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Evaluation of the California Community College Linked Learning Initiative

Second-Year Report

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Executive Summary

In the 21st century economy, postsecondary education is the gateway to a viable career and adequate earnings. Yet, in California, neither the K–12 education system nor the postsecondary education system has addressed fully its responsibility for ensuring successful student transitions from high school to postsecondary education. As a result, California's public education system is not meeting the college and career readiness needs of many of its most vulnerable residents. The majority of California high school graduates who go on to postsecondary education first enroll in a community college, but less than half of these students go on to earn a certificate, complete a degree, or transfer to a four-year degree program. In recent years, low-income students, first-generation college students, Latino, and African-American students, in particular, have had very low postsecondary completion rates.

Low-income and first-generation college students encounter many obstacles to their success in postsecondary education. The gap between K–12 and community college educational systems is a key source of the barriers they face. On one side, there is evidence that K–12 systems are falling short in providing all students with opportunities to acquire the knowledge, skills, and mindsets they need to be college and career ready. On the other side, we see community college systems hobbled by ineffective placement and basic skills remediation practices and by inadequate student guidance and support systems. These are real problems and areas for improvement on both sides of the K–12 and college systems gap, but working in isolation, neither side can address fully the multiple barriers that prevent students from making successful high school to postsecondary transitions. Only by working together can community college and K–12 education systems fill the gaps and develop coherent strategies for providing students with needed supports at all stages of the transition from high school to and through community college.

In 2011, to help close the gap between California's K–12 and community college systems, The James Irvine Foundation funded the Career Ladders Project to create the California Community College Linked Learning Initiative (CCCLLI). The goal of CCCLLI is to extend the Linked Learning approach into postsecondary education. In 2012, the Career Ladders Project chose three community colleges to serve as hubs for CCCLLI model development and implementation—Contra Costa College, Pasadena City College, and Sacramento City College.[1] Each of these hub colleges partnered with a local Linked Learning K–12 district to work together to improve support systems for students' transitions to postsecondary education. From 2012 through 2014, SRI International evaluated the implementation of CCCLLI in the three hub college demonstration sites. This report summarizes key findings from our analysis of data collected during the second year of the CCCLLI evaluation.

The CCCLLI approach: Extending the Linked Learning approach into college.

With guidance from the Career Ladders Project, the CCCLLI colleges worked together with their K–12 partners to align and extend Linked Learning pathways from high school into and through community college. Each of the three CCCLLI hub colleges created pathways in a different industry sector and each built upon its own distinctive programmatic strengths. Although each site developed its own unique plans and strategies, all three sites focused their efforts on a combination of transitional support strategies to improve students' readiness for college-level coursework, to align high school and college career pathway programs of study, and to enhance personalized counseling and student services supports. More specifically,

[1] The Career Ladders Project also awarded a number of smaller CCCLLI grants to partner community colleges to form networks of college career-technical education programs all working in the same industry sector as each of the three CCCLLI hub colleges. The CCCLLI work by partner colleges was not included in the SRI evaluation.

- The CCCLLI hub colleges worked with K–12 district partners to implement strategies like early assessment, dual enrollment, and summer bridge programs to strengthen students' academic readiness before they entered the college pathway program of study.
- The CCCLLI hub colleges aligned college career-technical programs of study with Linked Learning pathways in partner high schools.
- The CCCLLI college and K–12 teams used a wide range of strategies to expand and enhance personalized student supports like early college registration and expanded college counseling services for high school students, summer bridge programs, and student cohort class scheduling and dedicated counseling and other student services in the college pathways.

CCCLLI Cross-level Collaboration

In the first year of the SRI evaluation, we identified three key barriers to effective college and K–12 collaboration: difficulties creating a shared vision and common goals across systems, limited sharing of data, and logistical constraints on cross-level collaboration. In the second year of the evaluation, we learned that the CCCLLI teams faced their greatest challenges in implementing programmatic strategies that required cross-level (college and K–12) sharing of resources and sharing of responsibility (such as aligning college and K–12 expectations and supports for students' academic readiness, implementing dual-enrollment options, and coordinating college and K–12 counseling resources). We also saw evidence of the importance of active systems-level leadership engagement, distributed leadership, and interdisciplinary collaboration in CCCLLI communities of practice. For example, we found:

- Active engagement of systems-level leadership is an axiomatic but too often unrealized requirement of cross-level collaboration. Leadership turnover and inattention were limiting factors for cross-level collaboration in the CCCLLI sites, because direct action by college and K–12 systems leaders was a key support for cross-level collaboration.
- A well-established distributed leadership structure can offset barriers of time and organizational boundaries to support college and K–12 collaboration. The CCCLLI sites found that a team approach to leadership was an effective way to avoid putting too much burden on one or two CCCLLI champions. The distributed leadership model also mitigated against leadership turnover and scheduling constraints for cross-level meetings and expanded the capacity and access to resources available to the CCCLLI cross-level teams.
- A strong, interdepartmental faculty learning community can provide a forum for ongoing discussion and resolution of disagreements on curricular and instructional priorities that divide academic and career-technical faculty within colleges. Differences between academic and career-technical faculty priorities are also a barrier to cross-level faculty collaboration. The robustness of the disciplines as the basic structural element of higher education institutions cannot and should not be underestimated as a potential barrier to the CCCLLI vision of integrated academic and career-technical high school to college career pathway programs of study.

CCCLLI Program Development

CCCLLI was an opportunity for community colleges and their K–12 district partners to experiment with application of the core components of the Linked Learning approach in ways that would support more seamless student transitions from high school into and through community college. The CCCLLI teams focused their work on three of the four components of Linked Learning and developed a range of strategies to support student's academic readiness for college-level coursework, to align high school and college pathway programs of study, and to enhance personalized student supports. Across all three areas of the CCCLLI work, the college and K–12 teams were most effective when high-level leadership was actively engaged, making it possible to integrate transition support strategies with college-wide and K–12

district-wide systems and resources. The experiences of the CCCLLI teams in each site also revealed some key lessons related to the effectiveness of strategies within each area of work:

- The CCCLLI teams were successful in taking initial steps to address the goal of strengthening students' academic readiness for college, particularly with early assessment, dual enrollment, and summer bridge programs. However, the unfinished state of broader systems-level reform of academic standards and assessment policies and practices, especially reform of basic skills assessment and placement in developmental English and mathematics courses at the colleges, was a key contextual constraint on progress on the academic readiness goal.
- CCCLLI teams made effective use of pathway mapping as a strategy for aligning high school and college career pathway programs of study. The pathway maps also had value as a means of communicating the objectives and value of the CCCLLI pathways to high school and college faculty and staff. Judging from difficulties CCCLLI college pathways experienced in recruiting high school students from aligned Linked Learning pathways, the CCCLLI teams may need to develop additional strategies to communicate more effectively the value of college pathways to prospective students.
- Across the wide variety of strategies adopted by the CCCLLI teams to enhance personalized student supports through the postsecondary transition there were many notable successes, including enhancement of college counseling services offered to high school students, early college enrollment of students prior to high school graduation, and integrating the first-year CCCLLI college pathway program with broader efforts at each college to provide a strong first-year student counseling, tutoring, and student services. The Linked Learning strategy of creating small student cohorts with common course schedules to foster a more personalized and supportive learning experience was not as effective in the college context. All three CCCLLI colleges found that it was advantageous to students and faculty alike to allow for more flexibility in student course scheduling and more heterogeneous classes (mixing in some more mature students with students straight out of high school).

CCCLLI Student Experience

The SRI research team collected descriptive data on characteristics, coursetaking, and course outcomes of students enrolled in the CCCLLI college pathways. We also conducted focus group interviews with a small number of CCCLLI pathway students. The nature of the available data prohibits any discussion of the *impacts* of participation in pathways in the sense of a cause and effect relationship between the programmatic treatment and the outcomes for students. The principal value of this descriptive analysis is to identify aspects of the student experience that may be in most need of attention and improvement. The descriptive analyses indicate:

- Rates of placement in college developmental basic skills English and mathematics courses and course failure rates among the first two CCCLLI student cohorts were high, suggesting a continuing need for intensive work on strategies to improve students' academic readiness.
- Data on CCCLLI student rates of course success, grades, and credit accumulation, in combination with evidence from student comments in focus group interviews, reveal a mixed picture of the likelihood of college success among the second cohort of CCCLLI college students. Many students struggled to keep up with the demands of the CCCLLI pathway programs of study, suggesting a need for additional work on improvements to curriculum, instructional quality, and supplemental academic supports.
- In interviews, CCCLLI students and faculty both pointed out that first-year college pathway students need assistance in developing college success skills, such as good study habits,

effective time management, self-awareness, the ability to seek out help when needed, the ability to set academic and personal goals, and persistence in efforts to achieve them. Together, these data support the maintenance of a strong counseling component during the first year of college (and perhaps after) to help students adjust to college-level expectations and improve their chances for college success.

Conclusions and Implications

The model demonstration phase of CCCLLI was a useful context for exploring questions related to the potential collective impact of community college and K–12 systems alignment on regional industry, education, and workforce development ecosystems (such as those envisioned by the California Career Pathways Trust initiative). Two general findings from the CCCLLI evaluation seem particularly relevant for application to regional cross-level and cross-sector collaborations to promote more seamless and successful student transitions from high school to college and career.

- First, **Linked Learning pathways are not pipelines**. The goal of Linked Learning is to keep educational and career opportunities open and not to force high school or college students to make an early choice to pursue an occupation in a particular industry sector. Ideally, the goal of regional collaboration will be to give students a wide range of high-quality college career pathways to choose among.
- Second, **seamless systems are needed to support seamless transitions**. The CCCLLI experience shows that cross-level collaboration to blur the line between K–12 and college education systems is an important first step toward better systems to support students' postsecondary transitions. The CCCLLI demonstration project also illustrates the difficulties of cross-level collaboration. The CCCLLI teams faced many challenges in building cross-level communities of practice. Looking ahead, it is clear that the cross-level collaboration experience of the CCCLLI teams, and their work on aligning and extending Linked Learning pathways from high school into community college, will offer valuable guidance for regional efforts to develop systems of Linked Learning pathways from high school through community college. Creating such seamless systems will be a big step toward the goal of more seamless student transitions to postsecondary education and stronger pathways to 21st century careers.

Introduction

In the 21st century economy, postsecondary education is the gateway to a viable career and adequate earnings. Yet, in California, neither the K–12 education system nor the postsecondary education system has addressed fully its responsibility for ensuring successful student transitions from high school to postsecondary education. As a result, California's public education system is not meeting the college and career readiness needs of many of its most vulnerable residents. The majority of California high school graduates who go on to postsecondary education first enroll in a community college, but less than half of these students go on to earn a certificate, complete a degree, or transfer to a four-year degree program. In recent years, low-income students, first-generation college students, Latino, and African-American students, in particular, have had very low postsecondary completion rates.[2]

Low-income and first-generation college students encounter many obstacles to their success in postsecondary education. The gap between K–12 and community college educational systems is a key source of the barriers they face. On one side, there is evidence that K–12 systems are falling short in providing all students with opportunities to acquire the knowledge, skills, and mindsets they need to be college and career ready. On the other side, we see community college systems hobbled by ineffective placement and basic skills remediation practices and by inadequate student guidance and support systems. These are real problems and areas for improvement on both sides of the K–12 and college systems gap, but working in isolation, neither side can address fully the multiple barriers that prevent students from making successful high school to postsecondary transitions. Only by working together can community college and K–12 education systems fill the gaps and develop coherent strategies for providing students with needed supports at all stages of the transition from high school to and through community college.

In 2011, to help bridge the gap between California's K–12 and community college systems, The James Irvine Foundation funded the Career Ladders Project to create the California Community College Linked Learning Initiative (CCCLLI). The goal of CCCLLI is to extend the Linked Learning approach into postsecondary education. At the time CCCLLI was launched, the Foundation's California Linked Learning District Initiative, supporting development of systems of Linked Learning pathways in nine California K–12 districts, was in its third year. One of the Foundation's key objectives for the Linked Learning initiative has been to increase successful transitions to a full range of postsecondary education opportunities, particularly for low-income and disadvantaged youth. The Foundation understood that this objective was only partially addressed by the K–12 district system reforms being undertaken in the District Initiative. The Foundation also understood that many graduates of Linked Learning high school pathways would first experience postsecondary education at a California Community College.[3] For these reasons, the Foundation asked the Career Ladders Project to select several California community colleges to participate in a CCCLLI demonstration project to support the colleges in working with K–12 district partners to develop model strategies and programs to improve postsecondary education transitions and success.

Extending the Linked Learning approach beyond high school and into community college is important because community colleges are the backbone of California's postsecondary education and workforce development systems and because success rates for students entering community colleges are far too low. The California Community College System, serving more than 2 million students, trains 70% of the state's nurses, 80% of firefighters, law enforcement personnel, and emergency medical technicians, and

[2] See http://scorecard.cccco.edu/scorecard.aspx

[3] As part of the planning work for CCCLLI, Career Ladders Project staff estimated that roughly 60% of students in the nine districts participating in the California Linked Learning District would attend a California community college after graduating from high school.

also provides initial postsecondary education for 28% of University of California graduates and 55% of California State University graduates.[4] Yet, far too many students who enter California community colleges do not achieve their educational goals.

When CCLLI was launched, California was still recovering from the 2008 recession. California community colleges had been hit hard by cuts in state funding that resulted in reductions in course offerings and reduced access for thousands of potential students. Over the course of 2011, the Student Success Task Force convened by the California Community College Board of Governors carried out a strategic planning process to identify best practices and develop strategies for promoting educational opportunity and student success. In its December 2011 report, *Advancing Student Success in California Community Colleges*, the task force made 22 recommendations aimed at improving educational and workforce outcomes. Taken together, these recommendations laid out an ambitious long-term reform agenda for California community colleges. The goals and objectives of CCCLLI align closely with many of the key recommendations in the Student Success Task Force reform agenda. For example, the Task Force called for greater collaboration between K–12 schools and community colleges, for development of structured pathways and programs of study, and for enhanced counseling and student support services, all of which are central aims of CCCLLI.

At the national level, advocates for improvements to student transitions to postsecondary education have regularly called for closer college and K–12 collaboration. The American Association of Community Colleges, as part of its *21st-Century Initiative*, has formed an "Implementation Team on Community College/K–12 Collaboration for College Readiness (Team 3)."[5] Also, in July 2014 the White House and the U.S. Department of Education hosted a summit "to catalyze and expand collaboration across the K–12 and higher education sectors" as part of the *White House College Opportunity Initiative*.[6] Although there are many barriers to effective cross-level collaboration, research has demonstrated the value of cross-level partnerships as mechanisms for developing stronger systems of support for student transitions to postsecondary education.[7] The CCCLLI approach begins with the formation of community college and K–12 communities of practice.[8] These cross-level communities of practice are the foundation for aligning and extending into college the core components of Linked Learning high school pathways—integration of rigorous academics, real-world technical skills, work-based learning, and personalized student supports within a career-themed program of study

SRI International's evaluation of the model development phase (July 2012–July 2014) of CCCLLI included two years of qualitative and quantitative data collection, analysis, and reporting. This report presents findings from the analysis of data collected during the second and final year of the SRI evaluation. The research questions that guided data collection and analyses for the CCCLLI evaluation derived from a theory of change that hypothesized that strong collaboration and data sharing between colleges and K–12 districts would lead to good design and effective implementation of interventions to improve college readiness and success for students at the precollegiate (high school), college transition and entry, and first year of college stages of the student experience. As a result, the SRI evaluation of

4 *California Community Colleges: Vital to the Economy.* California Community Colleges Chancellors Office.

5 See http://www.aacc.nche.edu/AboutCC/21st_century/implementation/Pages/team3.aspx

6 See http://www.ed.gov/blog/2014/08/owning-the-challenge-summit-helps-community-wide-teams-strengthen-collaboration-to-boost-college-completion/)

7 See, for example, M. J. Amey, P. L. Eddy, & C. C. Ozaki (2007), Demands for partnership and collaboration in *Higher education: A model, new directions for community colleges*, 139, 5–14; M. J. Amey, P. Eddy, & T. Campbell (2010), Crossing boundaries to promote educational transitions, *Community College Review,* 37(4), 333–347.

8 The Career Ladders Project has defined a community of practice as "a process of collective learning in a shared domain or sphere [that] involves a group of people interested in an exchange of ideas through some reflective or inquiry process."

CCCLLI concentrated on identifying factors that facilitated or impeded college and K–12 collaboration, on documenting the development of transitional support strategies at all three stages, and on understanding the effects of the CCCLLI work on the student experience.

SRI's evaluation of the model development phase of CCCLLI focused on the design and implementation of model Linked Learning career pathway programs in the three community college demonstration sites. Each of the demonstration sites—Contra Costa College (legal and public services), Pasadena City College (arts, media and design) and Sacramento City College (allied health)—developed model career pathway programs in one industry sector to create bridges between designated high school Linked Learning pathways and the aligned community college programs of study (see Exhibit 1).

Exhibit 1. CCCLLI demonstration sites

Contra Costa College is in San Pablo, California, and serves western Contra Costa County, an urban area with high concentrations of students living in poverty. For the 2012–13 academic year, Contra Costa College reported a student population of 11,108. The greatest numbers of students were Latino/a (33%), African American (25%), and Asian (20%).

Since 1995, the Administration of Justice (ADJUS) program at Contra Costa College has worked closely with high schools in West Contra Costa Unified School District.

In fall 2012, the ADJUS program enrolled 23 students; almost all were graduates of Linked Learning high school pathways. In fall 2013, 20 new students entered the ADJUS pathway, and 17 students entered a new Emergency Medical Services pathway (majority of students in both pathways from a Linked Learning high school).

Pasadena City College is in Pasadena, California, and serves the greater Los Angeles area. In fall 2013, Pasadena City College had a student population of 26,271 that was predominantly Latino/a (46%) and Asian/Pacific Islander (21%).

When CCCLLI began, Pasadena City College did not have a strong recent history of collaboration with Pasadena Unified School District.

In fall 2012, 25 students (none from a Linked Learning high school) were enrolled in the Design Tech pathway at Pasadena City College. In fall 2013, Design Tech enrolled 53 students (10 from Linked Learning high school pathways), and the new Media Arts pathway enrolled 21 students (four from a Linked Learning high school).

Sacramento City College is in Sacramento, California. In fall 2013, SCC had 23,242 students, 28% of whom were Latino/a, 28% white, 23% Asian/Pacific Islander, and 13% African American.

The Allied Health Learning Community at Sacramento City College has a decade-long academic partnership with the Arthur A. Benjamin Health Professions High School in Sacramento City Unified School District.

In summer 2012, the Allied Health pathway enrolled 37 new students (about half from a Linked Learning high school). In summer 2013, 28 students entered the pathway (about one-third from a Linked Learning high school).

Findings from the SRI evaluation of CCCLLI are presented in three sections. First, we discuss progress and challenges around cross-level collaboration. We then assess CCCLLI program development. In the third section, we examine students' experience transitioning from high school to community college pathways. We conclude the report with some thoughts on the implications of the CCCLLI evaluation findings. In the context of rapid scale-up of the Linked Learning approach in high schools and K–12 districts in California and beyond, we highlight the value of K–12 and community college partnerships and the potential for scaling of grade 9–14 Linked Learning pathways to support more seamless student transitions to and through postsecondary education.

College and K–12 Collaboration

Cross-level collaboration is one of the key components of CCCLLI. The initiative aims to encourage the formation of cross-level communities of practice, bridging the gap between K–12 and community college systems. As discussed in the Introduction, this goal is in line with a broad range of research and policy initiatives supporting the value of closer collaboration and better alignment between K–12 and college systems to improve college access and student success. During 2013, the initiative made limited progress toward achieving its collaboration goals. In the April 22, 2014, memorandum based on evaluation data collected in 2013 (*Lessons Learned from the First Year of the CCCLLI Evaluation)*, we highlighted three findings related to the formation of CCCLLI college and K–12 communities of practice:

- Active engagement and shared vision among key college and K–12 district leaders—essential requirements for success in achieving the central goals of CCCLLI collaboration—had not yet been fully achieved.
- Incomplete engagement of K–12 district and college leadership hampered cross-level data sharing, which in turn constrained collaborative planning of transitional interventions.
- Time was a barrier to effective collaboration in two ways. First, developing an effective college and K–12 community of practice among the initial CCCLLI sites takes many years and multiple institutional and personal connections. Second, incompatible college and K–12 work schedules can make finding sufficient common time to meet as a cross-level team a major logistical challenge.

These findings set a low baseline for the second year of work with plenty of room for improvement. We are happy to report that our analysis of evaluation data collected in 2014 revealed encouraging signs that all three CCCLLI teams recognized the barriers they faced in terms of leadership engagement, found ways to address at least some of these barriers, and made progress in establishing cross-level college and K–12 communities of practice. We discuss the headlines from these second-year evaluation findings on collaboration next. First, we discuss the importance of engaging systems-levels leaders to facilitate cross-level collaboration. This is followed by a description of the value of a distributed leadership model for the CCCLLI cross-level communities of practice. Finally, we highlight the importance of fostering an ongoing interdisciplinary dialogue between academic and career-technical instructors.

Active engagement of systems-level leadership is an axiomatic but too often unrealized requirement of cross-sector collaboration.

Partners in CCCLLI understand that success of the initiative depends on commitment to collaboration at high levels of the systems as well as hands-on participation in activities to solidify and extend collaborative efforts. In particular, systems-level leaders need to be actively engaged to open the door to cross-level data sharing and to signal the importance of cross-level collaboration to college and K–12 faculty and staff. Unfortunately, changes in key leadership positions seem to be more the rule than the exception, particularly on the K–12 side of the equation as experienced by Pasadena City College and Sacramento City College.

For both community colleges, turnover among K–12 district administrative staff was an important source of the difficulties they faced in forging collaborative relationships with their respective partner K–12 districts. In both Pasadena Unified and Sacramento City Unified School Districts, key district-level Linked Learning leadership positions changed just before or during the period of the CCCLLI evaluation. The Linked Learning directors for Pasadena Unified and Sacramento City Unified were both new to their posts for the 2013–14 school year. These sites had very little time and very few opportunities to develop the strong personal connections that would lead to mutual respect and trust across organizations.

Collaborative team building is hard work in any event. On top of this, changes in personnel and/or inattention by leadership can lead to a self-defeating blame game, particularly if some potential collaborators have already invested much energy only to find themselves needing to start over. One CCCLLI leader opined that building a stronger relationship with the local K-12 district was something that needed "to get done at the Chancellor level" and could not be accomplished by the college program leadership.

The conclusion drawn by this CCCLLI leader is likely correct at one level of the collaborative process. Top sector leaders do need to openly embrace collaboration. There is, however, plenty of room for other strategies to move activities forward. A promising approach is a distributed leadership model that can mitigate against barriers such as turnover in personnel and scheduling dilemmas for meetings, as we discuss next.

A well-established distributed leadership structure can offset barriers of time and organizational boundaries to support college and K–12 collaboration.

In the first-year CCCLLI evaluation report, we noted that Contra Costa College and West Contra Costa Unified School District had the strongest and most developed college and K–12 district collaboration of the three initial hub college sites. We attributed the relative strength of the partnership to long-standing personal and institutional connections and to stability in key leadership positions. Now, we can detect signs of distributed leadership structures in all of the CCCLLI hub sites.

Early on, the Contra Costa College CCCLLI team established a leadership team that included college program and project leaders plus district administrators, school staff, and a former West Contra Costa Unified school board member who was a long-time community activist. The Contra Costa College leadership team met monthly to address systems issues that affected the successful transition of high school students to the CCCLLI pathway programs of study. The information sharing that occurred among this group, facilitated by Career Ladders Project staff and supported by institutional research units, proved extremely valuable to both partners. According to respondents, as a result of ongoing communication within the CCCLLI leadership team, partners were able to establish a "foundation for really tackling the hard questions. … The fact that we have this relationship has built this sense of trust among the faculty." Contra Costa College has established a new administrative position to oversee K–12 transitions (e.g., placement, dual enrollment) of all West Contra Costa Unified students.

In Pasadena, mutual respect between college and K–12 district leaders had been eroded over the years because each side blamed the other for students' lack of success in college. As a direct result of encouragement by top leaders, the college and district began sharing data that revealed a strong need for collaboration. The data made it clear that large numbers of Pasadena Unified high school graduates were entering Pasadena City College. Shared data also revealed a compelling need for college and K–12 collaboration on the CCCLLI goals of increasing students' awareness of college programs and improving their academic readiness for college-level coursework. The key point here is that direct intervention by top leaders led to broader recognition in both sectors (distributed leadership) that a problem needed to be addressed.

The Sacramento CCCLLI site developed a distributed leadership team within Sacramento City College's Allied Health Learning Community (AHLC) during the second year of CCCLLI. In the first year of the CCCLLI work in Sacramento, the CCCLLI team there was led by the Dean of Allied Health and the AHLC's CCCLLI Project Manager. With the CCCLLI Project Manager's departure after the 2012–13 academic year, the AHLC created a six-person leadership team. The chief value of this expanded leadership group was that it allowed for distribution of leadership roles and responsibilities, with one person managing data needs, another person managing curriculum revisions, and another focusing on

high school partnerships. Adding K–12 representation to this team seems like a realistic goal as new Linked Learning leadership stabilizes within the school district.

A team approach to leadership and collaboration appears to hold promise for each of the three CCCLLI hub sites, albeit in varying ways that fit the local contexts. Distributed leadership also seems to be the best hope for the hubs to share their lessons learned with additional community colleges. One or two champions per site cannot adequately shoulder the expanding responsibilities that this will require.

A strong, interdepartmental faculty learning community can provide a forum for dealing with disagreements on curricular and instructional priorities that divide academic and career-technical faculty.

Cross-level collaborations are core to CCCLLI goals. However, they are necessary but not sufficient conditions for development of career pathways extending from high school through community college. Within-college (and within-high school) collaborations are also critical to creating the best pathway experiences for students. All three hub colleges faced the ongoing challenge of bridging gaps between academic (general education) and career-technical education faculty to develop a common vision and goals for the CCCLLI work. For example, English and Administration of Justice career-technical faculty at Contra Costa College had difficulty resolving differences of opinion on the degree to which writing instruction in pathway English classes should be contextualized to public safety occupational standards and genres. Further, as the numbers of students in CCCLLI pathways increased in Pasadena and Contra Costa and new academic faculty members were added to the pathway teams, bridging gaps between academic and career-technical perspectives was an ongoing challenge. A Pasadena City College program staff member commented that the interdisciplinary approach of CCCLLI pathways is disruptive to a traditional, discipline-based college system.

There is evidence that, given time, efforts to foster interdepartmental collaboration within CCCLLI teams can be successful. For example, even before the start of CCCLLI, the Allied Health Learning Community at Sacramento City College was developing a strong community of practice among college faculty. The Allied Health faculty learning community encountered some of the same conflicts between academic and career-technical faculty visions for student learning that other CCCLLI teams grappled with. However, the Allied Health Learning Community was relatively successful in managing these conflicting visions, in large part because it had long sought to create a supportive environment for interdisciplinary collaboration, work that included establishing a common set of clearly defined Student Learning Objectives (specifying content students should learn in Allied Health classes) and Program Learning Objectives (specifying skills students should gain from the Allied Health program).

At the beginning of this section, we asserted that active commitment and support for cross-level collaboration by top college and district leaders is a key ingredient for CCCLLI's success. After the discussion under this headline, it seems equally axiomatic that endorsement by top leaders of programmatic interdisciplinarity within pathways is also necessary. The robustness of the disciplines as the basic structural element of higher education institutions cannot and should not be underestimated as a potential barrier to the innovative vision that CCCLLI espouses.

Overall, the importance of collaborative activities to CCCLLI's progress and success has grown and intensified in the year since our first interim report on the initiative. Cross-level collaboration between the college and K–12 systems remains a core goal for establishing pathways offering students a smooth transition between secondary and postsecondary educational experiences. The three CCCLLI hub partnerships have had growing pains with their efforts to establish these collaborations but on balance have made some good progress with distributed leadership teams that seem sustainable even in the face of inevitable personnel changes. At the same time, there is increased recognition that multiple kinds of collaborations underlie pathways. One of the thorniest of these to implement may well be interdisciplinary

curriculum collaborations between academic and technical faculty. In addition, the state of California is both endorsing and expanding collaboration goals to include closer relationships among education, employment, business, and governmental sectors. In other words, there are opportunities in abundance for visionary leaders to dig in and make a difference for California's youth.

CCCLLI Program Development

The model development phase of CCCLLI was designed as an opportunity for community college sites and their K–12 district partners to work on organizational and systems changes needed to facilitate more seamless transitions to college for high school graduates of Linked Learning pathways. In pursuit of this vision, CCCLLI was also an opportunity to experiment with application of the core components and guiding principles of the Linked Learning approach in ways that extended through high school and into the first years of college.[9]

The discussion of evaluation findings in this section is organized around the three core components of the Linked Learning approach that were the primary foci for most of the CCCLLI program development work. We first examine efforts by the CCCLLI sites to implement interventions in support of the academic component of Linked Learning, including early assessment of academic readiness, dual enrollment, and summer bridge programs. Next, we discuss CCCLLI work to address the technical component of Linked Learning, including mapping and aligning high school and college career pathway programs of study. Finally, we discuss the wide range of CCCLLI efforts to address the personalized supports component of Linked Learning, including high school student outreach, early college registration, and counseling at all stages of the student transition from high school to and through the first year of college.

The CCCLLI sites were successful in taking initial steps to address the goal of strengthening students' academic readiness for college, but were constrained by incomplete implementation of broader systems-level reforms of high school and college academic standards and assessment policies.

Each of the three hub college sites made some progress in developing strategies to better prepare students for the academic demands of college-level coursework. All three CCCLLI teams implemented new or expanded forms of early assessment to identify high school students' levels of academic readiness for college level coursework. All three sites also acknowledged the value of expanding dual enrollment offerings to high school students, but progress on doing so was limited. Likewise, summer bridge programming was a focus of attention in all three CCCLLI sites, with varying levels of success in implementation. In each of these areas, the CCCLLI work on improving academic readiness was constrained by broad systems-level changes and unresolved issues in standards and assessment policy. The high school Linked Learning partners were in the middle of the transition to Common Core English and mathematics standards and new Smarter Balanced Assessment Consortium tests. The colleges were in the very early stages of addressing the need for fundamental reforms of community college English and mathematics basic skills assessment and placement policies and practices. These tectonic shifts in college readiness standards and assessment policies and practices were the context for the work by the CCCLLI teams around early assessment, dual enrollment, and summer bridge programs described next.

Early assessment was one part of all three hub colleges' strategies for improving precollegiate students' academic readiness, but each site took a different approach and all were constrained by the unsettled state of the broader context of assessment practices at both the K-12 and college levels. The Contra Costa College CCCLLI team extended college placement assessment (as part of early college enrollment) to all high school seniors in West Contra Costa Unified School District. Pasadena City College developed a pre-assessment workshop for high school students at its campus that was designed to help them better prepare for the college placement test. In Sacramento, a faculty member in the Allied Health

[9] The four core components of Linked Learning are rigorous academics, real-world technical skills, work-based learning, and personalized supports. The four guiding principles are preparing students to succeed in college, career, and life; preparing high students for a full range of post-graduation opportunities; connecting academics to real-world applications; and improving student engagement. See http://www.connectedcalifornia.org/linked_learning/faqs

Learning Community developed an experimental assessment of nonverbal skills. The assessment measures nonverbal skills that research has shown to be associated with success in science learning, including spatial ability, proportional reasoning, and pitch pattern recognition and was piloted with Health Professions High School Students and with college students in the Allied Health pathway.

Dual-enrollment course offerings are an opportunity for high school students to gain early exposure to the academic demands of college-level coursework and an opportunity to earn college credits before high school graduation.[10] Although dual-enrollment opportunities were available to high school students in all three hub college sites, the offerings were limited. All three hub college teams expressed a desire to expand current offerings, but barriers to doing so included lack of clear policy guidelines for handling of teaching assignments and for sharing of costs for dual-enrollment courses between colleges and K–12 districts.

Summer bridge programs can take many different forms and serve different goals. Two of the three hub colleges developed summer programs that combined interventions to support improved academic readiness with interventions to support nonacademic college readiness skills development. The Allied Health program at Sacramento City College was designed to begin in the summer term, in part to circumvent summer declines in academic readiness and to avoid the "summer melt" phenomenon. [11] For both initial Sacramento City College Allied Health student cohorts, the summer term has included support for academic skills building as well as pre and post testing and remediation on the nonverbal skills measured by the pathway's alternative assessment battery. Students entering a Pasadena City College pathway program participate in a 2-week summer bridge program (called Jams) to help build community with fellow students, gain exposure to some of the tools they will use in their college career pathway classes, participate in a short group project similar to those in their career pathway, and to become familiar with the campus and support services available to them (tutoring, coaches, labs). Academic coaches offer counseling support to identify the challenges that students will face during college and to help clarify student goals. The Contra Costa College team struggled to plan and find the resources to support a summer bridge program. Several students from the Administration of Justice career pathway participated in an 8-day Youth Academy Program operated by the college in collaboration with five local law enforcement agencies, but no other summer bridge program was offered to the second cohort of career pathway students at Contra Costa College.

Thus far, in this section, we have described the mix of strategies adopted by CCCLLI teams to support efforts to improve students' academic readiness before they entered the college pathway program. We also have described the varying degrees of success experienced by CCCLLI teams in implementing each type of strategy. In the areas of early assessment, dual enrollment, and summer bridge academic development programming, the CCCLLI teams made progress but also faced systemic barriers that limited the scope of implementation. In addition, the unsettled and incomplete state of broader reforms of college assessment and placement policies and practices during the demonstration phase of the CCCLLI was a fundamental constraint on the progress that could be made on the goal of improving academic readiness. It is an encouraging sign that reform of college basic skills assessment and placement practices is a focal point for the next phase of the CCCLLI work (CCCLLI 2.0). In the next section, we turn from work on academic readiness to work on pathway curriculum relevance and describe use of pathway mapping as a strategy for extending high school Linked Learning pathways into college.

[10] K. L. Hughes, O. Rodriguez, L. Edwards, & C. Belfield (2012), *Broadening the benefits of dual enrollment: Reaching underachieving and underrepresented students with career-focused programs,* San Francisco: The James Irvine Foundation.

[11] B. L. Castleman & L. C. Page (2014), A trickle or a torrent? Understanding the extent of summer "melt" among college-intending high school graduates, *Social Science Quarterly, 95*, 202–220.

CCCLLI sites had success using pathway mapping as a strategy for aligning high school and college career pathway programs of study. The value of pathway mapping as a support for recruiting students to enroll in college pathways was less clear.

With technical assistance from the Career Ladders Project, the three CCCLLI sites each created graphic representations of education-to-career pathways showing routes to occupational opportunities through multiple levels and types of postsecondary education certificates, degrees, and other credentials. Career pathway maps were used effectively as a communication tool for college and K–12 staff to help them align high school and college programs of study and occupational opportunities and earning potential at various stages of the career pathways. Career pathway maps were also intended to serve the needs of broader communication to show clearly the links between high and college pathways as well as links through the pathways to further education and employment and potential earnings. The CCCLLI teams hoped to use pathway maps to spark student interest and to encourage enrollment in the college pathways.

The Contra Costa College team used a mapping template to create career pathway maps for its Administration of Justice and Emergency Medical Services programs and was able to use the mapping template to identify curriculum gaps between high school and college pathways. The Pasadena City College team was able to use the mapping process to work out issues of breadth and specificity in its college career pathways. Within the Pasadena City College career pathway faculty, there were differences of opinion regarding the degree to which pathway design should take a broad-based approach to career preparation to keep career options open for all students as opposed to taking a more narrow focus on specific industry requirements. For Pasadena City College, this issue was particularly salient in the design of the new Media Production pathway. In the end, the college opted for broader career preparation. For this purpose, the college adopted the concept of meta-majors—designing academic programs that have common or related content aligned with preparation for a broadly defined set of career goals (e.g., social sciences, business, health careers and life sciences, arts, design).[12] While mapping and developing meta-majors can help, a Pasadena City College respondent noted that it still is difficult to find the balance between efforts to keep students on track for program completion and, at the same time, maintain enough flexibility in program design so that students can modify their career goals and "so they don't feel trapped by their choices."

Pathway mapping was also intended as a method of communicating to prospective students the value of enrolling in a college pathway aligned with the career theme of their high school Linked Learning pathway. One of the operative assumptions underlying the CCCLLI work was that many high school students who complete a Linked Learning pathway will be interested in pursuing a similar program of study in a local community college. Evidence from SRI's evaluation of the Linked Learning District Initiative supports this assumption in part. According to student survey results, many students in high school Linked Learning pathways expressed an interest in pursuing a career related to their pathway theme. Likewise, with few exceptions, many students in focus groups across all three CCCLLI sites reported that they had a strong interest in pursuing a career related to their college career pathway. Despite this evidence of student interest, CCCLLI colleges experienced difficulty in recruiting high school graduates from related Linked Learning pathways.

Overall, pathway mapping showed itself to be an effective means of supporting cross-level conversations around alignment of pathways between college and K–12 staff. The value of pathway maps as a tool for communicating with students, parents, and community members was less clear. In the end, there was little evidence that would suggest that the recruiting difficulties CCCLLI college pathways experienced

[12] See, for example, *Core Principles for Transforming Remedial Education: A Joint Statement,* December 2012; *CCRC working papers No. 32 (Get with the Program: Accelerating Community College Students' Entry into and Completion of Programs of Study,* January 2012) and *No. 34 (Charting Pathways to Completion for Low-Income Community College Students,* September 2011).

were in any way related to a misalignment between the students' interests in further technical education and the technical content of the college pathway programs. It seems far more likely that pathway maps were completed too late to come into play in recruitment of the second cohort of CCCLLI student. The CCCLLI teams used pathway mapping to address the real-world technical skills component of the Linked Learning approach. In the next section, we describe the role of systems-wide engagement as a strategy for supporting another core component of Linked Learning, enhanced personalized student supports.

Integrating CCCLLI programs with broader college-wide and K–12 district student support services was an effective strategy for increasing the scope and potential for sustainability of CCCLLI work to improve personalized student supports.

The CCCLLI sites implemented a broad range of activities to improve personalized student supports. All three colleges made concentrated efforts to improve high school student outreach and recruitment, to extend early college enrollment and college counseling to more high school students, to develop students' college knowledge and success skills, and to expand counseling and academic support services. In each of these efforts, the CCCLLI teams found that they could avoid duplication of effort and increase greatly the scope and sustainability of student outreach and services by integrating the CCCLLI work with broader district-wide and college-wide systems and resources.

High school student outreach and recruitment by college pathways was a strategy used in all CCCLLI sites to identify early students with a strong interest in a college pathway. The CCCLLI teams understood that many high school students choose to attend a community college or choose a college program of study only at the last minute. Early outreach to high school student before their senior year allows students to make informed choices among college programs and also gives students greater opportunities to prepare themselves for the academic rigor of college coursework in the college program of interest. Engaging existing district and college counseling resources to support high school student outreach was instrumental to the improvement and sustainability of early student outreach activities in the Contra Costa and Pasadena sites in particular. At Contra Costa College, responsibility for pathway outreach moved into the counseling department. Counselors presented information about the Emergency Medical Services and Administration of Justice college pathways to students in the health and law pathways in West Contra Costa Unified high schools. Outreach to Pasadena Unified high school students for the career pathways at Pasadena City College was also expanded by merging with outreach efforts for the college's large first-year pathway program (called the XL pathway).

Early college enrollment coupled with placement assessment and precollegiate counseling was another key strategy adopted by the Contra Costa and Pasadena sites to facilitate student college transitions. In Contra Costa, the Administration of Justice and Emergency Medical Services pathway teams merged their early enrollment, assessment, and precollegiate counseling activities with college-wide efforts in West Contra Costa Unified. By establishing regular meetings between high school and college counselors, the merger enabled district-wide coordination of Contra Costa College's early college enrollment and precollegiate counseling activities in West Contra Costa Unified School District. Similarly, the Pasadena career pathway team's merger of outreach efforts with the college-wide XL pathway also expanded the scope of precollegiate counseling available to Pasadena Unified School District students. After the merger, XL pathway counselors and coaches began presenting information on the CCCLLI college pathways to Pasadena Unified high school students.

All the CCCLLI colleges have state-funded, college-wide **Student Support and Success Programs** (SSSP, formerly Matriculation) that are intended to support improvements in admissions, orientation, assessment and testing, counseling, and student follow-up that will lead to better rates of college retention and completion. Each of the college sites found ways to use its college SSSP process to attain CCCLLI goals. At Sacramento City College, the Allied Health Learning Community was identified as a model for matriculation and orientation for the college's SSSP. Contra Costa College made plans to get

more West Contra Costa Unified students to go through the SSSP process while they are in high school so that when they arrive at the college their applications will be on file, their assessments will be completed, and students will have an idea of what courses they should register for. At Pasadena City College, the CCCLLI grant supported hiring of additional counselors for the Teaching and Learning Center, a resource serving all first-year students at the college.

The range of efforts to enhance personalized student supports across the three CCCLLI sites was impressive. As described in this section, it became clear to all three CCCLLI teams that work on improving high school student outreach and early college enrollment, transitional counseling, and first-year college student support services was best done in coordination with broader district-wide and college-wide programs.

Looking across the three areas of work by CCCLLI teams discussed in the section, we see a range of levels of success. Our best explanation for the varying levels of success the CCCLLI teams experienced in improving students' academic readiness, aligning high school and college programs of study, and enhancing personalized student counseling and support services is that the teams were most effective when cross-level collaboration was strong and when systems-level resources could be fully engaged. Both conditions were met in the case of the CCCLLI work on outreach, counseling, and student services. This may be because high school and college counselors (as opposed to academic and career-technical instructors) have more bandwidth and more motivation to collaborate with peers across educational levels and across divisions within their K–12 districts and colleges. It may take more time and more systems-level work on reform and alignment of K–12 and college academic standards and assessment policies and practices before CCCLLI strategies to improve academic readiness can be fully developed and effective.

Findings on the Student Experience

In this section, we rely on a combination of qualitative data obtained from interviews and focus groups with CCCLLI faculty and students and limited descriptive quantitative data obtained from the hub colleges' respective offices of institutional research. The nature of the available data prohibits any discussion of the *impacts* of participation in pathways in the sense of a cause and effect relationship between the programmatic treatment and the outcomes for students. When we can, we compare descriptive statistics for the CCCLLI pathway students with similar institution-wide statistics. However, these are gross comparisons and should be treated with caution. The principal value of this descriptive analysis is to identify aspects of the student experience that may be in most need of attention and improvement. Exhibit 2 summarizes characteristics of the second-year cohort in each of the five college pathways studied.

Exhibit 2. Summary of CCCLLI cohort 2 pathway student characteristics

	Total	From LLHS	Female	Male	Latino/a	Asian	Black	White
CCC: ADJUS	***N***	**%**	**%**	**%**	**%(*n*)**	**%(*n*)**	**%(*n*)**	**%(*n*)**
Fall 2013	20	60	50	50	85(17)	NA	NA	NA
Spring 2014	13	69	46	54	85(11)	NA	NA	NA
CCC: EMED								
Fall 2013	17	71	38	63	88(15)	NA	NA	NA
Spring 2014	13	69	33	67	92(12)	NA	NA	NA
PCC: Design Tech								
Fall 2013	53	19	47	53	94(50)	NA	NA	NA
Spring 2014	46	22	43	57	93(43)	NA	NA	NA
PCC: Media Arts								
Fall 2013	21	19	38	62	70(15)	NA	NA	NA
Spring 2014	15	20	40	60	71(11)	NA	NA	NA
SCC: Allied Health								
Summer 2013	28	29	82	18	50(14)	NA	NA	35(10)
Fall 2013	28	29	86	14	54(15)	NA	NA	35(10)
Spring 2014	25	28	84	16	57(14)	NA	NA	35(9)

ADJUS, Administration of Justice; EMED, Emergency Medical Services

NA – Numbers are small (0 to 4 students) and are not shown to protect privacy.

Exhibit 2 clearly shows that all five pathways are majority minority—primarily Latino/a. All five pathways have a higher proportion of Latino/a students than is true of each college's population as a whole at the time. The overall proportion of Latino/a students for the 2013–14 academic year at Contra Costa College (CCC) was 34.8%, at Pasadena City College (PCC) it was 44.7%, and at Sacramento City College (SCC)

it was 27.8%. Students from all other racial/ethnic groups are under-represented in all five pathways relative to overall college student populations at the time. Of the five pathways, the Allied Health program in Sacramento is the most racially/ethnically diverse, as is also true of the college population as a whole in Sacramento. At the same time, the Sacramento pathway is the least balanced in terms of gender, suggesting that the jobs and professions in the allied health field are perceived to be stereotypically for women. All of the pathways experienced some fall to spring student attrition, with the largest number of dropouts coming from the dominant ethnic group. The percentage of college pathway students enrolling from a Linked Learning high school is by far higher for the two pathways at Contra Costa College, one indication of the relative strength of the high school-college relationships in that setting.

The data in Exhibit 2 also show that the second cohort of CCCLLI college students is similar to the first cohort of CCCLLI college students (students entering college in summer or fall 2012). Pasadena City College and Contra Costa College both added new college pathways in the second year (Media Arts at PCC and EMED at CCC). PCC also doubled the number of students enrolled in its Design Tech pathway in the second year of the evaluation. As a result, PCC nearly tripled the number of students entering a CCCLLI pathway in the second year (from 25 students in the first cohort to 74 students in the second cohort). By adding a new pathway, CCC also increased the number of student entering a CCCLLI pathway (from 23 in fall 2012 to 37 in fall 2013). The second cohort of students entering the Sacramento City College CCCLLI pathway is smaller than the first cohort (down from 37 students entering in summer 2012 to 28 students entering in summer 2013). Overall, despite increases in student numbers and pathway options, a relatively small number of students participated in the second cohorts of CCCLLI students across the three colleges. The small size of the CCCLLI student cohorts was by design, as the colleges focused their efforts on improving pathway programs before scaling up. However, our ability to draw conclusions about the quality of the CCCLLI pathway programs based on student experiences and outcomes is constrained by the small numbers of participating students.

In the remainder if this section, we discuss findings and implications of the student experience in two areas: academic readiness for college and overall success in the first year of college.

Evidence of academic readiness: Some of the most direct evidence we have for students' readiness for the academic demands of the first year of college comes from rates of placement in college basic skills English and mathematics courses, and course failure rates.[13] In examining this evidence, we should keep in mind that current methods of assessing and placing students in basic skills English and mathematics courses are under debate in California and throughout the country, with some scholars and observers arguing for (among other things) more campus-to-campus consistency in cut-off scores on placement tests. Therefore, we should be cautious in interpreting high placement rates in basic skills classes and high course failure rates as indicative of low academic readiness. We might also see these outcomes as indications that placement tests are underestimating students' potential academic readiness and that being placed in a basic skills class is demotivating, which may in turn lead to course failure.

Rates of placement in at least one basic skills courses were very high among the second cohort of CCCLLI college students in three of the five pathways (90 percent and 82 percent of all cohort 2 pathway students at Contra Costa College and 95 percent for students in the Media Arts pathway at Pasadena City College), and were moderate to very low (43 percent for the Design Tech pathway at Pasadena and 7 percent of the Allied Health students in Sacramento) in two other pathways. For purposes of comparison, we estimate that 70 to 90 percent of all students entering these three colleges are placed in at least one basic skills (developmental) class.

[13] In California, basic skills courses in community colleges are comparable to courses other college systems describe as developmental or remedial. Typically, students do not earn degree-applicable college credits for completion of basic skills courses.

Evidence of overall likelihood of college success: Data on CCCLLI student rates of course success, grades, and credit accumulation, in combination with evidence from student comments in focus group interviews, reveal a mixed picture of the likelihood of college success among the second cohort of CCCLLI college students. Overall course success rates were high in some terms. As a frame of reference, system-wide, California Community College students' course success rates in 2013-14 were roughly 70 percent for credit-bearing and degree-applicable courses, about 62 percent for basic skills courses, and about 74 percent for vocational courses.[14] It is evident that many students struggled to keep up with the demands of the CCCLLI pathway programs of study, suggesting a need for additional work on improvements to curriculum, instructional quality, and supplemental academic support services. (see Exhibit 3).

Exhibit 3. Average course units attempted, units earned, course success, and GPA

	Students	Number of classes taken	Units attempted	Units earned	Course success rate	GPA
CCC: ADJUS	***N***	**Mean**	**Mean**	**Mean**	**%**	**Mean**
Fall 2013	20	5.7	11.5	7.3	66	1.6
Spring 2014	13	4.0	10.6	9.9	92	2.9
CCC: EMED						
Fall 2013	17	4.4	9.4	9.3	99	2.7
Spring 2014	13	2.4	4.9	3.3	67	1.6
PCC: Design Tech						
Fall 2013	53	4.7	12.0	10.7	88	2.0
Spring 2014	46	4.4	12.1	9.0	73	1.5
PCC: Media Arts						
Fall 2013	21	4.4	9.4	8.4	86	1.9
Spring 2014	15	4.4	12.2	10.2	81	1.8
SCC: Allied Health						
Summer 2013	28	2.6	7.6	7.5	98	3.5
Fall 2013	28	5.8	14.9	14.3	95	2.6
Spring 2014	25	3.8	12.6	10.4	77	1.6

ADJUS, Administration of Justice; EMED, Emergency Medical Services

Evidence from interviews with hub college team members suggests that compared with the broader college student population, college career pathway students seem to be less cognitively and behaviorally mature, less skilled at managing their workload, and less able to navigate the resources provided to them

[14] See http://datamart.cccco.edu/Outcomes/Course_Ret_Success.aspx.

at the community college. It is worth noting that the average community college student tends to be in his/her mid-twenties; the pathway students are, on average, younger. College pathway students in focus groups echoed these faculty perceptions of themselves and their pathway peers. Students and faculty both pointed out that first-year college pathway students need assistance in developing college success skills, such as good study habits, effective time management time, self-awareness, the ability to seek out help when needed, the ability to set academic and personal goals, and persistence in efforts to achieve them. Together, these data support the maintenance of a strong counseling component during the first year of college (and perhaps after) to help students adjust to college-level expectations and improve their chances for college success.

As we noted at the start of this section, the nature of the available data on student outcomes prohibits any discussion of the *impacts* of participation in pathways in the sense of a cause and effect relationship between the programmatic treatment and the outcomes for students. The principal value of this descriptive analysis is chiefly to identify aspects of the student experience that may be in most need of attention and improvement. Rates of placement in college developmental basic skills English and math courses and course failure rates among the first two CCCLLI student cohorts were high, suggesting a continuing need for intensive work on strategies to improve students' academic readiness. In addition, the evidence from the CCCLLI evaluation suggests that focusing student support systems solely on issues of academic readiness and remediation may not be sufficient and that a broader range of personal success factors may need to be targeted in systems of student support and counseling.

Conclusions and Implications

Since CCCLLI began, the state context for collaboration around the concept of Linked Learning pathways has significantly expanded in terms of funding and in the scope of partner relationships. The SRI evaluation of the model demonstration phase of CCCLLI was an opportunity to address questions about issues and conditions that will affect efforts to bring the Linked Learning approach to scale in California and beyond. Specifically, the initial phase of CCCLLI has been a useful context for exploring questions related to the potential collective impact of community college and K–12 systems alignment on regional industry, education, and workforce development ecosystems (such as those envisioned by the California Career Pathways Trust initiative). Two general findings from the CCCLLI evaluation seem particularly relevant for application to regional cross-level and cross-sector collaborations to promote more seamless and successful student transitions from high school to college and career.

First, system-wide engagement of programs and resources will be even more critical to the success of cross-level and cross-sector regional collaborations such as those supported by California Career Pathway Trust grants. The CCCLLI sites faced significant challenges in implementing programmatic strategies that required cross-level (college and K–12) sharing of resources and sharing of responsibility (such as aligning college and K–12 expectations and supports for students' academic readiness, implementing dual-enrollment options, and coordinating college and K–12 counseling resources). The most effective strategy for addressing this challenge was engagement of high-level leadership and integration of student transition support programs with college-wide and K–12 district-wide systems and resources. With system-wide engagement, regional K–12 and postsecondary education partnerships will be well positioned to take advantage of the opportunities that CCPT grants provide to engage seriously with regional industry partners.

In the context of broader regional collaboration of industry, workforce development, and education systems, it may be necessary to remind all partners that Linked Learning pathways are not pipelines. The goal of Linked Learning is to keep educational and career opportunities open and not to force high school or college students to make an early choice to pursue an occupation in a particular industry sector. One of the guiding principles of Linked Learning is that students are not and should not be constrained by the career theme of the high school Linked Learning pathway from which they graduate. Some Linked Learning high school graduates will choose a college pathway aligned with the career theme of their high school pathway. Others will not. A good Linked Learning pathway is one that prepares students to pursue whatever postsecondary education and career path they desire. Ideally, regional collaboration will give students a wide range of college career pathways to choose among and outreach and recruitment will give students good information about the full range of their postsecondary education and career options.

Second, filling the systems gap and supporting more seamless student transitions between K–12 and college education may take a blurring of the line between the two systems. The original California community colleges were created by high schools that offered college courses. Only later did separate K–12 and community college systems emerge in the state. In terms of providing adequate support for students to take them through the transition to postsecondary education, the separation of K–12 and community college systems has now become dysfunctional. The CCCLLI experience clearly illustrates the difficulties of developing and implementing programs that can effectively bridge the gap between high school graduation and entering a college program of study. The CCCLLI experience also demonstrates the potential for cross-level collaboration to be an effective mechanism for developing better systems to support seamless postsecondary transitions.

Drawing on the lessons learned from the model development phase of CCCLLI, the Foundation and the Career Ladders Project initiated a second phase of CCCLLI work (CCCLLI 2.0) in 2014, with grants supporting continuing cross-level work at the Contra Costa College site and also in Oakland and Los

Angeles. CCCLLI 2.0 is focused primarily on cross-level collaboration around three strategies for supporting more seamless postsecondary transitions, adoption of new multiple measures approaches to improve basic skills assessment and accelerate remediation, dual enrollment to give high school students early exposure to college-level coursework and a chance to begin accumulating college credits, and enhanced and expanded college and career counseling services from high school to and through community college. These three strategic foci are appropriate next steps for CCCLLI efforts to blur the lines and fill the gaps between high school and community college systems. Looking ahead, it is clear that the cross-level collaboration experience of the CCCLLI teams, and their work on aligning and extending Linked Learning pathways from high school into community college, will offer valuable guidance for regional efforts to develop systems of Linked Learning pathways from high school through community college. Creating such seamless systems will be a big step toward the goals of more seamless student transitions to postsecondary education and stronger pathways to 21st century careers.