*I do projects now (in the workplace) and doing projects back in high school totally prepared me to maintain my own schedule towards my work.*" Similarly, a student discussed, "*I'm able to communicate with people. I'm able to create a task list, making sure what everyone needs in order to complete a project.*"

Alumni indicate that these skills have provided them with an edge in the workplace compared to their peers who attended traditional high schools. Further, most students felt that the skills acquired through the pathway would assist them well into the future, as they experienced new jobs or through career shifts. A student explained, "*I guess I gained a lot of experience doing the independent learning and the presenting. Those have been the two skills that have kept coming up and coming up and I've really refined those.*" Another student explained that she is still using many of the skills she acquired and will "*use [them] throughout my life.*"

"It was similar to a more professional environment, almost like a college. I liked the atmosphere. And what I expect to gain from these classrooms was just better understanding of what my possible career fields were going to be involving."

A number of students also shared that they have found particular skills related to the theme of the school particularly helpful. For example, a student from CTA shared, "*That's definitely the … number one reason why I went to that school in the first place. ... Once I got into college it was … exactly what they were doing in high school.*" The student, currently studying architecture, also appreciated the integration of courses at the high school level and pointed out that in college he continues to identify how courses relate to his field of interest. A graduate of High Tech Los Angeles who is currently studying to be a mechanical engineer stated, "*Everything I learned that was technical at High Tech High was directly applicable to my degree right now. ... The experience I gained in high school allowed me to know how parts are made and done by a technician, so that now that I'm becoming an engineer, I have a much greater understanding of how something is designed and how it actually gets made. When I design something or analyze something, I can think of the whole picture.*" For graduates pursuing a field related to the theme of the pathway, *"you definitely have a step up against other people who are just coming in from a traditional school."* And, for those students exploring career interests, the pathways they attended allowed for discovery.

Finally, a number of Linked Learning alumni also discussed how their experience in an internship or other field-based experience was extraordinarily helpful beyond graduation. Graduates shared that preparation for the work-based experience (preparing a resume, making cold calls to possible internship sites, etc.) was as useful as the actual experience. Further, these experiences were helpful to students whether or not they were interested in pursuing a career related to the internship. After one student interned with an engineering firm, he commented, *"I definitely knew I wanted to be a computer engineer by the end of senior year, but I wasn't quite sure if I wanted to be a mechanical engineer, and [after the internship] I decided I wanted to get a second degree in mechanical engineering because it was so fundamental."* One student shared how her career interests shifted after her internship with a Congressman, *"I definitely learned that I do not want to work for a politician and I certainly wouldn't want to be one either, definitely!"* In sum, *"because you have that experience working with professionals, you definitely have a better aspect about the working world."*

Graduates also commented that the relationships they developed with internship mentors have provided them with support well beyond their high school years. For example, a student shared, "*I'll go visit them [mentors], often. And besides catching up, we'll talk about what I'm doing, and they'll give me pointers, and refer me to people.*"

Community Engagement

When interviewed, a majority of the Linked Learning alumni indicated that their high school experience had prepared them to participate in civic life. Students provided a number of examples that demonstrated community involvement while in high school. Alumni discussed that learning civic responsibilities began in their small school setting wherein students worked with each other to ensure the success of all students. A student from High Tech LA shared, *"I think High Tech High has a good sense of wanting to help everybody in the school be better, so if you knew a subject better than someone else, you'd help them. You're all working towards understanding the material versus a cutthroat competition for only 10% of the class getting an A."* Students also discussed learning skills within their classes that they continue to use in every day life. For example, students shared how they learned to present, listen, collaborate, and bring together diverse individuals and ideas for shared projects and/or presentations. According to students, they feel confident to use these skills in a variety of settings.

Outside the school setting, students indicated that they engaged in the world outside the school setting through internships, service learning, and projects. Almost all alumni interviewed provided an example of an activity or project that allowed them to apply their learning and interests to the needs of the neighborhood or larger community. For example, a student from CTA shared, *"The NAWIC project was a project that a fourth of the population of our school was working on to better a part of our community. … They were working on a real project that was going to be developed and it was a competition for the bid so it was very much a real deal kind of thing."* A student from DMD summarized her learning from these community-based experiences, "*All the projects were just really big eye-openers to see like what's going on in society around you."* Indeed, across sites alumni shared that the high school worked to prepare students to engage and contribute: *"That particular high school prepared us for life. It prepared us to be involved with political stuff, with our community, and on discovering ourselves and what we're passionate about."* Further, many students indicated that opportunities to identify and contribute to the community here helped them to develop skills and abilities (e.g., how to collaborate, learn from others, and solve problems) that have assisted them in college, the workplace, and in other endeavors.

While a few students shared that they have been able to transfer the skills and abilities they learned in high school to continue to engage in their community and in civic life, most Linked Learning graduates, unfortunately, indicated that they were currently not involved in these "traditional" civic

engagement activities. Not surprisingly, Linked Learning alumni who were one to five years beyond high school graduation remained more focused on their postsecondary education, work, and family.

Conclusion

Comparing Linked Learning high school graduates to the random sample of high school graduates does not tell the full story. The degree to which Linked Learning schools graduate a higher proportion of entering 9th graders compared to the statewide average may understate the impact of Linked Learning. Approximately 85% of students who attended a Linked Learning site beginning in the 9th grade graduated four years later (in 2011) compared to three-quarters of students statewide. These findings are especially significant given that Linked Learning pathways enroll greater numbers of students from groups at risk of not graduating, and the well-established research on the importance of a high school diploma. Survey findings reveal that Linked Learning alumni are also more likely to attend a postsecondary institution versus not attend college at all compared to non-Linked Learning graduates. Unfortunately, lacking longitudinal data that follow students from high school entry onwards, we cannot determine the full impact of Linked Learning participation on students. Further, these findings must also take into consideration the state's current economic climate and the new challenges it has created for schools, students, and those seeking employment.

Ensuring all students make it to high school graduation and providing all students with a wide range of postsecondary options is the primary goal of the Linked Learning approach. Survey findings indicate that sites are working towards achieving these goals. Interview data sheds additional light on how the high school experience impacts the trajectories of Linked Learning graduates. However, further studies are needed to gain a greater understanding of how the educational, labor market, and civic trajectories of students who attended a Linked Learning pathway will progress over time.

APPENDIX A:
PARTICIPATING SITE DESCRIPTIONS

The Center for Advanced Research and Technology (CART):

CART provides a half-day program for 11th- and 12th-grade students from 13 traditional high schools and four alternative schools in the Clovis and Fresno Unified School Districts. Students attend either a morning or afternoon session at CART and spend the rest of their day at their "home school" (the traditional public high school or alternative school in their district and attendance area).

CART is comprised of 14 labs within four thematic clusters. The types of labs offered at CART shift every year based on the needs and interests of the students, but generally fall within Advanced Communications, Professional Sciences, Global Dynamics, and Engineering fields. The majority of the CART labs offer a one-year course and students who attend two years have the opportunity to experience two different labs. Nine of the labs offer a two-year course sequence. Content areas taught, classroom setups, and types of integration vary depending on the lab; however, every lab offers 20 credits that include five English course credits, five technology credits, five themed elective credits and five social science or lab science credits.

CART received Linked Learning certification in 2011.

Community Partnerships Academy (CPA) at Berkeley High School:

CPA is one of six options for students attending Berkeley High School, a large comprehensive high school located in Berkeley, Calif. While the official career focus of CPA is the human service professions, its central commitment is to the promotion of equitable outcomes for all students. The goals of academic, career, and civic development are understood to be essential to the success of students and to attaining these positive outcomes. CPA seeks to provide all students with personalized schooling experiences that make them eligible for higher education, while also exposing them to career and community experiences that will guide and prepare them for civic and professional life. The school's published mission reflects these goals and their commitment to the success of every child in the school: "Our mission is to nurture and develop individual strengths to ensure that every student achieves at their highest level and is prepared for college and careers in fields serving community needs. We create teams that foster a climate of integrity and respect as we work together to develop both the capacity and the commitment to participate in building and leading healthy communities."

CPA recently changed its name and broadened its theme to the Academy of Medicine and Public Service to highlight the academic rigor of the pathway.

Construction Tech Academy (CTA):

Originally operating as an academy within San Diego Unified's Kearny High School, CTA is currently an autonomous small school, designed to prepare students for careers in the field of architecture, engineering, and construction. CTA is situated on the Kearny High Educational Complex alongside three other autonomous small schools each of which, like CTA, possess a unique theme, a rigorous academic curriculum, and a focus on providing students with access to real world experiences that will prepare them for college and career. The school's stated mission is to provide students with an opportunity to explore these fields through a contextual, hands on, rigorous curriculum that prepares students, upon graduation, for direct entry into colleges, apprenticeships or careers. CTA's stated strategic goals include: 1) increasing the number of college ready San Diego Unified School District high school graduates, particularly among low income and minority population; and 2) improving students' post secondary options, whether college, technical training, or the world of work.

CTA received Linked Learning certification in 2011.

School of Digital Media and Design (DMD):

DMD is an autonomous small school located on the Kearny High Educational Complex in the San Diego Unified School District. DMD offers a focus on graphic design, multimedia, video production, fashion design, and journalism. According to its mission statement, DMD "exists to develop exemplary communication skills in students through authentic, media based experiences in an environment of high academic and social expectations." Developed by administration and staff, DMD's mission statement is based on student need, current educational research, and the belief that "all students can achieve when challenged with high academic and social expectations."

Teachers are grouped in grade-level teams and share the same students. Projects incorporate all subject areas and are anchored in the themed elective class at each grade level and in advisory periods.

DMD received Linked Learning certification in 2010.

High Tech Los Angeles (HTLA):

Founded by a group of teachers with the help of community partners, HTLA was intended to serve as an alternative to the large comprehensive high school and provide a personalized approach to learning. Inspired by the High Tech High Model in San Diego, HTLA is "dedicated to fusing the traditional academic subjects with real-world technical applications and problem solving skills. Students are productive, self-directed learners, engaged in rigorous, relevant work." HTLA aims to prepare all of its students to be "motivated, influential leaders committed to the challenge of connecting our community to the larger society."

HTLA opened as a dependent charter within the Los Angeles Unified School District and became an independent charter in 2008. HTLA works to customize its classes to meet the needs of individuals and makes sure all students have access to a high quality, college-preparatory curriculum. Advanced Placement courses are not offered, but teachers work to challenge students and all have the option to contract with teachers and take classes for honors credit. In their senior year, students are encouraged to take a course off-campus at a local community college. Each HTLA student must complete an internship.

Los Angeles School of Global Studies (LASGS):

LASGS is part of the Los Angeles Unified School District and is located within the Belmont Zone of Choice, which offers 8th graders within a particular area the option of choosing between 17 small schools, pilot schools, or small learning communities. Open since 2006, LASGS receives support from the New Technology Network, primarily with 1) technology tools and software for creating and maintaining an online network for project-based learning, grades and collaboration among students and teachers, and 2) access to initial training for new teachers, professional development for continuing teachers, visits to New Tech model schools and networking among its schools.

LASGS received Linked Learning certification in 2012.

Life Academy of Health and Bioscience (LIFE):

Life Academy is a small, autonomous high school in East Oakland that was born from a movement led by educators and community members to create smaller, more responsive and equitable schools. The school opened in 2001 in the Oakland United School District.

In most of its promotional materials, the school emphasizes its dual mission of preparing students for college and exposing them to the fields of health and bioscience through project-based learning, and engaging and enriching activities. A more recent iteration of the mission statement includes the school's desire to dramatically interrupt patterns of injustice and inequity for underserved communities in Oakland. Through transformative learning experiences focused on the health and science fields, students are engaged in learning and inspired to acquire the skills needed to succeed in college and their chosen careers.

Life Academy received Linked Learning certification in 2011.

MetWest (MW):

MetWest, a small school located in West Oakland, opened its doors in the fall of 2002. The academic program is based on the Big Picture Learning design that prioritizes students' interests and goals, uses a curriculum that is relevant to students' lives, and assesses students' abilities through authentic measures. The school's approach to learning is grounded in a commitment to educate "one student at a time, in a tight-knit community of peers, family, teachers, and community mentors—utilizing resources inside and outside the classroom."

MetWest is located across the street from a local community college where students are encouraged to broaden their access to course offerings and explore their interests by enrolling in college-level classes. The community college is an extension of the MetWest school curriculum and culture.

MetWest's commitment to providing students with real-world learning experiences is evident through its dedication to internship-based learning. Beginning in the 9th grade, all students participate in internships and continue exploring their varied interests well into their senior year. Most students will complete a total of eight internships by the time they graduate from MetWest.

Sacramento New Technology High School (NT):

Sacramento New Technology High School opened in 2003 as a small dependent charter school within the Sacramento City Unified School District. The school graduated its first class of seniors in 2005.

NT is based on the model of Napa New Technology High School and is part of the New Tech Network that supports over 86 schools nationwide. "New Tech" schools enable students to "gain the knowledge and skills they need to succeed in life, college and the careers of tomorrow. NT's instructional approach is rooted in project-based learning and integrates technology in the classroom. The school uses technology as a tool for teaching and learning and has a 1:1 ratio of computers to students. The school strives to create a "real" work environment.

Sacramento New Technology High School received Linked Learning certification in 2011.

Table 7: Participating Site Profiles, 2010-11

SITE	LOCATION	SCHOOL SIZE	YEAR OPENED	DEMOGRAPHICS	
CART*	Fresno/ Clovis	1,373 (both sessions)	2000	NA	NA
CPA**	Berkeley	238	1991	Asian 6% AfAm 51% Latino 24% White 9%	ELL 12% FRL 49%
CTA	San Diego	459	2002	Asian 11% AfAm 13% Latino 59% White 11%	ELL 25% FRL 79%
DMD	San Diego	484	2004	Asian 11% AfAm 16% Latino 47% White 15%	ELL 15% FRL 77%
HTLA	Los Angeles	345	2002	Asian 4% AfAm 4% Latino 37% White 49%	ELL 5% FRL 50%
LASGS	Los Angeles	349	2006	Asian 2% AfAm 1% Latino 92% White 1%	ELL 16% FRL 84%
LIFE	Oakland	272	2001	Asian 6% AfAm 10% Latino 79% White 0%	ELL 28% FRL 88%
MW	Oakland	151	2002	Asian 2% AfAm 36% Latino 52% White 6%	ELL 14% FRL 68%
NT	Sacramento	303	2003	Asian 5% AfAm 19% Latino 49% White 22%	ELL 18% FRL 65%

Source: California Department of Education. Retrieved May 1, 2013 from http://dq.cde.ca.gov/dataquest/

* Data is not available from CDE for CART.

** Disaggregated data is not available from CDE for small learning communities such as CPA. Information retrieved from *Visiting Committee Report, Western Association of Schools and Colleges, Focus on Learning for Berkeley High School*, 2012

APPENDIX B: METHODOLOGY

The 10 schools participating in UCLA IDEA's implementation study of Linked Learning were invited to take part in the alumni study. Harbor Teacher Preparatory Academy, within the Los Angeles Unified School District, was unable to participate due to district regulations and policy. The nine participating sites were asked to provide UCLA IDEA with alumni rosters from the classes of 2006 to 2010, and a data file containing a list of 8,430 alumni who graduated from these high schools/programs during the specified time frame was compiled. The data list was delivered to the Social Science Research Center (SSRC) at California State University, Fullerton, which administered the survey.

SSRC cleaned the data list and removed records that did not contain a valid telephone number. Of the 8,430 names contained in the sample frame, telephone numbers were only available for 6,242 students (74%). As a consequence, 2,188 records were culled from the original sample frame. Fifteen percent (932 records) of the youth in the sample frame had graduated prior to 2006 (before the time frame specified). As such, these records were also omitted from the sample.

Our initial goal was to conduct 500 telephone surveys (50 from each school). However, as a result of Harbor Teacher Preparatory Academy's non-participation, and the large number of students enrolled each year at the Center for Advanced Research and Technology (CART), in comparison to the other schools in the study, we ultimately chose to survey 100 alumni from the CART. In order to get an adequate representation of alumni from each of the nine schools, a quota of approximately 56 respondents per school was specified. Furthermore, within each school, a quota of approximately 11 alumni per graduation year was also specified. This was done in order to get an adequate representation of alumni from each of the five graduation years. In order to maintain an adequate response rate, SSRC made telephone calls to a random sample of 2,601 records contained in the final sample frame in order to complete 502 telephone surveys.

The comparison group comes from a randomly selected sample of young adults who participated in a telephone survey for the California Young Adult Study (CYAS). The CYAS is part of a larger study on PATHWAYS to Postsecondary Success that is being conducted by UC/ACCORD All Campus Consortium on Research for Diversity. The CYAS study relies on phone interviews with 2,200 randomly selected youth, ages 18-26, who attended school in California at any point before the age of 17. Both the Linked Learning and comparison samples were administered the same questionnaire.

Random Sample Telephone Survey Data. The study relies on telephone survey data collected through landline telephone and cell phone interviews with 502 randomly selected young adults who attended one of the nine Linked Learning schools identified. For a few sites with very small graduating classes, we had to make due with a convenience sample. For example, Oakland's Life Academy serves many low-income families, and we encountered some difficulties in contacting many of the individuals that were included in the final sample. Many of the phone numbers provided by the school were no longer in service as families moved or lost service. As a result, the final sample consisted of alumni we were able to contact.

The survey instrument was drafted by UCLA IDEA and was refined in collaboration with SSRC for comprehensiveness, flow, length and factors that influence respondent cooperation and interest.

SSRC pilot-tested the survey on a small sample of young adults, and made final revisions prior to full-scale administration.

This survey was administered from August to December 2011 by SSRC. Phone interviews used CATI (Computer Assisted Telephone Interviewing) software during the interview in order to easily navigate skip patterns. This CATI software enhanced data accuracy and contributed to the efficiency of interviews. Telephone surveys lasted an average of 25 minutes. Survey respondents received a $30 gift card. Potential study participants were called up to 36 times in order to secure their participation.

Of the 502 completed interviews, nearly equal proportions were conducted with women (n=241; 48.1%), and men (n=261; 51.9%). Because the contact information of youth graduating in 2010 was more accurate compared to those graduating before that date, there is an over-representation of this subgroup in the final survey sample (n=125; 25.5% in the survey sample compared to n=677; 10.7% in the sample frame).

Semi-Structured Follow-up Interviews with Random Sample. We conducted in-depth follow-up phone interviews with a subsample of 50 survey participants (10 students from CART and 5 students from each of the remaining sites). The sample was selected by identifying students who indicated in the survey that they 1) had attended either a two- or four-year college after graduation; 2) wished to pursue a career in a field related to the theme of the school; and 3) were willing to participate in a follow-up interview. The sample was also drawn to reflect the school's graduating classes with regard to gender and race. As with the survey sample, the final sample was comprised of those individuals successfully contacted. All interviews were conducted by phone and lasted from 30 minutes to 3 hours. Interview participants received a $30 gift card for their time. All interviews were recorded, transcribed, and coded for the purpose of data analysis.

Interviews were coded and analyzed using Dedoose, a web-based qualitative software that allowed multiple research team members to review and analyze data simultaneously.

Notes

1 In 2008, UCLA IDEA identified 10 schools or academies, located throughout California that were implementing Linked Learning (then referred to as Mulitple Pathways). Sites were selected to represent a wide range of themes and pathway structures. All 10 schools demonstrated a commitment to the four essential components of Linked Learning. Six of the 10 participating sites have been certified as Linked Learning through the *ConnectEd* quality review and certification process.

2 Oakes, J., & Saunders, M. (Eds.). (2008). *Beyond Tracking: Multiple Pathways to college, career, and civic participation.* Cambridge, MA: Harvard Education Press.

3 Approximately 6,275 schools nationwide have a specialized career academy as reported in the 2007-08 National Center for Education Statistics Schools and Staffing Survey. Available at http://nces.ed.gov/programs/digest/d09/tables/dt09_100.asp

4 For a review of this research, see Stern, D., Dayton, C., & Raby, M. (2010). *Career Academies: A proven strategy to prepare high school students for college and careers*. Berkeley, CA: Career Academy Support Network, University of California. Retrieved from http://casn.berkeley.edu/resource_files/Proven_Strategy_2-25-1010-03-12-04-27-01.pdf

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5 See, for example, Stern, D., Dayton, C., & Raby, M. (2010). *Career academies: A proven strategy to prepare high school students for college and careers*. Berkeley, CA: Career Academy Support Network, University of California. Retrieved from http://casn.berkeley.edu/resource_files/Proven_Strategy_2-25-1010-03-12-04-27-01.pdf

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6 Kemple, J.J. (2008). *Career academies: Long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood*. New York, NY: MDRC.

7 It is anticipated that a report on student outcomes will be made available by SRI International's Center for Education Policy in 2015, based on the graduating class of 2014.

8 Alliance for Excellent Education. (2007). *In need of improvement: NCLB and high schools*. Washington, DC: Author. Retrieved from http://www.all4ed.org/files/NCLB_HighSchools.pdf

9 See Saunders, M., Hamilton, E., Fanelli, S., Moya, J., & Cain, E. (2013). *Linked Learning: A guide to making high school work*. Los Angeles, CA: UCLA's Institute for Democracy, Education, and Access. Available at www.ucla-idea.org

10 Harbor Teacher Preparatory Academy, one of the 10 schools that participated in the UCLA IDEA implementation study, located within the Los Angeles Unified School District, was unable to participate due to district regulations and policy.

11 See www.pathways-ucaccord.org/projects/california-young-adult-survey

12 A comparison of demographics at the district level reveal that participating Linked Learning sites enrolled underrepresented minorities at higher rates than their respective district's high school average. Examining 2010-11 demographic data, this was the case for all participating pathways with the exception of High Tech Los Angeles.

13 Interview with Linked Learning administrator, May 20, 2009.

14 Low-income background is based on Free and Reduced-Priced Lunch. When we examine parent reliance on public assistance, figures change to 66% for the Linked Learning sample and 41% for the random sample.

15 Educational programs include GED/adult school, vocational training, and college.

16 The results reported above are pertinent to the entire sample, but some alumni from Linked Learning high schools did not experience the full program. To test whether exposure to the full intervention impacted students, we removed students from the sample who did not attend the pathway for four years (in some cases, new pathways enrolled students beginning in the 10^{th}, 11^{th} or 12^{th} grade). A total of 60 students were removed from the Linked Learning sample. These analyses did not yield different findings. No significant differences between those who experienced the full Linked Learning intervention and the random sample were identified. Similarly, additional analyses were conducted to identify potential differences between students attending Linked Learning sites that had been certified or were in the certification process and the random sample. Again, additional analyses did not yield significant differences.

17 Multinomial regression analysis allowed us to compare any one outcome (four-year, two-year, vocational education) to a fourth outcome – the "no college" group. These analyses yielded a statistically significant difference in four-year college enrollment versus no college at all, yet no statistically significant differences for two-year college or vocational education enrollments versus no college at all. Given these results, we posit that the increased likelihood of postsecondary enrollment for Linked Learning alumni versus no college, compared to the random sample, can be attributed to four-year college enrollments.

18 Findings for two-year college enrollments significant at $p<.05$ level. Findings for four-year college enrollments significant at $p<.001$ level.

19 Findings for two-year college enrollments significant at $p <.05$ level. Findings for four-year college enrollments significant at $p<.001$ level.

Exploring the Educational, Labor Market, and Civic Trajectories of Young Adults who Attended Linked Learning Pathways

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UCLA IDEA
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UCLA IDEA is a research institute seeking to understand and challenge pervasive racial and social class inequalities in education. In addition to conducting independent research and policy analysis, IDEA supports educators, public officials, advocates, community activists, and young people as they design, conduct, and use research to make high-quality public schools and successful college participation routine occurrences in all communities. IDEA also studies how research combines with strategic communications and public engagement to promote widespread participation in civic life.

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