Research Brief: New Findings on the Benefits of Student Participation in Linked Learning

For the past 8 years, The James Irvine Foundation has been making a significant investment in Linked Learning, a promising approach to transforming education in California and across the nation. Linked Learning integrates rigorous academics with real-world experiences to provide students with a personally relevant, wholly engaging high school experience. The ultimate goal is to improve high school graduation rates and increase successful transitions to a full range of postsecondary education opportunities, particularly for low-income and disadvantaged youth.

In 2009, the Irvine Foundation launched the California Linked Learning District Initiative, a demonstration of Linked Learning in nine California school districts. The initiative serves as a vehicle for the Foundation and its Linked Learning partners to develop and refine Linked Learning, to determine what makes it successful at a systemic level, and to demonstrate its viability as a comprehensive approach for high school reform. The Irvine Foundation commissioned the Center for Education Policy at SRI International to conduct a rigorous multiyear evaluation of the initiative that describes the work, results, and lessons from the nine districts and measures the effect of Linked Learning on students.

SRI has produced four evaluation reports. The most recent, "Taking Stock of the California Linked Learning District Initiative: Fourth-Year Evaluation Report" (Guha et al., 2014), presented findings on student outcomes from most districts in the initiative.[1] For each *individual* district, we examined indicators of pathway students' engagement in school, their progress toward high school graduation and college eligibility, and their gains in knowledge, statistically adjusting for their background characteristics and prior achievement. We found that, compared with similar peers, students in certified pathways make significantly more progress toward graduation each year, as measured by credits accumulated and on-track completion of the a-g courses required for admission to California's public 4-year universities.

As a follow-up to the Fourth-Year Evaluation Report, we present here the results of a hierarchical linear model (HLM) that estimated a single Linked Learning effect *across* the participating districts for two key 10th-grade outcomes: (1) credit accumulation during the 10th grade and (2) successful completion of suggested 9th- and 10th-grade a-g requirements by the end of 10th grade. Specifically, after adjusting for students' background characteristics and prior achievement, we found that students enrolled in certified pathways across the districts

- **Earned an average of 6.6 more credits** in the 10th grade than similar peers in a more traditional high school program
- **Were 8.9 percentage points more likely to be on track** at the end of 10th grade to complete the a-g requirements than similar peers in a more traditional high school program.[2]

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[1] SRI requested student-level data from all nine districts and was able to analyze student outcomes for the eight districts that currently have certified pathways.

[2] We excluded Sacramento from the 10th-grade a-g on track analysis because of data limitations.

Both these estimates are statistically significant at the *p* < .05 level. More important, the difference in credits earned is meaningful because the average student in each district accumulated about 55 credits (roughly 25% of the credits needed to graduate) each year. Extra credits in the early grades may provide pathway students with a buffer against later failures, thereby preventing them from falling off track toward graduation. The a-g on-track finding is also promising because a-g completion is an important step for students who wish to attend a 4-year public university in California and an indication of the rigor that students may be experiencing through the pathway curriculum.

Although these combined results are consistent with the findings in the Fourth-Year Evaluation Report, we cannot directly compare the two sets of findings because they were estimated using different models and comparison groups. In moving to this combined HLM model, we have shifted the reference group for our estimates. In the Fourth-Year Evaluation Report, we compared outcomes for students in certified pathways with those of the average student in the district as a whole. To obtain the HLM results, we compared the performance of students in certified pathways with those of students in more traditional high school programs. This change provides a more distinct contrast between the experience of students in certified pathways and the students who do not experience key elements of the Linked Learning approach, particularly as the number of students in certified pathways in the districts grows.[3] Further, the single cross-district estimate is conceptually appropriate given that Linked Learning is a common approach across the districts in the initiative, not a series of individual programs implemented separately in each district. Moving to a single cross-district estimate also makes sense given the convergence in the results we have seen for these outcomes across the districts.[4]

In our next evaluation report, we plan to extend this HLM model to estimate all the 9th- through 11th-grade outcomes previously reported: absences, credits accumulated, and course failures in each grade; on-track to complete the a-g course requirements; and retention in the district. In addition, for the cohort of students who began 9th grade in the 2009-10 school year, we will be able to examine high school graduation and a-g course completion for the first time.

Additional Resources from the Evaluation of the California Linked Learning District Initiative
- Year Four Evaluation Executive Summary http://irvine.ly/1nRk150
- Year Four Evaluation Report http://irvine.ly/1jhwCyf
- Technical Supplement to the Year 4 Evaluation Report http://irvine.ly/OfQCaj
- Linked Learning in Motion infographic http://www.irvine.org/linkedlearning/

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[3] There were several additional changes to the sample. First, we controlled for only one prior year of test scores, given the varying availability of prior achievement data in different districts. We omitted the Long Beach class of 2013, as we lack 8th-grade data for this cohort, and the HLM model provides us less flexibility to deal with this issue. Finally, we omitted the 10 students taking either Integrated Math 1 or the Summative High School Math CST exam the year before entering a pathway because these cell sizes were too small to support valid estimation.

[4] The HLM model also has technical advantages because it adjusts for the precision of the estimate for each individual pathway in combining them into a single overall estimate.