



ConnectEd

The California Center for College and Career

Transforming today's education
for tomorrow's economy

Implications from the Network of Schools Evaluation

To advance multiple pathways, ConnectEd established a Network of Schools consisting of a group of pathway demonstration sites. During the 2007–08 school year, the James Irvine Foundation commissioned an evaluation of those network sites. The Foundation also produced a shorter summary of the evaluation highlighting its key findings and details the process for the evaluation's development on the Foundation's website.

The Network of Schools were site-level demonstrations that informed the need for system-level demonstrations to provide students with a choice of pathways, scale up the number of systems of pathways in California, and help ensure the sustainability of pathways within districts. The network informed the development of the California Multiple Pathways District Initiative, which consists of

ten school districts aiming to implement a system of six to eight pathways each. Findings from the Network evaluation will help ConnectEd and its partners support schools and districts in planning and implementing pathways to better serve California's students.

The evaluation revealed that, in certain areas, network sites were producing better student outcomes compared to the statewide average. For example, network sites on average had higher graduation rates, better pass rates on the California High School Exit Exam, increased numbers of students completing courses needed to prepare students for California's four-year public colleges, and greater student engagement in school. Key areas for improvement also emerged in the evaluation, some of which are outlined below with their implications for the field.

Integrated Curriculum

Integrated curriculum is a cornerstone of pathways. Such a curriculum combines academic and technical content from different subject areas and delivers that content through hands-on project-based applications that encourage students to make connections between academic theories and real-world applications. This makes learning more exciting and relevant.

EVALUATION FINDINGS

Evaluators found many examples of high-quality cross-curricular projects and, when those were not present, often an academic teacher had integrated technical concepts into lessons. Staff interviewed for the evaluation acknowledged the value of an integrated curriculum and a desire to develop more of it, but admitted that they lacked either the capacity or the time to collaborate with others to do so. The master schedule posed problems in many cases. Incorporating common planning time into the master schedule and scheduling students in a dedicated pathway cohort would allow for better implementation of the curriculum. [See Scheduling and Student Access.]

The evaluation also revealed that schools were missing opportunities to improve the rigor of their curricula, with technical instructors in particular missing opportunities to include rigorous academics in their classes.

POSSIBLE IMPROVEMENT APPROACHES

Evaluation findings related to integrated curriculum have implications for scheduling and professional development. ConnectEd and its partners can:

- Provide pathway teams of teachers with specialized professional development and ongoing support in developing integrated curriculum.
- Develop more examples of rigorous integrated curriculum for each of the industry areas and particularly examples that integrate higher-level mathematics.
- Provide site leaders with tools and specialized training that help them develop master schedules that will support the development and delivery of integrated curriculum. [See Scheduling and Student Access for more details.]

Mathematics Skills and Knowledge

Engaging high school students in mathematics can be difficult, but pathways are well positioned to make mathematics exciting and relevant to the real world. With international comparisons showing U.S. students trailing behind other countries in math and employers hiring from abroad due to an inadequate pool of available U.S. candidates skilled in math, many are seeking solutions for improving mathematics education.

EVALUATION FINDINGS

The evaluation found that students in network sites need to improve mathematics skills and knowledge, as was true statewide. Scores may be lower than was hoped for various reasons. Teachers reported difficulty integrating mathematics into project-based units related to a site's industry theme. And when mathematics was integrated into units, content often focused on lower level math. Math teachers not included in interdisciplinary curriculum planning teams may have resorted to traditional teaching methods, which can fail to engage students. Finally, students entered high school with different ability levels and were often scheduled into classes by ability level rather than grade level making it difficult to deliver an integrated curriculum.

POSSIBLE IMPROVEMENT APPROACHES

Evaluation findings related to mathematics skills have implications for curriculum planning and master scheduling. ConnectEd and its partners can:

- Share models for teacher professional development that increase math teachers' understanding of how real-world applications can bring relevance to math course content, and result in
 - Helping teachers learn to integrate high level mathematics into their multi-disciplinary integrated curriculum.
 - Helping math and technical teachers to work more closely in planning and implementing curriculum that demonstrates how theoretical concepts apply to real world scenarios.
- Develop and share more rigorous integrated curriculum examples that incorporate high level mathematics concepts.
- Share network school strategies that have improved students' math performance such as:
 - Assigning all 9th graders to Algebra I to ensure a strong foundation in algebra and enable teachers to address students of similar ability or requiring 4 years of math so students entering 9th grade take Algebra I even if they've taken it before.
 - Offering a first period "math recovery class" to help bring all students to a similar level.
 - Changing scheduling to include blocks of math, which allows time for combining direct instruction with challenging and exciting projects that deliver math content through career-related applications.

Scheduling and Student Access

The master schedule, which determines which students and teacher will meet for each course and when, must ensure that all students have access to the classes they need. In a pathway, certain factors complicate scheduling because students all need to take a college preparatory curriculum as well as technical courses. In addition, the master schedule must support students' participation in work-based learning. For teachers to deliver multi-disciplinary projects, there must be a consistent cohort of students in academic and technical core courses. And, for teachers to develop integrated curriculum, they must have adequate common planning time.

EVALUATION FINDINGS

The evaluation found that some network schools had difficulty developing a master schedule, with teachers and administrators citing student access to specific classes and teacher assignments as the two main issues. It is difficult to coordinate a schedule for all students that includes the needed graduation requirements, electives, advanced courses, as well as the necessary support and intervention classes. The schedule often dictates whether students must choose among pathway courses, AP courses, AVID, and bolstering their transcript with additional recommended a-g courses, such as more advanced levels of foreign language or mathematics.

Sites reported that a lack of a dedicated cohort that includes only pathway students can complicate scheduling. In a few sites that struggled to meet pathway enrollment goals, non-pathway students would join the pathway cohort for certain classes, making it difficult to use integrated curriculum focused on the industry theme. In another case, students were pulled out of the pathway cohort because of a district policy requiring students who failed the CAHSEE to take remediation classes. These students then missed part of the pathway curriculum.

The master schedule must also take into account teacher assignments. If the physics instructor's assigned classes do not constitute a full load, she needs to be willing and credentialed to teach other subjects as well. The master schedule should also provide teachers with common planning time to develop and coordinate delivery of the integrated curriculum.

POSSIBLE IMPROVEMENT APPROACHES

These findings have implications for master scheduling, student recruitment, and district support. ConnectEd and its partners can:

- Provide or arrange training for site administrators on strategies for creating a master schedule that accommodates the unique needs of pathway students and staff.

- Provide examples of various schedule options such as a 6 or 7 period day, block scheduling, or others, along with strategies that other schools have used to address scheduling issues.
- Ensure that sites have the recruitment tools and policies in place so that they will meet enrollment targets, making it easier to plan their master schedule, implement “pure cohorts,” and offer integrated curriculum units.
- Promote district policies that support pathway scheduling needs.
- Identify and distribute examples of various ways to provide collaboration time for teachers.
- Provide alternative approaches to offer supplemental instruction that allow students to stay in elective classes.
- To the extent possible, incorporate elective courses (e.g. AVID, Advanced Placement, additional recommended a-g courses, such as advanced levels of foreign language or mathematics intervention and support classes) into the pathway theme to further contextualize their learning and make it more engaging.

Work-based Learning

One of pathways' four core components is work-based learning, or giving students opportunities to learn through real-world experiences that integrate with classroom instruction. Students might participate in a progression of experiences including worksite visits, job shadowing, mentoring, school-based enterprises, virtual apprenticeships, or internships.

EVALUATION FINDINGS

While ConnectEd sees work-based learning as a core component of a pathway, and those interviewed for the evaluation see these opportunities as valuable, some sites offer work-based learning as an “option.” The evaluation reports that the availability of quality options for participating sites was “spotty at best.” Those interviewed cited many and varied challenges. Time is needed to build relationships with industry partners that lead to quality experiences for students. Once sites have identified and arranged opportunities with industry partners, sites need

to match students with opportunities that most closely match their interests. When many students have a similar interest, internships fill quickly.

Students and staff reported that paid internships are difficult to find, and some students need to work to help support their families. Students can spend a significant amount of time traveling to workplaces too. Securing and coordinating transportation takes time and the transport itself can be costly, totaling 10% of one program's budget. Students who do not have access to a car, have a driver's license, or otherwise need assistance must rely on the site to coordinate this. Security or safety issues, with students leaving campus and being supervised by others, must also be addressed.

POSSIBLE IMPROVEMENT APPROACHES

These findings have implications for developing resources that will help pathways improve their work-based learning opportunities. ConnectEd and its partners can:

- Provide sites with tools, resources, and ideas for:
 - Securing funding to hire a staff member dedicated to planning and maintaining work-based learning opportunities (e.g., redistributing existing funds or seeking funds from the district, local ROP (as one site did), or foundations and corporations).
 - Developing strong relationships with industry partners through the development and regular business/industry/community advisory committees that lead to quality placements for students.
 - Developing a district infrastructure (logistics, insurance, process and procedures) to support and encourage work-based learning, as well as coordinate the outreach in the community.
- Providing transportation for all students who need it including teachers borrowing school vans to drive students to sites as is done at one site.
- Helping sites learn how to develop virtual learning opportunities to ensure that students do not spend an exceptional amount of time on transportation rather than on learning.

Teacher Retention

Teacher turnover is an issue for schools nationwide but may have an even greater impact on pathway sites given how closely teacher teams work together in pathways. Supporting existing teachers and hiring new ones who fit well with the existing school culture can help not only to improve programs, but also to retain teachers. To prepare teachers to succeed in pathway sites, a group of California universities now offer teacher preparation programs focusing on the unique skills needed to teach in pathways.

EVALUATION FINDINGS

Some sites reported teacher turnover as a problem. Some teachers leave because they are not comfortable with the level of collaboration required in planning and implementing an integrated curriculum. This may be particularly true for teachers who are assigned to the site as a result of teacher contract requirements, or when program administrators had a small pool of teachers to choose from, such as calculus teachers, and had to hire someone who truly is not interested in collaborating. Some teachers with industry experience decide to return to industry because of low teacher salaries or because they do not enjoy teaching.

A program administrator's ability to find teachers who will excel in the pathway setting is key to a site's success. Pathway teachers need a willingness to collaborate in developing and delivering curriculum, and interest in learning about an industry theme. Several program administrators reported difficulty in determining whether a teacher candidate was truly interested in the type of collaboration required in pathways. In some cases candidates

may not understand exactly what this type of collabora-

tion entails, and in other cases, candidates may simply be trying to secure a position. Developing the capacity of veteran teachers is also important. Teachers need common planning time to develop and coordinate delivery of integrated curriculum. They also benefit from a cohort of students dedicated to the pathway, allowing teachers to connect with the same group of students and deliver the integrated curriculum to those interested in the industry theme. [See Scheduling and Student Access.] Not surprisingly, the evaluation reported a strong correlation between leadership scores and a site's overall pathway score.

POSSIBLE IMPROVEMENT APPROACHES

These evaluation findings have implications for teacher hiring and scheduling. ConnectEd and its partners can:

- Develop screening tools for site administrators to use when interviewing teacher candidates.
- Share district practices, policies, and bargaining unit agreements that help retain teachers and promote pathway team stability.
- Engage representatives of teachers' bargaining units in designing and implementing pathways to foster better understanding of pathway needs.
- Offer professional development that helps teachers learn how to collaborate, develop integrated curriculum, and generally acquire the skills needed to be successful in a pathway environment.
- Assist with scheduling issues detailed in the Scheduling and Student Access section.