Linked Learning
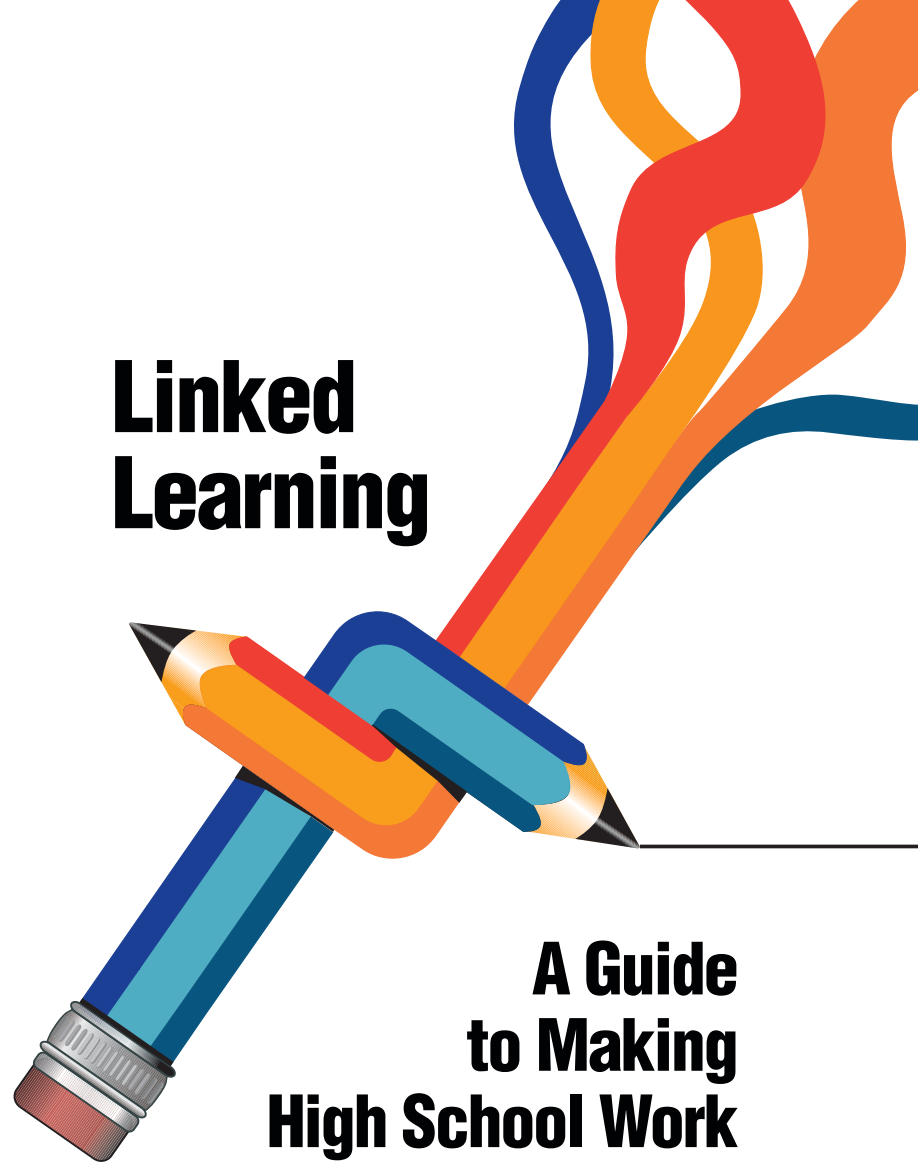
A Guide to Making High School Work

Marisa Saunders

Linked Learning

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INTRODUCTION

AN ENGAGING, RELEVANT, AND CHALLENGING EDUCATION FOR ALL STUDENTS

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Life Academy combines everything: teachers who support and push, friends who feel like family, internships and mentors who help you believe that you can be successful. You see Latino professionals and you think, 'I can do this too.' That is really big for me because I have no one in my family who goes to college.

— *Veronica, Student, Life Academy* [1]

Life Academy is a small autonomous high school located in Oakland, California. The school integrates academic and technical study, employing knowledge and practices from the field of health and bioscience. These blended academic and real-world foundations provide the basis for advanced learning, career training, and responsible civic participation.

Like many of her classmates, Veronica entered high school with the dream of college and a rewarding career, but with no understanding of how she could make her dreams real. In 2010, she graduated with options that included multiple college acceptances, a plan for becoming a physician, and a desire to provide health services in her community. She enrolled in a four-year college, and is completing her second year. In many respects, Veronica's story is similar to her classmates'. Seventy-seven percent of entering 9th graders graduate high school four years later, prepared for a wide range of postsecondary options that include two- and four-year colleges, apprenticeships, certification programs, and readiness to enter the workforce directly.[2] Fifty-three percent graduate with the eligibility requirements for entrance to California's public four-year universities—one of the highest rates in the district.[3]

There is widespread agreement that high schools do not work well for vast numbers of students; too many youth are unprepared for the future demands of an uncertain economy. As cultural and economic divides widen, the ability to participate in civic affairs declines. High school dropout rates are alarmingly high, especially at schools in low-income communities and those serving a high percentage of students of color. Students who do manage to graduate often lack the tools and knowledge they need to succeed in college, experience rewarding careers, or contribute to an active citizenry.

This guide is designed to answer questions about how high schools are practicing Linked Learning, shedding light on the ways they address practical challenges, set high expectations, and adapt to changing circumstances. This guide does not provide a set of requirements or prescriptions to implement Linked Learning "the right way." Rather, it lays out in plain terms how real schools do the hard work of preparing all students for college, careers, and life beyond high school.

The guidebook has six main sections that present conditions strongly associated with successful Linked Learning sites. Each of the schools discussed in this volume struggled to establish these conditions. Readers will see that these conditions are as important as other factors that school leaders commonly associate with school success. Throughout the guide, we refer to Linked Learning as an approach to education; this reference focuses attention on the variety of practical, educative, and socially just *outcomes* of the six conditions we lay out. The Linked Learning approach provides students with a "pathway" of integrated coursework that prepares students for a wide range of postsecondary options. Some schools offer one pathway, while others may offer students the opportunity to choose between a number of pathways.

For each section, we explain a particular condition and illustrate how a few schools have developed and implemented the condition. We also provide additional resources to assist educators and policymakers as they move towards providing all students with preparation for college, career, and civic engagement. We also identify some caveats to keep in mind.

A DVD complements *Linked Learning: A Guide to Making High School Work.*

Find a link to the video, and related materials at: **www.ucla-idea.org**
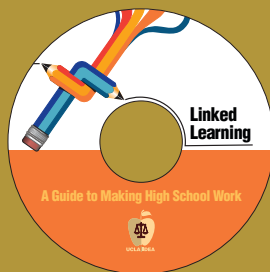
Life Academy is one of many California high schools taking a unique approach to preparing students with the skills, knowledge, and abilities required for college, career, and civic life. In 2008-09 and 2009-10, we studied Life Academy and other schools in California engaged in a promising approach to education called Linked Learning, formerly known as Multiple Pathways.[4] *Linked Learning: A Guide to Making High School Work* brings together observations, interviews, and analyses we garnered from Life Academy and nine other public high schools located in diverse regions of the state.[5]

UCLA IDEA and a Study of High School Transformation Efforts

University of California, Los Angeles' Institute for Democracy, Education, and Access (UCLA IDEA) is a research institute seeking to understand and challenge pervasive racial and social class inequalities in education. Over the last decade, UCLA IDEA has worked alongside policymakers, educators, and communities as they have designed, conducted, and used research to make high-quality public schools and a wide range of postsecondary opportunities routine occurrences in all communities. In 2005, UCLA IDEA was asked to help understand the Linked Learning approach to high school education (referred to as "Multiple Pathways" at that time). With the belief that all students can graduate from high school with the skills, knowledge, and abilities to prepare them for postsecondary education, a rewarding career, and participation in civic life, Linked Learning relies on an engaging and integrated curriculum that connects academic and theme- or career-based learning.

UCLA IDEA convened a group of leading scholars who looked for common understandings of how Linked Learning proposed to transform high schools, and for research questions that would guide that investigation. The scholars produced a series of papers that identified potential strengths and challenges to Linked Learning. The papers, later published as *Beyond Tracking: Multiple Pathways to College, Career, and Civic Participation*, along with briefings to policymakers, educators, and community groups, were hopeful.[6] The authors suggested that, done right, Linked Learning could meet the diverse needs of students and serve the collective good. Feedback was overwhelmingly positive, but the

readers had questions. Reform-weary groups and individuals wanted to know what Linked Learning looked like in action. In particular, how do schools maneuver around the numerous technical, political, and cultural obstacles the reports draw attention to? *Linked Learning: A Guide to Making High School Work* is a response to those questions.

There is widespread agreement that high schools do not work well for vast numbers of students. High schools do not prepare youth for the current or future demands of an uncertain economy. Knowledge of and participation in civic affairs are not sufficient to stem the widening cultural and economic divides. High school dropout rates are alarmingly high, especially at schools in low-income communities and those serving a high percentage of students of color. Students who do manage to graduate often lack the tools and knowledge they need to succeed in college, in rewarding careers, or to contribute to an active citizenry.

Many schools fail to provide a flow of knowledge, relationships, and experiences that sustain student interest and effort. This is a familiar critique of both the status quo and school reforms for the past half a century. In response, reforms often concentrate on improving student performance within essentially unchanged schooling paradigms. Making school interesting, engaging, and connected to the real world—foundations of Linked Learning—has been a provocative, but not central, element of policy and reform. In the best cases, recent school reforms have marginally raised test scores while allowing achievement gaps to persist. In other cases, performance is static and gaps have worsened.

For example, recent trends for using standardized tests to drive students' school experiences leave little room in curriculum and instruction to make learning vital and interesting. Even students enrolled in the most "rigorous" of courses, such as Advanced Placement courses, are provided few opportunities to apply or create knowledge and think critically. This guidebook is intended for policymakers, practitioners, and community members committed to transforming schools into equitable places of learning that provide students with an academically challenging, relevant, and engaging curriculum.

The 10 schools highlighted in this guidebook are moving beyond (though not ignoring) the sphere of standardized testing, and meeting the required Academic Performance Index (API) and Adequate Yearly Progress (AYP) measures.[7] These schools are preparing a diverse California student population for work, for continued learning including college, and for constructive participation in their communities. The schools we studied demand high levels of student effort, performance, and accountability. Expectations include *all* students leaving high school with the knowledge and abilities they need for lifelong learning; entering postsecondary institutions without need for remediation; pursuing rewarding careers and earning a comfortable living; and shaping their workplaces and communities into positive and equitable places.

What is Linked Learning?

Linked Learning gives all students access to the experiences and conditions they need to grow as learners and be prepared for college, career, and civic life. Two equity-minded guiding principles form the basis of the Linked Learning approach:

- A commitment to challenge prevailing patterns of school stratification.

- A commitment to graduate all students prepared for college, career, and civic participation.

To achieve this goal, Linked Learning brings together rigorous academics, a challenging theme-based or career-based curriculum (e.g., health professions, technology, global studies), and an opportunity to apply learning through real-world experiences.

The Linked Learning approach blurs the distinction between Career and Technical Education (CTE) and college preparation by creating a pathway toward a single goal: preparation to succeed in college *and* careers. Thus, Linked Learning is not another term for Career and Technical Education. Likewise, Linked Learning's "academic education" is not just the usual academic coursework enhanced by interesting career, technical, or "hands-on" experiences. Something quite new is forged with Linked Learning, as it prepares students for particular careers or industries while giving students the college prep courses they need for California's four-year public institutions. Linked Learning pathways do not expect that all students will go to four-year institutions—just that they will have that option.

Essential Components

Linked Learning pathways have four essential components that bring real-world context and relevance to the curriculum by emphasizing broad themes, personal interests, and career and technical education. The components are:

- An **Academic Core** that is rigorous and satisfies the course requirements for entry into California's public colleges and universities. Courses cover essential subjects such as English, math, science, social studies, foreign language, and visual and performing arts.

- A **Technical/Professional Core** that emphasizes the practical use of academic learning and prepares youth for high-skill, high-wage employment.

- **Real-World Learning Opportunities** that allow students to learn through meaningful work-based experiences including internships, apprenticeships and school-based enterprises. Experiences deepen students' understanding of academic and technical knowledge through application in authentic situations.

- **Support Services** that help students master the advanced academic and technical content necessary for success in and outside of school. Services may include counseling and supplemental instruction and are tailored to meet the unique needs of particular students and communities.

Linked Learning merges excellent academic instruction with career and technical education, resulting in rigorous academics and engaging projects. Problem-solving activities in the context of real-world experiences take place in the classroom and with adults outside of the classroom. Students' high school diplomas attest to their acquiring skills, certifications and/or credentials in support of a promising line of work or study. Students learn by doing and exhibit their skills and knowledge through authentic demonstrations. Adults support students with a commitment to high standards, program coherence, individualized support and learning, and their determination to disrupt prevailing patterns of school stratification.

Linked Learning is delivered through a wide variety of structures or programs known as *pathways*.[8] Those pathways are shaped by existing school structures and capacity, local opportunities for partnerships and support, the skills and backgrounds of instructional staff, and much more. Pathways vary in their theme or career focus, how they organize coursework, how much time students spend on and off campus, their relationships with two- and four-year colleges, and their partnerships with community organizations, business, and industry. Pathways may align with careers or majors, and may be "delivered" in academies, magnet schools, occupational training centers, small themed high schools, or small learning communities within large high schools. This variability is a key feature and strength of Linked Learning, but it also creates challenges: some schools might be hard to "replicate" and some models could complicate a school's ability to fit into the organizational schemes of program certification.[9] The uniqueness of each pathway means that practices vary from site to site. What works at one site, with a particular theme, might not work at another site, even one with a similar theme. As a result, this guidebook does not offer lists of best practices, but presents *conditions* that allow Linked Learning principles to flourish.

Standing on the Shoulders of Giants

Linked Learning is not a new concept. John Dewey is one of many early 20th century educators who argued that the purpose and reward of learning exists beyond the school setting—it is to provide students with "continued capacity for growth."[10] These educators and philosophers believed that the greater social,

economic, and democratic ends of education could be met by linking the vocational and the academic. Dewey opposed the pressure to prepare students narrowly for industrial work while reserving separate academic education for the few. John Goodlad's work in the 1950s, Theodore Sizer's network of "essential" schools, Deborah Meier's student-centered Central Park East Secondary Schools, and Dennis Littky's Big Picture Company have continued to challenge the academic-vocational divide and judgments about who *fits* into one track or another.

Linked Learning follows these traditions. The schools highlighted in this guidebook take on the formidable task of closing the gap in educational approaches that have historically kept college preparation apart from career readiness.

The Research Team and the Research Process

In 2008, Linked Learning was in its nascent stages. Very few schools in California, if any, identified themselves as "Multiple Pathways" or "Linked Learning" sites.[11] Yet it was clear that some schools and programs were developing a constellation of similar and very promising practices that we are reporting here as Linked Learning. So, it was up to the UCLA IDEA research team to identify schools as potential Linked Learning sites. The team's first challenge was to determine a preliminary set of criteria that constituted this approach.[12] Although many schools appeared to be career-based or theme-based, not all of these schools were committed to integrating college-qualifying academics with their career orientation. Further, not all of these programs provided students with real-world experiences or applications. When selecting schools to visit and, later, to include in our study, we found many that were on a solid trajectory toward Linked Learning, even if few met all the criteria that our research and supporting scholars suggested were important.

Our site visits helped the team refine a set of "non-negotiables" for Linked Learning. For example, in the fall of 2008 we visited an automotive technology academy that provided students with useful skills and tools for the industry. However, the career-based courses were taught in isolation from the academic courses. Students were not made aware of academic concepts that could support their technical learning,

neither were technical, hands-on experiences used to help develop academic principles and theory. Further, most of the students enrolled in the academy were identified as "struggling" and the academy was seen as an alternative to the larger high school's college preparation track. The academy students seemed enthused about their learning, but few of them were encouraged to take courses that would give them access to California's public four-year universities.[13] Thus, our visit to the automotive technology school brought into focus our first non-negotiable: Linked Learning sites would have equity concerns at the core of their schools' purpose and vision.

Of course, our criteria could not be used as a rigid test; none of the schools was designed to be a Linked Learning site, hence we could not expect them to have all components. Rather, we were looking for schools with promising mixes of unrealized goals and elements that were already in place. For example, a number of the sites we visited could not provide all students with field-based learning experiences. However, many indicated that they were working to include or grow this component. Other sites invited real-world clients to the classroom (rather than send students out of the classroom) where they "hired" students to conduct projects. In sum, final selection of the 10 sites was based on our finding commitments to the core principles and components of Linked Learning (our second non-negotiable), and our attempt to create a diverse sample based on a school's geographic location, size, theme of the school, governance structure, and population served.[14] Appendix A provides an overview of the sites and these characteristics, and Appendix B provides a full description of site selection and methodology.

In the spring of 2009, the team began three-day visits to the study sites. We observed and surveyed students and staff, and interviewed teachers, students, parents, community partners, and administrators. We conducted follow-up interviews over the next year. We share here what we learned and what we think could be informative, useful, pragmatic, strategic, and inspirational from the experiences of Linked Learning sites.

Six Conditions: An Overview

Many California schools and school districts are exploring Linked Learning to transform their high schools. Educators and policymakers already involved

with Linked Learning can use this guidebook to learn from the experiences highlighted here. For others, this introduction to Linked Learning can inform the creation of new, locally appropriate versions of Linked Learning. We also hope to expand the public's confidence in the notion that Linked Learning can work in a variety of settings.

This guidebook presents six conditions that are strongly associated with successful Linked Learning sites. Each of the pathways in this volume struggled to establish these conditions; these struggles, however, are as important to the schools' stories as their successes. Throughout the book, we may refer to Linked Learning as an approach, but actually, Linked Learning might be seen as a practical, educative, and socially just *outcome* of the six conditions.

Within each of the sections, we explain the significance of a particular condition and provide one or two strategies schools followed to develop and implement that key feature. Each section also provides additional resources and references to assist educators and policymakers as they move toward providing all students with preparation for college, career, and civic life.

Condition One: A Commitment to Equity

The sites we studied did not set out to implement Linked Learning, but were led by a purpose for their schools guided by equity concerns. This section explores how various Linked Learning sites got their start and describes the considerable amount of time schools spent planning and designing their programs before opening their doors to students. The Linked Learning pathways we studied used desired student outcomes to serve as the school's starting point and moved to shape the curriculum and structures to support this equity-based purpose. Rather than starting from scratch, many Linked Learning pathways often grow from existing strengths and/or budding programs. Further, Linked Learning pathways do not develop in a vacuum, but take the needs and strengths of the surrounding community into consideration. A schools' equity-based purpose provides the foundation that allows the remaining conditions discussed in the guidebook to take root.

Condition Two: Connecting Linked Learning Components

In this section, we identify the various ways in which Linked Learning integrates disparate pieces of the curriculum into a more coherent whole. Many schools rely on overarching themes to integrate the curriculum. The benefits of a themed organization of the pathway derive as much from principles of learning, relationships, and student engagement as they do from the content of the theme. Indeed, the theme can give substance and distinctiveness to the school's otherwise abstract purpose and vision, challenge leadership to examine how all students can access the full range of outcomes that the theme allows, and break away from the traditional one-way flow of instruction from teachers to students. Some Linked Learning sites connect the various Linked Learning components through independent themes that are not clearly associated with an industry sector

or career. In these pathways, students pursue a wide range of career interests based on an individualized approach to integrating the components of the curriculum.

Condition Three: A Culture of Care and Support

One of the key components of Linked Learning is attending to the individual needs of students. Capturing student interest and ensuring they succeed in both the academic and technical cores of their programs was key to the pathways we studied. This section examines the various strategies that pathways employ to establish caring and supporting relationships between students and adults that help teachers and school leadership identify students' existing and developing needs for learning and growth. Curriculum and school structures are informed by the desire to create supportive and caring relationships coupled with a commitment to high expectations. And, by personalizing relationships, the school communicates its high value on a caring culture—emphasizing civic as well as academic and workplace preparedness.

Condition Four: Grounding in the Real World

Each of the sites established relationships with individuals, groups, institutions, and organizations situated in the world outside of school. Expanding the learning community to include a wide range of partners acknowledges the role of multiple stake-holders in the learning, growth and development of young people. Partnerships allow schools to broaden curriculum, course offerings, and opportunities for student learning from adults outside the school setting; for example, through internships, job shadows, client-based projects, and so forth. Partnerships with postsecondary institutions offer students access to courses and interests not offered at the school site. Partnerships allow outside agencies, organizations, and industry to invest in students and the school community, and vice versa. A frequent refrain, shared by school personnel and partners, captures this two-way relationship—"they need us, and we need them."

Condition Five: An Environment that Works for Adults

One of the most impressive features of Linked Learning is teacher enthusiasm. Across Linked Learning sites, we found learning environments must work well for adults as well as for students. Distributed leadership, collaboration, and support allow for the establishment of these professional and creative environments. Collaboration permeates every aspect of the school structure and culture—from students working in groups to teachers working across content areas, and administrators spanning multiple leadership roles and engaging with teachers in school leadership. Although implementing Linked Learning requires and generates a culture of collaboration, teachers must have autonomy to shape the curriculum to meet their students' needs and take advantage of their own unique backgrounds and strengths. Key shifts in the way schools operate require schools to rethink traditional adult relationships—between administration and teachers, between school personnel and external partners, and among teachers.

Condition Six: Redefining Success

This section explores the multiple means by which Linked Learning sites measure student success, and how they judge their own progress in meeting their goals. The sites we studied did not define their success based solely on students' scores on mandated standardized tests. While fully aware of the importance of such external measures, the sites in our sample measured their success by students' preparedness for the adult world. Understanding success in this way requires new and authentic assessment tools that go beyond test scores and course completion to capture college and career readiness, civic orientations, and eagerness for life-long learning. ➔●

A COMMITMENT TO EQUITY

I think [reform] calls on us as educators to look at what hasn't happened for students, and really ask ourselves some hard questions and see if this method of reform could be useful in that equity disparity … but, in an accurate, strategic way. It doesn't happen through osmosis and it's not haphazard, and it's not from a reactionary or deficiency model. It has to be purposeful, intentional, well-planned, all hands on deck, with a level of enthusiasm and from a fundamental belief system that all children can learn when taught to high levels of expectations.

— Administrator, Construction Tech Academy

At the core of Linked Learning is the conviction that all students will receive the resources and opportunities they need to be prepared for life after high school. As this section illuminates, Linked Learning pathways are guided by this belief. Pathways, however, do not develop overnight and addressing issues of equity requires considerable planning, as well as constant reflection and adjustment. The schools we studied spent considerable time planning and designing their programs before opening their doors to students. Initial program leadership formed design teams or committees, who studied research and best practices, and scoured the country for useful examples and models for designing or redesigning schools. Though each of the schools or pathways we studied has a unique origin and history, similar elements of their purposes and visions —including a commitment to equity—guide the structures and practices by which they pursue their school's goals. The schools we highlight in this guidebook shared the following strategies:

1. Linked Learning identifies desired student outcomes and equity concerns that serve as the starting point for developing all of the school's activities, from its purpose to its programs and lessons.

2. Linked Learning requires shared ownership: Schools use language that is shared among all stakeholders for understanding and communicating the school's purpose—its goals and vision.[15]

3. Linked Learning reforms take stock of strengths and resources in order to begin with the strongest possible foundation.

4. Linked Learning looks for community and institutional partners to establish and support the school's commitment to equity.

A Purpose Based on Clear Outcomes and Equity

Starting from Scratch: The Story of the Center for Advanced Research and Technology

Located next to each other in Fresno County, Fresno Unified School District and Clovis Unified School District could not be more different. Fresno Unified is a much larger district whose students are majority Latino, and many of them are English learners and low-income. Clovis is a much smaller district that serves more middle-class families, and where white students are the largest ethnic group. Their teachers are represented by different unions and operate with different collective bargaining agreements, with different salary structures and working conditions. Yet, in 1997, these two districts set out to design a joint school that would provide students with "a seamless transition between school and the world of work and higher education."[16] They knew from the beginning that although from different backgrounds, their students needed the same opportunities and that they could excel if provided with the right support and high expectations. Starting with that goal, they jointly created a board of directors, consisting of their districts' representatives, educators, the business community, and local colleges and universities. After three years of planning and hard work, the Center for Advanced Research and Technology (CART) welcomed its first cohort of students.

This desire to create an equity-focused school that addresses cultural differences in backgrounds and in learning, and provides supports to supplement what students get at home and in the neighborhood makes CART unique and demonstrates what a deep commitment to equity looks like. CART provides

a half-day program for over 1,300 11th and 12th grade students from traditional high schools and alternative schools in the Clovis and Fresno school districts. To maximize the number of students served, students attend either a morning or afternoon session at CART and spend the rest of their day at their "home schools" (the traditional public high school or alternative school in their district and attendance area). Working side-by-side, Fresno Unified and Clovis Unified students engage in rigorous projects that are grounded in specific intentional learning outcomes.

Backward Design: Shared Desired Outcomes

CART's board created a design team composed of administrators, teachers, and Regional Occupational Program (ROP) and technology staff from both districts, as well as representatives from business and local colleges. These individuals, representing diverse interests, set out to negotiate their differences before they could discover the common ground on which to build their new school. Early on, the different perspectives seemed daunting and impossible to overcome. One leader in the process recalled, "the business people definitely saw this as an economic development movement," or preparing students to be "workers" for local industry. Others clearly saw the program as a college preparatory pathway that prepared students for their next level of education. These stark differences led the design team to focus first on changing students' current school experiences and determined that a different sort of school might provide better opportunities: "We spent a lot of time talking about what's wrong with high school, what's not working. … " This concrete focus formed the basis for their vision: "What do kids need? How should they look when they leave high school? What kind of skills do they need to have in a new high school to navigate in the world now? Then we morphed into, if we could do anything we wanted to do, how would you design this school?"

Equipped with questions like these, the CART team traveled around the United States, visiting schools such as the Met School in Rhode Island, the Zoo School in Minnesota, and a variety of pilot schools in Boston. They talked monthly and delved into the research on best practices. Eventually, they developed a deeper and more nuanced understanding of the kind of school they wanted; their shorthand for the school's purpose is nearly captured by the CART acronym (one needs to add a "P"): Cognition, Academic Rigor, Relevance, Technology,

and Personalization. The outcome is a school that integrates career-based themes and academics, and provides the pedagogy and structure to support their goals. Educators at the school explained it in the following way:

C: Cognition

> *We decided that integrated instruction made a lot of sense, that kids don't make the connections with one period, one period, one period — it's too confusing and too erratic.*

> *We decided that project-based learning and discovery learning was what we wanted to do. You set up the need to know and they do the research to come up with the concept.*

A: Academic Rigor

> *We needed to be a college prep environment, and we needed to meet the graduation requirements. Why would a student come here if he/she couldn't meet the graduation requirements?*

R: Relevance

> *We needed to connect [teenagers] back to their communities. Students needed to learn how to interface with adults, what was appropriate and not appropriate. They needed to be exposed to more. We needed a community component of our curriculum. [We would] use mentors, and have speakers and send students out for visits, and maybe job shadows, and internships.*

T: Technology

> *This was no longer just a technology school, but it was going to be a school that used technology. Most of us could navigate our word processors, but that was about it. We needed to be up to speed on that.*

P: Personalization

> *We talked a lot about how important it is to connect with kids and for kids not to get lost. Students need a personal environment, and it needs to be an environment where they want to be.*

The next step for CART was designing the structures and instructional strategies to achieve these CART (plus P) goals. This *backward design* approach contrasts with traditional approaches that begin with conventional subjects and/or content and are taught with little regard to how the instruction will be useful to students in the real world.[17] CART and the other Linked Learning sites we studied clearly articulated their purpose so all stakeholders (educators, students, community, parents, etc.) knew the abilities and knowledge students should possess after leaving high school. Program design, instruction, assessment, and accountability would follow this purpose.

Reinventing a Large Comprehensive High School in San Diego: Construction Tech Academy

Like CART, Construction Tech Academy also used a *backward design* approach to create a small Linked Learning school in San Diego. With a background in construction, Glen Hillegas, CTA's founding principal, had been providing his students with woodworking and other hands-on experiences that contextualized their academic learning. It was this integrated instruction that captured people's attention and led, in 1999, to his award as teacher of the year for San Diego County. Hillegas advocated for real-world classroom experiences that could engage students, promote deeper learning, and improve the educational outcomes for all students. He set about convincing district leaders to reach more students by creating a school that linked academic and theme-

or career-based learning. CTA opened its doors on the campus of a San Diego Unified School District comprehensive high school. Two years later, that entire campus, Kearny High School, converted to theme-based autonomous small schools.

CTA's design team was comprised of district leaders, educators, representatives from the construction industry, community leaders, and local universities. As was the case with the CART design team, the design brought very different sets of expectations and norms to the table. Yet, they were able to articulate CTA's purpose by focusing on common goals: "provide students with an opportunity to explore the fields of construction, engineering and architecture through contextual, hands-on, rigorous curriculum that prepares students, upon graduation, for direct entry into colleges, apprentices or careers." Again, the school focused from the beginning on equity as a guiding principle. CTA's stated goals included closing the achievement gap by 1) increasing the number of college-ready San Diego Unified School District high school graduates, particularly among low-income and minority students; and 2) improving students' postsecondary options, whether college, technical training, or the world of work.[18] Following a similar path as CART, CTA used research to identify best practices and models to implement their vision. The design team's goal was to identify strategies that would support students' academic learning in the context of projects, hands-on opportunities, and real-world applications (internships).

Best Practices, Research, and Models

Each of our Linked Learning sites cited bodies of research or real-life models that helped them identify principles and practices that would bring their school's vision to life. As one administrator pointed out, the team did a "smart thing, while we were planning" and that was "to base it on research." CTA's founding principal reported that the burgeoning research on small schools was particularly helpful. Research on small schools pointed to increased student engagement, higher attendance rates, improved academic achievement, lower dropout rates, fewer behavioral problems, and more.[19] In addition, the small school structure could allow for greater personalization. The designers emphasized the importance of strong, sustained relationships between students and staff as a means of fulfilling the school's purpose.

Identifying models and visits to other schools doing similar work helped Linked Learning schools develop their instructional programs after the structural design issues were somewhat settled. Unfortunately, there were few examples within California to turn to for guidance. One principal said, "I had nowhere to go to look and find a school like the one we wanted to build. I didn't know where to go, nobody knew where to tell me where to go." Some sites looked at the High Tech High model in California, or networks such as the Big Picture Schools, or New Technology High Schools located around the country, while others mixed research and reports of best practices, borrowing from different models. Today, there are a growing number of schools engaged in Linked Learning that can serve as models and as more California districts turn to Linked Learning to transform their high schools, we expect more examples.[20]

Attracting a Diverse Population of Students

A key part of the design process for the Linked Learning sites we studied was to ensure the pathway would effectively attract and serve a diverse population of students based on academic background and experiences (including English learners and special education students), gender, and ethnic/racial background. Schools were designed to serve high-achieving students as well as those who enter the high school poorly prepared for high school-level work.

Each of the study sites formed part of a choice system. Unique pathway features, including theme, size, and instructional practices, serve to attract students and their families. (See Condition Two for more information.)

Pathway	Choice System
Center for Advanced Research and Technology	Joint Unified
Community Partnerships Academy	Small Learning Community
Construction Tech Academy	District Magnet School
Digital Media and Design	District Magnet School
Global Studies (Los Angeles School of)	Open Enrollment
Harbor Teacher Prep Academy	District Middle College
High Tech Los Angeles	Independent Charter
Life Academy	Open Enrollment
MetWest	Open Enrollment
Sacramento New Technology	District Charter

Despite efforts to attract a diverse population of students, a few sites have struggled to achieve this purpose. High Tech Los Angeles (HTLA) is located on the campus of a large comprehensive high school. In 2008, 50% of students attending High Tech Los Angeles where white, 38% were Latino, and 11% were Asian. Four percent were identified as English learners. In comparison, the population attending the large neighboring high school was 12% white, 71% Latino, and 5% Asian; 18% were English learners. HTLA attracts students who are drawn to its technology theme and the school's reputation for a strong math and science program. Students are selected by lottery, and according to administrators, the school has had a difficult time attracting more students from the neighborhood. HTLA has increased local recruitment efforts and encourages all students to apply—students interested in an exciting and high-quality program in the humanities and arts as well as those with an interest in math and science.

Conversely, Community Partnerships Academy (CPA), a small learning community located on the campus of Berkeley High School, has historically attracted large numbers of African American students since it opened its doors in 1991. Students are drawn to the strong and caring student-teacher relationships that develop and the equity-minded reforms that support achievement. In 2008, CPA served a student body that was 55% African American, 19% Latino, and 12% white. In comparison, the larger campus served a population that was 28% African American, 13% Latino, and 33% white. Unfortunately, CPA has the reputation as the school on campus for students who need extra academic help. In a self-fulfilling cycle, the school has difficulty recruiting and retaining higher-performing students. To address these issues, CPA is in the process of changing its name and broadening its theme to the Academy of Medicine and Public Service to highlight the academic rigor of the program. (See pp. 28-29 for a fuller discussion of CPA.)

We started to address the needs of students who are poorly served by the school system, and the teachers who coalesced around this program are teachers who really are trying to figure out how to teach that student population...but really to teach the students, and not just the content.

— Administrator, Community Partnerships Academy

Establishing Shared Ownership

Linked Learning schools require a deep understanding of the underlying principles and goals. To establish shared ownership, most sites followed a participatory model. They created inclusive design teams comprised of school-level staff, community members, partnering organizations, and educational partnerships with community colleges or universities. This inclusive model created a practice that set the tone for the participatory practices that would later take hold across the school culture. There was little evidence of "rubber stamp" committees, token participation, or elite control that many reform initiatives paying lip service to "buy-in" give rise to. Further evidence of this authentic ownership is the staying power of these coalitions: most sites have maintained deep relationships with initial design team members.

Inclusivity and Long-Term Collaboration

Our sites have countless stories of disrupting the status quo and showing that diverse partners can work together toward a common goal without compromising their own belief systems. The founding principal of CTA recalled, "At the table everybody was there; the teachers union every month, the classified union every month. I was the teacher representative. We had union construction folks, non-union construction folks, developers; anybody and everybody would go. The community college was important, and the university, from day one." These schools demonstrate that diverse stakeholders who are brought to the table early on, and whose roles are respected, can work well together. The former principal at CTA emphasized that the early planning stage set the pattern for an environment

that continues to rely on collaboration: "This is the only place I've ever seen where union and non-union work together at a school. No agendas; it's all about helping kids. That's a beautiful thing we have here and it has stuck."

For most of the schools we studied, early participation in the design process continued with membership on advisory boards and committees. These committees and deeply committed stakeholders are in it for the long haul, even as some schools struggled in their early years.

In addition to institutional partners, the Linked Learning sites we studied made sure that parents and students had a solid understanding of the schools' goals and purpose (in a few instances, parents and students were involved from the beginning). We were struck by how parents, students, teachers, and staff all used a shared language to describe the schools' goals. Students and parents often articulated their hopes for the very same outcomes that served as the schools' starting point for developing programs and lessons. A parent from the School of Digital Media and Design, in San Diego, shared:

I think this school has a strong mission to generate and develop an interest for students, and then give them all the preparation that they need through practical experience. I think that's one of the major goals, but in a way in which they can be more prepared to enter the college setting, so that they can nurture and get the specific training for whatever interest they've developed, with a media background. And I think they're hitting the mark with that.

Parent and student ownership, however, is most impacted by real student engagement that, in turn, draws parents to the school and allows for first-hand exposure to a school's purpose. For example, a number of parents shared that the amount of time their students were spending at the school site (well beyond school hours) prompted them to inquire about their activities at school. These inquiries lead to a greater understanding of students' engagement in projects, mentorship programs, experiences, and the school's overall purpose. (Parents also shared that greater understanding has resulted in greater parent involvement, as they choose to lend a helping hand in activities and/or procure much-needed resources for activities.) A school's reputation for and ability to produce these outcomes—to prepare students for college, career, and civic life—promotes further understanding. Parents and students also shared the

language of equity that is reflected in a pathway's purpose. They felt listened to, respected, and part of the larger school community. As one parent shared, "it is a three-pronged approach: student, parent and the educators."

Long-Term Commitment to Equity and High Expectations

Maintaining a steadfast commitment to equity and high expectations cannot be mandated and requires a culture of self-reflection and deep trust. School operations, from staffing and budget considerations, to curriculum design, and to teachers' moment-by-moment classroom adjustments, are all anchored by connecting actions with expectations. Shared understanding (of the school's goals and purpose as well as the concrete classroom practices) helps the entire staff match their practices to their expectations, and alerts them to needed adjustments. New teachers often learn from those with more expertise and time at the school. These ongoing reflective practices will be discussed in more detail in Condition Six, but are important to raise in a discussion of shared ownership and understanding of the school's purpose. Sometimes staff realize that they are in danger of drifting from their equity goals. As one teacher shared, "A lot of times new teachers come in and they pick things up as we go along and they have an understanding of the school through the interview … but obviously you don't have the full scope of

everything." To maintain authentic ownership and understanding, staff must believe that unsuccessful strategies will receive open discussions, and there will be adequate time to re-evaluate and make course or program corrections. For example, the need for remediation and support classes to help students pass the California High School Exit Exam (CAHSEE) initially led some schools to follow district guidelines and to separate students in need of support from the rest of the students. Schools reviewed such practices and made adjustments to ensure that students received support while remaining fully integrated with their peers.

Taking Stock: Building on Pre-Existing Strengths

The initial impetus for many of the sites in our study was embedded in pre-existing district-level reforms. Sometimes new sites were prompted by outside groups. Some Linked Learning sites came about via conversions or redesigns of larger and failing comprehensive high schools.[21] Whether a new school, a redesigned school, or a conversion of a large comprehensive high school into smaller schools, each site built on its existing resources, such as promising structures, practices, staff, relationships and systems.

From Large Schools to Small Autonomous High Schools: San Diego and Oakland

In 2004, the San Diego Unified School District determined that Kearny High School needed a major overhaul to improve its academic achievement. They decided to break up the large comprehensive high school and convert it into four smaller theme-based schools.[22] The School of Digital Media and Design (DMD) was one of the outcomes. In the case of DMD, two key elements guided the transition to one new school: 1) shared ownership—a school leader who nurtured widespread participation among faculty and students, capped off by voting on major decisions; and 2) the "seed"—a popular teacher with an idea to expand a popular course into an appealing school-defining theme.

At Kearny High, teachers, administrators, and district officials collaborated to design the individual schools. Faculty members led the design teams that had one year to determine a structure and purpose for their small school. A typical first step was to determine the themes. Teachers and students suggested, discussed, and voted on the themes. DMD's principal, Cheryl Hibbeln, indicated that student votes were consistent with teacher goals and understanding and that the voting process was critical in assessing student interest. The voting process also informed the eventual school purpose while setting a tone for future participatory decision-making at DMD. As the media teacher reflected, the schools that were created (and teachers and students voted for) were built from Kearny's existing strengths and its existing history:

I was the only media teacher ... , I guess I had enough experience with kids that a lot of them voted to have a media school. ... The kids almost naturally picked what Kearny's strengths were ... The programs that had history at Kearny High School became the basis for these four surviving, really strong small schools.

According to Hibbeln, the seed of DMD had been planted years before Kearny High School broke up into small schools. The idea of a school that focused on digital media was the "brainchild" of the larger school's media teacher. He had created "Global Affairs"—an inter-disciplinary program which comprised history, English and the media teachers. When the opportunity to design a small school arose, the media teacher suggested Global Affairs. The theme had good prospects for getting kids engaged and "excited in a way that makes them want to go deeply into the content." This small beginning let

other teachers observe an example of how one of their own unique, engaging themes could generate student and teacher satisfaction. Teachers at DMD advised that these small beginnings are important to recognize:

Even if it's just one unit out of the year, [or] where things are going on in two different classrooms that are going to be combined for this final product or project. ... It's a good way to get a taste of what it's like, and that can help get the staff more interested and on board.

Life Academy in Oakland Unified began in 2001. However, it already existed as a small learning community (SLC) within a large district high school. Inspired by the district's support for small autonomous schools, a group of teachers, students, parents, and a high school administrator proposed converting the SLC into an autonomous small school. In particular, they saw two advantages to making the switch: 1) maintaining existing practices, features, and school staff; and 2) creating a new culture for the school.

This SLC possessed some of the elements of Linked Learning, and was receiving funds through the state's California Partnership Academy program.[23] Replicating one real aspect of induction into the workforce and higher learning, the academy featured student internships, partnerships with professionals in the field, and interdisciplinary projects. The SLC was a perfect candidate to transition to a small, autonomous school. These features, practices, and partnerships were maintained as the academy was converted.

Approximately half of the start-up staff at Life Academy transferred from the high school in which the SLC was located, and they were already interested in the opportunities they saw for playing a role in establishing the purpose of the new school. Likewise, many of the new student enrollees were former students at the SLC.

In spite of enthusiasm over new goals, practices, and relationships, it was not easy to give up the old ones. "From its inception, Life faced the challenge of converting an existing student culture, existing adult culture, existing pedagogical approaches, existing instructional program, existing resources, existing belief systems about what students can and can't accomplish."[24] School leadership and staff members sent strong messages to students about the new culture:

Within the course of a few hours, the students knew that this school would be very different from what they were used to, as they began to grasp the staff's commitment to establish a strong and positive school culture. They saw that time would be devoted to building relationships, that there would be room for their voices and input, and that they would certainly no longer be anonymous.[25]

Establishing a new culture for Life Academy was particularly challenging because it opened to students grade 9-12 at once. Of particular issue were upperclassmen who had a difficult time adapting to a new culture and practices that differed from those of their previous high school. Some Linked Learning sites (some conversions and brand new schools) were able to open with freshmen and sophomores only, however. Principals at these sites indicated that this slow growth was helpful in creating or shifting the culture.[26]

Opening a Brand New School: Building on Community Needs

The designers of new schools in our study considered the perceptions and needs of the community, the school system, and the workforce. For example, Harbor Teacher Prep Academy, a *Middle College High School* in Los Angeles Unified School District, was established after educational leaders determined a need for more LAUSD teachers, especially in under-resourced South Los Angeles.[27] In the fall of 2001, an LAUSD school board member and the Harbor Community College president proposed a school to prepare young people to become teachers. The resulting partnership created a *Middle College High School* on the Harbor College campus. There, all the students receive rigorous academic college preparation that includes enrollment in the courses required for eligibility for California's public four-year universities and entry-level college courses. Approximately 70% of students graduate with associate degrees,[28] and many feel encouraged to become teachers for the LAUSD. California State University, Dominguez Hills, joined as a partner and guaranteed admission to their teacher pathway project for Harbor transfer students, and gave general guidance to the school for fulfilling its teacher preparation mission.[29]

In addition to meeting workforce needs, Harbor also strove to meet the needs of the community. The tremendous benefit of fitting six years of classes into four years is persuasive to students, parents, and those with an eye on education, economics, and policy. As one administrator shared, providing students with

the opportunity to earn an associate degree while in high school has increased students' understanding of and readiness for college and attended to parents' concerns of college affordability. Many families, according to the administrator, choose to attend Harbor because students can graduate with enough credits to enter college as a junior, hence minimizing costs.

Partnering with Other Organizations

Partners vary widely and are important to the design process. Key partners come from industry, community-based organizations, community colleges, universities, and the district itself. Also, at six of our 10 Linked Learning sites, an important partner has been a network of schools engaged in similar transformations. Networked schools helped guide school design and foster valuable relationships. Networks are a source of continuing support as schools confronted inevitable challenges and crises over the years. (See Condition Four for a full discussion of partnerships.)

External Partners

The efforts of community groups to address the educational needs of the students in their communities and to address the growing achievement and opportunity gap can lead to Linked Learning. In Oakland, community groups (e.g., Oakland Community Organizations, the Bay Area Coalition for Equitable Schools, etc.) encouraged converting large high schools to small autonomous schools. Community and professional groups (e.g., Oakland Children's Hospital and Berkeley Biotechnology, etc.) gave advice, organized parents, and helped develop programs.

Networks

Networks that connect new schools or redesigned schools to other "similar" schools can alleviate the sense of isolation inherent in establishing a unique school in a resistant or unfriendly climate. A fundamentally different approach to teaching and school organization carries at least an implicit rebuke of the status quo.

Linked Learning pathways in our study are part of a wide array of educational networks.[30] Membership in a network provides schools with legitimacy and gives access to network educators who have faced similar

challenges. For example, the New Tech Network provides teachers with "critical friends"—teachers who teach the same subject matter in other network schools and can help with curriculum, assessments, and professional development. Sacramento New Technology High School based much of its initial structure on the original New Tech model located in Napa, California, while adapting the model to its own needs. At MetWest, one of approximately 60 Big Picture schools around the country, the Big Picture Network provides professional development, assistance with grant writing, occasional funding, and opportunity for participation in network-wide research that tracks the postsecondary trajectories of Big Picture graduates through semi-annual surveys and alumni convenings. In 2008, Life Academy, CART, CTA, and DMD formed part of ConnectEd's network of schools and had access to technical assistance to strengthen their Linked Learning pathway.

District as Partner

School districts can be critical in guiding, scaffolding, granting permission, and providing resources to create new designs and find teams of teachers who share the school's purpose. In the best cases, school autonomy and district engagement are finely tuned in the areas of curriculum, instruction, assessment, hiring, and budgeting. In successful school-district partnerships, schools can be forthcoming about their concerns and not feel that they have to "hide" their problems or practices. Trust amongst the group of partners, including the district office, helps keep the schools' efforts, resources, and energies available for students. According to one administrator,

To sustain the model you have to know who the key person is in the district because it's shifting all the time, and immediately start a relationship, and request to meet with that person. ... They may be our great resource in terms of directing resources ... but they can't do it if they don't know anything about the model. ... They need that.

Conclusion

Linked Learning sites must continue to evolve and adjust as internal or external factors necessitate. And, the administrators and teachers who implement a school's plan and the students who participate in it play a large role in maintaining the purpose of the school. Over the course of our study, the research team witnessed dynamic developments and refinements across the sites. We witnessed leadership changes at the school and district level, policy changes, shrinking budgets, growing class sizes, and teacher layoffs. We were also witness to new and/or changing instructional practices and new projects. However, desired student outcomes and equity concerns continued to guide the schools' activities. In particular, a belief that all students will leave high school prepared for college, career, and civic life shaped decision-making across stakeholder groups. Linked Learning pathways establish and maintain community and institutional partners who share in the schools' purposes. ●

KEEP IN MIND

- Keep equity concerns at the top of the list. Pathways must continue to reflect the diversity of the school community and work to attract a wide range of students based on past educational experiences and backgrounds. Linked Learning should not lead to the creation of isolated poles of excellence. Rather Linked Learning schools must lead the way in the belief that excellence and equity go hand in hand if system-wide reform is to be realized.

- Creating or transforming a school takes TIME! From designing the curriculum to refining projects and meeting high standards, staff and students need time to get used to the new school culture and processes.

- Take stock of local strengths and resources. Build on teachers' pre-existing interests; ask students and families for authentic engagement in the process; and assess your community's assets and resources.

- Build support and establish shared ownership and understanding among district officials and the community. Open the school's doors to parents, civic and business leaders, and families. Deeply committed stakeholders will stand with you in times of economic needs or if the school faces unexpected struggles.

- Whether you are transforming a small learning community, converting a large comprehensive high school, or opening a brand new school, there is a lot to learn from schools that might look nothing like the school you are planning. Learn about other models, visit other schools regardless of their governance or organization structure, and connect with existing networks.

For more information and resources:

Read

- Ancess, J. (1997). *Urban dreamcatchers: Launching and leading new small schools*. New York, NY: Teachers College Press. Retrieved from http://www.tc.edu/ncrest/onlinepub/dreamcatchers2.pdf

- Friedlander, D., & Darling-Hammond, L. (2007). *High schools for equity: Policy supports for student learning in communities of color*. Stanford, CA: School Redesign Network. Retrieved from http://www.srnleads.org/press/pdfs/hsfe_report.pdf

- Hallinger, P., & Heck, R. (2002). What do you call people with visions? The role of vision, mission and goals in school leadership and improvement. In K. Leithwood & P. Hallinger (Eds.), *Second international handbook of educational leadership and administration*, (pp. 9-40). Dordrecht, The Netherlands: Kluwer Academic Publishers.

- Oakes, J., & Saunders, M. (2008). *Beyond tracking: Multiple Pathways to college, career, and civic engagement*. Cambridge, MA: Harvard Education Press.

- Wiggins, G., & McTigh, J. (2005). *Understanding by design: Expanded 2nd edition*. Alexandria, VA: Association for Supervision and Curriculum Development.

Visit

- Career Academy Support Network at http://casn.berkeley.edu

- The Coalition of Essential Schools at www.essentialschools.org

- ConnectEd: The California Center for College and Career at www.connectedcalifornia.org

- National Academy Foundation at www.naf.org

View

- *Linked Learning: A Guide to Making High Schools Work* at www.ucla-idea.org/projects/linked-learning

- *What is Linked Learning?* at www.connectedcalifornia.org/video/?video=linkedlearning

- *First Certified Pathways* at www.connectedcalifornia.org/video/?video=certification

CONDITION TWO

CONNECTING LINKED LEARNING COMPONENTS

CONNECTING LINKED LEARNING COMPONENTS

I believe that there are some strategies that are really powerful for engaging students and connecting things to a vision.

— *Preston Thomas, Principal, Life Academy*

Typically, high schools organize instruction according to subjects (math, art, etc.), grades (usually consistent with age), and a number of other formal and informal divisions (student proficiency and skills, estimates of postsecondary prospects, etc.). Students' days are filled with start-stop experiences and, to do well in one class, students must put out of mind what they learned a few steps down the hall just minutes ago. In spite of obvious problems and inefficiencies with this scattered approach to learning and the curriculum, there is a tremendous pull to maintain this traditional and fractional delivery of instruction.

Linked Learning attempts to create a more cohesive whole by connecting the various components of the curriculum. A rigorous academic core, for example, that fails to connect to the pathway's technical core or to real-world experiences re-creates the fragmentation seen at the traditional high school. Linked Learning unifies the various parts of the curriculum primarily through the theme and the instructional strategies that theme integration inspires.

1. Linked Learning themes are at the center of a coherent system of student engagement, curriculum, resources, and learning. They make sense to students and fit with real-world needs beyond high school graduation.

2. Theme integration necessitates and triggers a host of practices that break down barriers. In particular, cross-curricular integration, project-based and standards-based learning are well grounded in practical experience and scholarly research. Teaching and learning strategies work synergistically rather than subject-by-subject or in track-by-track isolation.

Theme as Center of Students' Motivation and Learning

A small school without a theme is missing out on something.

— Teacher, Construction Tech Academy

Much has been written about small, themed high schools.[31] Advocates argue that letting students select a small high school because they are interested in the school's theme increases students' commitment and achievement. Further, themed high schools can promote a diverse enrollment by adding choice and student interest to the usual criteria for school assignment—neighborhood or test scores.[32] [33] Linked Learning schools use themes to these and other advantages that include bridging students' interests to both classroom learning and to the world beyond the high school setting.

Themes penetrate all aspects of the curricula in Linked Learning schools. Non-Linked Learning schools might include a theme in their names or have some team teaching aligned to a theme, but much of the school and many students may still operate independently of the theme. In our Linked Learning study schools, all students had access to experiences shaped by the theme. The theme was the norm, not the exception, and it shaped all students' experiences.

The theme helps give substance and distinctiveness to a school's otherwise abstract purpose and vision. It helps create the school's, students', and faculty's identity and distinguish that school from others. And, by choosing to attend (or teach at) this distinctive school, students and teachers commit to shared values and aspirations unconstrained by students' background and experiences.

Pathways and Themes

Themes are enormously varied, and there is not much reason to believe that any particular theme is inherently better than another. Selection of theme is often based on an attempt to create a special identity and break away from the traditional schooling that is a poor fit with a great many students as well as with

Themes Encountered

Agriculture	Global Safety and Security
Administration of Justice	Health Careers
Arts, Entertainment, and Media	Health and Bioscience
Automotive Technology	Information Systems
Building Industry Technology	International Trade
Business Technology	Industrial Design Engineering
Business and Entrepreneurship	Medical Education and Research
Communication Technology	Multilingual Teacher Preparation
Construction, Architecture, and Engineering	Oil Technologies
Culinary Arts	Performing Arts
Digital Media and Design	Public Services
Electronic Arts	Public Service and Social Justice
Engineering	Science and Technology
Environmental Science	Space, Technology, and Robotic Systems
Engineering and Environmental Science	Student Empowerment
Fashion, Design, and Visual Arts	Teacher Preparation
Finance	Technology
Fire Science	Tourism, Cuisine, and Hospitality
Global Business	Travel and Tourism
Global Environmental Sciences	
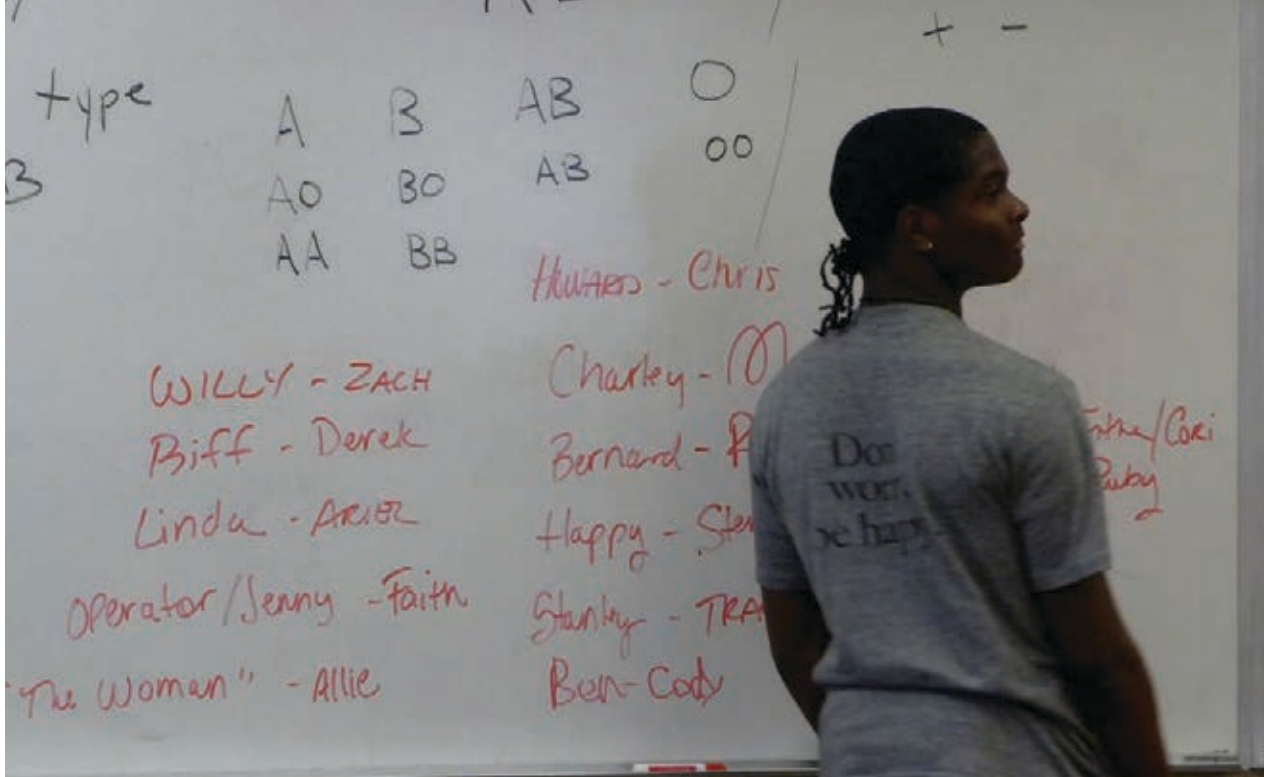
creative and innovative teachers. However, attempts to be distinctive can run the risk of being exclusive. A special concern of equity-minded Linked Learning schools has been to ensure that their "exceptional" pathways and themes do not lead to student differentiation and school tracking. The thinking and relationships are complex, but three broad theme requirements are apparent: The theme should motivate students to engage in their learning; attract a diverse population of students based on academic background and experiences; and apply to students' learning in a way that would serve them well beyond high school graduation and prepare them for college, career, and civic life.

A Range of Themes

In general, themes of Linked Learning sites are constructed into four different categories:

1. *Well-defined industry sectors* such as health science and medical technology, or arts, media, and entertainment (e.g., Life Academy of Health and Bioscience, Digital Media and Design, Harbor Teacher Preparation Academy).

2. *A combination of industry sectors* such as "Building Trades and Construction" and "Engineering and Design" (e.g., Construction Tech Academy, Center for Advanced Research and Technology).

3. *Expansive industry sectors* such as "information technology" or "public services" that provide students with a wide range of career options (e.g., Community Partnerships Academy, Los Angeles School of Global Studies).

4. *Individualized* themes not clearly associated with an industry sector. The theme allows students to identify and pursue a wide range of career interests based on an individualized approach (e.g., MetWest, Sacramento New Technology High School, High Tech Los Angeles).

In pathways with *well-defined industry sectors* or a *combination of industry sectors*, industry is often invited to take part in the planning of the pathway from the outset. This is to ensure that industry standards are identified, measured and met, and that they connect to the school's purpose. Students' acquisition of the skills, abilities and tools that would allow the student to pursue careers in this industry often form part of the school's expected outcomes and purpose. For example, Digital Media and Design (DMD) in San Diego "exists to develop exemplary communication skills in students through authentic, media based experiences in an environment of high academic and social expectations."[34] A well-defined focus, such as the development of skills necessary for success in the digital media and design industry, helps the school design theme-related courses that culminate in a capstone course and/or certification. In this sense, completion of the program signifies that the pathway has met its goal and expected outcomes. Although the industry sector might not specify that skills be applicable to other career areas or postsecondary

What's in a Name?

When Glen Hillegas and community and industry partners began planning and designing what would become Construction Tech Academy in San Diego, they envisioned a school that would prepare students for the wide range of careers in the fields of construction, architecture, and engineering. However, the school has struggled since it opened its doors to attract students who can visualize themselves attending a four-year college after graduation. Rather, according to Hillegas, "construction" in the name feeds into a widely accepted belief that a "construction school" is an alternative for the non-college bound student. Further, the school has had difficulty attracting females—in 2008, less than one-quarter of the population was female. Hillegas states, "If I could go back in time, I wouldn't have put construction in the name. It's a stereotype."

We, from day one, planned a college-going culture. ... Being construction, architecture, engineering, we planned to have the community college and university connection. The whole concept of the school is that one day they work with a construction engineer and the next day they might work with an electrician and the next day they might work with an electrical engineer so that they learn about apprenticeship programs, they learn about the university options. I felt really good about that culture taking off in the school in spite of the construction stereotype. By design it had its eye on the prize —the university.

— Glen Hillegas, Founding Principal, Construction Tech Academy

participation, these Linked Learning sites make great efforts not to force students to commit to a job or career during their high school years, but demonstrate the theme's applicability to a host of jobs, careers, and interests. A teacher from DMD explained,

I like our theme. Digital media and design is a great way for kids to express themselves creatively, but also something they will always use, whether they're a science major, a math major. It doesn't matter, you do PowerPoints, you do presentations.

Linked Learning sites with a theme that involves more *expansive industry sectors* such as "information technology" or "public services" focus on students' acquisition of skills, tools, and abilities that can be applied to a broad range of careers. They often emphasize "foundation standards"[35] and "21st century skills" (see text on p. 28) that prepare students for the wide range of career options and job opportunities within the pathway. At Community Partnerships Academy (CPA) in Berkeley, for example, the theme is Community Service Professions, with emphasis on how technology is used in health, education, law, and government. The expansive industry sector allows for several entry points for teachers of all subjects to incorporate the facets of the theme into students' learning experiences. One student explained that, although not always obvious, there is always a connection to community in "some way or form." Indeed, the theme of "community" is incorporated through connections to the school community, learning about social issues in the community, and field-based experiences that prepare students for professions serving the community. Freshman courses such as Community and Ethnic Studies engage students in content and discussions around their community. As sophomores, students take a computer art class, which seeks to build their technology skills. Assignments, such as creating public service announcements around community issues, integrate the theme. A math teacher explained how he aimed to teach statistics while also helping students comprehend how data can be used to understand and influence their communities. Through a unit called "Pollsters Dilemma First," he noted that it was apropos to talk about what's going on socially while teaching students how the central limit theorem works. Students designed their own surveys and were encouraged to design questions wherein the responses could influence or impact the community (i.e., through policy or other regulations).

In addition to taking courses that incorporate the thematic facets of CPA, upperclassmen also take classes that guide them through their field-based learning experiences and help them develop career capacities. For instance, all students at CPA take a yearlong course titled Community Service Professions (CSP) during their junior year, which requires participation in an internship and teaches introductory skills for professional fields serving the community (e.g., health, law, government, and education). And, as seniors, all students participate in a class that requires them to do an extensive research project, typically around an internship in the community. (See Condition Six for more information on senior projects and exhibitions.) The broad nature of the theme allows for numerous and wide-ranging field-based experiences. The multiple facets of the theme also provide the school the opportunity to pursue diverse partners and funding streams to support the pathway and facilitate the internship program as a whole.

Finally, in pathways with *individualized themes* or those not clearly aligned with an industry sector, students identify and pursue a career of their interest. These schools often utilize individualized instructional strategies that focus on developing opportunities for students that will be of interest. At MetWest, for example, a small autonomous high school located within the Oakland Unified School District, students "create their own theme."[36] Grounded in its approach to "educate one student at a time," each student designs an educational program that ensures integration of internships, academic study, and interdisciplinary project work.[37] Employing the assistance of the internship coordinator and an exhaustive database featuring hundreds of internship sites, students explore fields they hope to pursue in the future and are introduced to new fields and occupations.

Vincent, a senior at MetWest, is devoted to the field of science. He has taken many college-level science courses at nearby Laney College and is certain he

What are "21st century skills"?

It has become increasingly commonplace for practitioners and policymakers to frame education goals as "21st century skills." Although there is not widespread agreement on what constitutes "21st century skills," the work of Tony Wagner[38] provides a useful set of "survival skills" students need to effectively adapt to rapid change created by emerging technology and its effects on the workplace. These are the same skills that enable lifelong learning and civic engagement.

- Critical Thinking and Problem Solving

- Collaboration and Leadership

- Agility and Adaptability

- Initiative and Entrepreneurialism

- Effective Oral and Written Communication

- Information Access and Analysis

- Curiosity and Imagination

will pursue a career in the sciences. However, for his senior thesis project, he decided to investigate a new interest area. He chose to explore the expression of non-violent resistance through art, and approached a renowned artist for guidance with his project. Vincent described his productive meeting with the artist: "I was in an interview with him, and it turned into an internship. … I'm going to be doing the glasswork on my own, and I'm taking glasswork classes." In addition to learning a new craft, he is discovering "life as an artist," and states that he is also gaining a better understanding of the "business side." His internship consisted of providing guided tours of the artist's studio, assisting in the office, and increasing his knowledge and appreciation of various art forms. When we met Vincent, he shared his detailed progress on his senior project, his plans to acquire his own kiln, and his hope to further develop his passion for art alongside his pursuit of science. Students at MetWest acquire internships in art studios, dance studios, schools, at the Oakland Children's Hospital, in health clinics, restaurants, research centers, and more. These experiences allow for individualized career preparation and for students to understand how their interests materialize in the adult world. And, as Vincent's story illuminates, they allow students to explore new interests and ways of learning. As a teacher shared:

The idea of the internship is not really about being on a career path—it's really about exploration and learning. We encourage students to try out a number of different things that they might be interested in and work with different adults in the community so that they're seeing a lot of options. And then we work with them around whatever internship they're in, whatever interest they begin to develop, to build an academic program around that.

It should be understood that different themes and types of themes can have a higher or lower status within the job market and culture. For example, "engineering" communicates a high-paying job, a mathematics-intensive curriculum, and college-going; whereas "public service profession" might communicate low-paying, child- or elderly-care. At CPA, for example, staff members explained that public service is not as job-specific or seen as desirable as other fields (e.g., health professions).[39] Such perceptions correspond with the view that CPA is the school on campus for students who need extra help; the result is a lower-skilled, higher-needs cohort of students.[40] In a self-fulfilling cycle, community

and professional perceptions of the program make it increasingly difficult to recruit and retain higher-performing students. As a result, CPA is in the process of changing the theme of the school to a well-defined, higher-status industry-based theme (Academy of Medicine and Public Service). CPA is also working to move the larger high school campus in which it operates in a direction that will provide students with "more level" choices across the small learning communities on the campus. As pointed out by the lead teacher, this is becoming more possible as the impetus for combining college and career grows statewide and nationally.

Bridging College and Career

The process of theme selection challenges leadership to examine how all students can access the full range of outcomes that the theme allows, including preparation for college, career, and civic participation.

Theme strategies at Linked Learning sites should lead to students exploring many options for postsecondary study and careers. The theme, therefore, embodies a set of common elements for college and career preparation. Under the best circumstances, these common elements draw together the varied interests of students and adults.

The mere presence of a theme, however, does not mean that all the stakeholders agree on how the curriculum should play out in daily practice. For example, integrating academic and technical learning for the construction industry requires lots of negotiating and learning among teachers and partners. Not all teachers at CTA think every student needs to be interested in that theme or learn about construction-related careers. Rather, many believe that the theme could be a useful motivational "hook," while not translating into a hard goal:

We're trying to walk that balance where it's exposure to a theme that they really like, and they're getting some really valuable skills, and yes, they could go out and pursue that if they wanted to, but that's not necessarily the goal.

We realized that the theme of the school … was just the hook for kids. … It's what gets the students excited. … When [students] come here they realize, … 'I'm actually going to be learning everything that I would be learning in a traditional high school, but I'm learning it in a way, in an environment [that is engaging].'

Still others see the theme as the "key" to unlocking students' interest in a focused adult livelihood, not just a motivational hook. They hold strongly to their beliefs that since students choose to attend the school because of the theme, they must be well exposed to the knowledge, skills, and abilities that pertain to the theme.

This tension is most acute in pathways with well-defined industry sectors or those that combine sectors. However, across sites, administrators and teachers attempt to bridge existing or possible divides by appealing to students' interests and developing skills for a range of postsecondary options. All teachers, for example, regardless of the subject they teach, can bridge various components of the curriculum. Indeed, one possible concern did not turn out to be an impediment: teachers without first-hand experience with a theme are able to align lessons and generic skills to fit or supplement the theme. For example, many teachers at CTA without a construction, engineering, or architecture background were able to contribute to integrated grade-level projects that focus on the theme. The 9th grade project, for instance, asks teams of students to originate an entire green community and create a scale model of the community, accompanied by a proposal outlining the green components, measurements, and costs. The instructional team is led by the 9th grade English teacher who does not possess a background in these fields; however, she is enthusiastic about all aspects of the project and uses the proposal writing component to ensure English standards are met. As one teacher at CTA shared:

I think one of the coolest things about this place is that you have these core curriculum teachers who are in the classroom doing their core curriculum thing and they're really buying into the idea of, 'now how can we tie this into construction? How can we tie this into the CAD and the drafting and the architecture side of things?'

Dividing Resources and Ameliorating Tension

Given the range of students' and teachers' interests, it is not surprising that tensions would arise between those who view the theme as a "hook" versus those who view it as "key" to the school's overall purpose. Partners representing industry or business are more inclined to be in the "key" camp—paying more attention to the career nature of the theme and less attention to the mission's general education and academic preparation elements. One teacher pointed out, if industry partners are providing resources to

the school, partners expect that those resources be funneled to support the theme:

All of the money received goes for the theme and that's not cool. That is really not cool. The school is getting money from industry, the unions and stuff. So I understand that funds need to go towards the theme. But, then take other funds and give them to the [academic] departments.

With limited resources for time, training, and meetings, school leaders must pay a lot of attention to avoid polarization around different interpretations of the theme. Strong leadership requires a commitment to linking, along with knowledge of, both technical and academic goals. The common element for school leaders is a solid understanding of learning theory and pedagogy that ties together collaborative, project-oriented learning for both students and teachers.

At CTA, for example, a former principal had a background in and ties to the construction field and was perceived as favoring technical courses. When standardized test scores began to slip, the principal responded by hiring a dean of students to bring together different perspectives around achievement expectations and use data to inform curricular and instructional decisions. Unfortunately, many people on the campus perceived the former principal and the dean as being on opposing sides (technical/academic), and perhaps they were.

In 2008, a new principal was hired with experience in project-based learning, academic instruction, and course integration. She did not know much about construction, engineering, and architecture, but she was skilled at identifying unifying elements of the theme. While maintaining a focus on preparing students for high school graduation and postsecondary education, she has simultaneously made sure that all students are able to continue to access and succeed in theme-based courses that connect and support students' academic learning and career preparation.

Students and Themes

Prominence of Theme in Student Pathway Selection

Students select Linked Learning for different reasons and with a variety of encouragement. In spite of the variety, all Linked Learning sites aim to attract a diverse group of students. (See p. 15.) And, if the students are not already persuaded, the schools will try to make the theme of interest to them. But, more specifically, theme selection encourages Linked Learning sites to consider the following: 1) Do students choose the pathway because of the theme? and 2) Do schools provide students the opportunity to explore interests outside the theme?

A survey of students attending Linked Learning sites in 2008 indicated that 40% chose to attend their school because of its theme.[41] Linked Learning sites have to work to engage *all* students in the theme because, as these survey results reveal, the theme is not an important initial factor for many. Recommendation by a parent or friend, the school's neighborhood, and its certification program also played roles in decision-making, although survey results indicate that they were not prominent decision factors. Rather, interviews with teachers, parents, and students revealed that the school's perceived safety, instructional strategies, and

personalization—especially compared to school alternatives—were key factors.

As one student shared, "As soon as I came to this school I haven't seen fights. … This is a big change for me because last year, when I was in that school, there used to be fights everyday … everyday." A student at Harbor Teacher Prep Academy in Los Angeles stated, "I do not want to go to [my home] high school. It has a really bad reputation." Staff members estimated that only between 10% and 20% of students choose Harbor because of its teacher preparation theme. Survey data confirmed the estimate, showing that just 15% of students see themselves in education professions in the future.[42]

In addition to safety, many students indicated that receiving a nontraditional school experience through varied instructional practices is more important than pursuing a particular career. Many students like the theme because it allows them to learn "in different ways" in a different setting as compared to the comprehensive high school. For example, students discussed learning through doing, creating projects, working collaboratively with other students, and demonstrating their learning through other means besides tests. A CART student shared:

Basically it's more hands-on and they don't just put it on an overhead. Here they actually show you and then if you still don't get it they pull you aside with other people that don't get it. They take it a step further and they bring out, let's say, screws and bolts for, let's say, a certain type of bond, chemical bonds, and why they stick together. … Let's say the electrons and protons, they're always opposite charges and so the neutrons stick together. …They constantly change the examples until you finally get it or it clicks in your head.

Personalization also plays an important role in students' decisions to attend a Linked Learning site. Berkeley High School students have six placement options to choose from. CPA is one of four small

schools on the large campus that provides a core group of teachers and a course of study designed around a particular theme. Students not enrolled in a small school at Berkeley High School (BHS) attend one of two larger programs that are not theme-based. The small schools and programs are not autonomous schools, but they each have their own identity and culture on campus. Students choosing CPA indicate that the personalization and caring relationships between teachers and students that define the school's culture are critical factors in choosing to attend the academy. Many students who choose CPA fear they would "get lost" in the larger school (or larger programs) and indicate that they would not feel as comfortable in some of the other programs on the campus. Interestingly, the small schools at BHS have consistently attracted higher rates of African American, Latino and low-income students. In 2008, CPA served a much higher percentage of African American and Latino students (74% combined) than the larger campus (41% combined). As such, students who choose CPA prioritize belonging to a caring community versus a particular interest in a career or theme. Again, CPA staff members share that changes must be made at the campus level in order to provide *all* students with access to a pathway that allows for meaningful student-teacher and student-student relationships *and* matches their interests.

The sites we studied recognized the many reasons students choose to attend a Linked Learning pathway. Given that the theme plays a key role in fulfilling a school's purpose and bridging the various components of Linked Learning, sites are making great efforts to engage all students in the theme, especially those who choose to attend the school for other reasons.

Broadening the Theme and Exploring Interests

Once students select a particular themed pathway, they generally have limited choice for electives or exploring interests outside of the theme.[43] When

students were asked how they pick their classes, we heard, "We don't. We get them." To avoid a narrow, constricted curriculum and to interest more students, Linked Learning sites attempt to broaden their themes. Driven by the school's purpose, a combination of the school structure, flexibility in course offerings, partnerships with outside organizations, and individualization of student experiences (internships, projects) can broaden the theme to create an interesting and useful experience for each student.

At CTA, all 9th grade students are introduced to the three different career pathways offered—construction, architecture, and engineering. During their junior and senior years, students can choose one of three career paths and enroll in the capstone course for that particular field/industry. While each pathway tends to initially attract students with particular academic strengths or interests, the goal is to introduce all students to the various components of the theme and to maintain students' interest and engagement. Many students who were initially drawn to CTA for the construction theme, for example, shared how their courses in engineering and/or architecture led them to explore these fields further. One student shared how he "came here because of construction," but his engineering class and his experience using AutoCAD to design houses has prompted him to consider attending college with a construction and engineering major. "Most likely I [will major in engineering] because its one of my goals to have a big company and design houses, and have another group who will build the house."

In creating various strands, pathways must take caution not to re-create academic tracks. At Life Academy, for example, the school initially attempted to meet students' different interests and academic strengths by offering three distinct health and bioscience foci to its students. These strands included: a biotechnology path, a "medical" path, and a mental health path. The mental health strand was designed to appeal to students who were wary of a challenging science curriculum. Rather than see these students leave Life Academy after the 9th grade, the school devised a way to maintain their interests. However, staff members were concerned that the varied science course options could disrupt the school's equity agenda. As such, after a few years, Life Academy discontinued these different foci through science courses, and instead now allows students to explore their interests and discover their strengths through the 11th and 12th grade internships.

There are other nontraditional ways that Linked Learning can spark students' interests beyond the theme. Each school in our study had a close relationship with a local community college, and students were encouraged or required to take courses through the community college.[44] [45] College course-taking opens course opportunities that Linked Learning or most high schools cannot, and it demystifies college particularly for first-generation college-going Students. (See Condition Four for a full discussion of partnerships with postsecondary institutions.)

Linked Learning sites were not limited to connecting *every* worthwhile activity to the theme. Required service hours and afterschool activities also provide opportunity for students to explore their strengths and interests. At DMD in San Diego, students are required to fulfill 25 hours of community service each year. Students and teachers find community projects that connect with students' interests (not always theme-related). Then, all graduating seniors must produce and present a service-learning project that documents their work using acquired media skills. Some Linked Learning sites make special efforts to get students involved with afterschool clubs, sports, student government, and other activities both at the site and in the community. These activities expand the limited offerings of many small schools and allow students to develop relationships and skills beyond the work orientation of the classroom, job site, or project team.

Once a school acknowledges that students want and need choices that may extend beyond the theme, many options open up. CTA, for example, offers an "advisory wheel" during the final quarter of the year. Students choose from a long list of offerings such as dance, theatre, automotive repair, poetry, etc. Life Academy offers a two-week "post-session" that varies from year to year and allows the school to offer elective courses beyond its science and health theme, including those required for graduation, like physical education, or courses necessary for admission to University of California or California State University, like visual and performing arts. The intense, all-day courses provide students with a full semester credit. Post-session, beloved by students and staff alike, highlights special interests of teachers and students and helps teachers and students bond through creative projects. Previous classes offered include cooking, outdoor education, gardening and welding, service learning, backpacking, dance,

cultural studies, photography, media studies, filmmaking, martial arts, mural arts, and portraiture. In one post-session project, students traveled by bus, train, and ferry to visit and understand diverse places within the Bay Area like San Francisco's Chinatown and Castro District. Students interviewed residents and created a blog that shared their discoveries regarding socioeconomic differences, displayed photos, and allowed students to see their communities in complex ways. The all-day class schedule created the opportunity for students to travel across the city and explore topics deeply.

Theme Flexibility

At the Center for Advanced Research and Technology (CART), a joint unified school between the Fresno and Clovis school districts, adults made the initial decisions for themes based on recommendations of community and business leaders, including the local Economic Development Corporation and local government. Themes reflecting the teachers' interests were entered into the mix. However, the administration and faculty soon discovered that themes had to appeal to students. Science teachers, for example, advocated engineering programs, but the school could not get enough students to choose and fill the engineering sections offered. CART reconsidered offering an engineering lab.

Over its 10-year history, labs and curriculums at CART have shifted, transformed, or disbanded, but the core purpose and Linked Learning strategies remain constant. While many Linked Learning sites do not have the same level of flexibility of CART to adopt and drop the theme of a lab, other sites make adjustments as much as possible by re-examining, modifying and expanding the theme's meaning and by constantly tweaking and refining theme-related projects.

Instructional Strategies Connect Linked Learning Components

Basic features of Linked Learning inevitably shape instructional strategies: the theme's integration throughout the curriculum and connections to field-based opportunities outside the classroom simply require different approaches and attitudes toward learning. Rather than relying on traditional models wherein the teacher transmits information to

- An **Academic Core** that is rigorous and satisfies the course requirements for entry into California's public colleges and universities. Courses cover essential subjects such as English, math, science, social studies, foreign language, and visual and performing arts.

- A **Technical/Professional Core** that emphasizes the practical use of academic learning and prepares youth for high-skill, high-wage employment.

- **Real-World Learning Opportunities** that allow students to learn through meaningful work-based experiences including internships, apprenticeships and school-based enterprises. Experiences deepen students' understanding of academic and technical knowledge through application in authentic situations.

- **Support Services** that help students master the advanced academic and technical content necessary for success in and outside of school. Services may include counseling and supplemental instruction and are tailored to meet the unique needs of particular students and communities.

students, Linked Learning sites promote the active involvement of the learner as he/she constructs knowledge for him/herself.[46] Teachers are seen as "facilitators" and assist students as they solve realistic problems or engage in realistic projects. Further, learning is seen as a process in which the student creates new ideas or understands new concepts based on previous knowledge or experiences. Often there is no one "right answer" and students are challenged to defend their solutions. These approaches allow students to learn how to transfer their knowledge to new situations and develop the skills and abilities Linked Learning sites identify as necessary for college, career, and life-long learning.[47]

While the theme is often the "center" around which teachers design instruction, assess students' learning, and relate to one another, the goal is a cohesive curriculum that allows students to explore a topic of interest deeply. One teacher shared:

The [theme] focus is the center of your team. Having the English teacher interact with the science teacher and the English teacher interact with the career focus teacher dramatically changes how we plan our lessons, design instruction, [and] assess.

Themes provide the common threads that weave together multiple subjects and information sources. Ideally, no entirely new or "unattached" concepts are

introduced without an obvious (or anticipated, if not obvious) connection to pre-existing knowledge— without the new information being embraced by the theme. When students can make meaningful connections between subject matter, material is converted from discrete pieces of information to a means for further learning. Indeed, the heart of Linked Learning is that individuals learn best when encountering ideas that are connected to something that is familiar.

An integrated curriculum enhances student motivation when students are familiar with and interested in the theme or particular topic area. Further, meaningful learning is both individual and a social process and requires opportunities to observe and interact with others, and the theme can provide these opportunities. Making the curriculum relevant is not left to chance; rather, relevance drives the design of courses, projects, and so forth.

Connecting subjects and information sources looks different across the Linked Learning sites we studied. Teachers of theme-based courses work alongside teachers of other courses to weave topics and principles through *curricular integration* and *project-based learning.* Project-based learning allows students to get their hands dirty and explore the theme or interest area by doing. The intent behind these strategies is to surround students with a theme-

rich environment and triangulate key concepts so the student receives input and experience from multiple sources.

Curricular Integration

During the summer, grade-level teachers at CTA (both academic content teachers and Career and Technical Education teachers) plan quarterly, theme-based projects that are executed, primarily, through an advisory—a non-graded period that meets twice a week.[48] Although students often work on the projects in both academic or technical courses, the advisory period is the central place for groups to gather and work.

One such project was the 9th grade amusement park design. Teams of students drew a site plan that they presented during a "gallery walk." Six designs were selected by the class and scale models constructed of the chosen amusement park designs. Larger teams came together to build the models, led by a "foreman" who applied to lead the team. As a teacher explains, "through a draft process, [the foreman] then select[s] their employees. … You have a ninth grader, a freshman, in charge of twenty of their peers to produce something. It's crazy talk, and yet it happens."

While projects are constructed in advisory, grade-level teachers incorporate aspects of the project into their courses. For example, English students made a brochure (emphasizing persuasive writing techniques) to use with the team's presentation. In pre-engineering, students applied topography and 3-D images to create the scale models, and in physics students applied concepts to design rides such as roller coasters for the amusement park.

Assigning group projects can be a challenge. Students working on particular projects together must find time during the day to work on the projects. Ensuring students are enrolled in at least one same course and period allows common work time. At CTA, this happens during students' advisory period, but at other sites, students work together on projects during a technical theme-based course (e.g., media arts, science, etc.). At Harbor Teacher Preparatory Academy, students engage in the "teacher project" through students' Advancement Via Individual Determination (AVID) class and through optional participation in the Teacher Club. Organizing and completing projects within a single, time-limited class is also a challenge experienced across sites. Not surprisingly, we encountered many students (and teachers) across sites who elected to remain at school well beyond school hours to work on group projects.

The integration of certain courses also posed a challenge. In particular, sites struggled to integrate math. While many courses are dictated by grade level (e.g., English and social science courses), math course enrollment is often determined by individual readiness. For example, a 9th grader can be enrolled in Algebra I, Algebra II, Geometry or other courses dependent upon skill level. Despite this challenge, a number of Linked Learning pathways are striving to integrate the theme across all the content areas.[49] At High Tech Los Angeles (HTLA), for example, all students must take the grade-level curriculum even if the student has already taken a given course prior to enrolling at HTLA. Though the school identifies the value of courses that the student may have taken before entering HTLA, they believe students benefit from the whole HTLA experience. Students are encouraged to take additional courses at the local community college, and can contract with teachers to take a course for honors credit. When possible, this strategy seems to take greatest advantage of theme-based Linked Learning—drawing from the widest and most divergent resources at hand.

How cross-content collaborations form and take root varies by site. The seed for collaboration often begins informally and opportunistically: teachers find they work well with one another, can identify overlapping standards and/or content areas, and their classes are next to each other. Informal collaborations like these take place across each site, and teachers and principals agree that once interest in a cross-curricular, integrated project takes off, organized, official participation is necessary; that might include resources, scheduling, professional development, etc. According to one principal, even teachers who are very familiar with curricular integration "realize that they have to revisit … that they're working with new people. … They need the time and the structure to do the work that they want to do around projects." Staff and administrators at CTA commented that as a result of more focused professional development and organization, they saw an improvement in integration efforts and in the resulting projects.

Project-Based Learning

Project-based learning is about providing a context within which kids can connect what they're supposed to learn to what real life is all about. It's not arbitrary anymore, it's not disconnected, it's not because somebody wrote it in a textbook and told me I have to know this.

— Teacher, Sacramento New Technology High School

Whereas themes are abstract, projects make the themes concrete. One can only "think about" a theme, but one "does" a project. A century of learning theory calls for knowledge and mastery to be acquired through thinking and doing—theme and project; theory and practice.

Rigorous projects bridge key academic and technical concepts. At CART, teachers of the forensics lab created a crime scene that would test students' understanding of forensics' underlying principles. They obtained a crashed car and filled it with 15 pieces of evidence including hair fibers, animal bones, fingerprints and a small plastic bag of white powder. Fifteen student groups of four students each were assigned one piece of evidence. Teachers provided a hit-and-run scenario and multiple police reports. The teachers outlined processes that professional forensics teams would go through to determine the sequence of events and the collection and analysis of the evidence. Students used their knowledge of physics to determine how the car crash occurred. Chemistry and forensics were used to analyze the evidence. The English and technology components were brought in as students read the police reports, wrote analytical reports, and prepared expert testimony for a mock trial.

During the first week, the teachers "did a lot of frontloading" around collecting evidence, chain of custody, and crime scene and police reports. Students collected and analyzed the data, wrote reports and prepared for the mock trial. The mock trial and the final presentations took place seven weeks later, when students also had to "educate the public" on how they collected their physical evidence. Final presentations were at a CART public showcase before parents, community members, professionals, and school and district officials. Teachers and students agreed that the project was hard work and very worthwhile.

I feel like the kids totally got the idea of everything. They didn't just learn about chain of custody by reading about it, they did it, ... and we grilled them on the stand. We said, 'so how do we know that you were in possession of this evidence and that it didn't get tampered with?' They said, 'because I followed the chain of custody.' They knew the answers, and it was very satisfying ... fun. As an English teacher, I was used to 'read books—answer questions.' This level of presentation ... it blows me away that the kids did it, and that they were so good at it.

Projects, whether a few days or months long, can create a learning environment that is intrinsically rewarding: interesting, exciting, social, and active.[50] Projects do not lend themselves to passive learning or lectures.[51] When it is essential that the teachers do the talking, students are likely to be attentive—knowing that they will not be locked into passive, receiving roles. Project skills and attitudes are often normalized as appropriate ways to learn. For example, at one site we observed students working in groups to prepare for the state exit exam. They discussed their answers, gave reasons, asked questions. Groups reported their responses and problem-solving strategies to the rest of the class. Students appeared to be enjoying what could be a very dull lesson by using the skills and knowledge they learned in projects. Indeed, through projects students learn to learn.

Importantly, projects are not static. Staff and students are opportunistic, taking advantage of resources that happen to be available. Projects are idiosyncratic—each combination of personalities and prior experiences generate a unique final product. A project must be tailored to meet the needs of the group, but also allowed to find its own expression. A project that works well with one group might need to be tweaked to work with a different group. Some projects are improved upon and return year after year, while others are abandoned. And, of course, the exigencies that all schools might face—from absences to fire drills to natural disasters—require "on-the-fly" adjustments. Combined, themes and projects allow students a voice and participation in responding to unforeseen events—valuable generic workplace skills.

There are also predictable difficulties associated with project-based learning. It is challenging to be in a group with a student who does not want to

Accountability and Project-Based Learning

New Tech Schools (Global Studies and New Tech Sac) use project-based learning to create a culture of high expectations and support. Students work in groups with teachers acting as facilitators and coaches who can provide specific mini-lectures or training.

Student groups are responsible to create team accountability. Each group signs a contract and if students do not fulfill the requirements of the learning contract with their team, they can be "fired" from the team and required to complete the project independently.

While projects are generally done by groups of students, performance is assesed on an individual basis.

(See Condition Six for more information.)

collaborate. Cooperation requires confidence and a set of skills that can be taught and learned. Teachers often combine whole class instruction (lecture) with active instruction and mediation of student collaboration. (See accompanying DVD for more information on student collaboration.)

We try to get them to understand that the work world doesn't happen in a little vacuum. You're not in your own bubble ... so understanding how to work with different types of personalities [is important]. Understanding that sometimes, when you work with somebody who doesn't work that hard, it doesn't mean you can say, 'ok, well, you don't do your part and I'll turn in my part and it will be fine,' because both pieces are needed in order to get the complete project. What somebody else does is a direct reflection on what you can produce. They realized that they had to tell this person, ... 'these are the concerns we have and we were hoping that you could make some changes. What do you think?' Just getting them to open up with that dialogue is important.

Teachers at Linked Learning sites are also mindful that while projects tap into the social processes of learning, there must be room in projects for the individual, "mental" processes of learning.

Connecting to Standards

Across sites, administrators and teachers have resolved to teach content standards. They distinguish between teaching off of a list of standards (hitting specific standards at certain times during the year) and in-depth teaching that allows students to learn and acquire facts and skills that might otherwise be lost because they are taught out of context. Many teachers contend that depth rather than breadth serves students better for learning complex skills and content. A few teachers shared:

Everybody thinks we don't do standards education here. Of course we do. We don't do all of them, nobody ever does all of them, but one of the first questions we always get is, 'do you guys teach to the standards?' Well, no. 'Do we teach standards?' Yes.

We've been looking at the standards to make sure they're aligning. I guess calibration is a better word than aligning. Aligning kind of means 'yeah, I'm addressing that standard.' Calibration is more ... 'what are my assessments asking for? Is it to the level of the synthesis or evaluation that are in the higher level English language arts standards?'

In addition to the common misperception that the nontraditional curriculum is not standards-based, administrators and teachers must persuade observers and critics that project-based learning also challenges students academically. Across sites, the teachers and students insist that the content and skills taught and learned are as challenging as those taught in high-level courses (Advanced Placement, International Baccalaureate, etc.) at traditional high schools. They add that using the theme to connect the various components of the Linked Learning approach and the hands-on methods make the content and skills more accessible and therefore seemingly "easier." One student commented:

It's not easier; we learn all the same stuff. I do help out some of my friends that take chemistry at my home school, they say it's really hard, I pick up on it, science, really easy here, and so I help them. We do the same stuff, just in a different order and they say that it's easier, but it's really not, really not.

Teachers and students repeatedly made a point that "ease" of accessing the content does not translate into "dumbing-down." Teachers acknowledge that some students arrive thinking that they are not going to have to work hard. These students quickly learn otherwise.

We always get kids at the beginning of the year who come thinking this is an easy, fun class. There's a lot of work involved, I mean a lot of work. At other schools they might be able to be absent a week and [say], 'just give me a book and the worksheets and I'll do it at home.' You

can't do that here. We work in groups. We do so much hands-on stuff you can't do that. They see that you can't just coast here. You have to try.

Conclusion

As the above discussion suggests, the theme is a powerful mechanism for bringing together the various components of Linked Learning. The benefits of a themed organization of the school or pathway derive as much from principles of learning, relationships, and student engagement as they do from the content of the theme itself. However, themes need to be flexible and adjust to the changing needs of the community, students, and teachers. And, as the Linked Learning sites we studied demonstrate, they must take great care to effectively create balance between the academic and technical core, and to attract and interest a diverse student body based on past academic experiences and backgrounds, and to meet the overall goals of the pathway. �

KEEP IN MIND

● In selecting the pathway's theme, the following three questions should be asked:

1. Is the pathway's theme a way to engage and motivate students in their learning? Find ways to check in with students about what engages them.

2. Is the theme attractive to a wide group of students, across gender, socio-economic background, prior achievement? If not, what can be done to make the theme a vehicle for detracking?

3. Does the theme provide meaningful opportunities for students' learning that will serve them well beyond high school graduation and prepare them for college, career, and civic life?

● Know your strength. Choose a well-defined industry sector if you have resources in the community to make the theme "real" and introduce students to specific careers and skills. Other communities might be better served by a broader theme such as "technology" or "public service" where students are exposed to a range of careers and postsecondary options.

● Not all teachers or staff need to be "experts" in the school's theme.

● Project-based learning is one of the primary ways Linked Learning schools deliver theme-based instruction and connect the core components of Linked Learning. Grade-level teams can create projects that highlight curricular integration. Team teachers can support each other's content areas, and vertical integration can ensure wall-to-wall commitment to common goals.

● In a Linked Learning school, rigor and relevance go hand-in-hand. Tensions will arise between stakeholders about what should be emphasized. Keeping true to the dual commitment that all students have access to a rigorous college-prep curriculum and have a chance to apply their new knowledge and skills can be difficult at times. Confront these challenges as an instructional team early and often.

For more information and resources:

Read

- Ancess, J., & Allen, D. (2006). Implementing small theme high schools in New York City: Great intentions and great tensions. *Harvard Education Review, 76*(3), 401-416.

- Larmer, J., Ross, D., & Mergendoller, J. R. (2009). *PBL starter kit: To-the-point advice, tools and tips for your first project.* Novato, CA: Buck Institute for Education.

- California Department of Education. (2007). *California Technical Education Framework for California public schools: Grades seven to twelve.* Retrieved from: www.cde.ca.gov/ci/ct/sf/documents/cteframework.pdf

- Wagner, T. (2008). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need—and what we can do about it.* New York, NY: Basic Books.

Visit

- The Buck Institute for Education at www.bie.org

- ConnectEd: The California Center for College and Career at www.connectedcalifornia.org/curriculum/integrated_units

- Edutopia at www.edutopia.org/project-based-learning

- Ford Partnership for Advanced Studies: Next Generation Learning at www.fordpas.org

View

- *Linked Learning: A Guide to Making High School Work* at www.ucla-idea.org/projects/linked-learning

- *PBL for ELL* at www.bie.org/videos/video/pbl_for_ell

- *High School Project: Save the Beach* at www.youtube.com/watch?v=cJ5Z53JAivE

- *Project-Based Learning from Start to Finish* at www.edutopia.org/stw-project-based-learning-best-practices-new-tech-video

- *Learning Through Projects* segment from *Teaching the Adolescent Brain* at http://newtechnetwork.org/video/teaching-adolescent-brain

CONDITION THREE
A CULTURE OF CARE AND SUPPORT

A CULTURE OF CARE AND SUPPORT

They break down the wall between teacher and student, they get really involved with you, and try to understand what's going on in your life. … I've gone through a lot this year. … I recently turned 18, and was kicked out of my home … so I've been having trouble getting to school, keeping up on things, and [my teacher] will pull me over from time to time and he'll ask me what's going on. And we'll talk about it, and he'll understand and he'll say, 'as long as you're trying, you keep me informed, and you're doing your best,' … He knows that life throws things at you.

— *Hector, Student, Center for Advanced Research and Technology*

When students talk about Linked Learning pathways, they mention an interesting curriculum, engaging projects, internships, and so on. But they also speak of their growing sense of themselves as members of a caring community. This sense is palpable to visitors who walk around the schools, listen to conversations, and look in on classes and activities. Students use the expression (and many versions of it), "Here, I am a person instead of a number." A caring culture allows space for effort, trust, risk, and focus, all of which make Linked Learning work. Most schools around the nation place a high value on care, many mention such a culture in their mission statements, but few take the necessary steps to design schools in a way that makes caring structures and acts permissible and inevitable.

The caring and supportive relationships we discuss in this section are distinguished from "friendliness" or an "accepting environment" (both worthy aspirations). In other words, care is not so much feelings, as it is actions—actions that meet individual needs, talents, and interests. When such actions infuse the normal, daily school routines, we speak of a caring culture. It is through these caring relationships that students engage with and benefit from Linked Learning. The sites we studied employ these actions and have created a culture of care through the following:

1. **School Design:** School structures and instructional strategies support personalization and prioritize the identification of students' needs.

2. **Flexibility:** Sites adjust to students' existing and developing needs for learning and growth without relying on diagnostic categories, like "advanced," "vocational," and so forth.

3. **Modeling:** Adults model the values, care, commitments, relationships, and community interests they expect students will achieve.

School Design: Structures and Strategies that Promote Personalization

Many structures and strategies help adults at Linked Learning sites personalize the school experience and meet students' interests and academic needs. They include:

- small school design
- block scheduling
- common planning time
- advisory/academic advocates
- looping

These structures and strategies enable personalization to take place by determining who talks to whom at the school site, and by providing the time and space for meaningful interactions. The goal is to create greater opportunity for adults to understand students' needs and interests. As well, it is through these structures and strategies that curricular cohesion (as discussed in Condition Two) is optimized. (See Table 1 on p. 44.)

Small School Design, Block Scheduling, and Common Planning Time

All 10 sites provide students with a small learning environment. In 2008, the size of each school ranged from 125 students to approximately 1,800. The largest school, Fresno and Clovis' Center for Advanced Research and Technology (CART), offered two sessions. The morning session served 772 students and 601 students attended in the afternoon.

Much has been written on small school design, and the positive outcomes associated with small schools provided the basis for the design of the schools we studied.[52] An important caveat revealed by the best of these studies is that it's not small size alone that makes a good school, but the learning and relationships that small size enables. One student from High Tech Los Angeles shared:

I chose to come here because I was tired of big schools ... the pressure from everyone around you in that sort of school. I figured here would be much different, where you know everybody instead of being surrounded by people you aren't really familiar with. ... I liked how you got to know the teachers on a more personal level and you actually knew every teacher.

Teachers discussed the importance of building these relationships not only with the student body, but with other teachers.

We are a small community, there are like 32 instructors here, versus the high school I was at, there were about 100 instructors. … It's really easy to get lost in that shuffle, but here I just don't feel that.

Small school design, teachers and administrators warned, does not necessarily result in small class sizes. At Construction Tech Academy in San Diego, for example, average class size from 2007 to 2008 increased by three students per teacher, and according to teachers, was expected to increase in subsequent years.[53] [54] Large class size makes personalization more difficult.

Not to be too cynical, but you know part of the dream here is reasonable teacher-student ratios and that changed this year. I had 35 freshmen in my first freshman class, and they're talking about 35–40 per class next year. So in my mind that just torpedoes the whole idea of personalization.

However, the sites we studied were creating ways to prioritize personalization, and build and maintain strong teacher-student relationships, even though class sizes were increasing.

At CART, some of the larger "labs" (some of which have upwards of 80 students) are able to maintain small teacher-to-student ratios as three or four teachers are often assigned to one lab. The flexibility of assigning multiple teachers not only alters the school's student-to-teacher ratio, but there are also time "economies" that allow for a greater amount of personalized help if the class remains supervised when a teacher turns her back to help a student group or a single student.

In addition to being small, all but one Linked Learning site has also implemented block schedules. (Community Partnerships Academy at Berkeley High School has wanted to institute a block schedule for years, as they feel it would be a better fit for their program than the traditional six-period day. However, groups in the larger school community have resisted these changes.) Block schedules allow for: 1) a longer class period; and 2) smaller class loads per teacher per semester.

Importantly, the master schedule also takes into consideration common planning time for teachers to plan collaboratively and to discuss shared students. Meeting regularly with other grade-level teachers "make(s) learning a lot more personalized. You know the kids a lot better, and we discuss things that go on in our classrooms. The kids are amazed that from one

Table 1: Structures and Strategies that Support Personalization

	Small School	Block Schedule	Advisory	Looping	Common Planning Time
CART	✔	✔			✔
CPA	✔			✔	✔
CTA	✔	✔	✔	✔	✔
DMD	✔	✔	✔		✔
Global Studies	✔	✔	✔		✔
Harbor	✔	✔	✔	✔	✔
HTLA	✔	✔	✔		✔
Life Academy	✔	✔	✔	✔	✔
MetWest	✔	✔	✔	✔	✔
New Tech Sac	✔	✔	✔		✔

period to the next period we know what's going on with them in their lives and it makes a big difference in their life." As will be discussed in Condition Five, common planning time also provides teachers with an important source of collegial support, and allows shared norms to develop that can ultimately lead to new practices. Indeed, in addition to spending lots of time with students, teachers need plenty of time with each other. Common planning time allows teachers to discuss and develop strategies for jointly addressing students' needs.

Advisory

With the exception of CART and CPA, sites also assign students to an advisory period. Advisories are class periods built into the school day through which an adult and a small group of students meet regularly for academic guidance and support.[55] The benefits of school-wide advisory programs are well documented.[56] Advisories provide a structure and a set of school-wide practices for monitoring and supporting students' academic progress and college and career readiness throughout their high school years. In today's education parlance, advisories might be seen as an accountability structure that holds adults responsible for meeting certain student needs; however, "accountability" does not capture the caring functions of advisories which might be seen as a school's guarantee of personalized help. At some sites, students remain with the same advisor for their entire high school career. In other instances, students change advisors each year. Over the course of a student's four years in a pathway, he/she may have established relationships with most, if not all, of teachers that comprise the pathway.

Advisors wear many hats including counselor, subject area instructor, and parent liaison. At MetWest, for example, advisors oversee students' field-based internships. They travel to internship sites, and meet with students and mentors to "pull out the learning that's going on and help the student and mentor [to] develop project work that will connect [to] academic learning." Some advisors work closely with the family, helping to guide students through academic, social, or emotional obstacles. Relationships with students can create an important bridge to family, which in turn creates an opportunity to provide and assemble additional sources of support for the student. Efforts made on behalf of the advisor or teacher to get to know the student's family are expressions of care that strengthen the teacher-student relationship and teacher-family relationship.

Advisors often make themselves available to their students outside of the advisory period, before or after school, during lunch, etc.

Looping

CPA provides one example of a site that uses looping to support student-teacher relationships. In looping, a teacher works with the same students over multiple years, changing grade levels with his or her students.[57] At CPA, the goal is to have students stay with the same teacher for all four years of high school. One student explained:

It takes time. ... Just getting to know my teachers, ... I think that it took about two years. When I was in 11th grade it was easy—you can tell them what you don't understand, what you understand, what you need help with.

At CPA, teachers spoke about how looping sends a message that they are committed and responsible for their students' success.

It's like coming in day one, their freshman year in math and saying, 'You know, I have a commitment to you. We're going to be here together for four years, you know that, don't you?' And it's like, 'What?' They don't even really understand it. 'You're our math teacher for four years?' 'Yeah.'

Students understand that commitment: "no matter how bad it gets ... we're family to them. They help us like that."

Many students experience more comfort and encouragement and say they participate more than they have in other schools they have attended. Teachers also believe that students trust the rigor and relevance of the work being assigned.

I think once I have that connection with them I feel like I can have them do whatever. ... It's like, 'Oh, what do you mean, a 20 page [...] research project?' 'Oh, you guys are so good, you can totally do it.' And they do. ...That's [in] their third year, and by that time I feel we have that connection made.

And a student said, "we develop a relationship with them, which makes us better as students because they know how we do, how we write … how we can do better."

When teachers do not have to start from scratch each year diagnosing and assessing students' skill levels, time is saved for actual instruction.

Finally, at Linked Learning sites, close relationships exist between students and other adults at the school in addition to teachers. Across sites, we were impressed with the office staff and their familiarity with students and their families. At Sacramento New Technology High School, the principal knows all 346 students by name. During visits at the school, we saw her counsel students one-on-one in her office most of the day. She shared the importance of creating a personalized and supportive school culture:

We work pretty hard on the culture of this school. We try to put some support systems in. Every kid deserves This. … Every kid deserves a place where you don't have to watch your back, every kid deserves a place where you're valued, it doesn't matter if you are gay, plaid, straight, black, whatever.

When individual caring adults and programmatic structures "fill" the culture, students respond with effort and persistence. As one student shared,

I know there is support. I know that the school has a tutoring thing after school and I know that you're always welcome after school if you have any questions. If you're struggling, you're always welcome. …

Flexibility: Responding to Student Needs

If you build an environment where you get to know children well, you better be ready for what you find out.
— **Cheryl Hibbeln, Principal, School of Digital Media and Design**

One of the hallmarks of a caring school culture is that teachers adjust their teaching to students' requirements for learning. The "lesson plan" remains a useful organizational tool, but teachers constantly adapt and adjust to get the best match between teaching and learning.

[My teachers] do the best they can. If it doesn't work the first time they'll change it the second time so we can better understand it. For example, my government teacher, if we don't get it the first time he would just explain it a second time until we get it. He wants us to succeed and [I can see that].

Flexibility of this sort is common in many schools, but too often adaptations or mid-stream changes

are seen as resulting from poor planning, ineffective delivery, or incompetent students. Linked Learning schools encourage flexibility that responds to individual needs. Of course, flexibility implies just the potential for making changes; actually responding and changing direction requires self-reflection, perhaps a sense of risk, and often lots of time. One teacher explained:

I go home every night and I think about how I served some kids and how I didn't serve other kids and what I could do again tomorrow to make sure that those kids that I was unable to serve today, I get them tomorrow.

The previous section shared the various structures that allow adults to get to know students at Linked Learning sites. This section looks at how Linked Learning sites use this information. In particular, we examine how one site, Construction Tech Academy in San Diego, relentlessly seeks (and sometimes rejects) structures and strategies that best address the needs of its student body. CTA is not locked into one best way to meet the needs of its students, but rather keeps trying and exploring various methods with its changing demographics.

Construction Tech Academy: Flexibility in Action

CTA, located on the Kearny High Educational Complex, attracts students from both the neighborhood and neighboring communities (over 40% of CTA's population attend through the district's magnet program). Serving students of diverse academic and social backgrounds, experiences, and interests is challenging.

It's really hard because frankly we have a lot of kids who are really low in terms of skills and sometimes motivation, … motivation in terms of academics. They don't buy into the 'I need to know how to do these advanced things with reading and writing and creating documents' because they see themselves out laying concrete or being a carpenter or doing electrical work. Then we have kids who want to do architecture and go to four-year schools and then go on to graduate schools, so it's a really weird mix.

In addition to the wide range of students attracted to the theme, CTA has experienced recent demographic shifts. The number of English learners more than doubled from 10% to 22% between 2004 and 2008, and entering 9th graders have lower standardized test

scores than those students who entered the school in its first years.[58] [59]

Some, but not all, staff and administrators have grappled with making necessary adjustments to their instructional strategies to meet the needs of the sites changing population.[60] Many staff members feel that because students choose to attend CTA, their level of interest should be enough to foster their success: "They'll do great, they'll be engaged." However, when the school slipped into Program Improvement[61] in 2009, staff felt obliged to evaluate current instructional strategies and implement new ones.

Scheduling to Meet Individual Needs

In 2009, CTA offered "Math Support" and "CAHSEE Math" for 9th and 10th graders who were identified as needing extra assistance. The school also had a course for those needing assistance in English Language Arts. The principal and staff were very deliberate in assigning some of CTA's "best teachers" to teach the school's struggling students. Teachers selected were to have strong content and pedagogical expertise and would teach the same group of students for consecutive years (a form of looping). At CTA, these were often the teachers that had routinely been assigned to teach the more advanced classes such as pre-calculus. The strategy would allow the teacher to form part of the 9th and 10th grade teaching teams, participate in common planning time, and share information with the other grade-level teachers regarding the needs of this group of students as they move on to the next grade level. As a result, 9th grade teachers at CTA have become more aware of the sort of preparation the class needs in order to be ready for the next course or grade level.

Especially challenging to CTA and other small schools is the fulfillment of students' credit requirements, given the limited number of course offerings. A block schedule offers flexibility but some students in need of remediation or credit recovery due to a class they have failed in the past still cannot make up the classes they need during the regular school day (students at CTA who receive a "D" or an "F" in a course need to take the course over) without foregoing another class. Importantly, staff realizes that repeating the course in a small school means taking the course over with the same instructor (using the same style of instruction). Critically, staff at Linked Learning sites look for credit recovery options for students that can meet their specific

learning needs and do not require them to forego enrolling in electives (often theme-based courses). In 2009, for example, CTA utilized an online curriculum, and students were provided this option to make up failed classes. Other options included enrolling at the nearby community college or adult school to make up the course.

CTA experimented with additional strategies required for students' continued academic success in the pathway. In 2008, the school decided to use the advisory course for California High School Exit Exam prep for all 10th graders. Advisory at CTA had been the place where students worked on theme-based group projects, and many students and teachers did not like losing that time to test preparation. One student commented that the project "get[s] people … interested in engineering and things, it seems that the projects sometime bring that out in them and then they get interested in it." This opportunity to spark interest in various theme-based fields was lost. With the conversion of advisory to CAHSEE prep, teachers missed the projects but also missed the time to help struggling students with their other courses. So not all experiments are successful, and one year later CTA scrapped the infringement on advisory time. Other experiments would follow.

Providing Additional Challenges

CTA strives to challenge students who are prepared for higher-level academics, including honors or advanced-level work. It is difficult for teachers to come up with the right level work for students. As an alternative to separate higher-level courses, a number of teachers offer an honors section within their regular courses. Approximately one-quarter of students took advanced-level or honors courses in 2008. Further, students could take college level courses at the nearby community college. Finally, in 2009, CTA began offering Advanced Placement (AP) courses after parents and students insisted. CTA offers AP Art Studio and other schools on the shared Kearny High Educational Complex began to offer one or two AP courses that were open to students of all four schools. Very few students enrolled in complex-wide AP, but the offerings were still new.

Students with Special Needs

For students identified with special needs, CTA provides Specialized Academic Instruction (SAI) for all students with Individualized Education Plans (IEPs).[62] This allows all students to engage with the theme of the school and benefit from theme-related

projects. Based on need, some students who receive special education services may receive all of their instruction in general education courses with support (i.e., they are "mainstreamed"), while other students may receive a combination of general education/ separate classes. Some students may be in separate classes for the majority of their day. This flexibility is evident when examining the on-going adjustments to CTA's special education program.

CTA serves students with a wide range of special needs, including students identified with mild to moderate needs and moderate to severe. In 2008, 15% of CTA's student population was identified with special needs. Students who were formerly labeled as Resource Specialist Program (RSP) students are all "mainstreamed." Each grade level has a resource specialist assigned who co-teaches with core subject teachers. Special education teachers are members of the grade-level teams and help with plans that address special and grade-level lessons and projects. According to the principal, RSP teachers are "teaching the class much more this year … and all the students in the class see them as teachers. … It's phenomenal how they're working together."

Students who had been assigned to Special Day Classes (SDC) are similarly "mainstreamed," and they and their teachers engage in the school theme. According to the principal, "we built in more capacity

with our teachers to actually enroll [SDC students] in some of the electives and even core classes. … We made a commitment that all the kids were going to have an experience in CTA, that it was going to be outside [day] class." On an individual basis, the team determines how many and which mainstream classes each individual student should join.

[Mainstreaming] broadens their horizons and their chances to … spread [their] wings. … When [name of student] first came to me he never had anyone who provided him services. … We didn't know where his levels were and he really didn't have much in terms of IEP services, and he was shut down in class. Now he's up there doing presentations. It's finding what that student likes to do. … Now, because he's interacting with people, he's talking. He's engaging in social skills and it's an amazing thing to watch. We should all have hope as educators.

Students who are identified as non-diploma bound (these special education students are carefully identified after the 10th grade as unable to complete the high school graduation requirements, including passage of the CAHSEE) are also mainstreamed at CTA.[63] Non-diploma bound students share the same classroom space and teacher as those students enrolled in mainstream courses but receive credit for an alternative class. In these cases, the teacher modifies the curriculum and assignments to meet the needs of the small group of students. Each teacher

Advanced Placement, College Courses, and Honors

Most Linked Learning sites offer few or no AP classes, believing that these courses are often tailored to prepare students to pass an end-of-course exam created by the College Board and, unfortunately, do not lend themselves to interdisciplinary and project-based instruction. Rather, sites encourage students who are prepared for college-level work to take actual college courses at local community colleges. Linked Learning sites also offer students a chance to complete "honors" level work. Honors level classes provide students with the additional grade point that is given for AP classes—as such, students graduating from Linked Learning sites are not at a disadvantage for college entry compared to students who graduate from a high school that offers many AP classes. At High Tech Los Angeles, for example, any student may enter into an "honors contract" with their teacher. Fulfillment of the contract (often through additional research, a project or presentation) provides the student with the additional grade point on the transcript.

serving these students has a resource teacher with whom he/she collaborates, and together they work to modify the curriculum.[64]

In 2009, CTA also established a student learning center for students identified as needing additional assistance with English Language Arts and math skills. Students functioning below the 4th/5th grade level and scoring far below basic rotate in to the learning center. The learning center provides two periods of basic ELA and math skills and has a cap on the number of students that can be enrolled in the class.

Although administrators and teachers across the larger Kearny complex indicate that all students are encouraged to choose a school based on theme and interest, including those with special needs, the four schools on the complex work toward creating areas of expertise and minimizing the duplication of resources. For example, one school serves a greater number of English learners (CELDT levels 1-3) than the other schools. Similarly, CTA tends to serve a larger number of special needs students (particularly moderate/severe), while the School of Digital Media and Design tends to serve special needs students formerly identified as emotionally disturbed (ED). The "Cluster Support Teacher"—a district-supported position—assists in coordinating the work across sites and the position serves as the liaison between all the special education teachers across the four schools.

English Learners

To address the needs of CTA students identified as English learners (ELs), CTA, as well as other Linked Learning sites, relies heavily on providing support both within and outside the classroom. Teachers across sites say that EL students benefit from group work, internships, and projects that give lots of opportunities for EL students to engage with English speakers.[65] Further, the schools provide additional classes and tutoring to help students close skill gaps. CTA does not offer structured language support through English Language Development (ELD) classes, but administrators and staff feel that they are able to meet students at their level, and strategic placement of students in courses serves EL students well. Further, Linked Learning's focus on projects and activities that relate to the real world allow students to "hook into the reality of these situations," and see the clear purpose of their learning, including their language development. (See text box on p. 50.)

Modeling Caring Interactions

Recent educational research has highlighted several connections between supportive school environments and student outcomes. Specifically, there is a significant relationship between a sense of "school belonging," teacher support and positive school outcomes, particularly for students of

English Learners at Life Academy

There's no tracking in our school, which is an interesting dilemma for English teachers because of our English language learner population. ...You have to be able to differentiate or you're not serving some of your students. ... How do you do it authentically so that you're actually teaching kids at the levels they need to be taught at, but at the same time serving the whole school and building strong communities? ... I mean, I have a student here that reads at a freshman in college level and I have kids that read at the third grade level, so how do I honor them both, keep them both humble and see the value of being in a classroom with each other? That's what I really work at a lot as a teacher. I think even being cognizant of that is really important.

— Teacher, Life Academy

At Life Academy in Oakland, where 38% of the student population is identified as EL, English learners are mainstreamed into every classroom and have access to specific support in English Language Arts. The school's philosophy is to ensure that EL students participate fully in the projects, and they provide scaffolding and modifications to projects so that students can participate with additional tutoring and support. EL students are expected to participate in and contribute to group projects. Students are assigned to or allowed to select a group based on the topic of the project, and are not grouped based on English language skills.

The Digital Storytelling Project, for example, requires students to write and present a story for a real audience. Each student is required to interview a person in his/her family (interviews can be conducted in the student's primary language), and use the transcript to write a story. Because they are writing for an authentic audience, students are constantly revising to improve their stories. Students use their technology skills to create three-minute presentations to accompany their stories. As one teacher indicated, the project provides an opportunity to showcase their strengths, whether in technology, creating voice-overs, or writing, and all students, including English learners, are able to expand and develop their English skills.

In a state audit of the school's English Language Learner program in November of 2004, it was judged to have the most "rigorous overall curriculum of any high school in Oakland."

color.[66] School belonging significantly predicts school behavioral outcomes, like effort, motivation, and absenteeism. Also, students who perceive their teachers to be supportive are almost twice as likely to stay in school.[67] Linked Learning sites share a commitment to create caring, supportive and personalized learning environments. The environment—apart from academic and technical learning—promotes important life-long lessons about the value of becoming contributing members of their communities. As one student from CPA shared:

CPA is preparing students to change the world ... it is preparing people for a change not just in our nation but [in] our world, class by class.

Nearly a century ago, John Dewey argued that young people learn more though their environments than any direct instruction from teachers and textbooks. He asserted that an environment, like a classroom or school, conveys or teaches certain beliefs through its values and practices. Community members and educators at Linked Learning sites model the values, care, commitments, relationships, and community interests that they hope students will learn and achieve.[68] Importantly, teachers and other adults in the community must also experience the conditions of caring, support, and community engagement in order to model these important behaviors and attributes. Modeling care and support is authentic and universal—it flows from adult to child, from child to adult, from child to child, and from adult to adult.

Across the Linked Learning sites we studied, a great deal of attention was paid to the learning environment. Both within the school walls and in students' real-world work experiences, efforts were made to ensure the environment reflected the overall goals and purpose of the school.

Community-Building Activities

Community-building activities start before the first day of school. "Transitional programs" and orientations help students feel comfortable and inform them about the school's purpose and norms. At Sacramento New Technology High School (New Tech Sac), for example, incoming freshmen have an overnight orientation to their new school. Students get to know each other and staff members, and participate in activities that give them a sense of what is to come—group projects and collaboration. Students shared:

A Community Meeting at MetWest

Two students are leading the weekly community meeting held in the school's common area. All MetWest students and staff participate. The meeting begins on a somber note. The internship coordinator reports on recent thefts at the school. He's upset. He wants a community where "we can all trust and depend on one another." He speaks about how important respect and care are to him and how he wants to preserve them. It is a call to action—in order to safeguard the community, everyone has a responsibility.

After minutes of reflection, the meeting continues. The student leaders comment that the MetWest community has a great deal to be proud of. Indeed, a couple of seniors had applied for a "Youth Grant for Youth Action" to benefit the young people in their community. They share news that they were successful and offer to help others apply. Next, a number of students demonstrate the new dance moves they learned in the salsa class, which fulfills their physical education requirement. After the music and excitement subside, students and staff share announcements—the Oakland College and Career fair is coming up, and the girls' wrestling team has won recent tournaments. The meeting ends with teachers and students sharing their appreciation for the personal achievements or contributions of others in the MetWest community during the previous week: a teacher calls out a few students who made great efforts during the week. A student shares that he appreciates the principal "for pushing me and encouraging me to keep working on my documentary project." This student has been invited to exhibit his documentary at an Oakland museum. Minutes of applause follow.

All school meetings, such as those that happen weekly at MetWest, are constant reminders to students and teachers that they form part of a community, that their actions impact that community (positively and negatively) and function to continuously strengthen the school community.

The 9th grade went on a field trip, because we didn't know each other so they help us to get along, and we had different activities like team work activities, which was a good thing because we built our community better within the school, and now I know all of my fellow classmates really well.

I feel the school bonds, because we go on retreats and stuff that help us bond. Last year we went on a retreat, and people cried. You don't cry with people you don't know. It's really good that we can get this close.

Community-building activities often continue throughout students' years at Linked Learning schools, with upperclassmen organizing and leading many events that introduce younger students to the school culture. Eight of the 10 sites we visited held community meetings on a regular basis. Community meetings, wherein the whole school convenes, serve as a reminder to students and adults that they form part of a community and encourage all members to take an active role.

Developing Community Membership

Formal and informal structures encourage students to support their peers both emotionally and academically. Developing the skills that build community membership and responsibility is an important goal, and teachers across sites were aware that these skills must be taught—group projects provide the perfect canvas for conveying these lessons. Interactions on teams can give students helpful and sometimes subtle feedback they could not get through formal teacher evaluations or even informal comments. A CART student described his team: "Our group came together because we knew what our strengths were. Mine was communication and collaborating, but my weakness was conclusion and relating it to myself. That's where my group members came in." Teachers encourage students to collaborate, share their ideas, direct their own learning, and have fun in their work.

At the traditional high school, the teacher is the one who lectures, does the testing, delivers the curriculum. Here it's a different story because the kids are sometimes teaching, sometimes testing, sometimes presenting. In the traditional system if I were one of those shy kids or a free rider, I could get away with it and fall through the cracks. Here there's no way that you can do that because whether you are the star or an average or shy kid, you know that sooner or later you're going to be up here. ... You work in teams so there's no way that you can hide. Your teams are going to call you out.

New Tech Sac and Global Studies have created structures that address the problem of students who do not contribute to their group. After a student receives repeated warnings from fellow team members that he is not "pulling his weight," the team can elect to "fire" the student. A "fired" student must then complete the project on his/her own, without the benefit of others. This does not happen very often, we were told. Many students indicated that letting down other team members is a more serious consequence than earning a low grade.

Students not only receive the help and support of other students but also identify when other students are in need. A senior described the encouragement she got from her peers when she was struggling: "Students, they talk to each other, 'OK, [student's name], you're failing, so come on, something is wrong, you have to do something about this.'" Another student shared how his friends followed up with him to support his success:

When I didn't come to class they would call me, 'Oh, you missed this assignment,' or, 'Why weren't you at school today? Are you OK?' Because we're more like a family rather than Friends. ... We learn how to grow with each other and build a relationship.

Importantly, students also learn from a community of adults to support each other and value the knowledge, expertise, and talents of others. Teachers and students across sites noted that this is expected of all community members:

You know the culture here with the students, it's similar to the [attitude] of the teachers at times because they band together and they support each other and they're willing to help each other out.

Indeed, students pay a lot of attention to how teachers and staff members work together and support each other. With co-teaching, for example,

students see what it looks like when adults collaborate, share ideas, and have fun with their work. A teacher noted:

We really respect each other ... if she had this idea ... I ran with it, and the same thing happened on the other side. ... Sometimes you have to just sort of trust that they do know what they're doing. ... I think the main thing is sort of thinking not of yourself as a lead person, but just as a team person. It's not your class, it belongs to you and it belongs to these two or three other people equally, and you just kind of have to work through disagreements. ... The goal is to get the students to understand these pieces, whatever they may be.

Teacher collaboration and co-teaching provide critical instructional modeling and learning strategies that help students learn to work together, learn from and assist one another, communicate and collaborate—all critical skills that fulfill the school's purpose of preparing students for life beyond high school.

Connecting to the Larger Community

Emphasizing students' connection to the school community serves as an initial step in preparing them to take part in the community outside of school. Linking students to the world outside the school walls deepens these lessons. Internships and working with real-world clients give students access to caring and mentoring individuals beyond the school environment. Linked Learning helps students realize that there are people in their communities whose work and interests match their own. Further, before their internships and mentorships, many students had not been aware of—or met personally—professionals or job holders with whom they could easily identify: "You see Latino professionals and you think, 'I can do this too.'"

Linked Learning sites gain a great deal through partnerships (e.g., students gain work-based experiences) as do the partnering organizations. (See Condition Four for more information on partnerships.) It serves the schools well to foreground their contributions to their current and future partners. Community organizations, business, and industry often reach out to Linked Learning sites for assistance with projects. At CART, for example, organizations (particularly nonprofits) often request students' help to produce websites or videos. Students at the School of Digital Media and Design in San Diego do useful work with an international nonprofit

Table 2: Civic Orientations of Linked Learning Students and National Sample

	All LL Students*	National Data**
Helping Other People in Your Community		
Not Important	8%	7%
Somewhat Important	43%	56%
Very Important	49%	37%
Working to Correct Social and Economic Inequalities		
Not Important	15%	27%
Somewhat Important	51%	53%
Very Important	34%	19%

* Source: UCLA IDEA Survey, N = 2,752
** Source: Education Longitudinal Study, National Center for Education Statistics, N = 14,668

by providing slogans, art, brochures, and media clips for their annual environmental initiatives. The organization has come to rely on DMD's contributions. As one teacher commented, these experiences can shape students' lives.

Both Harbor Teacher Prep in Los Angeles and Community Partnerships Academy in Berkeley involve high school students in tutoring nearby elementary students.[69] At CPA, students receive training and support to be tutors through their English, social studies, and Community Service Professions (CSP) class. The "buddy reading program" exposes students to the teaching profession and provides an opportunity for them to learn about social issues in education.

They're doing great things with their lives, and they're doing things for the community. ... And there are countless stories. ... They're working as teachers, or they're in the nursing field or the medical field, or they're giving back to their community in some way.

Linked Learning schools overall, when compared to a national sample, seem particularly adept at promoting civic orientations.[70] (See Table 2.) Students attending Linked Learning sites indicated that civic values—"helping other people in your community" and "working to correct social and economic inequalities"—are "very important" to them at much higher rates than the national sample. Indeed, approximately half of Linked Learning students surveyed indicated that helping others in the community is "very important" compared to 37% of a national sample. Similarly, 34% of Linked Learning

students indicated that working to correct social and economic inequalities is "very important" to them compared to 19% of a national sample surveyed.

Conclusion

Students repeatedly shared stories of the caring and trusting relationships they had developed with adults at their sites. Common sentiments include, "I never had a type of relationship like this with my teachers. ... They're just good. They're all counselors." As we discussed above, the structures and strategies that support the development of these relationships are many and varied, and each site employs multiple strategies with the end goal of creating a culture that tends to the individual needs, talents, and interests of students. It is through these relationships, between and among students and adults, that students engage with and benefit from the various components of Linked Learning. ●

KEEP IN MIND

- Build trust. Linked Learning schools are places that value relationship-building as an integral part of their purpose. Adults must experience and model this culture of care and support. Interactions between teachers, administrators, parents, and support staff all communicate to the students that care and support is authentic and universal.

- Create pathway structures that support and sustain a culture of care and personalization.

- Familiarize yourself with the research that makes clear that personalization allows for students to meet high expectations.

- Although many Linked Learning schools tend to be small schools or learning communities, there are many ways to create a personalized and caring environment. Building strong teacher-student relationships and teacher-family relationships must be supported and prioritized by the school leadership.

For more information and resources:

Read

- Burke, D. L. (1997). *Looping: Adding time, strengthening relationships*. Champaign, IL: ERIC Clearinghouse on Elementary and Early Childhood Education.

- Darling-Hammond, L., Alexander, M., & Price, D. (2002). *Redesigning high schools: What matters and what works: 10 features of good small schools*. Stanford, CA: School Redesign Network. Retrieved from: www.srnleads.org/data/pdfs/10_features.pdf

- Goodenow, C., & Grady, K.E. (1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent students. *Journal of Experimental Education, 62*(1), 60-71.

- Poliner, R. A., & Lieber, C. M. (2004). *The advisory guide: Designing and implementing effective advisory programs in secondary schools*. Cambridge, MA: Educators for Social Responsibility.

- Ullman, E. (2005, Oct. 24). Looping leads to long-term connections with students. Retrieved from http://www.edutopia.org/looping-multiage-classroom-grouping-benefits

Visit

- The Coalition of Essential Schools at www.essentialschools.org/resources

- Edutopia at www.edutopia.org

View

- *Linked Learning: A Guide to Making High Schools Work* at www.ucla-idea.org/projects/linked-learning

- *Getting Advisory Right: Tools for Supporting Effective Advisories* at www.esrnational.org/resources/advisory-resources

- *Principal Derek Pierce on Building Relationships between Students and Teachers* at www.edutopia.org/stw-maine-project-based-learning-relationships-video

CONDITION FOUR

GROUNDING IN THE REAL WORLD

GROUNDING IN THE REAL WORLD

These partners need us and we need them.

— *Laura Bellofatto, Principal, Construction Tech Academy*

A fundamental principle of Linked Learning is that education extends beyond the classroom. Key institutions such as colleges and universities, business and industry, community-based organizations, and other service-oriented institutions have a stake in today's pre-adult generation and its continued learning in the workplace and in higher education. This section examines:

1. The diverse range of field-based learning experiences offered by Linked Learning sites and the intrinsic value of these opportunities.

2. How diverse stakeholders are working with the school to expand students' learning opportunities and prepare and educate young people for the real world.

Real-World Experiences: Expanding Students' Learning Beyond School Walls

There are many ways to connect schooling with outside resources, talents, relationships, and dispositions. Some ways are obvious, such as when a student has an internship position in a workplace setting. Sometimes working adults come into the school to help make the school environment resemble, in some important respects, the world outside. Students learn about relationships between their academic learning and the real world, and they experience work and workplaces that would have little meaning if simply described in class.

Below we highlight a few of the expanded learning opportunities offered by Linked Learning sites, examine the intrinsic value of field-based learning opportunities, and discuss the challenges of giving all students access to these opportunities and ensuring these experiences connect to and reinforce school-based learning.

There are members of the community that are just as good as your teachers at teaching you things. You need to go to them and learn from them and show your respect in the same way that you show it to us, or even better, hopefully, and make that connection.

— Teacher, Life Academy

Internships, Mentorships, and "Client-Based" Opportunities

All students at MetWest, located in Oakland, participate in internships. Students report to internship sites on Tuesdays and Thursdays. An internship coordinator and individual advisor help students make initial contact with internship sites throughout the Bay Area. Because the school is near a public transportation hub, students can travel to internships across town. Private fundraising, facilitated by the school, pays for public transportation costs.

To pursue (or discover) a likely internship site, each student develops a search portfolio, investigates at least one area outside his/her current interest, conducts five informational interviews, and does at least one shadow day. Through this process, students gain an overview of contacts in their fields of interest and beyond, and are encouraged to consider trying new things. Finding the right fit can be a challenge, however. Often a student's initial and hopeful impressions do not play out in the actual internship site. Adults (primarily the coordinator and the advisor) reinforce and teach the student how to remain professional even when there are tensions or disappointments at the work site.

Internships at MetWest lead to meaningful projects that have a real impact in the community. For example:

- A professional map of the City of Piedmont that was sold at stores as a fundraiser for the League of Women Voters.

- Organization of a day-long conference on health care and educational access for immigrants.

- A brochure for a local animal shelter based on research on the deadly Parvovirus to help patrons better care for animals and administer medications.

According to teachers and students at MetWest, the most powerful projects are not necessarily those that are high profile, but those that change the way students think about themselves and their ability to have an impact beyond the classroom.

In San Diego, the School of Digital Media and Design provides students with an "internship-like" experience. A "client" (e.g., a nonprofit like the Surfrider Foundation) works with a particular grade level, and students act as service providers to meet the "client's" needs. As seniors, students try to find real-world clients or projects for which to provide services. This may or may not require spending time at off-campus work sites. Students say they experience what it is like to have an employer. One student discussed the wide range of skills she has acquired through client-based projects:

From 10th grade, 11th and 12th grade, we all have client-based [projects] where they gave us a client, and they tell us what they want. ... Last year our client was the City Attorney and we were promoting more awareness about ... global warming. We made different solutions to the global crisis, and we made a poster promoting it, and brochures, and then we had to go in front of the panel and present. That's another thing that is great about our school: we build our communication skills.

DMD teachers meet during the school year and, importantly, during summer months. They plan new client-based projects and modify previous ones. Over time, teachers become familiar with partner organizations' work, which helps them develop a better sense of how to reach out and structure student assignments. For example, one DMD teacher knew of Surfrider Foundation's work and reasoned that students would "connect" with the foundation's environmental mission. As the teachers approached the organization, they also conferred with other teachers on the campus (in particular, DMD's "Dean of Theme") to ensure that the project would meet the school's broad goals.

There are many entry points for partners to expand students' learning. Sometimes local businesses or organizations sponsor clubs or activities, and these are worked into the school day or are offered after school or during the summer. Construction Tech

Academy (CTA) in San Diego has relationships with a wide range of companies and industries that provide resources and mentorships through the Architecture, Construction and Engineering (ACE) Mentor Program. ACE is offered to students weekly after school. ACE students have undertaken a variety of planning and design projects, and they have competed in local and statewide competitions. ACE also provides scholarships to CTA students. Local engineering companies support the after-school Robotics Club (mentors work intensely with the kids during the competition period), and the "Ladies of Construction Tech Academy" are mentored by the National Association of Women in Construction (NAWIC) and by the San Diego State University female construction engineering students. NAWIC hosts the "Mentor A Girl In Construction" camp—or "Magic Camp"—each summer at CTA. The one-week program teaches girls the basic skills of the trades (carpentry, electrical, plumbing, sheet metal, masonry, landscaping, etc.) and increases their comfort with hand and power tools and with operating heavy equipment used on construction job sites. Most importantly, it provides the minority of young women attending CTA with a sense of belonging and membership.

Funding for afterschool mentorship programs such as ACE, NAWIC, Robotics, and Ladies of CTA are provided by a 21st Century Community Learning Center Grant.[71] Other schools, such as the school of Digital Media and Design in San Diego, use 21st Century grant funds and partnerships to expand students' learning opportunities beyond the theme of the school by offering a wide range of after school programs and activities. (See Condition Two for a fuller discussion.)

Linked Learning staff noted that student enthusiasm for deeply engaging learning activities that extend beyond the school day and walls promotes curiosity and support from parents and other community members.

When the kids are working on projects like the ACE project, ... they get involved and they go outside into the community. ... Parents actually get curious. 'Aren't you supposed to be going to school? Why are you staying after school? Why are you going in on a Saturday?... Why are you doing that?' They want to see what this kid is doing. They come here, they see all the stuff that the kids are actually doing, and they try to get involved more. 'How can I help?'

Indeed, we found that student engagement and interest was often the catalyst for increased community involvement.

The Intrinsic Value of Field-Based Learning Experiences

We get an internship in the mayor's office, which is a major coup. Two weeks after the young lady started, she comes to see me, 'Ms. Hanzel, I don't know if I can do this internship, these people are driving me crazy … these people don't know how to collaborate.' … I wanted to laugh, but I kept it serious. … 'Tell me about that.' She said there was this one particular lady who was really directive and people didn't work well because of [it]. We talked about it and what she needed to do. She stuck with it, and they hired our student over the summer. You get stuff like that … 'these people I have to work with, they don't know how to do this, or they don't know that, and I know how to do this.' There's this confidence that comes.

— **Paula Hanzel, Principal, Sacramento New Technology**

Over and over, parents, students and teachers spoke of internships and other field-based experiences as having value that was beyond and perhaps independent of the curriculum or theme. Field-based experiences involve relationships; each experience carries with it a set of learnable skills, but practicing those skills in a timely fashion, with appropriate affect, mixing humility and confidence, addressing conflicts, and more, are all valuable in ways that cannot be written into a formal curriculum or replicated within a classroom.

Although field-based experiences vary greatly in the richness of their activities and impact on students, nearly all offer opportunities for students to get at least a taste of professional standards that distinguish one field from another, learn the terminology of the field, and imagine themselves in a role other than that of student. These experiences also enable students to

determine whether or not a career or field is the right fit for them. For example, a student who was certain she wanted to become a Registered Nurse (RN) reconsidered after her internship:

All four years she was here, 'I'm going to be an RN, I'm going to be an RN', so we get her a placement at the trauma center. … She's there about three hours and comes back and says, 'I can't do that. … I can't be an RN, there's no way.' … She was panicking because she thought she had failed her internship. 'Oh no, honey, you're passing. … What are your next thoughts about what you want to do?'

Indeed, in addition to gaining access to authentic activities in a community of practice where students can draw connections to their classroom learning, access to these real-world activities provides an opportunity for students to identify reasons for continuing their education.[72]

Many students describe the common experience of the internship or mentorship as helping to elevate career and college aspirations. As one student shared, the internship "really helps you see what choices you have in the field … plus they really help you out with college applications." Many students commented that real-world experiences "look really good on college applications." Further, the experience often serves as an eye-opener to the benefits of postsecondary education. The principal at Sacramento New Technology recalled the story of a student who determined after an internship that he would benefit from furthering his education:

John was Mr. D-minus, a bright kid, but Mr. D-minus. That was good enough. 'I'm not going to college. … I just want to be a welder.' His internship was in welding. We got him a paid internship. John didn't have his college credits, so we leveraged the paid internship to get him into the certification program at City College. He graduates. A year later he's probably the highest paid 19-year-old I know because he's good at welding. We see him about six months later at a fundraiser and says, 'I wanted to let you know I've decided to go back to college.' 'What, excuse me? I thought you wanted to weld, you were a welder.' He said, 'I've decided I'd rather be the guy that designs what gets welded than the guy who stands there and welds all day.' So, John's going to college.

Not only do pathways lead students to understand the benefits of furthering their education, they also lead to jobs where Latino, African American, and poor people in general are underrepresented. The range of field-based learning opportunities Linked Learning sites offer is extensive, and few such

California students get that exposure. One teacher explained the significance of expanded learning in a health and bioscience theme:

The struggle for a lot of people working in this field is how to push the students who might naturally, because of society or because of what they have been told, look for a job that doesn't require college.

Another teacher described the importance of challenging the reproduction of inequalities by exposing students to a wide range of options, while respecting students' choices and interests.

If [students] have a limited ability to imagine what's out there, we're just going to be reproducing people's class status because class is such a huge determiner of what people see as options for their lives, particularly in the world of work. So how do we both respect that students should have a voice in what's happening and they need to be in the habit of taking initiative to pursue learning opportunities? There needs to be choice, and at the same time they need to find things that they might not otherwise find, because of school.

Starting Small

In 2008, the Los Angeles School of Global Studies started an internship program for all 11th and 12th graders. By mid-year, the leadership team had suspended the program. A number of issues were behind this decision. First, the curriculum for the internship classes was not fully developed and there was little direction or support for the students regarding how to find a meaningful internship. Second, no staff member had the time or capacity to build relationships with businesses that would be willing to work with interns. Third, students' schedules only allowed for a total of one hour per day for the internship. Given needed travel time to and from the site, student time at the internship site was limited. Fourth, students depended on public transportation. Global Studies is located close to downtown and on a major bus route, but taking the bus would eat up most of the internship time and it was a challenge to find internships that were directly off that bus route. Finally, there were a multitude of district policies and safety considerations for students participating in the internship program in 2008 that the school could not resolve.

Although staff and students were disappointed, they did not give up. The internship program was resurrected the following year. The principal took an active role in organizing and supervising the program and streamlining processes. Aware that the program would not be sustainable without additional support, he recruited the assistance of a community partner with strong connections to the business world. A sign-out process to monitor students' arrival and departure from sites was established, and the district streamlined an internship paperwork process that included insurance, permission, and attendance documentation. Importantly, rather than offer internships to all 11th and 12th graders, participation was limited to a smaller number of students. In 2009, Global Studies provided internships to 14 seniors. By late spring the number of students participating in internships had expanded to 24 and the number of internship sites had also increased considerably.

"I want[ed] to start small, because if I start with 20 kids with one class, ... I'll get the right match ups. I have Microsoft, I have a public defender's office, I have a couple of judges ... and their concern is how do we supervise these students. 'We're responsible for them once they're here with us.' They get nervous about that. One of the ways to address that is to pair students up, so that they're not alone. ... We're going to start with organizations that are very local, and we're going to have one person ... dedicated to making sure we checked in, the person is already in there, and there's a clear criteria [about] what the students are going to do, what they're going to get out of it when they leave."

— Felipe Velez, Principal, Global Studies

Access: Increasing Opportunity and Distribution

Despite the obvious merit of field-based opportunities connected to schools, those opportunities remain limited. In 2008, 44% of seniors attending the Linked Learning sites in our study indicated that they had participated in work-based experiences that were part of a class while attending the pathway. Thirty-seven percent of seniors participated in an internship, 29% participated in job shadowing, and 30% indicated participating in a mentorship program. Forty-three percent did community service (arranged by the school), and 13% had engaged in a school-based enterprise. Fifteen percent of seniors indicated that they had not participated in any of these field-based experiences. Given limited availability, it's important to look at how these field-based work experiences are distributed among students.

A few schools view these experiences as a cornerstone of the school's purpose. At Life Academy, for example, all 11th and 12th graders participate every year (120 students, or more than half of the school's total enrollment). And, as mentioned, every student at MetWest participates in an internship. At other sites, the internship programs are still in development. With a limited number of job shadows and internships available to students, sites struggle to broaden access to these opportunities.

In 2008 and 2009, Linked Learning sites were working to extend these opportunities to a greater number of students—a daunting challenge in light of budget constraints and the economic climate. Despite efforts to maintain relationships with various partners, the number of internships and job shadows available to students was shrinking across sites as many workplaces struggled to keep afloat. As one staff member shared:

Because of the economy, I'm seeing our internship opportunities shrink a little bit and people have to take time out of their schedule to get the intern moving or say this is what your task is for the day. Because they're losing their colleagues, more is being put on their plates, so I've seen a decline this year.

Sites also struggled to distribute existing internships fairly. Not all internships are of equal value or quality. The level of commitment from the employer or mentor can vary widely. According to staff members across sites, the best internships are those in which the employer/mentor "takes a vested interest in that student." Otherwise, "it's just an internship, it's a place where a kid shows up, they check in, they do a job, and they leave." Sites struggled with distributing these qualitatively different opportunities, and there were many obstacles: 1) some internship placements have pre-existing selection criteria; 2) school sites often feel they need to "preserve" school-partnership relationships by selecting only "highly qualified" students to intern; 3) the actual level of dedication of internship "mentors" varies tremendously from site to site and year to year; and 4) not all students are interested in the school's theme where most organized internships are offered.

Given these differences, all sites have had to make difficult decisions regarding distribution. Administrators and staff members of sites are keenly aware that internship selection criteria can be imposed, formally or informally, by the internship personnel who have biases about what students can and cannot do or who are sensitive to the preferences of the school partners. Some sites have a selection process to distribute the insufficient number of internships. Considerations might be based on students' grades, whether or not they can "afford" to be out of class two or three times a week (if that is required), the level of interest they have in the school's theme, and the students' maturity or reliability in representing the school site. Other schools mentioned that relationships with outside organizations, could also influence student selection: a newly formed relationship necessitates selecting a solid student choice (e.g., responsible, good grades, etc.) to ensure the relationship continues to grow and the site continues to offer internships or mentorships in subsequent years. Schools typically try to balance preferences of the internship sites, the needs of individual students, and fairness of opportunity to all students. One administrator remarked that while internships are often reserved for "a certain level of kid," he believed that these opportunities are transformative for all students. He remarked, "showing him heart surgery in the 9th grade could be that thing that's transformative for that kid. That's definitely the lens that we take here, but it is kind of hard to get everybody on board."

Finally, cuts to school budgets were also threatening the coordination of internships and other real-world learning experiences. Most sites had personnel whose job it was to work with outside partners. The "internship coordinator" or "employment outreach specialist" coordinated with partners, teachers, and students to ensure best placements. As a result of budget cuts, sites struggled to preserve these key positions.[73][74]

Connecting Expanded Opportunity to Classroom Learning

Administrators want to be sure that students' out-of-school experiences are connected to a challenging classroom curriculum (and vice versa). Teachers acknowledged that while the school makes sure that students gain work-based experiences, they ask if students are "bringing their learning back to school and implementing it in the classroom across the content areas."

Life Academy tightly links internships and the classroom. A strong relationship makes students' classroom learning more authentic while encouraging transfer of classroom knowledge to the novel situations that arise at a workplace. To ensure the connection, the lead internship teacher and coordinator incorporate Internet blogs where interns send reflections on their work to their supervisors and teachers, who comment in return.

The biggest problem on an internship site is that often the supervisors get so engaged in what they're doing they don't have time to sit and reflect. But if there was an expectation that supervisors were supposed to respond to the student's blog, what does that take, five minutes?

Schools often incorporate internships with school-based research projects, presentations, and other assignments. At MetWest, students are expected to bring the skills and knowledge acquired in the classroom into the work they produce for their internship sites. Similarly, internships provide the context for individualized projects and allow students to integrate experiences and learning from their internships to coursework. For example, one student worked at a nonprofit dedicated to addressing a reduction in drug use through education and information distribution. This student conducted a survey of the program's clients that she later analyzed to assess the long-term and short-term impacts of the program. The student developed conclusions regarding the effectiveness of the program by using the data analysis skills she acquired through courses taken at MetWest (findings were shared with the nonprofit). Her use of scientific methods and her write-up of the project and findings enabled her to meet expected English and science standards. Further, she reported that the lessons learned through this particular project made a "big difference" in her career and college trajectory as she became encouraged and determined to pursue her interest in the health professions.

Student assessments also help connect coursework (or course credit) and outside experiences. Like many Linked Learning schools, Life Academy assigns a "culminating senior project" that is fully integrated with the student's experience at the internship. The internship is the focus of the senior's "abbreviated

dissertation" through which they receive feedback from industry people at a public demonstration.

Some schools have created rubrics to evaluate and monitor students' internships, and to provide feedback to the internship mentors and supervisors. (See Appendix C.) Some internships are part of an organized program and students receive specific guidance, instruction, and assessments from their assigned mentors. The "Faces for the Future" program, located at the Oakland Children's Hospital and serving students from a number of Bay Area schools including MetWest, Life Academy, and Community Partnerships Academy, serves as an example. At MetWest, the student advisor meets on a regular basis with each student and mentor (at the internship site) to monitor student growth, progress, and address any challenges. This level of monitoring ensures that students are engaged in meaningful work that is related to the school's theme or curricular choices.

Importantly, rigorous assessments (especially in a public or demonstration format), combined with internships, extra time for reflection, and partnerships (including with the district), give assurance to the adults and confidence to the students that they are becoming prepared for the world beyond high school. Through assessments, the sites make the "academic value" of internships clear to parents and the district.

Sharing Responsibility Among Partners

Grounding Linked Learning in the real world means sharing the responsibility of meeting students' needs with a host of partners. This happens through:

- Shared decision-making through advisories and/or committees

- Partnerships with institutions of higher education

- Resource support (identifying student needs and working with community-based organizations to provide these needs)

- Community-wide visibility, accountability, and outreach

Shared Decision-Making

Much has been written on the topic of shared decision-making. Through shared decision-making, the principal shifts some of his/her authority to a larger body of individuals. Most of the Linked Learning sites we studied created advisory boards or committees that incorporated the voices of multiple stakeholders, including community, industry, and higher education. In this section, we examine shared decision-making as a strategy for involving partners, creating champions for the school and program, and increasing understanding and ownership. (See Condition Five for a discussion of how a distributed leadership model impacts the teaching environment.)

CTA's wide range of partners have been involved with the school since the design phase. The school wants its partners to have a sense of shared ownership and a high level of engagement. CTA's partnerships have contributed to developing the school's theme, giving students access to a wide range of courses and field-based experiences, and providing incentives for students to continue their study of construction, architecture, or engineering.

CTA relies heavily on its partners for well-informed and trusted decision-making, especially during challenging times. Many of the founding partners now serve on the school's advisory board, and are well positioned to make difficult decisions. For example, in the search to replace CTA's founding principal in 2008, the panel of interviewers included parents, CTA advisory board members, teachers, representatives from supporting foundations, organizations, and the district. Each committee member possessed a solid understanding of CTA's purpose and, as a result, the leadership skills required to take on the position of principal.

Advisory boards can bring together a surprising group of folks that do not usually find themselves in the same room. Again, at CTA, union and non-union organizations have committed to leave their differences at the door to provide opportunity for students. As one administrator shared:

They were always afraid that one would get one penny more than the other or more credit than the other one. Now it's classic. ... I mean they have an executive advisory board and they're union and non-union and they work well together.

Setting differences aside has enabled a wide range of community members to participate. Additionally,

bringing multiple stakeholders together has increased the school's access to a rich set of resources.

As well as providing critical financial support, partners provide field trips to job sites, corporate offices, training centers, and universities; guest speakers and co-teachers; job shadows; internships; mentorships; specialty materials and equipment; special software; technology tools; transportation and more. Each Linked Learning site had an individual who was primarily responsible for overseeing the development and sustenance of partnerships. At CART, for example, the Dean of Curriculum held this responsibility, at MetWest, this was the responsibility of the Internship Coordinator, and at CTA the Employment Outreach Specialist held this responsibility.

Shared decision-making provides partnering organizations with a reminder that they have a stake in the pathway's development and progress. An advisory board member of a pathway shared:

The very first batch [of interns] that we had, there was a kid … he did such an excellent job, … he knew where he wanted to go and we could see him coming back and working for [us]. … That's what we have envisioned as a company, … we're going to establish a pipeline where they get the experience and then they want to come back in the future and work for [us]. I'm hoping he may be one of the ones, in another 10 years or so, that he may come back.

Partnerships with Higher Education Institutions

In addition to partnerships with business and industry, each pathway established partnerships with institutions of higher education. Small Linked Learning pathways are limited in the number of discrete courses they can offer, so they partner with outside institutions to expand their offerings. Sometimes students are expected to enroll in college courses and earn college credit through *dual enrollment* or *concurrent enrollment* programs (Sacramento New Technology, the School of Digital Media and Design, Construction Tech Academy, Los Angeles School of Global Studies, MetWest, and High Tech Los Angeles).[75] Partnerships with local community colleges and universities that allow for dual enrollment can increase students' access to courses, demystify college, give all students a college-going experience, and provide college credit. Local community colleges and universities have a stake in better preparing students to succeed on their campuses.

New Tech Sac requires students to complete 12 college credits in order to graduate and to meet their elective requirements. The master schedule is organized to support students' access to college classes. The basic schedule is a modified-block schedule, and while 9th and 10th graders are scheduled for the full eight blocks, juniors and seniors have flexibility to enroll at the nearby college. New Tech Sac encourages students to enroll in courses that are of interest to them (five electives are required for graduation and most of these classes are taken at the community college). Using their individual learning plans developed in advisories, students identify courses that meet their postsecondary interests, from design to advanced math to welding. Their advisors help them find classes with a high prospect for their success (students pass college-level courses at high rates, as successful completion of these courses is tied to high school graduation requirements). Finally, advisors encourage students to enroll in courses that are approved for transfer to the California State University or University of California systems. A "College Success" course is offered at the local community college and is also highly recommended.

Middle College High Schools offer another option for experiencing higher education while in high school. Harbor Teacher Preparatory Academy (Harbor) in Los Angeles is located on the Harbor Community College campus. That association exerts a powerful influence on the school's and students' identities. All Harbor students enroll in college courses, and approximately 70% graduate from high school with an associate degree.[76] As a Middle College High School, Harbor more easily fosters a strong college-going culture, including students' and staff's expectations for a high standard of maturity and responsibility. Although teaching is the career theme of the school, Harbor focuses more broadly on college preparation. Students are enrolled in college courses beginning in 9th grade, which allows ample time to earn their high school diplomas and associate degrees after just four years of schooling.[77] As a high school requirement, all Harbor students must complete the a-g series of courses. These courses are taken at the high school or through courses "contracted" with the community college. Upperclassmen choose their college courses from pre-approved set.

For contracted courses, the high school arranges with the college for a professor to teach a college-level course exclusively for Harbor students, providing

a transitional experience. A high school teacher often sits in on contracted courses to take roll, support learning, and help with discipline. The partnership takes care in selecting college faculty for this program, as the dean of the community college explained,

We go to lengths to make sure we have the right college teacher, someone who understands the rigor of the discipline, who also has an ability to work with that age group, and that's a hard thing to find.

Sharing the campus eases coordinating and scheduling contracted classes for the high school students. The partnership allows the vertical coordination of curriculum to extend beyond the 12th grade. Harbor students have access to a college counselor and the college's career center. The community college also benefits in increased enrollment.

The college's active participation takes a lot of effort. An advisory committee (formed during the design phase), comprised of college representatives, continues to make decisions for the school, and the relationship pays off when inevitable tensions arise. The principal explained:

You have to make sure you have the buy-in of your community college faculty because, if not, the minute you start having graffiti, discipline problems, fights, or any of those things, they're like, 'Get these kids out of here.' So you have to have the involvement of the community college faculty.

Partnerships can also be with four-year universities. Harbor Teacher Prep, for example, has an agreement with California State University, Dominguez Hills. Through a memorandum of understanding, students who finish at Harbor (ideally with an associate degree) can transfer to CSU Dominguez Hills. Students are guaranteed admission into the liberal studies program and into the teacher pathway program where an additional two years of coursework and student teaching experience will provide them with a degree and credential. Similarly, in San Diego, qualified graduates of CTA can enter the highly competitive engineering program at San Diego State University. CTA is seen (and was created to serve) as a critical, local pipeline to the university program.

Resource Support

Resources provided by partners vary widely. Some partners are very involved and offer direct monetary support, materials, mentors, and/or internships. Others provide an occasional panel member or field-

based work experiences by engaging students in a project or requesting specific work to be done as part of a project.

Partners often have ties to other similar enterprises that they can draw upon as resources for the school. At CTA, for example, the economically hard hit construction, architecture, and engineering partners have nevertheless provided a stream of financial support since the school's inception. As one teacher indicated:

The other advantage this school has is the industries we have identified; construction, architecture, engineering are very lucrative. They're very organized. … There are associations for everything and they are networked and very tight. They are used to working together.

Initial funds were directed toward the school's remodel, the acquisition of furniture, books, software, and other equipment. CTA benefits from donated construction materials, welding supplies, gas, electrical materials, hardware, and fixtures that are donated by local business and industry supporters. In its first six years, CTA coordinated more than $1 million of in-kind labor and materials to develop new engineering and construction labs.[78]

At most sites, teachers and staff members draw on their own connections and social capital to foster new relationships and partnerships. For example, CTA's formal partnership with a large international engineering company based in San Diego began through a teacher's personal connection and an identified need—robotic team support. This particular company continues to provide financial support to the robotics team, offers approximately 10 internships a year, and provides two annual scholarships (through an employee-raised fund). Teachers at MetWest shared a number of similar stories wherein an identified school and/or student need prompted teachers to explore and expand their social networks. For example, when a student at MetWest indicated that he was interested in working with a sculptor, teachers went to work (calling friends who in turn called friends) until an opportunity surfaced. The internship with the artist is now offered on a regular basis and forms part of the internship database.

As the number and reputation of Linked Learning pathways grow, groups and organizations are expressing interest in partnerships. As a result, some administrators spoke of having to exercise care in forming new partnerships or "testing" the

partnerships before moving forward. While some sites indicated that a growing awareness of Linked Learning has led to new partnerships, other sites can foresee eventual competition for partners as the popularity of Linked Learning pathways increases.

Community-Wide Visibility, Accountability, and Outreach

Typically, community members subscribe to a model of schooling that involves students attending class; learning from books, lectures, and assignments; and being assessed with tests and grades. By expanding on those experiences, Linked Learning pathways can challenge public perceptions of what school "ought to be." Every school needs public confidence and appreciation, especially if it asks for greater autonomy to depart from traditional conceptions and boundaries. As such, Linked Learning sites try to be open and transparent.

Public demonstrations of student learning have dual benefits: they allow the community to understand the school's educational program—its success in preparing students for college, career, and community life; and these demonstrations are authentic assessments of instruction as described further in Condition Six.[79] For example, when students at Life Academy in Oakland present their "10th grade defense" to community partners, including parents, members of Oakland's Community Organization, internship sites, and district officials, they must reflect on, summarize, and present in a logical fashion their learning. Students appreciate the high stakes of their presentation for themselves and for their school. As one student put it, "it was interesting to present to older people that were professionals. That's something that made me feel good, that I could actually do something to make them think that I could do a good job."

The public presentations are tangible instantiations of the goals, mission, and benefits the school claims for its alternative pedagogy and assessments. And, of course, there are others. The former principal of Life Academy shared:

The bottom line is you have to prove beyond a shadow of a doubt that what you do works. … We have a responsibility to talk deeply around student results through our own meaningful assessment system. … We're not talking about another set of exams but other things, documenting those things, and looking at student work. … We're talking about going to the chief academic officer of the district and being able to say, 'Look, x percentage of students are able to blank as evidenced by blank.'

At Life Academy, Oakland Unified School District's familiarity with the program provides a constant source of support, even when standardized test scores may slip. And, in San Diego, while other small autonomous schools have recently been reconsolidated as a result of budget cuts, DMD and CTA (and the other two schools on the Kearny Educational Complex) have been spared thus far. When the board convened to make the final decision in 2010 as to whether the small schools at Kearny would be reconsolidated, administrators, teachers, students, parents, community members, and partners were prepared to rally based on a shared understanding of the schools' goals and outcomes.

A number of Linked Learning sites work closely with the neighborhood and neighboring organizations to help provide services and create opportunities for students and their families. The schools refer students to local community centers for medical and mental health attention and homeless shelters—in effect assisting these centers in their outreach efforts. Students themselves combine community service and engagement with their own authentic learning in a multitude of ways: a construction class worked over two months to build a footbridge at the local middle school; students design and present projects to younger students; students considering a career in education assist in elementary school classrooms; and students do volunteer work at community service organizations such as local nursing homes, homeless shelters, and environmental organizations, like the Surfrider Foundation.

Community Partnerships Academy in Berkeley incorporates the theme of "community" in many ways, such as building a strong school community where students feel connected, learning about social issues affecting the larger community, and participating in field-based experiences that prepare students for professions serving the community. The focus on community allows the school to pursue a wide range of partnerships that facilitate the internship program as a whole, and to make the school visible throughout the neighborhood and community. Internships and other experiences that bring together students and community members teach adults about the role of schooling just as schools teach students about life in the community. At MetWest, this engagement (connection) is a routine occurrence and the principal highlights both students' and adults' learning through field-based experiences. As students are about to depart to internship sites, the principal explains how their comportment can educate and shift the cultural beliefs of adults throughout the region. She shared:

It was a beautiful thing this morning to be out in front of the school and watch all of you guys show up with your professional dress. ... Part of why we have you practice doing this is, first of all, so that you impress the folks out in the community who you will be meeting with. Some of them [are not used] to taking teenagers as seriously as you deserve to be taken. And the clothing sends them a message that you are really serious about what you are doing, your purposes, getting a good education, and learning about the world around us. I know you guys are going to impress the heck out of a whole lot of adults all over the Bay Area.

Conclusion

Grounding students' learning in the real-world brings benefits to all the partners. Across sites we found that "students learn a lot and grow and have a more realistic sense of what it means to be a part of the real world and an active and contributing member of society." To contribute to the education of the young people in their communities, partnering organizations must first understand the power of their partnerships and the key role they play. It is a relationship most schools and communities have not explored. In return, extending the classroom beyond the school walls allows students to learn about, contribute to, and engage with the world around them.

KEEP IN MIND

- Creating real-world learning opportunities such as internships or interacting with the community in a systematic way is a critical component of Linked Learning, but it is often the last piece to be implemented by a pathway. Do not be discouraged if your school needs to scaffold or phase-in an internship program. Make sure that in piloting the program you keep in mind equity concerns and allow diverse students to participate.

- Check with district administrators or other schools already engaged in Linked Learning about legal and regulatory challenges to implementing an internship program. Sending young people into the world to apply their learning and to experience the adult world is one of the most exciting parts of Linked Learning. But planning these activities takes time, resources, and attention.

- To create long-lasting relationships, authentic partnerships with stakeholders must take root. Engage business, postsecondary institutions, or community members in decision-making; solicit input and feedback; and create opportunities for partners and teachers to learn from each other. Use professional development to allow teachers to experience the workplace with industry partners or to deepen their knowledge of community needs or of the theme.

- Consider assigning one staff member to develop and maintain relationships with stakeholders and to coordinate your internship program. Successful schools often have a full-time staff member responsible for coordinating these activities, or the school is able to carve out time for a teacher(s) to attend to these duties.

For more information and resources:

Read

- Association for Career and Technical Education. (2009). *The role of career academies in education improvement.* Alexandria, VA: Author.

- Bridgeland, J. M., DiIulio, J. J., & Wulsin, S. C. (2008). *Engaged to success: Service learning as a tool for high school dropout prevention.* Washington, DC: Civic Enterprises.

- Jones, B. L., & Maloy, R. W. (1988). *Partnerships for improving schools.* New York, NY: Greenwood Press.

- Kemple, J. J., & Willner, C. (2008). *Career academies: Long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood.* Oakland, CA: MDRC. Retrieved from www.mdrc.org/career-academies-5

- National Academy Foundation. (2010). *Preparing youth for life: The gold standards for high school internships.* New York, NY: Author. Retrieved from http://naf.org/files/press_release/2010/03/InternshipGoldStandards_final.pdf

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- Orr, M. T., Bailey, T., Hughes, K. L., Mechur Karp, M., & Kienzl, G. S. (2004). *The National Academy Foundation's career academies: Shaping postsecondary transitions.* New York, NY: Institute on Education and the Economy.

- Sanders, M. G. (2005). *Building school-community partnerships: Collaboration for student success.* Thousand Oaks, CA: Corwin Press.

- Symonds, W. C., Schwartz, R. B., & Ferguson, R. (2011). *Pathways to prosperity: Meeting the challenge of preparing young Americans for the 21st century.* Cambridge, MA: Pathways to Prosperity Project, Harvard Graduate School of Education.

Visit

- Jobs for the Future at www.jff.org

- Navigating the Real World at www.ntrw.org

- New Ways to Work at www.newwaystowork.org

- The Big Picture Schools at www.bigpicture.org

- The National Academy Foundation at www.naf.org

View

- *Adult-World Connections: An Internship with Real Impact for Rescuers* at www.edutopia.org/high-tech-high-internship-video

- *Linked Learning: A Guide to Making High School Work* at www.ucla-idea.org/projects/linked-learning

CONDITION FIVE

AN ENVIRONMENT THAT WORKS FOR ADULTS

AN ENVIRONMENT THAT WORKS FOR ADULTS

I love working with other teachers. I like to collaborate and I feed off their ideas and I think it makes me a better teacher. I feel that I'm held to a higher standard because my lesson plan isn't just a lesson plan for my students, but it impacts the other teachers as well.

— Teacher, School of Digital Media and Design

It's lunchtime at the Center for Advanced Research and Technology (CART). Three teachers sit around a table with their lunches in front of them and papers strewn. They each teach a component of the Finance Lab at CART: English, government/economics, and finance. Today, they are reflecting on a project in the morning session and debating the best way to frame a discussion about ethics in business. There is a lot of discussion, many disagreements, much joking around, and, by the end of the lunch period, they have a plan.

Each teacher has at least 20 years of teaching experience, two of them have been working as a teaching team since the school opened 10 years ago, and the third joined them two years later. They came to CART because they believed that integrating academics and career-based curricula would make the school a good place for students to learn—more interesting, fun, and relevant. They stayed at CART because the school was a good place to teach—more collegial and supportive. Indeed, across Linked Learning sites, we found learning environments must work well for adults as well as for students. Although a supportive, professional, and creative environment looks different across sites, Linked Learning shares three common strategies to create this environment:

1. ***Distributed Leadership:*** Teachers and administrators come together to support a shared purpose for the school. Teachers are provided the space to shape, teach, and assess the curriculum.

2. ***Collaboration:*** Teachers engage in a collaborative process of planning, implementation, and reflection.

3. ***Support:*** Teachers require support of material resources, time, and training.

Key shifts in the way schools operate require schools to rethink traditional adult relationships—between administration and teachers, between school personnel and external partners, and among teachers.

Creating an Environment of Distributed Leadership

Traditional high schools typically have hierarchical leadership. Principals are responsible for operational decisions such as hiring/staffing, budgeting, and scheduling (which includes the calendar, the daily bell schedule, and the programming of students and teachers). They are also responsible for instructional decisions, such as determining the courses offered, directing curricula, supervising instruction, and providing professional development for teachers.[80] Teachers are responsible for following the prescribed curricula, developing lessons, and providing instruction to students within their individual content areas. Students are often divided into separate tracks depending on their perceived abilities and teachers are grouped based on their content areas and the tracks they are assigned to teach.[81] (See Figure 1.)

Linked Learning sites create designs for distributed leadership. In this model (Figure 2), the principal (frequently in collaboration with a teacher leadership team) directs the operational decisions to support a shared and defined purpose or vision for the school. Such decisions include budget, schedule, staff, and professional development. The school's defined purpose guides the instructional leadership, which is largely within the purview of the teachers, and takes place within a continuous cycle of planning, implementation and reflection among grade-level teacher teams who share the same students.

Leadership Model for Linked Learning

The Linked Learning model (Figure 2) appears as if the traditional model has been turned upside down. The principal, leadership team, and the operationally focused leadership practices at the bottom provide support (e.g., staffing, budget, schedule, and

Figure 1: Leadership Model for Traditional Schools
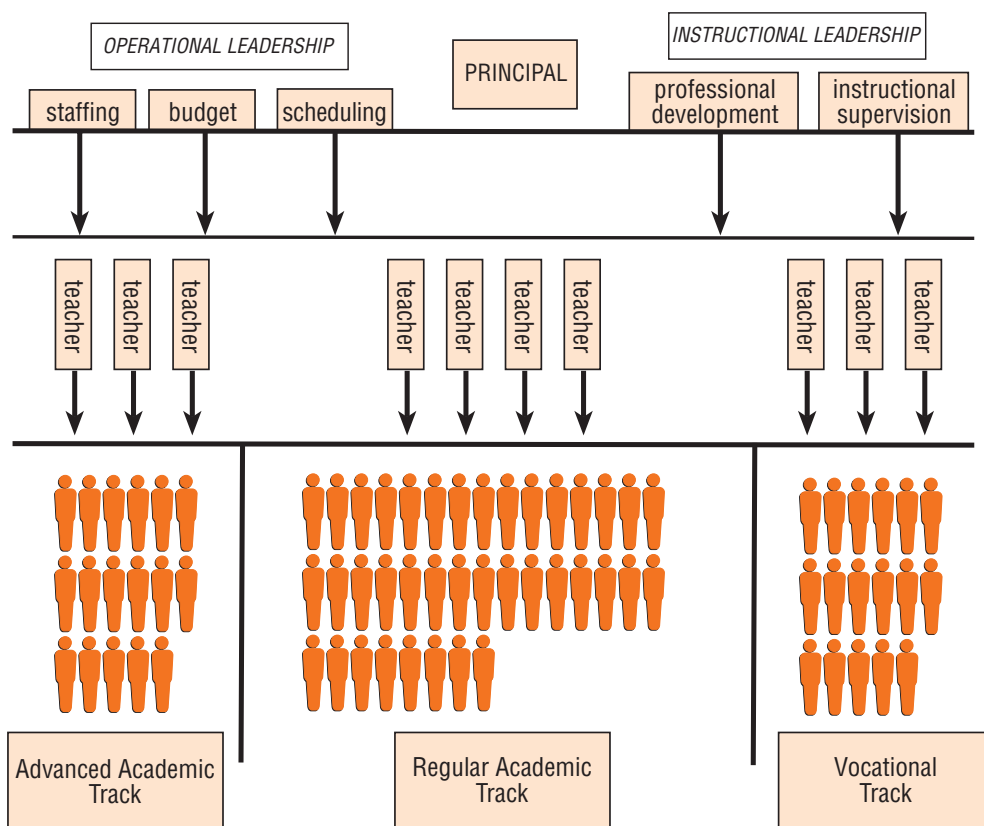
professional development) for the collaborative work of the grade-level teacher teams that, in turn, support the learning of the students they share.

The following touches on three key components of distributed leadership: shared and defined purpose, teacher autonomy, and teacher accountability.

Purpose

As discussed in Condition One, the purpose for each site in our study was developed in the early stages and based on the goal of preparing *all* students for college, career, and life beyond high school. The purpose also establishes the broad strategies for achieving these outcomes by integrating content through a specific theme, facilitating field-based learning opportunities for students, and providing individualized supports so all students can be successful.

We wanted to create a school that connected classes together so that students didn't feel like what they were doing in their English, history, and media classes were all in separate little universes. We wanted to show them that there are connections between the curricula.

Operational decisions (typically made by the principal and leadership team) are guided by the purpose. For example, curricular integration requires scheduling teachers and students in cohorts so that a teacher team shares the same students. Similarly, a theme sets the limits and guides teachers' collaborative decisions, determining broadly whether the curriculum focus is on, for example, digital media, construction, technology, or forensics. Because the school purpose includes equity, the curricular and operational decisions set expectations for all students to be prepared for college, career, and life beyond high school.

The collaborative development and explicit statement of the school's purpose—its ubiquitous appearance in documents, in hallways, and in conversations—permeates the culture. Though a purpose-driven culture is not a grand unifier that banishes disagreement, it sets the parameters within which different perspectives are argued, explained, and negotiated. For example, if one teacher on a team believes that all students can succeed given the appropriate supports, while another teacher believes

Figure 2: Leadership Model for Linked Learning
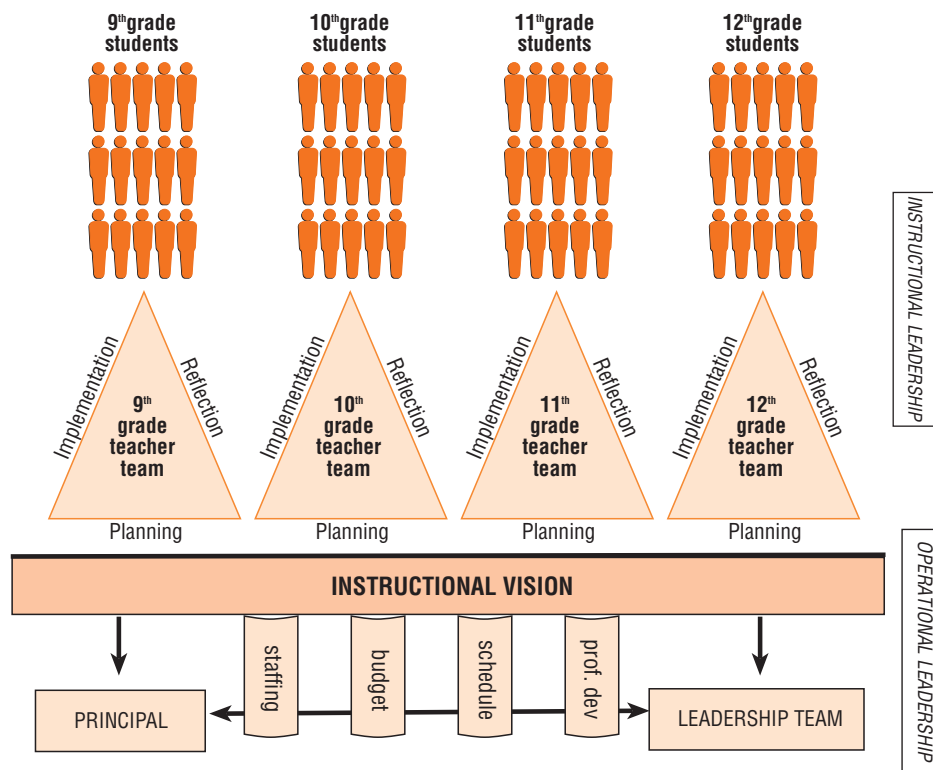
that some students do not have the capacity to access a rigorous curriculum regardless of available support, these two teachers will make different decisions regarding their instruction, which will come into conflict in a collaborative environment. While some level of conflict is inevitable (and welcome), Linked Learning provides within the "regularities" of the school structure (time, scheduling, etc.) a safe space for teachers to challenge each other, express their doubts, and find a way forward toward collaborative and coherent actions in support of the purpose.

Many schools regularly revisit and reexamine their purpose during school-wide meetings. At CART, these conversations take place during beginning- and end-of-the-year meetings.

We talk about what a CART student should look like, we have set goals, no matter which lab they're in. They should be able to speak, they should be able to have skills that get them to college and/or a career, they should be able to put together some kind of a technology presentation ... things that we want them to do across the board, and everybody works toward that.

Autonomy

Within the school's purpose, Linked Learning teachers have substantial autonomy to develop curricula. Teachers are presumed to be experts in pedagogy, knowledgeable about subject and theme content, and well informed about their students. Teachers say that autonomy gives them respect and a greater stake in the outcomes of the school, and also keeps them returning year after year. Experienced teachers find that autonomy allows them to be creative and make use of their knowledge and skills.[82] As one teacher with over 20 years of teaching experience and a master's degree in her content area said:

The administration allows us to create our own curriculum. We are not tied down by pacing guides. We are able to pull together what we believe is necessary for the students to understand the concepts, and what they need to understand by the time they leave our classroom. ... We pretty much have license to create the projects, with the understanding that we are professionals. We understand the standards, and we make sure that the students are learning what they need to know. Whether they are going to college or into the work world right away or starting a family, whatever it is—we have prepared them for that next step.

Administrators across sites reiterated the importance of teacher autonomy in making the best decisions for their students, tweaking projects, adjusting the pacing of the curriculum, etc.

Accountability

At the Linked Learning sites we studied, autonomy—especially that expressed in teacher teams—and accountability seemed to go hand in hand. Much of the effective accountability is a consequence of the transparency of teacher teams. Sharing responsibility for lesson design and for students means steady self-imposed pressure to employ the best instruction possible. It also requires receptivity to feedback and suggestions from other teachers regarding instructional strategies that would meet the needs of shared students. Of course, ultimate accountability to one's boss—the principal—remains, but teachers' accountability to each other is characteristic of, and likely more unique to, Linked Learning sites. A teacher at the School of Digital Media and Design in San Diego explained:

We are all focused on a goal. ... We understand the purpose of the small school. You really take ownership of it. In the big school setting there's less accountability, you can almost hide out. You're in your own little box for most of the day.

Creating an Environment of Collaboration

Collaboration permeates every aspect of the Linked Learning pathways' structure and culture—from the students working in groups, to teachers working across content areas, and administrators spanning multiple leadership roles and engaging with teachers in school leadership. This collaborative culture takes time to build. Below we describe collaborative processes we observed within Linked Learning sites. In particular, we describe the process of collaboration that includes planning, implementation, and reflection. We also discuss the process of staffing for collaboration.

The Collaborative Process

Collaboration looks different across the schools in our study. What is similar, however, is that teachers at every pathway engage in a collaborative process of planning, implementation, and reflection.

Collaborative Planning

Every summer, for two weeks, teachers at DMD work in grade-level teams to plan two or three integrated projects for the next year. The team starts with a general project idea and each teacher identifies what content standards from his or her subject will best support the project. Then, starting with the final product in mind (e.g., website, public service announcement, print campaign) the team members *backward plan* all of the supporting lessons they each need to teach so that students can complete the project and learn the skills and knowledge objectives for each course.

Great efforts are made to ensure that all teachers participate and represent their own content areas while understanding the needs of the other content areas. The career-technical teacher or partner often has the surest sense of the final product (e.g., website, building model, mock trial) and helps find opportunities to make academics relevant. A Career and Technical Education teacher at DMD shared:

Everybody gets a say in how the project is going to be run. It's not the academics saying, 'OK, this is what we want to do, you're the media teacher, you need to make them do this video.' The video production teacher is there in the process. So if there's a tension or there's an issue, it gets settled.

Although all teachers are valued, some subject teachers have more constraints than others. For example, the linear nature of math instruction or the vast amount of specific standards that must be covered in the social sciences can pose restrictions. At Global Studies, the teachers on the 9th grade math/science team described their negotiations of the school district's required pacing plan and assessment schedule. They determined, for example, that the pacing plan for Algebra I needed to play a central role in planning and scheduling. As such, the teachers planned "really cool algebra projects" that followed the standards and tied those standards to students' science courses to "make those projects more interesting for the algebra component." Similarly, at Sacramento New Technology High School, where social science and English are often paired, the English teacher allows the social science standards to influence the focus of joint projects. The English teacher commented that it is much easier for her to identify a great piece of literature or text that can complement and reinforce a social science topic.

These negotiations require a deep knowledge of one's own content area, a willingness to learn about other content areas, flexibility, an open mind, and the patience to coach colleagues and navigate the restrictions of pacing plans and testing schedules. (View Chapter 7 of the ancillary DVD for more information on teacher collaboration.)

Collaborative Implementation

After the planning is complete, teachers describe the next phase—implementation—as both challenging and exciting work. In some pathways where *co-teaching* takes place, teachers take turns

providing direct instruction and individual help to students as they work on projects. For instance, at CART, within the finance lab, the economics teacher will lead a discussion of the current economic crisis from a government perspective (as planned), the finance teacher shares the implications for business, and the English teacher frames the discussion in terms of a short story they have read. Students are assigned to read J. David Kuo's book, *Dot.Bomb: My Days and Nights at an Internet Goliath*. The book details the demise of an early Internet retailer and explores how rational people can make bad decisions. For students, the opportunity to hear multiple perspectives enriches the learning experience. A student shared, for example, that "it's better because you see different point of views."

At Global Studies, pairs of teachers co-teach math/science and English/social studies. The science and algebra teachers decide where to focus and how to present instruction.

Sometimes we'll decide, 'Okay, right now we need to worry about math because we're really falling behind.' So we are both algebra teachers. Maybe she'll be doing a workshop on one skill and I'll be doing a workshop on another. And then I might say, 'Okay, right now, we need to work on the science stuff.' Then we are both science teachers. Or one-half of the classroom is doing math, and one-half is doing science.

Co-teaching has challenges, particularly when teachers disagree or have to adjust a lesson in the middle of a class. Teachers, however, are also quick to point out that the difficulties do not outweigh the benefits for themselves and the students. In particular, collaboration makes teaching more "creative" and more rewarding. A teacher at Global Studies shared:

Having a second adult in the room not only improves life for students, but it makes the teaching process more creative for the adults. I think it's powerful for the students to see the two teachers talking through a problem, adjusting how the lesson's going based on what's going on, or getting to where they explore a difference of opinion or difference of emphasis, interpreting a text or something like that, I think that's great modeling, and it makes the teachers' lives more interesting.

Collaborative implementation is determined by a host of factors that include scheduling, common planning time, the physical proximity of classroom spaces, the size of classroom spaces, etc. At some

Linked Learning sites, such as DMD in San Diego, teachers contribute their part of the project within their own classrooms and the final product itself is typically created within an elective class or an advisory class. Compared to co-teaching, this type of collaboration requires fewer day-to-day negotiations within the classroom, but requires more meeting time out of class to align the process and timing of the elements that each class is contributing.

Collaborative Reflection

At Linked Learning sites, teachers and students reflect on their learning, and that reflection is both individual and collaborative. Students often complete surveys and write journals about what they learned and how they learned it. (See Condition Six for a full discussion.) The teacher teams, using different venues, compare these student reflections with their own experiences and observations. Reflections can take place informally, but structured settings are very valuable. Care is taken to be sure that teachers can be open with their doubts or errors in a safe environment. The principal at New Tech Sac shared how the pathway is a "reflective house" where teachers are encouraged to reflect on their practice, write down what worked and did not work and share it with the principal and colleagues who are referred to as "critical friends."[83]

At Global Studies, teachers set aside some of their meeting time each week for reflection. They check in on the daily events and the progress of students, as well as the larger project. They talk about instructional concerns and adjustments and about the distribution of their responsibilities. For example, a teacher described his initial concern that his colleague did not have the background to teach a particular subject, and how his initial response weakened the team:

My team teaching partner was able to tell me that I wouldn't let him teach the math. He felt whenever there was a math concept that I needed to teach it. ... He wanted me to have more faith in him and talk it out with him first. That was true, I was guarding math. I didn't want to risk him messing it up, even though he's a great teacher. We were able to work on that.

Across sites, we heard that collaboration without the time, resources, commitment, and trusting relationships that lead to reflection replicates past practices and does not go beyond assigning roles, tasks, or responsibilities to different parties.

Planning, implementation, and reflection are unique to each team and look different between teams within sites, and between sites. The process changes over the years as team members and administrators learn and relationships develop.

Staffing for Collaboration

When teachers and administrators talked about collaboration, they spoke of staff who were "flexible," "creative," and "reflective." However, few teachers have had much opportunity to work in collaborative settings, and they often lack such training or encouragement. Thus, collaboration skills typically need to be developed through training and on-the-job opportunities. Staff members consistently wanted to hire new staff who "fit" with Linked Learning principles and with their school's particular purpose. Although the hiring processes varied across sites, they always made sure to include teachers on hiring teams, explore the prospective hire's "fit" with the school and teacher teams, and educate the prospective employee about the school. Interviews made clear: collaborative teachers (and administrators and support staff) are made, not born.

Hiring for Collaboration

At all of the schools in our study, hiring teams included teachers. The process usually involved multiple interviews as well as model lessons conducted by the potential hire and the teacher

team. A new teacher at Global Studies shared his experience:

I was really impressed with the fact that my interview had multiple stages to it. First, I was interviewed with the teachers, and then with the students. ... Then, they wanted me to come do a tour of the school, and observe my partner teacher teach. After that I met with her for a little bit and brainstormed potential projects before they actually offered me the job. It was a very lengthy process, but you got the feeling that they were really trying to find the right match as opposed to kind of just plugging in a hole.

The teachers who were part of the hiring process explained that being involved in hiring enabled them to find a partner or team member with whom they could work on a daily basis, and in some cases within the same classroom. Teachers explained that finding this right "fit" involved extensive discussions of philosophies, teaching styles, and beliefs about students during the hiring process. According to a teacher at CART:

We try to gather the evidence that we have some of the same philosophies. We talk about grading even. 'How do you grade? Do you allow late work? How do you get students to be responsible without putting them down?' Just different philosophy questions. We spend a lot of time on that beforehand. That's really key in making sure you have the right team.

Beyond teaching philosophies, it is also important to determine how willing the applicant is to engage in a highly collaborative environment. A teacher at CTA explained:

We were looking for that teacher who didn't want to go in and close the door and just teach their classes and go home at the end of the day. We wanted someone who wanted more of a family atmosphere where the doors are wide open and you see everyone's faults and everything. Because when you work so closely with a team that's what happens.

The hiring process also involves educating the applicants about the school purpose and expectations for collaboration so that they can make the decision as to whether or not the school is a right "fit" for them. Over the years, some schools have developed a very intentional discussion of the school purpose as part of the interview process.

We talk about our design principles and this is what we're all about, so if you don't feel that this is the right place for you then you need to let us know. CART has to want them and they have to want CART.

Creating an Environment of Support

Classes at Linked Learning pathways are very different than those of many traditional schools that rely on textbooks to focus learning and use machine-scored tests for assessment. Teachers at the sites we studied use a much wider range of creative, interesting, and relevant resources, and used their time differently than teachers at traditional schools.

Material Resources

The New Tech schools (Global Studies and New Tech Sac) have a one-to-one student to computer ratio, and students use computers for most of their project work. This online capacity transforms the classroom experience for both teacher and student. A Global Studies teacher believed, "The technology gives students greater independence and control over their work, and I think that improves their learning." Indeed, some themes require greater material resources. At San Diego's DMD, students require access to advanced software and the hardware that will support it. And, at CTA, the school is required to maintain equipment and tools, as well as provide a supply of materials, including lumber, welding supplies, gas, electrical materials, hardware, fixtures, etc.

At CART, the principal made clear that "if you're going to ask teachers to be creative, to come up with ways to get kids excited about school and motivated, then you've got to give them what they need to do it." At CART, this means that the principal spends a good amount of her time procuring outside resources for the labs in her school. For the forensics project, this meant obtaining a wrecked car, animal bones, and lab materials.

In spite of some excellent and varied resources, Linked Learning pathways also have the usual needs and frustrations. For example, paper is a very valuable resource (even for those schools with access to technology). It is necessary to print out teacher-created project assignments, up-to-date readings, and student research, as well as group

contracts and work logs that guide the project work of students. As sites struggled with shrinking budgets, access to paper (or lack of access to paper) and other basic resources came up in multiple interviews across the sites in our study.

All pathways we studied go through similar lengths to obtain the resources needed, and teachers and administrators shared the importance of having basic supplies and those needed to engage their students in hands-on and project-based learning. For the adults engaged in this work, the availability and procurement of necessary resources demonstrates a level of commitment to the school's purpose. Further, the expectation and permission to be entrepreneurial about gathering resources is seen as a positive about the environment for many teachers. While traditional schools "allow" this to happen, it is not often made part of the collaborative culture. (See Condition Four for more information about partnerships and resources.)

Time

At Linked Learning sites, collaboration took place during the summer months and during the school year on a daily or weekly basis. At DMD, for example, teachers had approximately 120 hours of paid collaboration time during the summer to meet

and plan their projects for the upcoming year.[84] This commitment of resources has influenced teachers' dedication to the work.

[Our principal] has always made sure that the summer planning time is the most crucial thing. The school year doesn't end in June. You take some time off and rest, but you're also planning the next school year.

At other sites, teachers have full day "retreats" throughout the school year; however, they may or may not be compensated for that time. All of the teachers at Life Academy, for example, participate in three retreats throughout the school year. The retreats, organized by the principal and facilitated by the teacher leaders, are not paid, but the principal tries to create a comfortable, casual atmosphere, including finding a meeting space outside of the school and providing food. Teachers have mixed views of participating without pay. They see how the time they "volunteer" benefits students, but they are discouraged that budgets continue to shrink. They report more frustration and burn-out due to meeting year after year, with increased workload and without compensation.

Along with summer planning time and full- or half-day retreats, teachers value time for collaboration during the school day or week—for example, the

common conference periods for grade-level teams at DMD. Teachers at CART have two hours between the morning and the afternoon sessions when they combine lunch and planning for their "labs" with their colleagues every day.

Some schools, such as Global Studies, release students early one day each week so teachers can meet in grade-level or content-alike cohorts. Importantly, this time is used for collaboration and not taken up with operational issues or externally mandated professional development. One principal shared:

Our main thing is on that Wednesday block we have our professional development that is designed by our staff —it's not anything scripted from outside, and any time we've done anything from the outside, there's been a lot of tension.

Meeting during the summer months and/or during the school year on a daily or weekly basis necessitates a shift in thinking about the work of teachers. Linked Learning follows a professional model in which planning and collaborating are core activities rather than "add-ons" to supplement the "real" work in the classroom. A teacher explained:

The traditional model really pays teachers for face time in the classroom and so during the workday, there isn't enough time for planning or reflection. You end up, as all teachers do, carrying home lots of work, and when you have to coordinate that work with a partner, it's pretty demanding. If this model is going to be developed, the school day has to be restructured and the expectations revised. … You're supposed to be a professional, engaged in this intellectual process, reflecting on your teaching practice, analyzing your students. You're supposed to be fine-tuning things constantly. [This is] complex work, but the [traditional] school day doesn't support that at all.

At a number of Linked Learning sites, teachers expressed a need for additional time during the summer or within their daily schedules for grade-level teams to meet. Many teachers also struggled with the competing demands for limited collaboration time; for example, teachers wanted to meet with grade-level teams to collaborate across the curriculum *and* to meet within their content areas (for horizontal and vertical integration). As one administrator shared, teachers' willingness and desire to create teams and a strong sense of community

demonstrates that teachers are "not just there because it's a job, they're there because they like the people that they're on the team with. … They believe in the work." Administrators across Linked Learning sites expressed similar sentiments.

Training

Increasingly, teacher and administrator training curricula are including attention to project-based learning and teacher collaboration. Some California programs specifically address Linked Learning.[85] But for the most part, teachers who are new to Linked Learning sites—both novices and those with experience in traditional schools—are unfamiliar with (or have not even imagined) either the technical details (weaving together complex content standards, assessments, master schedules, off-campus experiences, etc.) or the new concepts of teachers' work lives (collegiality, flexibility, views of their distinct subject areas, relationships with students, etc.). The Linked Learning sites we studied try to help new teachers reflect on their teaching practices in the context of Linked Learning. A number of sites, like New Tech Sac, encourage teachers to participate in (paid) externships during the summer months.

Broadly speaking, professional training at the Linked Learning sites evolved from relying heavily on external experts and coaches who could bring generic skills and perspectives to the schools. Gradually, schools have taken on more responsibility for designing their own learning opportunities—relying on retreats and trainings specifically targeted to their particular curriculum planning, assessments, collaboration, and so forth. Much new training is provided by experienced people at the school, and outsiders may contribute their expertise to challenges defined by the school personnel.

New teachers at CART are assigned a mentor teacher who introduces them to the school. Teacher teams are responsible for orienting their new members. As one teacher explained:

I remember the first day [at my previous school]. The door shut behind me, 39 students. I was supposed to feed them all this information. I felt completely alone. On this campus, I work with two other teachers on a daily basis, and we meet for lunch three or four times a week. It just seems so much more tight-knit.

The majority of the teams at CART, DMD, CPA and other sites have been working together for many years, and they understand how the new teachers'

subjects fit into the projects. The challenge for these teams is to balance new teachers' fit with the established course content and relationships while leaving space for the new teachers to make their own contributions.

Conclusion

Linked Learning is designed to improve learning opportunities for students, but it must also work for adults at the school. Across sites, teachers expressed positive feelings about collaboration with colleagues, and a deep affection for their schools.

The only teachers that I really interacted with [before] were the teacher to the right and left of my classroom. … There wasn't that connection as a staff. [Now] we are all focused on a goal, because we all understand the theme, [and] we understand the purpose of the small school. The fact that we have professional development as an entire teaching team—25, 30 teachers working together in the summer, working together in early starts or late starts, coming in on weekends for workshops. … You really take ownership of it.

Teachers use words like "family," "not alone," and "supported" when contrasting their experiences with those at traditional schools. And they speak about how their experiences affect their personal growth. One teacher explained, "When you have intelligent people you're working with, it makes you a better teacher yourself." Another teacher shared:

I had no concept about just how personalized the learning would become here, for my own sense of development and fulfillment as an educator, to be working alongside colleagues who share the common philosophy, where we share the same prep throughout the year so that on any given day, I'm in a classroom with my colleagues and we're thinking about what's next, and thinking about how things are threading together.

Full participation in Linked Learning, or more accurately in a Linked Learning pathways culture, places high demands on teachers' time and commitment. Particularly in the initial years (when, perhaps, the "demands" outstrip the "culture"), some discouraged teachers return to more traditional schools. But administrators report that their staffs stabilize after the schools are established and have built a compelling reputation for collaborative project-based work. Indeed, across all of the Linked

Learning sites we studied, 63% of the teachers had been at the school for three or more years, with an increase to 72% for schools that have been open longer.[86]

The teachers who have stayed with the schools expressed strong feelings that they could not imagine teaching in any other environment.

Not everybody can do the hours that it takes to put the hands-on stuff together, the hours that it takes to see what the kids need and to individualize it. It's much easier to say, 'This is what I want you to read and know, and here's how I'm going to test you to see that you got it.' So, it's that much different. I think this is the only way to do it. I'm a firm believer in it. ◆

KEEP IN MIND

- Schools do not survive if they are dependent upon one person or a very small group of individuals to fulfill their purpose. Shifting to a distributed leadership model means that teachers take on more responsibilities and more autonomy. Yet, school principals are held responsible for the success or failure of the school by district administrators. Navigating this tension is possible when a culture of trust is established early on and reinforced on an ongoing basis.

- Provide teachers with greater autonomy to develop curricula, and support teacher collaboration and peer accountability and support. Linked Learning pathways thrive when experienced teachers work closely with newer teachers and where they support each others' professional growth.

- Be mindful that collaborative planning across subjects and grades takes time. Provide for some compensated time in the summer months, plan a retreat, or budget for meaningful time for teachers to collaborate.

- Some subjects (such as Algebra I) are sometimes harder than others to integrate into projects, and teachers might be required to meet specific standards and follow pacing plans. Negotiating these sometimes contradictory priorities takes patience.

- Teacher retention is critical to a successful Linked Learning pathway. Recruit teachers who understand the needs of a collaborative environment; support new teachers by pairing them with more experienced colleagues; and structure time for reflection and meaningful professional development.

For more information and resources:

Read

- Annenberg Institute for School Reform at Brown University. (2011). *Straight talk on teaching quality: Six game-changing ideas and what to do about them*. Providence, RI: Author. Retrieved from http://annenberginstitute.org/VUE/wp-content/pdf/StraightTalk.pdf

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- Spillane, J. P. (2006). *Distributed leadership*. San Francisco, CA: Jossey-Bass.

- Wagner, T., Kegan, R., Lahey, L., Lemons, R. W., Garnier, J., Helsing, D., … Rasmussen, H. T. (2006). *Change leadership: A practical guide to transforming our schools*. San Francisco, CA: Jossey-Bass.

Visit

- The Coalition of Essential Schools at www.essentialschools.org/benchmarks/13

- The School Redesign Network at www.srnleads.org

View

- *Linda Darling-Hammond on Facing Challenges* at www.youtube.com/watch?v=AnV5J6_KXqw&feature=share&list=PL61DEB97B8B750A94

- *Team Teaching: Two Teachers, Three Subject, One Project* at www.edutopia.org/high-tech-high-team-teaching-video

- *Linked Learning: A Guide to Making High School Work* at www.ucla-idea.org/projects/linked-learning

REDEFINING SUCCESS

Max stands in the front of the classroom.[87] He waits for a cue from his teacher that the audience—composed of teachers, family members, community members, some upperclassmen, and a few freshmen—is ready. Dressed professionally, Max looks great. Before he begins, he introduces himself and shakes the hands of the community members in the room. He then proceeds to discuss his analysis of Kurt Vonnegut's high school literature staple, *Slaughterhouse Five*—although from a unique perspective. Does the protagonist suffer from post-traumatic stress disorder, bipolar disorder, schizophrenia, or depression? Max has learned all about these disorders in his health and bioscience class—causes, symptoms, and treatment options. Using PowerPoint to help the audience follow his argument, Max arrives at his "diagnosis." After his presentation, his teachers ask him some challenging questions including a few regarding discrepancies in his argument. Max explains. The upperclassmen in the room have been in Max's shoes, and comment—"you were poised and confident in defending your diagnosis." Freshmen observe and take notes in preparation for their own "10th grade defenses" the following year. Max is excused from the room as the teachers discuss his defense and readiness for more advanced and independent learning. When he returns, the teachers congratulate him—he has passed.

At Life Academy in Oakland, all 10th graders must demonstrate and defend their learning. The "10th grade defense" will determine whether they are prepared for the upperclassmen experience at Life Academy. As 11th and 12th graders at Life, they will be expected to connect their learning across the curriculum and engage in an off-campus internship. The defense is not only testing their knowledge of science or their ability to comprehend the details of a complex novel, but testing their ability to apply, understand, and convey their knowledge. The requirements of the 10th grade defense matches the skills, abilities, and knowledge that Life Academy expects its students to know, create, and do.

Linked Learning schools use a number of measures including performance-based assessments to gauge students' readiness for graduation, college, career, and life beyond high school.[88] As discussed in Condition One, Linked Learning sites articulate a clear purpose that enables stakeholders to understand the abilities and knowledge all students should possess by the time they graduate from high school. Starting with these expected outcomes, school staff *backward plan* to create and integrate learning experiences that will connect back to these goals. This shared understanding creates a commitment to the necessary processes, strategies, and structures that will produce these desired outcomes. In this section we highlight how Linked Learning sites are working to create alignment between the school's purpose and the existing accountability landscape. This is accomplished through the following strategies:

1. *Balance:* Linked Learning attempts to create balance between external accountability measures and the development and use of appropriate assessment tools and structures that undergird the critical content, skills, and abilities valued by the school.

2. *Deep Engagement:* Linked Learning sites go beyond traditional assessments to measure students' success in various realms including students' real-world learning, and students' levels of engagement and growth.

3. *Reflective Practices:* Students and faculty ask how assessments can clarify and inform past and future learning.

Balancing "Success" with External Measures

What does [success] look like? On the outcome side ... [it] means that all students ... will be prepared by having access to an a-g college-going environment. ... It means we keep students here from their freshman year through their senior year, we keep them engaged and interested and motivated, which means referrals for discipline are minimal, attendance is high. ... These students are prepared to have a choice when they graduate to go into any arena that they choose. ... Students who are prepared to have as many options as possible warrants achievement to me.

— Laura Bellofatto, Principal, Construction Tech Academy

Measuring Student Preparation for College, Career, and Civic Life

Broadly speaking, alongside the academic content standards, sites prioritize various technical/professional standards, skills, and abilities. Sites also aim to equip students with the skills needed to adapt to a changing workplace, to participate in a democratic society, and to continue learning and accessing information. Finally, across Linked Learning sites, students are also expected to graduate with the know-how or navigational skills required to meet their postsecondary aspirations. As one administrator stated, "our goal is to ensure each student leaves with a plan for their future." This means students will acquire the tools and skills that will allow them to thrive and succeed as adults in the adult world. Another administrator shared, "I tell them, 'look, you're an adult in-process, you are going to learn how to be an adult here.'"

The question is, how do all of these expected outcomes get measured? While the expectations are

clear, sites struggle with assessing students' mastery of these outcomes and balancing it with California's narrow accountability system. As discussed below, some "external" measures match the schools' interests while other measures, such as standardized test scores or pacing plans, require a careful balance that some schools are more adept at navigating. Across sites, external measures were used as follows:

- *Standardized Test Scores* to measure knowledge of core academic content, and to maintain curricular autonomy.

- *Access to and Completion of the College Preparatory Curriculum (a–g)* required for entry to California's public four-year universities.

- *Graduation Rates* to measure schools' support of their most vulnerable students and to ensure all students graduate prepared for success in postsecondary education and careers.

- *Attendance Rates* to measure students' engagement with their own learning.

Standardized Test Scores: California's Accountability System and its Impact on Pathways

Linked Learning operates in the world of external assessment measures imposed by the state and the federal government (e.g., California Standardized Tests (CSTs), California High School Exit Exam (CAHSEE)). Performing well on external assessments can often translate into more autonomy from district and state mandates. Schools that meet their targets avert state and federal sanctions whose consequences become more serious each year. Given the stakes, it is of no surprise that the accountability system has pushed many schools to "teach to the test" and focus on basic skills and particular content areas, even when these practices conflict with teachers' and schools' beliefs about the best approaches for student learning.[89] A focus on test preparation often undermines many of the most essential school goals. This effect has been particularly intense in schools that serve large numbers of students who enter the 9th grade below grade level and where pressures to raise test scores and avoid sanctions are highest.[90] In varying degrees, administrators struggle to reconcile their school's pursuit of high standardized-test performance with their school's purpose.

Though CSTs and CAHSEE are standards-based tests that allow schools to assess what students know for specific subjects and standards, these tests cannot assess what students can do with the facts and knowledge they have acquired, how creative or resilient students are, how they adapt to new situations or work with others—skills and abilities that matter to Linked Learning. Indeed, the tests tell school staff little about students' abilities to research, experiment, communicate, and apply knowledge to solve problems.

Also missing is how schools achieve the scores; how they motivate students; how they reach English learners and others unprepared to realize the standards. As one administrator shared:

We have to get a little bit more sophisticated on how we analyze schools and characterize success, because schools need to be rewarded for taking on some of our most disadvantaged kids, whether they be EL learners, African American students that are at the bottom end of the achievement gap, socio-economically disadvantaged students. Schools need to be rewarded for taking those kids, not penalized for them.

At Community Partnerships Academy (CPA), for example, students score lower than Berkeley High School students as a whole. However, CPA tends to attract students who have struggled academically and scored lower on standardized tests. While teachers recognized that they have not been able to close the achievement gap based on standardized test scores, they feel that they are helping to close the gap in terms of opportunities.

One of the things I'm proud of is I think we've done a lot to close the opportunity gap. It doesn't mean our achievement gap is necessarily closed, but giving students who need more—more resources, more attention, more access to technology, more access to information about college and careers, more academic support than they would have gotten in the traditional structure—is closing the gap.

Unfortunately, current accountability measures do not account for these opportunities to learn. For CPA, that gap is both an artifact of opportunities and a construction of assessment. School leaders understand that their commitment to equity and to supporting all students might result in a test score "penalty" for having very high retention rates— retaining students who in other traditional schools would likely drop out or transfer to a continuation school.

CPA's test scores are not disaggregated for school accountability purposes, but teachers pay attention to them as a means of comparing their students' performance to other minority and low-income students on campus. According to their data, CPA's Latino and African American students score higher than other Latino and African American students on the larger Berkeley campus. And, CPA's cadre of experienced teachers are confident that their strategies (focusing on relevance, projects, and applied learning) are effective even if they do not translate to short-term gains on test scores. For example, CPA math teachers selected an applied and engaging math curriculum even though this approach is not well aligned with the state's multiple-choice tests. Students work individually and in groups to solve problems that require math applications and are asked to present their problem-solving strategies to the rest of the class.

Construction Tech Academy in San Diego faces a similar challenge. In 2009, as a result of falling test scores, CTA was designated to Program Improvement status. Unlike CPA, however, CTA shifted its strategies and program to increase scores. Efforts included converting students' advisory period into a CAHSEE preparation period for all 10th graders.

Students and teachers lamented the loss of the advisory period for theme-based projects. As one student discussed, "the first year [freshman year] was tight. We went to Sea World, and then we did [designed and built] an amusement park. I was foreman, that was pretty cool." In contrast, the student shared that his sophomore year was "really bad, … always prepping [for CAHSEE] and I was like, 'OK, I understand, we got low scores, but it kind of sucks.'" Test scores were not positively impacted by this strategy and the following year advisory projects were reinstated. At CTA, targeted CAHSEE preparation is now offered to those students who are identified as being in need of additional support based on incoming CST test scores and freshman year scores. CTA continues to struggle with how to meet accountability standards, raise test scores, and simultaneously ensure that all students benefit from the different components of the curriculum, graduate, and leave prepared for a wide range of postsecondary opportunities.

Other Linked Learning pathways shared their strategies to prioritize high standardized test scores in order to attain greater autonomy and less scrutiny from state and district officials. The principal of the School of Digital Media and Design in San Diego has taken a very pragmatic approach: failing to meet standards could impact the school's future course while increasing test scores have allowed for certain autonomies that support the school's current course for high school improvement. Indeed, test scores have risen steadily as teachers have become more comfortable with cross-curricular integration, and projects are fine-tuned.[91] As a result of increasing scores, the district trusts that school-level decisions will continue to yield these results. Further, the school's excellent performance on tests has created local, state, and national interest in the model; that recognition, in turn, brings acceptance by the district.

The downside expressed by the staff at DMD is that "keeping up" the scores means altering some of their practices, including increased test preparation. According to one teacher:

Somewhere between 40 and 45 percent of the instruction I do is based on project-based learning. The other 55 to 60 percent … is based on what I need to do to prepare them for the exams, not just teaching to the tests, working on the standards that are most frequently hit on the exams.

Increased student engagement, attendance, rigor, and relevance more than make up for traditional methods of imparting standards.

Across sites, there is shared frustration that test scores cannot capture the quality of the program and are most relevant within the political arena to procure the necessary space to continue the program. Balancing the need to raise scores with a Linked Learning mission presents deep challenges. State lawmakers are keenly aware of this fact and have proposed some changes to the API to de-emphasize the use of test scores and incorporate measures of college and career readiness.[92] The adoption of the Common Core State Standards provides encouragement for greater alignment between external accountability measures and sites' expected student outcomes and goals. (See text box on p. 95.)

Access to and Completion of A-G

To ensure students are "college-ready," participating Linked Learning pathways all opt to require completion of the a-g course sequence as a graduation requirement for their students.[93] And most of the sites graduate students having fulfilled a-g requirements at higher rates than the district average and higher than the state average of 36%.[94] (See Table 3 on p. 90.)

Importantly, to facilitate a-g course access and completion, all sites have structures in place that allow students to enroll in more courses per semester than would be possible in a traditional schedule, through block schedules or longer school days. Students have room in their schedules for the a-g course sequence and theme-based electives.

Clearly, not all students pass a-g courses with grades of "C" or higher. Students attending CPA, MetWest, Life Academy, CTA, DMD, and others who do not successfully complete their courses with a grade of "C" or better are required to retake them. Block scheduling or longer school days allow struggling students to enroll in support classes and/or repeat classes (recovery classes) without missing out on theme-based courses. Several sites allow students to repeat or get extra help in portions of courses as an alternative to repeating an entire failed class. This practice emphasizes that the goal of instruction and learning is mastery of the course content—not just a binary ending with a pass or fail. This practice also supports students who initially have less prior knowledge, and are not able to demonstrate proficiency on their first attempt. This allows students to master important skills and content while raising their grades.[95] Importantly, the practice also sends a strong message that all students are expected

to access all the experiences they need for high achievement and college preparation.

Finally, high expectations, coupled with specific interventions and strategies, allow sites to provide a rigorous (a-g) and relevant curriculum, and contribute to a "college-going culture."[96] The maintenance of a college-going culture also requires strong caring relationships between students and adults, as well as reinforcement of young people's aspirations through ongoing support.[97] Strategies and structures such as advisory classes, college and career centers, mandatory college-level courses for graduation, and group projects that demand collaboration and strong study skills compose the culture and are generative of individual strategies.

In addition to successful a-g completion, many pathways also look at college acceptances and college-going rates as measures of success and accountability. Beyond qualifying for entrance or "getting in," Linked Learning pathways try to ensure students succeed once they are there. Life Academy, for example, has assisted students in forming support groups on college campuses where a number of graduates attend. Students meet on a regular basis, providing each other with academic and social support. Most sites, formally or informally, track students' postsecondary success.

Advance Placement Augmentation at Community Partnerships Academy

Linked Learning sites are seeking ways to take advantage of before- and after-school hours to increase student academic success and provide college and career preparation. Sites are making use of this time to assist students who are behind in skills, as well as those students who are seeking additional academic challenges. At CPA, students who are interested in completing an AP curriculum can participate in the AP Augmentation program. Students enroll in the regularly offered class and simultaneously enroll in the AP Augmentation program offered before or after school. In preparation for the AP examination, students are expected to complete extra work. As such, the rigor of the regular class is raised. Students enrolled in the program serve as academic role models and leaders, and strengthen the school's college-going culture. Approximately one-third to two-thirds of students enrolled in any regular English class, for example, are also enrolled in the AP Augmentation program. The combined AP Augmentation plus the regular curriculum has College Board approval as an AP course, and students who take both receive ten units of credit per semester. Some AP Augmentation sections are offered to students campus-wide—this brings up the class size and allows teachers to collaborate and maintain alignment.

Table 3: A-G Completion Rates: 2009-10

Pathway*	A-G Completion Rates	
	Pathway	District
Construction Tech Academy	60%	44%
Digital Media and Design	51%	44%
Global Studies	80%	54%
Harbor Teacher Prep	84%	54%
High Tech LA	77%	54%
Life Academy	53%	47%
MetWest	75%	47%
Sacramento New Technology**	13%	29%

Source: California Department of Education

  * Data not available for the Center for Advanced Research and Technology, or for Community Partnerships Academy.

** According to district and school officials, data used to calculate these numbers were not prepared by the district's research department, and were miscoded by site level registrars.

Graduation and Dropout Rates

Linked Learning sites use graduation and dropout rates to gauge their ability to engage, interest, and motivate students. Although they are not included in the API or other school-level accountability measures used to "rank" schools, they are provided to parents and the public on the School Accountability Report Card (SARC), or on other district-level reports. As interview data revealed, the sites we studied aimed to prepare all of their entering 9th graders (including the schools' most vulnerable) for high school graduation and the adult world. Graduation and dropout rates allow schools to assess their success and make the necessary adjustments to curricula and/or requirements to foster greater interest and engagement.

Most participating pathways exhibited retention rates and dropout rates considerably better than those of the district and the state overall. (In 2009-10, 75% of students in California who had started high school four years earlier graduated; 17% dropped out.)

Examining one example from Table 4, CTA's overall graduation rate of 85% can be considered a relevant and rigorous accountability measure to supplement the well-documented inadequacies of standardized test measurements. Furthermore, 84% percent of Latinos who entered as 9th graders graduated four years later, compared to 74% in San Diego Unified School District, and 68% statewide. Similarly, 71% of English learners graduated from CTA four years later, compared to 59% of English learners who

graduated districtwide. Administrators and staff at CTA feel that their greatest success is supporting students who would not otherwise make it to high school graduation, and providing them with college and career preparation. Interviews of 12th-grade students confirmed this commitment:

My background is really difficult … I was a typical bad kid, getting bad grades and stuff … I got into a couple of fights and I was kicked out of school. … I was accepted to CTA and that's when I really shined, and now I'm doing good … I found CTA different from other schools … I feel more comfortable with the teachers. Next year I'm planning to go to Mesa [Community College] so I can save a little money and transfer to San Diego State. … My mom's really proud of me. She's happy to know that I am on the honor roll for graduation.

Attendance Rates

Attending school matters. An attendance-based funding formula in California (where districts receive money per student based on attendance, not enrollment) is one obvious reason. For pathways, attendance rates also shed light on students' engagement in their learning. Like failing classes, frequent absences can indicate student disengagement from school. Longitudinal studies of cohorts have found that attendance and course performance are the best predictors of who will and will not graduate from high school.[98] For students who leave without a diploma, patterns of low grades and absenteeism can often be traced back to elementary and middle school years.[99]

Table 4: Cohort Graduation and Dropout Rates: 2009-10

Pathway*	Graduation Rates		Dropout Rates	
	Pathway	District	Pathway	District
Construction Tech Academy	85%	82%	3%	8%
Digital Media and Design	91%	82%	5%	8%
Global Studies	90%	62%	8%	25%
Harbor Teacher Prep	75%	62%	17%	25%
High Tech LA	90%	62%	7%	25%
Life Academy	77%	55%	9%	32%
MetWest	85%	55%	3%	32%
Sacramento New Technology**	61%	68%	31%	23%

Source: California Department of Education

* Data not available for the Center for Advanced Research and Technology, or for Community Partnerships Academy.

** According to district and school officials, data used to calculate these numbers were not prepared by the district's research department, and were miscoded by site level registrars.

Sites use attendance to gauge student interest and to disrupt the trajectories of those who are falling off the path toward graduation. Sites work hard to identify these students early and keep them engaged. As one teacher shared, "a lot of the kids leave because … school's not for them and we haven't engaged them. Those to me are the ones that I really want to try to pull back in because I think that this is a good school for them …"

Both formal and informal mechanisms are in place across sites to "track" students and to understand what is happening in their lives that might contribute to chronic absences from school. For example, pathways used Student Success Teams (SSTs), School Attendance Review Teams (SARTs), and other school-level teams to identify students with attendance issues and to assist the students and their families in resolving attendance problems. Attendance data are used to understand patterns of absenteeism and to develop strategies to engage students in their learning. In some districts, efforts to improve attendance rates are part of a district-wide community schools approach that ensures wrap-around services support health and family issues that can impact a student's attendance. In addition to these strategies, small, collaborative, personalized, and caring learning environments contribute to high attendance rates across sites. Students, teachers, administrators, and office staff notice when a student is absent, and each stakeholder responds to the absence. As a teacher shared:

We can all identify who the attendance problems are. … We started calling students in one by one, sitting down with them and talk[ing] about it. … It's a plus of a small school—you can actually intervene at that level. We know who is supposed to be here; we know how to contact them; we care; we know how to call their parents; we know which of their friends to call and be like, 'Hey, help us support so-and-so.'

According to students, the small and caring environment and the strategies used to manage absences do make a difference. One student shared:

[I was a poor student in middle school] because of my anger, but the teachers, they didn't really understand my situation, but at DMD they really do. They really care about you. 'What can I do to help you?' … Everything changed since I [came here]. Now I really like school. I come to school every day.

In 2008-09, the overall truancy rate of Linked Learning pathways was 13%, compared to the statewide truancy rate of 33%.[100] Similarly, in 2009-10, the Linked Learning sites we studied averaged a truancy rate of 14%, compared to the statewide average of 36%.

Deep Engagement with a Task, Skill, or Body of Knowledge

Linked Learning staff indicated that the most critical measures of student success go beyond test scores or other quantifiable outcomes, and offer information regarding how students learn: for example, how well can students sort through information to find answers, how well can they access resources and networks, and how can they apply new knowledge to the real world and to real problems? Sites provide multiple opportunities for students to demonstrate developing learning and problem-solving skills and abilities through independent and/or group projects that often match their interests. These experiences expose students to new knowledge and, according to both staff and students, allow for deep engagement that prepares them for college, career, and a life of learning. As one graduating senior shared, "I have learned how to learn … If I don't know something, I know how to ask questions and find the answers I am looking for."

Pathways prioritize these opportunities for students to engage deeply with a task, skill, or body of knowledge. To send a clear message regarding the importance of the endeavor to students, families, and other stakeholders, participation in such activities is a graduation requirement across sites. And, to ensure successful completion, sites construct assessments that match each activity and hold meaning for students (versus bubbling in an answer sheet). As discussed below, sites rely on alternative or performance-based assessments to measure students' acquisition of critical skills, knowledge, and abilities not captured by traditional assessments.

Deep Engagement Opportunities and Performance-Based Assessments

Performance-based assessments require students to demonstrate knowledge and skills, and how they solved a particular problem.[101] Max's 10th grade defense at Life Academy provides an example. The defense measured his ability to integrate knowledge across disciplines, determined if he had met particular standards, and measured his ability to respond to new information and develop a plan of action.

Performance-based assessments are tightly linked to instruction and include a whole range of activities including projects, essays, experiments, demonstrations, and portfolios.[102]

Across sites, the performances reflect real-life situations; they are of interest to students and they can identify value in participation; and the performances align with the pathway's purpose and learning goals.

All performance-based activities and corresponding assessments require that the student engage and explore an area of interest for a prolonged period of time (months to years). Assessments also require that students recall prior knowledge (prioritizing deep learning over short-term gains) and are carefully crafted and calibrated, using detailed and rigorous scoring rubrics. Because performance-based assessments often include an authentic audience, stakeholders play a role in determining whether students meet the school's standards of success.

Pathways also take other factors into consideration, like available resources and time constraints. Deep engagement activities and aligned performance-based assessments look different across sites, but most use a combination of portfolios, senior or "capstone" projects, student exhibitions or demonstrations, and involvement in internships, and college-level courses. (See Table 5.)

Portfolios and Projects

Starting in the 9th grade, all New Tech high school students (i.e., Global Studies and New Tech Sac) must create a "digital portfolio" that collects examples and evidence of their growth and mastery of the school's learning outcomes. The portfolios are accessible online and teachers regularly review the work and provide feedback to the students. Students at New Tech schools engage in real-world projects or problems, and the required portfolio allows each student (and teacher) to monitor their learning. All students present their final projects to the class and often to outside partners. Each project is carefully designed to assist the student in meeting the school's expected outcomes.

New Tech Sac's skyscraper project provides an example. Students enrolled in GeoCADD—a course that integrates geometry and Computer-Aided Design and Drafting—were asked to create scale models of skyscrapers with radial symmetry and tapering elevations. Students also had to calculate the cost of the construction of their skyscraper using floor area estimations typically used by architects;

Table 5: Deep Engagement Graduation Requirements

Pathway	Graduation Requirement				
	(Senior) Project	Internship	College-Level Coursework	Portfolio	Exhibition/ Demonstration
Center for Advanced Research and Tech	✔				✔
Community Partnerships Academy*	✔	✔		✔	✔
Construction Tech Academy	✔			✔	✔
Digital Media and Design	✔				✔
Global Studies				✔	
Harbor Teacher Prep			✔		
High Tech LA	✔	✔			✔
Life Academy	✔	✔			✔
MetWest	✔	✔	✔	✔	✔
Sacramento New Technology			✔	✔	

* CPA, as a small learning community, cannot set graduation requirements. All CPA students must fulfill the indicated requirements although they are not recognized as graduation requirements in the larger district.

calculate the mechanical needs of the building using air volume calculations; and use surface area calculations to determine the area an interior designer would need to finish the design. At the end of the projects, students presented and defended their design choice and calculations to a guest panel of experts from the field.

The project was evaluated using a detailed rubric that allowed students to know how they did on achieving the expected outcomes, and where they needed to improve. As detailed in the rubric (see Appendix C), all students must master presentation content, work ethic, collaboration, critical thinking, and oral and written proficiency, as well as particular geometric learning objectives. Students also use a rubric to evaluate their peers, as individual accountability is critical to successful groups and must be designed

into the project. By using well established and identified learning outcomes consistently from 9th to 12th grade and across disciplines, students understand what is expected and identify their own growth and improvement toward meeting these outcomes. Growth and progress is documented in the portfolio, and by the time students are ready to graduate, the portfolio serves as an extensive map of their four years of learning and connects to their post-graduation plans.[103]

Portfolios at Construction Tech Academy in San Diego assist students and faculty in assessing student readiness for life after high school graduation. The portfolio requires students to explore college and career options and determine steps for achieving future goals. Each portfolio consists of a learning reflection, best examples of high school work, a

In 2010, California adopted the Common Core State Standards. The new standards in English language arts and math, which have been adopted by most states, signal a shift in what students are expected to know and do in order to be prepared for college and the workforce. The new expectations represent a significant departure from current practice for many schools. As such, Linked Learning pathways must consider how the adoption of Common Core will impact their approach. Can the new standards bring about greater alignment or will the recent adoption of Common Core add another layer of work and pressure to Linked Learning sites already struggling to balance expected learning outcomes with external accountability measures?

The conditions we have laid out in this guidebook provide pathways with a head start as they grapple with adoption.

Focus on Equity

The adoption of Common Core was a response to arguments that state standards were not adequately aligned to the knowledge and skills necessary for success in higher education or a career in an increasingly competitive marketplace. Linked Learning pathways start with the premise that **all** students will graduate ready for life beyond high school—for college, career, and civic life. Expected student outcomes serve as pathways' starting point and shape the curriculum and structures that support an equity-based purpose.

Connecting the Linked Learning Components

Though currently focused on English and math, Common Core essentially applies across all content areas. For example, reading, writing, speaking, listening and language standards need to be addressed in all disciplines. Linked Learning sites are ahead of the curve since they focus on identifying methodologies, or approaches that integrate disparate pieces of the curriculum into a more coherent whole. Through cross-curricular integration and real-world applications, students in pathways are able to access content in multiple disciplines and gain a better understanding of the purpose and relevance of their learning.

A Culture of Care and Support

All students must be held to Common Core standards. Linked Learning sites prioritize the creation of structures that foster caring and supporting relationships between students and adults, and that help teachers and school leadership identify students' existing and developing needs. By identifying students' needs, schools are well positioned to individualize instruction and provide the necessary supports and services that can meet the unique learning needs of their students. Pathways recognize, however, that they must work to identify new supports, interventions, accommodations, and resources that will ensure the new standards are accessible to all.

Grounding in the Real World

Implementation of Common Core must involve all stakeholders, not just those who ultimately deliver the instruction. The community, including postsecondary institutions, business, industry, and families, needs the knowledge, vocabulary, and understanding that will create ownership and support of the new standards. With established partnerships that have an identified interest in preparing all students for college, career, and civic life, Linked Learning sites are working to create this understanding and support. These partnerships also provide opportunities for students to engage deeply with the standards through real-world contexts, project-based learning, and field-based experiences.

An Environment that Works for Adults

To effectively implement Common Core, teachers need to work in an environment that fosters collaboration and reflection. At many sites, teachers are working together to perform a gap analysis of current and new standards, and to identify needed changes to the curriculum and required resources. While Linked Learning pathways have structures in place that allow for regular meetings between grade-level teams, sites are also working across grades to ensure students are ready to meet expectations. In addition, as the standards apply to multiple content areas, teachers will need to be "subject area experts" with each other, and understand realms beyond their disciplines. Distributed leadership, collaboration, and support allow for the establishment of these professional and creative environments.

Redefining Success

One of the biggest questions regarding Common Core is how students', schools', and districts' progress will be measured. As this guidebook highlights, Linked Learning sites grapple with assessing more than the mere acquisition of information, but how students analyze, synthesize, and apply their learning. Success means "kids are able to move on." Understanding success in this way requires new and authentic assessment tools that go beyond standardized test scores and course completion to capture college and career readiness, students' civic orientations, and their preparedness for the adult world. Linked Learning pathways are hopeful that Common Core will bring about greater alignment between what matters, what gets assessed, and, in turn, what constitutes "success."

resume, letters of recommendation, an interview with a person who holds a job in a field of interest to the student, a copy of a completed college application, a completed copy of the Free Application for Federal Student Aid (FAFSA), a copy of a completed scholarship application, autobiographical essay, and a spreadsheet of expected living expenses and transportation costs after high school graduation.

Senior Exhibitions

Many Linked Learning sites require students to demonstrate their learning through presentations or exhibitions. At CTA and DMD in San Diego, exhibitions form part of the district's graduation requirements. Schools across the district, including CTA and DMD, implement the requirement differently.

At CTA, for example, senior exhibitions are based on work the student has conducted and developed over his/her four-year period. Students revisit a completed project and further develop or refine it. In his sophomore engineering class, Donald had designed a new, state-of-the-art gym for the school. For his senior exhibition, he developed the project further with guidance from his teachers. He also made changes based on newly acquired information and skills. Using a poster board and PowerPoint to scaffold his presentation of salient academic concepts that supported his design, Donald presented his project to experts in the field and defended his work. He also explained his interest in this project, his scholastic achievements, and how he planned to use the skills and abilities he had developed after graduation. Donald expressed satisfaction with his project, sharing that he never expected that he would be able to conduct such advanced work when he entered CTA four years earlier. With rubrics in hand, CTA teachers, community members, and industry experts gave Donald feedback on his presentation, the content, and how well he demonstrated his strengths and accomplishments over the course of his four years at CTA.

At DMD, each senior is expected to perform a task or conduct a project for a real client or audience based on the skills the student has acquired. As one teacher explained, "A lot of those clients are outside businesses, so they're actually having a real interaction with the customer, like [creating] a website for a company." Key skills are introduced early and supported until graduation. About the project and exhibition, one student shared:

We got introduced to 'Flash'[104] in 9th grade, just like very nominal stuff; because it's a very complex program … Then in 11th grade we got introduced to [it] a little bit more. … In 12th grade, in our senior exhibition class, we're actually doing real projects and submitting it to the real world. I'm doing something that will probably be entered into a contest or submitted to a film festival.

Across sites we heard that demonstrations allow schools to assess students' growth and knowledge regarding key academic concepts, their developing interests, and critical 21st century skills that students will use well beyond high school graduation. A teacher shared:

By the time the kid is a senior, they've done probably eight presentations … each year they have projects to present in front of a panel. So they're not just presenting to their peers [whom] they feel comfortable with, they're presenting to community members. I think our students are more prepared, because in college and in jobs they're going to have to stand up in front of groups of people, they're going to have to talk, they're going to have to know how to dress.

Internships

All 11th and 12th graders at Life Academy in Oakland participate in an internship and Life's "Habits of Mind" are at the center of their performance evaluation. Teachers and administrators at Life are guided by the school's "Habits" in their assessments of students. (See text box on p. 97.) The Habits highlight the school's interest in enhancing the way students can produce knowledge rather than reproduce it.[105] Students often refer to them, and the Habits are reference points throughout their coursework, internships, and their culminating senior projects.

Using the "Internship Habits" rubric, there is the school-wide expectation that students will develop and master a set of critical skills, attitudes, and behaviors. (See Appendix C for rubric.) In particular, the rubric serves as a tool to assess student growth with regard to professionalism, commitment, ownership, and compassion. Use of appropriate vocabulary, attendance and promptness, initiative, and a student's willingness to assist others are all taken into consideration. While the "Habits" rubric is largely behavioral, the degree of skill mastery is inferred from the students' logs of their activities, successful completion of tasks, and the end-of-internship project reports and presentations.

Life Academy's "Habits of Mind"

1. **Persisting:** Sticking to task at hand; follow through to completion.

2. **Managing Impulsivity:** Take time to consider options; think before speaking or acting; remain calm when stressed or challenged.

3. **Listening with Understanding and Empathy:** Pay attention to and do not dismiss another person's thoughts, feelings and ideas.

4. **Thinking Flexibly:** Able to change perspective; consider the input of others; generate alternatives; weigh options.

5. **Thinking about Thinking (Metacognition):** Being aware of own thoughts, feelings, intentions and actions; knowing what I do and say affects others.

6. **Striving for Accuracy:** Check for errors; measure at least twice; nurture a desire for exactness, fidelity and craftsmanship.

7. **Questioning and Posing Problems:** Develop a questioning attitude; consider what information is needed; choose strategies to get that information.

8. **Applying Past Knowledge to New Situations:** Use what is learned; consider prior knowledge and experience; apply knowledge beyond the situation in which it was learned.

9. **Thinking and Communicating with Clarity and Precision:** Strive to be clear and accurate when speaking and writing.

10. **Gathering Data through All Senses:** Stop to observe what is seen; listen to what is heard; take note of what is smelled, etc.

11. **Creating, Imagining, Innovating:** Think about how something might be done differently from the "norm"; propose new ideas; strive for originality.

12. **Responding with Wonderment and Awe:** Have regard for what is awe-inspiring and can touch the heart.

13. **Taking Responsible Risks:** Willing to try something new and different; face fear of making mistakes or of coming up short.

14. **Finding Humor:** Willing to laugh appropriately.

15. **Thinking Interdependently:** Willing to work with others and welcome their input and perspective.

16. **Remaining Open to Continuous Learning:** Open to new experiences to learn from; welcome new information on all subjects.

Students, especially seniors, said that participating in internships helped them figure out how they learn, and which skills they will use in the real world.[106] Students and teachers listed specific skills they developed or strengthened as a result of their internship experiences, including communication, teamwork and interpersonal skills, work ethics, organization and independence, and research skills. Culminating senior projects or presentations based on internship experiences allow students to expand on their learning. Importantly, the rubric is not to assign a terminal grade or to be used as a pass or fail instrument, but is a springboard for conversation, reflection, and guidance.

College-Level Courses

At High Tech Los Angeles, seniors are encouraged to take at least one course off-campus at a local community college as an alternative to an elective course offered at the school. At DMD in San Diego, juniors and seniors are encouraged to participate in the Fast Track program at the local community college. Through the Fast Track program, students enroll in a wide range of courses like astronomy, ethnic studies, or music appreciation. Often, there is no Advanced Placement equivalent for the course, and student selection often complements the school's thematic focus.

This early exploration of college allows students to engage with an interest area, and demystifies higher education (which is especially important for first-generation college-going students). The principal at Sacramento New Technology High School explained that many students are initially worried about attending New Tech Sac because of the 12 college credits required for graduation. As she explained, "it's just a matter of finding the right courses," and the benefits are huge as students develop a different connection to college after completing the required units. Students usually identify an area of interest and become determined to explore it through higher education.

While course grades often serve as an indicator of student learning in college-level courses, at MetWest, located in Oakland, students are also able to demonstrate their learning in these courses through portfolios. College course enrollments and transcripts form part of their required senior portfolios.

Reflective Practices: Fostering a Culture of Reflection to Fulfill School's Purpose

Most high schools do not have a strong tradition of or deep social commitment to performance-based assessments, and Linked Learning pathways have few models to follow. As such, pathways are committed to self-assessing their progress toward and commitment to their purposes and expected outcomes. A culture of reflection for both students and staff that supports the school's definition and efforts to measure success is critical.

Reflective practices are critical for schools to assess how they are doing and where adjustments are needed. Teachers need the time to ask themselves and their colleagues whether students are learning, whether adults are moving in the same direction, and what changes need to be made to the structure or pedagogy to achieve the school's purpose. These reflective practices contribute to a positive culture that underlies the day-to-day operation of pathways and promotes student achievement, and healthy development, as well as teacher retention, which is a factor in student success.[107] A reflective culture encourages information-gathering from many sources and gives priority to providing the time for safe, friendly, and professional sharing of this information. Strategies used to enhance the gathering and sharing of this information include: student surveys to assess the learning climate, culture, and conditions; reliance on internal and external catalysts to provide insight and information; and school-wide task forces to address specific problems and propose solutions.

Student Surveys and Feedback

Some pathways use student surveys to fine-tune specific projects or lessons and evaluate their impact on student learning. For example, at the Los Angeles School of Global Studies, students complete surveys or write journals addressing what they have learned and how they learned it at the end of every unit and project. Informed by student feedback, teachers examine how the project went and what should be revised. This reflection is structured in a safe environment where teachers can think about and speak about their own practices in relation to other teachers. At DMD in San Diego, teachers use similar strategies. One teacher shared:

I look at what has worked and what has resonated with kids over the years, and I work on trying to preserve those elements. I seek feedback from the students too, I give them surveys on the class and on me as a teacher, and I ask them for honest feedback. 'Don't put your name on it, tell me how this has been.' And I take that feedback and try to look at one semester to the next. ... It's rooted in that need to reflect, you have to believe that there's always some way to improve.

Some sites ask students to reflect on their four years within the pathway. CTA, for example, performs exit interviews with students, and they are encouraged to discuss the overall high school experience and how well the school has prepared them for next steps beyond high school graduation.

> A survey conducted by UCLA IDEA indicates that students believe in their Linked Learning pathway: 93% percent of students attending the Linked Learning pathways we studied indicated that their school was preparing them to succeed in college. Ninety percent of students indicated that their school was preparing them to be successful in a career.

Internal and External Catalysts

At many Linked Learning sites, teachers are provided an opportunity to observe each other. This happens frequently at sites where teachers co-teach, but opportunity for observation takes place in pathways even when co-teaching is not a common practice. One staff member explained how he visited each classroom, "taking snapshots of every classroom," so he could plan professional development activities for his colleagues. He shared that the experience permitted him to gather information that helped him plan meaningful professional development and reminded him that he worked with a very talented group of teachers. A number of administrators frequently covered classrooms or hired substitute teachers to release teachers to observe other teachers or to attend professional development.

Some pathways bring in curriculum experts. At some sites, teachers meet at the end of the semester or school year with a facilitator who helps them fine-tune their teaching. As one teacher described, an outside facilitator has been "meaningful in terms of our collaboration and my growth as a teacher." As this teacher points out, these practices allow the staff to examine "how do we teach that better? And, how do I teach this more effectively?" At another site, the administrator was clear that the staff needed to refresh their understanding and practice of project-based learning. According to the administrator, many of the projects were no longer meeting students' needs, and teachers were reluctant to make the necessary adjustments. Teachers were resistant to attend the district's workshop, as many felt that their years of implementing projects made them expert. However, teachers who did attend the workshop felt they benefitted greatly and additional teachers were eager to attend the following year.

Task Forces

One Linked Learning site recently implemented student-led task forces to address school culture and learning climate issues. The principal referred to it as putting students in "the driver's seat" and explained that task forces help identify issues that can affect group work. Teachers at the site had noticed that students were less focused during group activities, and achievement was suffering. Although staff knew that the closure of a nearby school had caused an enrollment surge and demographic shift, the staff did not fully understand tensions between student groups outside of school. Building on the students' task force findings, the principal encouraged teachers to collaborate with students on improving cohesion and work in project-based learning.

Other sites rely on student feedback to identify and solve specific problems and address school goals and climate. Students participate in leadership committees focused on topics related to curriculum and civic identity and to provide feedback to teachers on projects, internships, and other school policies that affect their learning. For example, at CTA the principal shared how a team of seniors came together to propose the integration of the district's senior exhibition requirement with students' senior projects. The approved proposal required the creation of additional guidelines and a grading rubric, and lent greater purpose and meaning to CTA's "senior gala."

Conclusion

This section has described how a pathway's purpose—preparing students for college, career, and civic life—is kept coherent and functional when staff and students reflect on school structures, routines, relationships, instruction, and what student and school success look like. Key to pursuing that effort is the quality and variety of the information flowing into these reflections, the time given to the analyses, and the responsiveness to what is learned. Mandated assessment measures (chiefly, standardized tests) do not suffice. As suggested above, performance-based assessments, informal assessments, and various information-gathering methods such as task forces and surveys can balance the curriculum, support the critical content, skills, and abilities valued by the school, and shift the culture. ➔●

KEEP IN MIND

- Create strong alignment between the curriculum and the purpose of the school to assess what is important to your school—not just what's convenient or mandated to measure. Balancing the need to raise scores with a Linked Learning mission might present challenges. Strive to incorporate broad measures of college and career readiness into your assessments, but keep in mind that high test scores often translate into greater autonomy and less scrutiny from state and district officials.

- Use clear grading rubrics. Make sure that students are evaluated using a detailed rubric that allows them to know how they did on achieving the expected outcomes, and where they need to improve. Share the rubrics with other teachers and align expectations across subjects and grades.

- Require completion of college preparatory requirements for all your students and ensure that students get the support they need to succeed.

- Foster a culture of reflection to ensure the school is fulfilling its purpose and to allow teachers and students to improve teaching and learning outcomes. Create some schoolwide tools for reflection. Use surveys and other mechanisms to capture student voices.

- Set aside time and resources for teachers to collaborate on and implement new assessments, and to refine instructional strategies. Provide relevant and quality professional development to support teachers and encourage peer-to-peer feedback and observations.

- Do not reinvent the wheel! Tap into outside sources of information to guide assessment development.

For more information and resources:

Read

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Visit

- The Big Picture Schools at www.bigpicture.org/category/publications/

- The Buck Institute for Education, PBL for the 21st Century at www.bie.org/tools/freebies/cat/rubrics

- ConnectEd: The California Center for College and Career at www.connectedcalifornia.org/curriculum/resources

- The New Technology Foundation at www.newtechfoundation.org

- Partnership for 21st Century Skills at www.p21.org/tools-and-resources/educators

View

- *Linked Learning: A Guide to Making High Schools Work* at www.ucla-idea.org/projects/linked-learning

- *Comprehensive Assessment: An Overview* at http://www.edutopia.org/comprehensive-assessment-overview-video

- *Linda Darling-Hammond on Performance-Based Assessment* at http://www.youtube.com/watch?v=WpTT_ewXmKI

CONCLUSION
MAKING IT WORK

CONCLUSION

MAKING IT WORK

My dream is to create these networks of people dealing with similar populations and shar(ing) best practices. ...There definitely needs to be a much greater investment in these areas because, I will tell you, this school is completely subsidized based on the hearts of the people that are in it ... and their commitment to social justice. ...You can't transform a school system based on that. You can create little islands, but you can't transform a system.

— *Preston Thomas, Principal, Life Academy*

The schools highlighted in this study are committed to providing all students with high-quality learning opportunities—exciting, rich, rigorous, and engaging activities that connect to students' lives. They are intentional in their efforts to disrupt patterns of social stratification and they are explicit in their goals of building on students' and their communities' strengths and needs. They focus on expanding students' social capital and the range of experiences that will enable success after high school graduation and open doors to a wide range of postsecondary endeavors. To accomplish these purposes, the sites highlighted have worked diligently to create the conditions that allow these opportunities to flourish. In particular, the schools we highlight are committed to: equity; creating a cohesive and meaningful curriculum; providing a culture of care and support; grounding students' learning in the real world; building an environment that works for adults; and defining success in a way that serves both the students and the school. Linked Learning is the practical, educative, and socially just outcome of these six conditions. Conversely, for schools considering implementation, Linked Learning can be the lever that will necessarily create these conditions.

While this research focused on 10 schools effectively implementing Linked Learning, our work extends beyond them. The struggles and successes highlighted in these pages are meant to inform the work of others. Indeed, as the quote from the principal of Life Academy makes clear, the successes of these schools should serve as a springboard to effect system-wide change. The goal is not to create "islands" of excellence, but rather to create a system wherein all students graduate from high school prepared for college, career, and civic life.

Efforts to "scale up" Linked Learning, however, must begin at the classroom level. As we highlighted in this guidebook, Linked Learning implementation requires and effects deep changes in classroom practices. While critical structural changes and resources support the efforts, it is teachers' underlying assumptions and beliefs about how students learn, what effective instruction looks like, and what outcomes matter, as well as high expectations for all students that effect the changes Linked Learning depends on. And, it is the shift in daily practices (e.g., leadership practices, adult-adult interactions, student-adult interactions) that effectively sustains the changes. Indeed, the 10 sites we studied underwent difficult times and huge transitions during the study period. Four of the sites hired new directors or principals, teachers departed, and all sites experienced extreme budget cuts that necessitated teacher layoffs, increases in class size, and the elimination of key courses. Yet, at all sites, Linked Learning remained central to improvement and transformation efforts. We argue throughout

these pages that this was accomplished through a shared understanding of the pathway's purpose and shared ownership of the strategies, practices, and beliefs that bring Linked Learning to life—the six fundamental conditions.

We end this guide with four important caveats that educators, practitioners, policymakers, and the public interested in transforming high schools through Linked Learning must keep in mind:

First, Linked Learning sites form part of a larger system that must identify and prioritize the same goal—providing all students with the skills, abilities, and tools needed for success in the adult world. A systems-level approach will increase students' opportunities to access Linked Learning pathways and broaden options within the system. Further, a systems-level approach enables districts and schools to work together to negotiate, establish, and/or preserve policies and practices that enable effective implementation. Indeed, efforts to implement Linked Learning systemwide must focus on ways in which

the principles, norms, practices, and beliefs that undergird Linked Learning can influence district policies, procedures, and professional development.

Second, educators and policy makers must be aware that these schools did not develop into Linked Learning sites overnight. These schools have worked steadily, over a number of years, to develop the curricula, school cultures, and learning environments that allow students to engage with an exciting curriculum, engage with their peers, and engage with caring adults within and outside the classroom. Further, all of the schools we studied continue to work toward school improvement, greater outcomes for all of their students, and more comprehensive implementation of a Linked Learning model. It is through time that students, teachers, administrators, and community members can come to own and support efforts to implement Linked Learning.

Third, safeguards must be in place to ensure a pathway is not set aside for only high- or low-achieving students. No pathway should ever come to resemble the old non-college bound tracks that have disproportionately housed students from racial, ethnic, or linguistic minority groups, those less affluent, and those whose parents did not attend college.[108] A pathway must be attentive to the themes and the student populations these themes may attract, ensuring its appeal to a broad range of students.

Fourth, Linked Learning must not be viewed as the "silver bullet" to correct all that is wrong in our public high schools. Any approach to transforming our high schools will work best in the context of a strong social safety net that includes fair labor standards, access to healthcare, and decent housing that can address the negative effects of residential segregation, income inequality, and concentrated poverty.[109] Linked Learning, at its best, reflects at the school level the kind of society we envision for our children: a place where opportunity and success are accessible to all. ●

NOTES

1. School sites and site principals are identified by name throughout the guidebook. However, pseudonyms are used to identify all teachers and students who participated in the study. For more information on the study's methodology, please see Appendix B.

2. Based on 2009-10, four-year Adjusted Cohort outcomes. Retrieved from http://dq.cde.ca.gov/dataquest/CohortRates/

3. Retrieved from http://dq.cde.ca.gov/dataquest/

4. Several key factors were considered in the name change. Many in the field felt that Linked Learning better communicated the values and objectives of the approach. In addition, the name change alleviated confusion with multiple pathway programs being implemented elsewhere. Indeed, some programs now called "multiple pathways" run counter to the vision of integrating college and career preparation. In New York, for example, multiple pathways are aimed at out-of-school youth and alternative education. This understanding dominates perceptions of multiple pathways in Washington, DC, and within the national philanthropic community. For additional information regarding the name change, go to www.connectedcalifornia.org/enews/landing_feb2010.php

5. See Appendix B for a full description of the site selection process and methodology.

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

7. Under the Pubic School Accountability Act of 1999, each school and district in California receives an Academic Performance Index (API) or score. The scores range from 200 to 1000 and are calculated for all of a school's or district's California Standards Tests (CSTs) scores, and the California High School Exit Exam (CAHSEE). The school or district is expected to meets a growth target each year, and the state's goal is to have all schools achieve an API of 800. Under No Child Left Behind, all schools must also meet their Adequate Yearly Progress (AYP) targets. In order to meet AYP, a school or district must meet a participation goal of 95% on tests; a required percentage of students must meet Advanced or Proficient on English Language Arts and Math CSTs (the percentage increases annually and will reach the goal of 100% by 2014); the school must meet its API growth target; and high schools must meet graduation rate targets. Title I schools face increasing penalties if they fail to make AYP for two consecutive years. Beginning in 2012, waivers have been issued to states that allow schools and districts to set new targets aimed at preparing students for colleges and careers. In California, individual districts may file a waiver seeking relief from NCLB mandates.

8. This document uses the term "pathway" when referring to an autonomous small school implementing the core components of Linked Learning. The term "pathway" is also used to refer to an academy or a school-within-a-school that is implementing the core components of Linked Learning.

9. In California, ConnectEd, and partnering organizations (the Career Academy Support Network (CASN), the Education Trust-West, the National Academy Foundation (NAF)) have worked to create a common standard as a guide for pathway implementation and quality. Together, they have developed certification criteria and a pathway quality review process.

The criteria describe the specific elements that should be included in a quality pathway. Elements are based on the National Standards of Practice for Career Academies that were jointly developed by the National Career Academy Coalition, the National Academy Foundation, the Career Academy Support Network, the Southern Regional Education Board, and others. As of June 2012, a total of 22 pathways were certified throughout the state of California, with an additional 13 identified as "in progress" toward certification or awaiting review. Five of the 10 sites that participated in the UCLA study have been certified, and final recommendation is pending for one of the participating sites. For more information on the process and certification rubric see: www.connectedcalifornia.org/schools_districts/certification

10. Dewey, J. (1916, 1944). *Democracy and education: An introduction to the philosophy of education.* New York, NY: The Free Press, p.100.

11. Since initiating this study, the Linked Learning field has made incredible gains in California. A growing number of pathways identify using the term "Linked Learning," and a total of 22 sites (as of June 2012) have been "certified" as Linked Learning through ConnectEd and a network of organizations working toward advancing the field.

12. In collaboration with ConnectEd, the UCLA IDEA research team adopted a rubric that was being developed for the Linked Learning certification process. The rubric has been updated and revised and is available at www.connectedcalifornia.org/linked_learning/linked_learning_rubric

13. California's public four-year universities (University of California/California State University) require that high school students complete a sequence of 15 yearlong courses referred to as the a-g requirements for admission. Students must pass these courses with a grade of "C" or better. Courses include: two years of history/social science; four years of English; three years of mathematics; two years of laboratory science; two years of language other than English; one year of visual and performing arts; and one year of a college-preparatory elective.

14. Of an initial list of approximately 140 potential study sites, the team eliminated more than half of the sites because the theme of the school appeared to exist in name only, and/or introduction of theme or career was limited to one or two isolated courses. These eliminations were based on direct phone calls to the schools. Additional eliminations were made based on information gathered from individuals with knowledge of these schools and/or through public information. Schools with extremely low scores and API ranking (ranked in lowest two deciles) were also eliminated as we did not want to distract schools from their focus on program improvement. Finally, we eliminated schools that indicated they were not interested in participating in the study. See Appendix B for a full discussion of site selection and methodology.

CONDITION ONE

15. Throughout the guidebook, references to the school's "purpose" encompass and capture stated mission and vision.

16. Information cited is from CART's website. Available at: www.cart.org

17. Wiggins, G., & McTigh, J. (2005). *Understanding by design: Expanded 2nd edition*. Alexandria, VA: Association for Supervision and Curriculum Development.

18. www.constructiontechacademy.org/about/about. jsp?rn=3717152. Retrieved March 2, 2010.

19. See research on the benefits of small school design. For example, Darling-Hammond, L., Alexander, M., & Price, D. (2002). *Redesigning high schools: What matters and what works: 10 features of good small schools*. Stanford, CA: School Redesign Network.

    Steinberg, A., & Allen, L. (2002). *From large to small: Strategies for personalizing the high school*. Providence, RI: The Education Alliance at Brown University.

20. In addition, organizations such as ConnectEd: The California Center for College and Career or the Los Angeles Center for Small Schools are available to provide technical support and have compiled an extensive collection of Linked Learning tools and promising practices. The National Academy Foundation (NAF) and the Career Academy Support Network (CASN) offer curricula and/or other resources applicable to Linked Learning.

21. Of the 10 schools that participated in the study, one is a small learning community, two are conversions, and seven are new schools.

22. Kearny was originally slated to be broken up into five small schools, according to interviewee accounts.

23. California Partnerships Academies (CPAs) are a network of approximately 500 programs, supported by competitive state grants. Located in 36 different counties statewide, CPAs enroll close to 50,000 students. CPAs are based in the Curriculum, Learning, and Accountability Branch of the California Department of Education, and are designed to prepare students for both college and careers. Passage of legislation in 1984 launched CPAs, and authorization has been renewed in 1987, 1993, and 2010. Additional funding was made available in 2006 through support of career-technical pathways and in 2009 for "green" academies. CDE has issued a request for proposals with each round of additional funding.

24. Laura Flaxman, founding principal of Life Academy, quoted in "Life Academy and Fremont High School: Lessons for Large School Conversions." Published by Coalition of Essential Schools, 2004. Available at: www.essentialschools.org/resources/270

25. Ibid.

26. Of the 10 schools in our study, two opened to 9th grade only (Harbor Teacher Prep Academy and Construction Tech Academy); two opened to 9th and 10th graders only (Sacramento New Technology, Los Angeles School of Global Studies, and MetWest); one opened to 9th through 11th grade (High Tech Los Angeles); one opened to and continues to serve 11th and 12th grade only (Center for Advanced Research and Technology); and three opened to 9-12th grade (Life Academy, Community Partnerships Academy, School of Digital Media and Design).

27. Middle College High Schools are located on college campuses and aim to help students graduate from high school and encourage them to attend college. The four-year programs are community collaborations between school districts and colleges, parents and business representatives.

Harbor Teacher Preparatory Academy is a member of the Middle College National Consortium.

28. See Palaich, R., Augenblick, J., Foster, S., Anderson, A. B., & Rose, D. (2006). *Return on investment in Early College High Schools*. Denver, CO: Augenblick, Palaich and Associates, Inc. Prepared for Jobs for the Future. Retrieved from www.jff.org/sites/default/files/APA_ECHS_ROI_071906.pdf

29. The coursework completed by the students will qualify them for acceptance into California State University, Dominguez Hills' Blended Liberal Studies/Teacher Education Option, a five-semester program that leads to a bachelor's degree and a teaching credential.

30. Networks included the Big Picture Network, the New Tech Network, the High Tech High Model, California Partnership Academies, ConnectEd Network of demonstration sites, and Middle College High Schools.

CONDITION TWO

31. See, for example, Ancess, J., & Allen, D. (2006). Implementing small theme high schools in New York City: Great intentions and great tensions. *Harvard Educational Review*, *76*(3), 401-416.

    Also, Quartz, K., & Washor, E. (2008). Meeting the individual and collective aims of schooling: Can Multiple Pathways as small schools strike a balance? In J. Oakes & M. Saunders (Eds.), *Beyond Tracking: Multiple Pathways to college, career, and civic participation* (pp. 55-70). Cambridge, MA: Harvard Education Press.

32. See Ancess and Allen, (2006). In addition to promoting diverse enrollment, small themed high schools purportedly test market theory. By stimulating competition, the number of high-quality high schools increases while the number of inferior high schools decreases or are eliminated altogether.

33. Quartz and Washor (2008) caution that choice can pose a threat to the common good. According to Quartz and Washor, the small schools portfolio agenda submits that no school is right for everyone and that the "matchmaking process" is often orchestrated by the theme. Through the theme, schools communicate the type of student they are seeking—differentiated by gender, language, academic strengths, career interests, as well as political and ideological commitments. These efforts to differentiate among students and schools can pose a threat to the common good, conceived according to Quartz and Washor as a just, and equitable system of public education.

34. As cited in a report prepared by the School of Digital Media and Design for the Western Association of Schools and Colleges accreditation process, 2006.

35. Foundation standards consist of 11 core standards that support mastery of essential employability skills and rigorous academic content standards. For more information, see California Department of Education. (2007). *California Technical Education framework for California public schools: Grades seven to twelve*. Available at: www.cde.ca.gov/ci/ct/sf/documents/cteframework.pdf

36. As described by Quartz and Washor (2008), MetWest's notion of educational "fit" means that MetWest does not necessarily *provide* the pathway but creates a structure through which students and teachers can *construct* a pathway that fits individual needs in "unique, opportunistic, local, and relational" ways.

37. Oakland Unified School District, Enrollment Options, Middle & High School. Available at: www.ousd.k12.ca.us/enroll

38. See Wagner, T. (2008). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need—and what we can do about it*. New York, NY: Basic Books.

39. Communication with lead teacher of Community Partnerships Academy, Dec. 4, 2011.

40. At CPA (located on the campus of Berkeley High School), for example, students are provided six placement options, or learning communities, to choose from. CPA is one of four "small schools" that provide a core group of teachers and a course of study designed around a particular theme. The rest of the students at Berkeley High School (BHS) attend one of two larger "programs." The small schools and programs are not independent, autonomous schools but they each have their own identity and culture on campus. Through the school choice process, the small schools have consistently attracted higher rates of African American, Latino and low-income students compared to the larger programs. In 2008, more students within CPA (38%) participated in the Free and Reduced Price Lunch program than the school at large (26.4%). CPA served a much higher percentage of African American and Latino students (74% combined) than the larger campus (40.6%). The other two options for BHS students are larger in size and only require students to take two to three classes within a small learning community. Students in these larger programs have much more flexibility in designing their academic experiences, have access to more Advanced Placement courses than students attending the small schools, and are typically comprised of higher percentages of white, Asian and higher income students with higher incoming test scores.

41. In the spring of 2009, more than 3,000 students, grades 9 through 12, attending participating Linked Learning sites were surveyed by the UCLA IDEA research team. Survey instruments were designed by the research team and sought to explore why students choose to attend a particular pathway, their perceptions of the high school experience, and their readiness for college, career, and civic life. Approximately 200 teachers and administrators were also surveyed. See Appendix B for more information on methodology.

42. Although 15% of Harbor students surveyed indicated that they saw themselves in the teaching profession at age 30, a larger percentage of students (36%) indicated they chose to attend Harbor for its "theme/focus" on teaching. The discrepancy between these two factors could be a result of how some students interpret theme/focus. Some Harbor students indicated that the theme encompasses the school's identity as a Middle College that offers the opportunity to pursue an associate degree. In addition, it could also be that a higher percentage of students enter with an interest in education than the percentage of students who ultimately see themselves pursuing the career field. Interview data suggests that students are very interested in teaching and are open to the idea, often as one of many career options. One student shared: "We embrace the fact that we can become teachers, but we feel that we could do other things such as becoming doctors and lawyers and engineers." Students who were interested in the theme expressed a great deal of excitement. As one student explained, "I've always wanted to be a teacher since the 7th grade, so I was like, 'Oh wow, I can go to this school and I can learn to be a teacher.'"

43. Some electives that fall outside the theme, such as foreign language and visual arts, are often offered if they are required to fulfill district graduation requirements or the state's public four-year college entrance requirements. At the Center for Advanced Research and Technology (CART), courses offered are limited to those directly connected to the theme of the lab, as students are expected to fulfill other requirements at the home school.

44. As a result of budget cuts, many community colleges have had to substantially reduce the number of courses offered and restrict the enrollment of high school students. In instances where college courses were offered on the high school campus, community colleges have been forced to reduce or eliminate the provision of teachers to the high school campus to teach a course.

45. The offering of community college courses can create a number of challenges schools must contend with. First, there are costs involved. Undocumented students had to pay for classes and other students could not take more than two classes for free. Second, many community colleges require a placement examination, and sometimes students' placement did not match the course they wanted or needed to take. Third, there are differences in expectations and pedagogy between the college and the Linked Learning site. The Linked Learning site engages in more interactive and engaging pedagogies than the traditional lecture style of many of the college professors. These differences can lead to student boredom and dropped classes.

46. See, for example, National Research Council. (2000). *How people learn: Brain, mind, experience, and school: Expanded edition*. Washington, DC: The National Academies Press.

    Darling-Hammond, L. (Ed.). (2008). *Powerful learning: What we know about teaching for understanding*. San Francisco, CA: Jossey-Bass.

    Wiske, M. S. (Ed.). (1997). *Teaching for understanding: Linking research with practice.* San Francisco, CA: Jossey-Bass.

47. See, for example, Darling-Hammond, L., Ed., (2008).

48. Most sites required students to enroll in an advisory period; however, sites used this time period in different ways. For more information on advisory, see: Poliner, A., & Lieber, C. M. (2004). *The advisory guide: Designing and implementing effective advisory programs in secondary schools*. Cambridge, MA: Educators for Social Responsibility. See http://esrnational.org/

49. At DMD, for example, the principal shared that while students demonstrated improvement across all subject areas that were integrated, students were not experiencing the same sort of success or gains in math. Interestingly, at the time of the study, math was the only content area that was not being integrated. While efforts had been made in the past to bring the math teacher on board, earnest efforts were made in 2009 with greater success.

50. See Thomas, J. W. (2000). *A review of research on project based learning*. San Rafael, CA: The Autodesk Foundation. Retrieved from www.bobpearlman.org/BestPractices/PBL_Research.pdf

    Mergendellor, J.R., & Thomas, J.W. (1999). *Managing project based learning: Principles from the field*. Novato, CA: Buck Institute for Education. Retrieved from www.bie.org/research/study/principles_from_the_field

51. Mergendellor, J.R., & Thomas, J.W. (1999).

CONDITION THREE

52. See, for example, Darling-Hammond, L., Alexander, M., & Price, D. (2002). *Redesigning high schools: What matters and what works: 10 features of good small schools.* Stanford, CA: School Redesign Network. Retrieved from www.srnleads. org/data/pdfs/10_features.pdf. Educational researchers have found that, all else equal, in comparison to large schools, small schools tend to have better attendance rates, stronger academic achievement, lower dropout rates, higher grades, fewer failed courses, greater participation in activities, less vandalism and violence, fewer behavioral incidents, and especially strong academic results for low-income students and students of color.

53. Average class size (defined as enrollment in classes divided by the number of classes offered) increased from 22 students in 2007 to 25 in 2008. The pupil-teacher ratio (enrollment in school divided by full-time equivalent) increased more dramatically from 19 to 26 students. Information available at: http://dq.cde.ca.gov/dataquest/

54. CTA is on a 4x4 A/B block schedule, which means most teachers teach a total of three classes each day during a semester, and a total of six classes during the year (versus five courses in a traditional schedule). While some teachers might have a smaller student load within the semester, it is not clear whether their total student load by the end of the year is smaller than that of a traditional high school.

55. See Poliner, A., & Lieber, C. M. (2004). *The advisory guide: Designing and implementing effective advisory programs in secondary schools.* Cambridge, MA: Educators for Social Responsibility.

56. For a review of the research on advisories, see Coalition of Essential Schools at: www.essentialschools.org/resources/282

57. Despite favorable research on looping, the practice is fairly uncommon in the United States, particularly at the high school level.

58. California Department of Education, available at: http://dq.cde.ca.gov/dataquest

59. Until the 2004-05 school year, a student had to score at least "basic" on a reading test to be admitted to CTA. The San Diego Unified School District (SDUSD) imposed a reading requirement for all magnet programs within the district, and for CTA's first years of operation, approximately 98% of CTA students were magnet students. The "reading filter" was removed in the 2005-06 school year by the district. Additionally, in 2006 all four small schools on the Kearny High Educational Complex were made into magnet programs by the SDUSD Board of Education. For the first time, CTA enrolled more than half of its students from the neighborhood. According to teachers and administrators, the lifting of the reading filter and sharing magnet students among the three others small schools on Kearny's campus dramatically altered the school's demographics.

60. According to teachers and administrators, demographic changes triggered a decline in performance data because the school failed to make necessary instructional changes immedia- tely. As one teacher shared, "there was no shift in terms of instructional strategies once the reading component was eliminated. There hasn't been an analysis to shift instruction based on a new population or based on student needs."

61. All Title I funded schools and districts that do not make Adequate Yearly Progress (AYP) for two consecutive years are identified for Program Improvement (PI) under No Child Left Behind. Schools that continue to fail to make AYP toward statewide proficiency goals are subject to improvement and corrective action measures. Determinations are made using two years of data for schools. For more information see: www.cde.ca.gov/ta/ac/ti/programimprov.asp

62. Specialized Academic Instruction (SAI) is a way of delivering instructional services to students with disabilities. SAI ensures access to the general curriculum, so that students can meet educational standards. Districts have the local option of using the SAI designation to describe an instructional delivery model.

63. Special education students who will leave Construction Tech Academy without a diploma work toward receiving a letter of recognition of educational achievement or completion.

64. CTA also works with vocational rehabilitation programs such as "Transition Resources for Adult Community Education" (TRACE) to create Individual Transition Plans (ITPs) that provide the students with the skills they will need to live independently after high school graduation. TRACE is a community-based program and supports students after the age of 18 in their transition from public school to adult life. The program helps ensure students are connected to lifelong opportunities and to supports within the community, and assists with information and processes such as getting driver's licenses, etc.

65. On average, in 2008-09, 10% of students attending a Linked Learning site were identified as English learners. At Life Academy, 38% of students were identified as English learners, while only 4% of the population at High Tech Los Angeles was identified as such.

66. School belonging is defined as the extent to which a student perceives being liked, personally accepted, included, respected, and supported by others (students and teachers) in the school environment. See Goodenow, C., & Grady, K. E. (1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent students. *Journal of Experimental Education*, *62*(1), 60-71.

67. See Croninger, R. G., & Lee, V. E. (2001). Social capital and dropping out of high school: Benefits to at-risk students of teachers' support and guidance. *Teachers College Record*, *103*(4), 548-581.

   Several ethnographic studies corroborate quantitative findings by describing how Latino and African American students' perceptions of a lack of support and care from teachers can lead to disengagement from schools. See, for example, Valenzuela, A. (1999). *Subtractive schooling: U.S.-Mexican youth and the politics of caring.* New York, NY: SUNY Press.

   Conchas, G. Q. (2006). *The color of success: Race and high-achieving urban youth.* New York, NY: Teachers College Press.

   Katz, S. R. (1999). Teaching in tensions: Latino immigrant youth, their teachers, and the structure of schooling. *Teachers College Record*, *100*(4), 809-840.

68. According to social learning theory, people learn from one another, via observation, imitation, and modeling. See Bandura, A. (1977), *Social learning theory.* New York, NY: General Learning Press.

69. We found that particular Linked Learning sites, depending on the theme, correspond to varied levels of community engagement. For example, certain themes require that students focus on understanding and addressing the needs of their communities (e.g., health professions, global studies, community partnerships, teacher prep academy) more so than other themes. At Construction Tech Academy, for example, teachers attempted to make these connections through projects, but connections between community needs and construction, architecture, and engineering were not always so straightforward. (Teachers and students at CTA did cite a number of examples of community-oriented projects.)

70. According to the UCLA IDEA survey administered to students attending participating Linked Learning pathways, Linked Learning students possess a strong civic orientation. Responding to questions developed by the 2002 Educational Longitudinal Study (ELS) sponsored by the U.S. Department of Education, we were able to compare responses from a national sample (n=14,668) to responses of Linked Learning students (n=2,752).

CONDITION FOUR

71. The 21st Century Community Learning Center Grant is a federal grant program that supports the creation of community learning centers that provide academic enrichment opportunities during non-school hours for children, particularly students who attend high-poverty and low-performing schools. The program helps students meet state and local student standards in core academic subjects, such as reading and math; offers students a broad array of enrichment activities that can complement their regular academic programs; and offers literacy and other educational services to the families of participating children.

72. For more information on communities of practice, see Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, MA: Cambridge University Press.

    Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge, MA: Cambridge University Press.

    According to Lave and Wenger, communities of practice are formed by groups of people who engage in a process of collective learning. They share a concern or a passion for something they do and learn how to do it better through regular interactions.

73. In 2008, this role was the filled by a district Employment Opportunity Specialist (EOS) at CTA and DMD. Due to budget cuts, the EOS position was cut across the district in 2010.

74. Administrators at Life Academy estimated a yearly cost of $700 per student to run an internship program for all 11th and 12th graders. This cost includes supporting key positions to coordinate the program.

75. In California, the term *concurrent enrollment* is often used in place of *dual enrollment*. Dual enrollment programs allow high school students to enroll in college courses for college credit. Dual enrollment programs can be located on the college or high school campus.

76. Palaich, R., Augenblick, J., Foster, S., Anderson, A. B., & Rose, D. (2006). *Return on investment in Early College High Schools*. Denver, CO: Augenblick, Palaich and Associates, Inc. Prepared for Jobs for the Future. Retrieved from www.jff.org/sites/default/files/APA_ECHS_ROI_071906.pdf

77. According to Harbor Teacher Prep Academy students interviewed, if students aim to obtain the associate degree by the time they graduate from high school, they will likely need to take classes at night and in the summer to acquire enough units.

78. This excludes generous grants received to plan, design, and renovate the school.

79. As described in Condition Six, authentic assessment, or performance-based assessment, requires students to demonstrate skills and competencies that represent tasks, problems, and situations that they are likely to encounter in the real world. According to Grant Wiggins, authentic tests of intellectual performance involve engaging problems or questions of importance and realistic representation of the contexts encountered in a field of study or in the real world of adults. See Wiggins, G. (1993). Assessment: Authenticity, context, and validity. *Phi Delta Kappan*, *75*(3), 200-214.

CONDITION FIVE

80. Cuban, L. (1988). *The managerial imperative and the practice of leadership in schools*. Albany, NY: SUNY Press.

    Also, see Callahan, R. E. (1962). *Education and the cult of efficiency*. Chicago, IL: University of Chicago Press.

81. Oakes, J. (1985, 2005). *Keeping track: How schools structure inequality*. New Haven and London: Yale University Press.

82. UCLA IDEA survey results indicate that approximately 94% of teachers at the sites studied had worked in education for three years or more, with approximately 70% indicating they had worked in education for six years or more. Further, approximately 64% of teachers surveyed indicated that they had worked at their particular school sites for three years or more (31% indicated that they had worked at their sites for six years or more).

83. Costa, A., & Kallick, B. (1993). Through the lens of a critical friend. *Educational Leadership*, *51*(2) 49-51. According to Costa and Kallick, "a critical friend can be defined as a trusted person who asks provocative questions, provides data to be examined through another lens, and offers critiques of a person's work as a friend. A critical friend takes the time to fully understand the context of the work presented and the outcomes that the person or group is working toward. The friend is an advocate for the success of that work."

84. According to the principal at DMD, providing this training time costs approximately $50,000. Given recent budget cuts, this has been a difficult expenditure, and the school has been at risk of losing this valuable planning time. So far, she has found ways to fund training and planning through external grants.

85. The School of Teacher Education at San Diego State University (SDSU) leads a network of teacher training institutions that are implementing a state-approved teaching credential program designed to prepare teachers for Linked Learning. This program is a revision of the existing state teaching credential. The updated credential program adds a Linked Learning "lens" to existing teacher-training courses. It was created in 2008 at SDSU's School of Teacher Education to provide teachers with the additional knowledge and skills needed to participate fully in the growing number of career academies being established in California's high schools (additional training on work-based learning, teacher collaboration, and developing integrated curriculum across disciplines). SDSU received a grant to create a replicable

model of this new system that could be used in other universities as well. Programs are now offered at CSU San Bernardino, CSU Fresno, CSU Sacramento, San Diego State University, CSU Long Beach, CSU East Bay, Claremont Graduate University, and the University of California, Los Angeles.

86. Based on the results of a survey administered by UCLA IDEA. The 10 schools in the UCLA IDEA study had been open for an average of six years when we conducted the survey, with five of the schools open fewer than five years. See Appendix B for more information on the study's methodology.

CONDITION SIX

87. Pseudonyms are used for students and teachers throughout the guidebook.

88. See Wiggins, G. (1989). A true test: Toward a more authentic and equitable assessment. *Phi Delta Kappan*, *70*(9), 703-713.

   Wiggins, G. (1993). Assessment: Authenticity, context, and validity. *Phi Delta Kappan*, *75*(3), 200-214.

   The Office of Research. (1993). *Performance assessment (Education consumer guide: 2)*. Washington, DC: Office of Educational Research and Improvement (OERI) of the U.S. Department of Education. Retrieved from www2.ed.gov/pubs/OR/ConsumerGuides/perfasse.html

   Palm, T. (2008). Performance assessment and authentic assessment: A conceptual analysis of the literature. *Practical Assessment, Research & Evaluation*, *13*(4). A peer-reviewed electronic journal, available at: http://pareonline.net/pdf/v13n4.pdf

89. Clarke, M., Shore, A., Rhoades, K., Abrams, L., Miao, J., & Li, J. (2003). *Perceived effects of state-mandated testing programs on teaching and learning: Findings from interviews with educators in low-, medium-, and high-stakes states*. Retrieved from www.bc.edu/research/nbetpp/statements/nbr1.pdf

   Tracey, C. (2005). *Listening to teachers*. In G. L. Sunderman, J. S. Kim & G. Orfield (Eds.), *NCLB meets school realities: Lessons from the field* (pp. 81-104). Thousand Oaks, CA: Corwin Press.

   McNeil, L. M. (2000). Creating new inequalities: Contradictions of reform. *Phi Delta Kappan*, *81*(10), 728-734.

   Valli, L., & Buese, D. (2007). The changing roles of teachers in an era of high-stakes accountability. *American Educational Research Journal*, *44*(3), 519-558.

90. Hursh, D. (2008). *High-stakes testing and the decline of teaching and learning*. Plymouth, UK: Rowan and Littlefield Publishers.

   Sunderman, G. L., Kim, J. S., & Orfield, G. (Eds.). (2005). *NCLB meets school realities: Lessons from the field*. Thousand Oaks, CA: Corwin Press.

   Valenzuela, A. (Ed.). (2005). *Leaving children behind: How "Texas-style" accountability fails Latino youth*. Albany, NY: SUNY Press.

   White, K., & Rosenbaum, J. E. (2008). Inside the black box of accountability: How high-stakes accountability alters school culture and the classification and treatment of students and teachers. In A. R. Sadovnik, J. A. O'Day, G. W. Bohrnstedt, & K. M. Borman (Eds.), *No Child Left Behind*

and the reduction of the achievement gap: Sociological perspectives on federal educational policy (pp. 97-116). New York, NY: Routledge.

   Wood, G. (2004). A view from the field: NCLB's effects on classrooms and schools. In D. Meier & G. Wood (Eds.), *Many children left behind: How the No Child Left Behind Act is damaging our children and our schools* (pp. 33-53). Boston, MA: Beacon Press.

91. According to the principal, the only content area that has not seen improvement is mathematics—the one subject the school has had difficulty integrating. As such, in 2010, the school made great efforts at each grade level to achieve full cross-curricular integration that includes mathematics.

92. Senate Bill 1458, introduced by Steinberg, proposes changes to the composition and use of the Academic Performance Index (API) by providing that achievement test results constitute no more than 40 percent of the value of the API for secondary schools, and that achievement test results constitute at least 40 percent of the value of the API for primary and middle schools. Both sets of criteria would take effect beginning with the 2014-15 school year.

93. In order to meet the a-g requirements, students must complete the series of 15 required courses with a grade of "C" or above. This standard is not required for high school graduation and students can meet the graduation requirement with a grade of "D" or above in a-g courses.

94. Data retrieved from the California Department of Education at: http://dq.cde.ca.gov/dataquest/

95. See Friedlander, D., & Darling-Hammond, L. (2007). *High schools for equity*. Stanford, CA: The School Redesign Network. Retrieved from www.srnleads.org/press/pdfs/hsfe_report.pdf

96. See Oakes, J. (2003). *Critical conditions for equity and diversity in college access: Informing policy and monitoring results*. Los Angeles, CA: UC/ACCORD. Retrieved from http://escholarship.org/uc/item/427737xt

97. In the establishment of a college-going culture, schools also offered the support needed for students to feel like college was an option for them, regardless of their background, and they provided targeted and ongoing help for students to understand and navigate the college application process. See Oakes, J., (2003).

98. See Allensworth, E., & Easton, J. (2005). *The on-track indicator as a predictor of high school graduation*. Chicago, IL: Consortium on Chicago School Research.

   Allensworth, E., & Easton, J. (2007). *What matters for staying on-track and graduating in Chicago public high schools: A close look at course grades, failures and attendance in the freshman year*. Chicago, IL: Consortium on Chicago School Research.

   Silver, D., Saunders, M., & Zarate, E. (2008). *What factors predict high school graduation in the Los Angeles Unified School District*. Santa Barbara, CA: California Dropout Research Project.

99. See Roderick, M. (1991). *The path to dropping out: Evidence for intervention. Research Bulletin: Malcolm Wiener Center for Social Policy*. Cambridge, MA: Harvard University, John F. Kennedy School of Government.

100. A student missing more than 30 minutes of instruction without an excuse three times during the school year is classified as truant. Rates exclude Community Partnerships Academy and CART.

101. Performance-based assessments or authentic assessments have been used in schools since the early 1990s, in part in response to the impact of the multiple-choice style of accountability that experts believed was narrowing the curriculum and widening the achievement gap. Performance-based assessments and authentic assessments differ slightly. Performance-based assessments require students to complete or demonstrate the behavior or competency that the teacher wants to measure. In authentic assessments, the student completes or demonstrates the desired behavior, but does so in a real-life context. See Meyer, C. A. (1992). What's the difference between authentic and performance assessment. *Educational Leadership, 49*(8), 39-40.

102. See decription provided by the Office of Technology Assessment, U.S. Congress. (1992). *Testing in American schools: Asking the right questions (OTA-SET-519)*. Washington, DC: U.S. Government Printing Office.

103. Students are often provided time in advisory to work on their portfolios, update them, and select their best work from each academic year.

104. Flash is a multimedia platform used to add animation, video, and interactivity to web pages.

105. Arthur L. Costa and Bena Kallick crafted the 16 "habits of mind" that are used by teachers at Life Academy to create what they call "Habits of Life." For more information, see Costa, A., & Kallick, B. (2000). *Habits of mind: A developmental series*. Alexandria, VA: Association for Supervision and Curriculum Development.

106. For more on the positives and negatives of internships in general, see Merrit, R. D. (2008). *Student internships*. EBSCO Research Starters, EBSCO Publishing. Retrieved from www.ebscohost.com/uploads/imported/thisTopic-dbTopic-1072.pdf

107. For more information, see Zins, J., Weissberg, R. W., Wang, M. C., & Walberg, H. W. (2004). *Building school success on social emotional learning: What does the research say?* New York, NY: Teachers College Press.

    Visit the Center for Social and Emotional Education at: www.schoolclimate.org/guidelines/teachingandlearning.php

CONCLUSION

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

109. Ibid.

APPENDICES

The Center for Advanced Research and Technology (CART)

CART was initially conceived in early 1997 as a technology school for the Clovis Unified School District (CUSD). During its first year of planning, the vision changed, as a new CUSD superintendent reached out to the Fresno Unified School District to create a school that would prepare students for college, career, and the real world. In 2000, CART opened its doors to students from both districts.

CART provides a half-day program for 11th and 12th grade students from 13 traditional high schools and four alternative schools in the Clovis and Fresno school districts. Students attend either a morning or afternoon session at CART and spend the rest of the day at their "home school" (the traditional public high school or alternative school in their district and attendance area). During the 2008-09 school year, CART served 1,373 students between its morning and afternoon sessions.

CART is comprised of 14 labs within four thematic clusters. The type of labs offered at CART shift every year based on the needs and interests of the students, but generally fall within the advanced communications, professional sciences, global dynamics, and engineering fields. Each lab is taught collaboratively by two to four teachers. The majority of the CART labs offer a one-year course and students who attend two years have the opportunity to experience two different labs. Nine of the labs offer a two-year course sequence. Content areas taught, classroom setups, and types of integration vary depending on the lab; however, every lab offers 20 credits that include five English course credits, five technology credits, five themed elective credits and five social science or lab science credits.

CART received Linked Learning certification in April 2011.

Community Partnerships Academy (CPA) at Berkeley High School

CPA is one of six options for students attending Berkeley High School (BHS), a large comprehensive high school in Berkeley. In an effort to address the intractable achievement gap and to promote equity, BHS decided to divide the campus into small schools. In 2003, the Berkeley school board approved a community-driven comprehensive Small Schools Reform Initiative (SSRI), which was implemented in 2005. The founding of CPA, however, predates the small school movement of BHS. Founded in 1991 with the support of a California Partnership Academy grant, it focused on addressing the needs of students falling through the cracks in the larger school setting. In the 2008-09 school year, CPA served 224 out of the 3,329 students on the larger BHS campus.

Because it's situated within a larger comprehensive high school, CPA lacks the autonomy to implement structural changes to support its reform agenda. In particular, CPA has wanted to institute a block schedule and advisory period, which staff feel would better support their program and provide greater sustainability for teachers. However, CPA's schedule matches the rest of Berkeley High School: a six-period day with approximately 60-minute classes. CPA offers a zero and seventh period that allow students to take additional courses.

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

Construction Tech Academy (CTA)

CTA, a small public high school located within the San Diego Unified School District (SDUSD), opened its doors to 120 9th graders in the fall of 2002 and graduated its first class of seniors in 2006. CTA's structure and size has remained fairly constant, serving approximately 475 students, grades 9-12, each year.

Originally operating as an academy within Kearny High School, CTA is currently an autonomous small school designed to prepare students for careers in the field of architecture, engineering, and construction. CTA is situated on the Kearny High Educational Complex alongside three other small autonomous schools, each of which, like CTA, possesses a unique theme, a rigorous academic curriculum, and a focus on providing students with access to real-world experiences that will prepare them for college and career.

The school operates on a 4x4 AB block schedule. Teachers are grouped in grade-level teams and share the same students. Projects incorporate all subjects and are anchored in the themed elective class at each grade level, and in advisory periods.

The school's stated mission is to provide students with an opportunity to explore these fields through a contextual, hands-on, rigorous curriculum that prepares students, upon graduation, for direct entry into colleges, apprenticeships, or careers. CTA's stated strategic goals include: 1) increasing the number of college-ready San Diego Unified School District high school graduates, particularly within the low-income and minority population; and 2) improving students' postsecondary options, whether college, technical training, or the world of work.

CTA received Linked Learning certification in January 2011.

School of Digital Media and Design (DMD)

DMD, a small public high school located within the San Diego Unified School District (SDUSD), opened its doors in fall 2004 amidst district-wide reform efforts. In an attempt to disrupt persistent patterns of low test scores, high dropout rates, and few students going on to college, the district restructured Kearny High School and reopened it as four small, autonomous schools. DMD offers a focus on graphic design, multimedia, video production, fashion design, and journalism. During the 2008-09 academic year, DMD served 477 students, grades 9 through 12.

The school operates on a 4x4 AB block schedule. Teachers are grouped in grade-level teams and share the same students. Projects incorporate all subjects and are anchored in the themed elective class at each grade level, and in advisory periods.

According to its mission statement, DMD "exists to develop exemplary communication skills in students through authentic, media based experiences in an environment of high academic and social expectations." Developed by administration and staff, DMD's mission statement is based on student need, current educational research, and the belief that "all students can achieve when challenged with high academic and social expectations." DMD has two strategic goals: 1) to increase the number of college-ready San Diego City School high school graduates, particularly within the low-income and minority population; and 2) to improve students' postsecondary options, whether college, technical training, or the workplace.

In 2010, DMD was recognized by the California Department of Education as a Blue Ribbon School. In May 2010, DMD was the first pathway to receive Linked Learning certification.

Los Angeles School of Global Studies (Global Studies)

Global Studies is a small school of 380 students located on the site of the Miguel Contreras Learning Complex, just west of downtown Los Angeles. Global Studies shares the large, modern campus (which opened in 2006) with one pilot school called the Academic Leadership Community (437 students) and the Miguel Contreras Learning Complex, a comprehensive high school of 935 students with two small learning communities. The entire complex is part of the Los Angeles Unified School District (LAUSD) and is located within the Belmont Zone of Choice, which offers 8th graders within a particular area the option of choosing from 17 small schools, pilot schools, and small learning communities.

Global Studies opened in 2006 with 9th and 10th grade classes and added a new 9th grade class for the following two years to become a 9th-12th grade high school by 2008-09. In 2009, Global Studies graduated its first class. The small school receives support from the New Technology Network. The New Technology Network supports its schools in two primary ways: 1) technology tools and software for creating and maintaining an online network for project-based learning, grades, and collaboration among students and teachers, and 2) access to initial training for new teachers, professional development for continuing teachers, visits to New Tech model schools, and networking among its schools.

Global Studies' schedule is a modified block schedule with a built-in advisory. The schedule changed slightly during each of the study years to ensure class sizes remained as small as possible, to maximize opportunities for team teaching, and for grade-level teachers to meet and collaborate during the school day.

Global Studies received Linked Learning certification in June 2012.

Harbor Teacher Prep Academy (Harbor)

Located on the campus of Harbor Community College, 10 bungalows provide a sanctuary for urban high school students and their teachers to rigorously engage in academics. A small school within the Los Angeles Unified School District (LAUSD), Harbor has achieved impressive academic outcomes since opening its doors in the fall of 2002. As a Middle College High School, all students take community college courses with the opportunity to pursue associate degrees. Approximately 70% of Harbor's first four graduating classes completed high school while also obtaining their associate degrees. The school serves approximately 360 students.

In 2008-09, Harbor moved to a block schedule, where students attend classes every other day for 90 minutes, Monday through Thursday, and attend every class for shortened periods on Fridays. Harbor also offers a zero period and a seventh period that allow students to take additional courses before or after school. Extending the school day allows students to fulfill their high school requirements and complete courses for their associate degrees.

While the staff is dedicated to rigorously preparing all students so they can enter and graduate from college, they also aim to expose all students to the teaching professions and provide them with the opportunity to choose that career path. Thus, the vision is to provide students with experiences that motivate them to pursue teaching, while preparing them for the academic path (college) needed for access to the profession. "Our dedicated staff empowers students to think analytically and creatively while preparing them to be competitive, socially responsible, and successful in the completion of their college degrees."

Harbor was identified as a California Distinguished School in 2007 and a Blue Ribbon Award recipient in 2008. Most recently, it was named by a national magazine in a ranking of the top high schools in the country.

High Tech Los Angeles (HTLA)

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

HTLA is a charter high school and sits on the campus of Birmingham Community Charter High School (formerly Birmingham High). HTLA opened in 2004 as a dependent charter within the Los Angeles Unified School District and became an independent charter in 2008. In 2008, HTLA served 315 students, grades 9-12.

HTLA customizes its classes to meet the needs of individuals and makes sure all students have access to a high-quality, college-preparatory curriculum. The school operates on a six-period AB block schedule. Projects typically take place within individual classes, and integrate technical and problem-solving elements. Advanced Placement courses are not offered, but teachers work to challenge students and all students have the option to contract with teachers and take classes for honors credit. All students present their learning twice a year to a panel for defense and review. In their senior year, students are encouraged to take courses off-campus at a local community college. Each HTLA student is required to complete an internship.

In 2007, HTLA was honored as a California Distinguished High School, and has been identified by U.S. News & World Report as a "Best High School."

Life Academy of Health and Bioscience (Life Academy)

Life Academy is a small autonomous high school in East Oakland that was born from a movement led by educators and community members to create smaller, more responsive, and equitable schools. When the school opened in fall 2001, it was the first autonomous small high school in Oakland United School District. The school opened with 250 students, grades 9-12, from diverse backgrounds including a large number of English learners. Since its opening, the enrollment has remained at or near 250 students.

In most of its promotional materials, the school emphasizes its dual mission of preparing students for college, and exposing them to the fields of health and bioscience through project-based learning, and engaging and enriching activities. A more recent iteration of the mission statement includes the school's desire to dramatically disrupt patterns of injustice and inequity for underserved communities in Oakland.

The school has developed partnerships with health- and science-related community organizations to provide opportunities for students to participate in internships and summer jobs. All 11th and 12th graders are required to participate in internships. The school also integrates its health and bioscience themes in the curriculum with the goal of "increas[ing] the number of underrepresented, minority and low-income, young people that enter careers in science and health."

Life Academy was certified a Linked Learning site in January 2011.

MetWest

MetWest, a small school located in West Oakland, opened its doors in fall 2002. During the 2008-09 school year, a total of 131 students were enrolled at MetWest, with approximately 33 students per grade. The academic program is based on the Big Picture Learning design that prioritizes students' interests and goals, uses a curriculum that is relevant to students' lives, and assesses students' abilities through authentic measures. The school's approach to learning is grounded in a commitment to educate "one student at a time, in a tight-knit community of peers, family, teachers, and community mentors— utilizing resources inside and outside the classroom."

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

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

of eight internships by the time they graduate from MetWest.

Students are grouped into small (approximately 20 students) grade-level advisories led by an advisor who is responsible for facilitating the internship experiences and teaching core classes. Students take courses on Mondays, Wednesdays, and Fridays. Tuesdays and Thursdays are spent at their internship sites. Course offerings at MetWest are aligned with a-g requirements. The Big Picture Network developed a set of matrices that demonstrate how students can complete college requirements through alternative approaches and experiences. The UC approved the alternative process in 2006.

The stated mission of MetWest is to prepare young adults to recognize and take advantage of all resources to further their personal well-being. Furthermore, "graduates will have the skills, habits, knowledge, and networks to overcome obstacles to their success, access four-year colleges, and contribute positively to our world."

MetWest has received national attention for its innovative program. It has been featured in the *New York Times* and *Edutopia*.

Sacramento New Technology High School (New Tech Sac)

New Tech Sac opened in September 2003 as a small charter school within the Sacramento City Unified School District, with 200 9th and 10th graders. The school graduated its first class of seniors in 2005. New Tech Sac enrolls a diverse student body that reflects the district's student demographics. During the 2008-09 school year, the school served 308 students, grades 9-12.

New Tech Sac runs a modified block schedule with a built-in advisory. Freshmen and sophomores have eight blocks, while upperclassmen can "trade" a double block for a college course. Students must complete 12 units of study at the community college for graduation.

New Tech Sac is based on the model of Napa New Technology High School and is part of the New Tech Network that supports over 86 schools nationwide. New Tech schools enable students to "gain the knowledge and skills they need to succeed in life, college and the careers of tomorrow."

New Tech Sac's instructional approach is rooted in project-based learning and integrates technology in the classroom. The school uses technology as a tool for teaching and learning and has a 1:1 ratio of computers to students.

New Tech Sac teachers and students work in teams. Co-teaching allows teachers to integrate their respective curricula to enhance the power of project-based learning. Common team pairings include English/social studies and science/math. Similarly, students work in groups where they learn to collaborate in a collegial environment based on trust and responsibility. The school strives to create a "real" work environment.

Students are assessed through the completion of projects that are graded following clear rubrics and they are judged on content knowledge, mastery of key skills, and quality of the presentation.

New Tech Sac was certified as a Linked Learning site in May 2011.

Table 6: Linked Learning Site Profiles, 2008-09

SITE	LOCATION	SCHOOL SIZE	YEAR OPENED	API *	DEMOGRAPHICS**		NETWORK
CART	Fresno/ Clovis	1,373 (both sessions)	2000	NA	Asian 29% AfAm 7% Latino 29% White 50%	ELL 5% FRL 39%	ConnectEd Network
CPA	Berkeley	224	1991	NA	Asian 0% AfAm 55% Latino 19% White 12%	ELL 6% FRL 38%	California Partnership Academy
CTA	San Diego	474	2002	659	Asian 15% AfAm 14% Latino 54% White 17%	ELL 22% FRL 73%	ConnectEd Network
DMD	San Diego	477	2004	721	Asian 20% AfAm 18% Latino 38% White 23%	ELL 18% FRL 75%	ConnectEd Network
Global Studies	Los Angeles	380	2006	591	Asian 7% AfAm 2% Latino 90% White 0%	ELL 21% FRL 63%	New Tech Network
Harbor	Los Angeles	362	2002	857	Asian 13% AfAm 25% Latino 52% White 9%	ELL 0% FRL 62%	Middle College Network
HTLA	Los Angeles	315	2002	834	Asian 11% AfAm 2% Latino 38% White 50%	ELL 4% FRL NA	High Tech High
Life Academy	Oakland	248	2001	635	Asian 10% AfAm 11% Latino 73% White 1%	ELL 38% FRL 83%	ConnectEd Network, California Partnerhip Academy, Oakland Small Schools Foundation
MetWest	Oakland	131	2002	568	Asian 3% AfAm 38% Latino 49% White 5%	ELL 15% FRL 68%	Big Picture Network, Oakland Small Schools Foundation
New Tech Sac	Sacramento	308	2003	655	Asian 8% AfAm 25% Latino 35% White 30%	ELL 16% FRL 68%	New Tech Network

* CART does not have an API as California Standardized Tests are administered at students' "home schools." Disaggregated data are not available for small learning communities such as CPA, located on the campus of Berkeley High School.

** ELL stands for English language learners and FRL for free and reduced-price lunch.

In fall 2008, a research team from UCLA's Institute for Democracy, Education, and Access (IDEA) embarked upon a comprehensive study of California public schools implementing a Linked Learning approach to high school reform. Our team was interested in learning about the challenges and strategies associated with high school reform efforts in general, and those associated with Linked Learning, in particular. The team visited 27 schools that were in various stages of Linked Learning implementation (from a list of approximately 140), and asked 10 schools, located throughout California, to participate in this study.

This appendix details the research methodology used for our study site selection, primary data collection, and data analyses used in this study.

Case Study Analysis and Site Selection

This guidebook is based on a case study analysis designed to examine, in depth, a "case" within its "real-life" context.[i] The purpose of the case study was to examine implementation efforts of the Linked Learning approach to schooling. The research questions focused on 1) the obstacles and challenges experienced by schools attempting to implement Linked Learning; 2) the strategies the schools use to achieve successful implementation; 3) the results the schools have achieved with students; and 4) the extent to which the implementation of Linked Learning disrupts prevailing patterns of school stratification.

Site Selection Criteria

The research team identified a set of criteria to select the 10 case study sites. Four criteria were taken into consideration.

First, the site had to demonstrate a commitment to challenge the stratification of students within the school. All students needed access to the full curriculum—challenging academic courses, theme-based courses, and real-world experiences.

Second, the site had to demonstrate a commitment to implementation of the four key components of Linked Learning. All pathways provided college and career preparatory coursework. Some pathways did not have a specific career theme, but integrated a theme and/or offered course components that were related to career preparation. Sites provided field-based experiences (e.g., internships, school-based enterprises, technical mentoring, etc.) and supports for struggling students.

Third, we examined evidence of traditional measures of student success as reflected on standardized tests when compared with schools with similar populations.[ii] While we did not set a benchmark that schools had to meet for selection (see Table 6 in Appendix A for API scores), we did eliminate schools that were struggling to meet state and national accountability measures. These schools needed to prioritize performance on accountability measures and participation in our study could have served as a distraction.

Fourth, we selected sites in order to achieve a diverse sample of schools based on geography, demographics, governance, structure, network affiliation, and theme. Schools were selected to represent the geographic and demographic diversity of the state. We ensured demographic diversity across the sites and within the school sites. In order to explore equitable access to courses within schools, we chose to include racially and economically diverse schools within our study. All of the sites selected were public schools, and most operated within a local school district. However, we sought to include charter schools to explore the impact of governance on Linked Learning implementation. While the vast majority of Linked Learning pathways are small schools, academies, or learning communities (varying from 100 to 800 students), there is a variety of structural

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i. Green, J. L., Camill, G., & Elmore, B. P. (2006). *Handbook of complementary methods in education research.* Mahwah, NJ: Lawrence Erlbaum Associates, 111-112.

ii. Not every school selected for the study demonstrated a high API score and/or a high graduation rate. One site chosen for participation had not yet graduated a class at the time of site selection (however, in the 2009-10 school year, the school had a graduation rate of 90%). In these cases, the school rated very high on other selection criteria and showed promise of improving student performance through other indicators such as promotion rates.

representations of Linked Learning pathways throughout California. We also sought to include schools that had support for their work through various networks, including but not limited to the ConnectEd Network of schools. Finally, sites were selected to explore the wide range of themes offered through Linked Learning pathways.

Final Selection

In fall 2008, the research team compiled a list of approximately 140 potential study sites across California identified by education organizations, foundations that support the work of career academies and Linked Learning schools, and educational researchers with knowledge of career academies and Linked Learning. UCLA IDEA utilized rubrics developed by ConnectEd: The California Center for College and Career to assist in the selection process.

From this list, the team eliminated more than half of the sites because the themes of the schools appeared to exist in name only, and/or the introduction of themes or careers was limited to one or two isolated courses. These eliminations were based on direct communication with the schools. Forty-nine schools were eliminated based on recommendations from the above-referenced organizations and their understanding of the schools, and our selection criteria (with a priority placed on the perceived fidelity to the Linked Learning components). Of the remaining schools, 27 agreed to participate in the study, and our research teams visited and created brief reports on these schools during fall 2008. Finally, the team created a series of lists of the 27 sites visited, grouped them according to the diversity criteria (governance, geographic, demographic, and thematic), and held extensive discussions regarding the other criteria (implementation of Linked Learning components, standardized test scores, and equity). From those discussions, we arrived at 10 school sites and three back-up sites.

The final sample was varied enough to represent the issues that different schools implementing Linked Learning confront, and large enough to generalize for meaningful discussions of shared strategies.

Securing Access

A critical part of the site selection process was securing the willing participation of the leadership and staff at the sites. As such, we worked to develop relationships with the principals and key faculty members, making clear the purposes and methods of our project, and securing their cooperation in the data collection process and their participation in reviewing our analysis and findings. Such agreements both enhanced the trustworthiness of the study and enabled the selected sites to learn from their participation. Seven of the 10 schools selected required district approval prior to the collection of data and/or site visits. In these cases, the research team submitted proposals to administering districts for approval. In each instance, district approval was granted.

Instrument Development and Data Collection

The instrument development and data collection process took place over the course of 20 months, from fall 2008 to spring 2010 with the first round of site visits taking place in spring 2009 and the second round of site visits taking place during spring 2010.

Research Instruments and Data Collection

Using constructs from the research literature and our conceptual framework, as well as insights from the ConnectEd staff, we designed observation, interview, and document analysis protocols for collecting data about the pathways' implementation processes. The research team developed interview protocols and survey instruments specifically tailored to teachers, students, parents, administrators, and community partners of Linked Learning pathways. The interview protocol questions were intended to be broad and open-ended. The scaled survey prompts were more limited (surveys were administered to students and school staff only), but provided important information that allowed us to triangulate the data and test the various assertions and responses provided through interviews.

First round visits spanned three days and involved two to three researchers from the UCLA IDEA research team. During each visit, the researchers conducted interviews with school administrators (principal, assistant principals, deans, counselors, and support staff), teachers, and students. At the majority of the sites, the surveys were conducted prior to our arrival and were collected during the site visit. However, several schools elected to respond to their surveys online via Survey Monkey. First round visits resulted in 280 interviews and the administration of 3,000 surveys.

In addition to interviews and surveys, each research team conducted 15-30 minute classroom observations looking for demonstration of Linked Learning components. The researchers also collected artifacts such as student work samples, grading rubrics, master schedules, professional development materials, etc.

Based on the trends we saw across sites, the research team developed a second round of interview questions. The second round of interview questions included specific questions about the impact of the budget cuts (as they were being projected during our first round of interviews), and we included specific equity-related questions. Second round visits were typically two days and primarily involved follow-up interviews (a total of 173 second round interviews were conducted).

Data Analysis

After the conclusion of the first round of visits in spring 2009, interviews from each site visit were transcribed and uploaded to the qualitative analysis program "Atlas.ti." The research team created research codes; coded all interviews; analyzed survey data; and started drafting individual site reports.

The goal of each case report was to capture the "story" of the pathway and to identify key practices and policies that have assisted in both the development of Linked Learning and its implementation. Similarly, we sought to identify major obstacles in its development and implementation, and unsuccessful or distractive practices and policies. Analysis was guided by the goal of understanding the interconnectedness of the technical aspects of high school reform with the norms and politics. To check the factual and interpretive accuracy of these reports, we later interviewed a small team of school members to get their feedback on the draft reports, as well as any relevant updates.

Case reports (and ancillary cross-case analyses) form the basis of this guidebook. In addition, the authors relied on field notes, photographs, and artifacts collected at each site.

Respondent Anonymity

Using Atlas.ti, each interview and field note was assigned a unique identification document code. To maintain the anonymity of the research subjects, quotations from interviews are identified using the unique identification document code and line number. Direct references to document code and line numbers are not included, but are available upon request.

Guidebook and DVD

Linked Learning: A Guide to Making High School Work brings together findings from the individual case studies and a cross-case analysis that together yield the general principles and specific examples that can guide others as they implement Linked Learning. The guidebook and DVD are designed to answer questions about what Linked Learning pathways look like in action—how they address practical challenges, set high expectations for all students, and adapt to changing circumstances.

10th Grade Defense Panel DEFENSE Rubric
LIFE Academy of Health & Bioscience

Directions: **Welcome to the 10th Grade Panel DEFENSE.** Below is the rubric you, as the panel, will be using to determine if the student passes his/her DEFENSE as a graduation requirement of LIFE Academy. Please see the scoring sheet attached to determine if the student has passed his/her defense.

10th Grade Presenter's Name:_____   **Defense day/time:**_____

Grader's Name (you):_____

Audience members in attendance:_____

_____

Presentation Quality	Far Below Standard (1)	Approaching Standard (2)	10th Grade Defense Standard (3)	Senior DEFENSE Standard (4)
Effective Communication ❑ *Verbal: Does the student speak clearly using academic language, proper sentence starters and organization of thought?* ❑ *Body: Does the student demonstrate good body language and eye contact when speaking to the group?*	**No, not really**	**Yes, at times**	❑ Stands up straight with a comfortable relaxed posture. ❑ Makes eye contact with all audience members and is looking for opportunities to connect with audience. ❑ Body language matches the passion and emotion of the presentation. ❑ Does not read from the PowerPoint, but can refer to it.	**Yes, at all times and effectively**
Professionalism ❑ *Does the student dress to impress through wearing professional dress, or a LIFE Polo.* ❑ *Is the student ready to present on time and are the presentation materials neat, organized, and finely polished?*	**No, not really**	**Yes, in some areas**	❑ LIFE Academy polo or professional dress worn by all presenters that can include coordination of color, attire, etc. ❑ Students are immediately ready to present at the scheduled time with well-constructed handouts, PowerPoint, poster, etc all ready to present. ❑ Presentation materials are neat, readable, organized and finely polished.	**Yes, at all times and effectively**

LIFE Academy's Habits of Mind Rubric

Habits of Mind:	Far Below Standard (1)	Approaching Standard (2)	Sophomore Defense Standard (3)	Exceeds Sophomore Defense Standard (4)
Symptom #1				
Evidence ❑ *Does the student provide compelling, and accurate evidence from the novel and science content in the form of facts, quotes, to support his/her diagnosis?* ❑ *Is evidence properly cited in order to acknowledge the works of others they're drawing conclusions from? (MLA Format)*	❑ *No supporting evidence of mental disorder* ❑ *No citations*	❑ *One quote is an understandable misconception (not the obvious symptom)* ❑ *Missing MLA citation for one of the quotes*	❑ *Both quotes are reflective of the correct symptom* ❑ *Proper use of MLA citation for both quotes*	
Logical Reasoning and Analysis ❑ *Does the student thoroughly analyze the evidence to support their diagnosis?* ❑ *Does the student support/defend methods and conclusions in a well-organized and convincing way? (Can they answer your questions in a logical way that demonstrates their understanding of the novel and the science content?)*	❑ *Incomplete symptoms assessment* ❑ *Unable to defend questions & convince the panel of correct diagnosis*	❑ *One symptom is an inaccurate assessment or inaccurately linked to their mental health disorder diagnosis* ❑ *Able to logically defend only some questions related to both quotes*	❑ *Both quotes are connected & analyzed as correct symptoms, which supports their diagnosis* ❑ *Able to logically defend all questions related to both quotes*	*-Evidence*: All quotes are reflective of the correct symptom and properly cited using MLA format.
Symptom #2				
Evidence ❑ *Does the student provide compelling, and accurate evidence from the novel and science content in the form of facts, quotes, to support his/her diagnosis?* ❑ *Is evidence properly cited in order to acknowledge the works of others they're drawing conclusions from? (MLA Format)*	❑ *No supporting evidence of mental disorder* ❑ *No citations*	❑ *One quote is an understandable misconception (not the obvious symptom)* ❑ *Missing MLA citation for one of the quotes*	❑ *Both quotes are reflective of the correct symptom* ❑ *Proper use of MLA citation for both quotes*	*- Logical Reasoning & Analysis*: Student can analyze why their quote reflects a particular symptom.
Logical Reasoning and Analysis ❑ *Does the student thoroughly analyze the evidence to support their diagnosis?* ❑ *Does the student support/defend methods and conclusions in a well-organized and convincing way? (Can they answer your questions in a logical way that demonstrates their understanding of the novel and the science content?)*	❑ *Incomplete symptoms assessment* ❑ *Unable to defend questions & convince the panel of correct diagnosis*	❑ *One symptom is an inaccurate assessment or inaccurately linked to their mental health disorder diagnosis* ❑ *Able to logically defend only some questions related to both quotes*	❑ *Both quotes are connected & analyzed as correct symptoms, which supports their diagnosis* ❑ *Able to logically defend all questions related to both quotes*	

Habits of Mind:	Far Below Standard (1)	Approaching Standard (2)	Sophomore Defense Standard (3)	Exceeds Sophomore Defense Standard (4)
Concession				
Logical Reasoning and Analysis- Concession ☐ *Does the student articulately argue against another diagnosis?* ☐ *Does the student support/defend methods and conclusions in a well-organized and convincing way? (Can they answer your questions in a logical way that demonstrates their understanding of the novel and the science content?)*	☐ *Incomplete concession*	☐ *Inaccurate concession or inaccurately linked to their mental health disorder diagnosis*	☐ *Concession makes logical sense based on symptoms chosen.*	*- Logical Reasoning & Analysis*: Student can analyze potential opposition to their diagnosis and provide counterexamples. *-Evidence*: Concession quotes is reflective of why one diagnosis was chosen over another and properly cited using MLA format (Extra Credit).

Notes/Questions for Presenter:

Overall DEFENSE Score

☆ Please enter a score for the student below by using the above rubric. If a student score is between two scores, you can give a student a combination score of 3.5 for example.

We, the panel, recommend that this presentation:

Category	My Score (1-4)	Panel Consensus (1-4)
Effective Communication		
Verbal		
Body		
Professionalism		
Time and Dress		
Symptom #1		
Evidence		
Logical Reasoning & Analysis		
Symptom #2		
Evidence		
Logical Reasoning & Analysis		
Concession		
Logical Reasoning & Analysis		
Math		
Logical Reasoning		
Logical Analysis		
Total Number of Categories that scored at least a 3 (DEFENSE Standard):		

	Passes with Distinction *(Meets the DEFENSE standard in all 10 areas)*
	Passes *(Meets the DEFENSE standard in at least 8 areas)*
	No Pass: Re-present 1 Habit of Mind to Advisor on Friday, December 10th 2010. *(Meets the DEFENSE standard in 7 or fewer of the areas)*
	No Pass: Must Re-present all areas of Habits of Mind to Advisor at a later date. *(Meets the DEFENSE standard in 7 or fewer areas)*

☆ **For Presentations that do not pass, which category will the student work on when he/she re-presents to you?**

Panel Member's Signature:_____

The PCOC Internship Habits
Professionalism, Commitment, Ownership, Compassion

	Below Basic (2.0) No Evidence of Internship Mastery	Basic (3.0) Approaching Internship Mastery	Proficient (4.0) Internship Mastery
Professionalism	**Professional Dress** ❑ Intern never wears his/her ID badge. ❑ Intern rarely wears a buttoned, collared shirt or LIFE Academy polo that is tucked in. ❑ Intern rarely wears closed-toed shoes. **Professional Behavior** ❑ Intern does not use appropriate vocabulary while speaking to anyone at his/her internship site. ❑ Intern does not listen to nor follows directions given by his/her supervisor. ❑ Intern rarely brings internship material to his/her internship. ❑ Intern does not asks questions in a respectful manner when he/she does not understand.	**Professional Dress** ❑ Intern wears his/her ID badge 75% of the time. ❑ Intern wears a buttoned, collared shirt or LIFE Academy polo that is tucked in 75% of the time. ❑ Intern wears closed-toed shoes 75% of the time. **Professional Behavior** ❑ Intern sometimes use appropriate vocabulary while speaking to anyone at his/her internship site. ❑ Intern sometimes listens to and follows directions given by his/her supervisor. ❑ Intern sometimes brings internship material to his/her internship. ❑ Intern sometimes asks questions in a respectful manner when he/she does not understand.	**Professional Dress** ❑ Intern wears visibly his/her LIFE Academy ID badge at all times. ❑ Intern wears a buttoned, collared shirt or LIFE Academy polo that is tucked in. ❑ Inter wears closed-toed shoes at all times. **Professional Behavior** ❑ Intern uses appropriate vocabulary while speaking to anyone at his/her internship site. ❑ Intern listens and follows direction given by his/her supervisor at all times. ❑ Intern brings appropriate materials to his/her internship, which an internship folder, a pen, and a notebook. ❑ Intern asks questions in a respectful manner when he/she does not understand.
Commitment & Attendance	❑ The intern has more than two unexcused absences. ❑ The intern has arrived late more than three times. ❑ The intern rarely dresses professionally. ❑ The intern rarely behaves in a professional manner. ❑ The intern calls the internship supervisor *after* he/she is going to be absent. ❑ The intern does not sign-in at the internship site upon arrival.	❑ The intern has less than two excused absences. ❑ The intern has less than three tardies. ❑ The intern dresses professionally 75% of the time. ❑ The intern behaves in a professional manner 75% of the time. ❑ The intern calls the internship supervisor *before* he/she is going to be absent or late. ❑ The intern always signs-in at the internship site upon arrival.	❑ The intern has perfect attendance – meaning he/she has not missed one day of the internship. ❑ The intern always arrives on time to his/her internship. ❑ The intern always dresses professionally. ❑ The intern always behaves in a professional manner. ❑ The intern always follows-through with communication between Dania and the internship supervisor. ❑ The intern always signs-in at internship site upon arrival.

How to calculate your grade? Add up the total number of boxes you checked and then multiply whichever box by the number in that column. For example, if you marked "intern wears his/her badge 75% of the time" you would multiply it by _____.

Total Score: _____/ 52 total points =

The PCOC Internship Habits (continued)
Professionalism, Commitment, Ownership, Compassion

	Below Basic No Evidence of Internship Mastery	Basic Approaching Internship Mastery	Proficient Internship Mastery
Ownership	❑ The intern has not developed a research question. ❑ The intern does not take the internship seriously. ❑ The intern does not advocate for him/herself. ❑ The intern is very quiet and does not ask questions at all.	❑ The intern has developed a research question with the supervisor, but without his/her own initiative. ❑ The intern sometimes takes advantage of opportunities the program has to offer. ❑ The intern sometimes advocates for him/herself by asking questions.	❑ The intern taken the initiative to develop a research question with the internship supervisor and consistently works towards developing that research question. ❑ The intern recognizes the value of the program and takes advantage of opportunities the program has to offer. ❑ The intern advocates for him/herself by asking questions.
Compassion	❑ The intern is not willing to help other students who have the same internship. ❑ The intern rarely demonstrates his/her appreciate using "please" and "thank you". ❑ The intern does not understand that the internship is a privilege.	❑ The intern is willing to help other students succeed at the internship but may not take initiative. ❑ The intern sometimes demonstrates his/her appreciation using "please" and "thank you". ❑ It is unclear if the intern really understands that this internship is a privilege.	❑ The intern takes initiative and helps other students succeed at the internship. ❑ The intern frequently demonstrates his/her appreciation using "please" and "thank you". ❑ The intern understands that this internship is a privilege and has consistently demonstrated this through his/her dedication and commitment to the program.

How to calculate your grade? Add up the total number of boxes you checked and then multiply whichever box by the number in that column.

Total Score: _____/ 24 total points =

Reflection: Answer the following questions on a separate sheet of paper!
1. What was your score for the front of your rubric?
2. Explain why you scored this way?
3. What was your score for this side of the rubric?
4. Explain why you scored this way?
5. You will be getting an A for this assignment if you complete it and are honest. Were you honest in your scoring? Explain because this will determine if you pass this assignment!
6. What can you do to improve the quality of your internship right now?

NEW TECH SAC RUBRIC

| By teacher only: | C&C by: _____ | Verify | Fix | Late | DNP | Date Presented: _____ | Period 12 34 56 78 |

GeoCADD
2011-2012
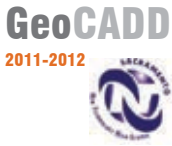
Skyscraper project - Quadrilaterals, Polygons, Area & Volume Unit Rubric

Students will design a skyscraper for an international competition by eVolo architectural magazine.

Driving Question(s):
- How do we design a building's footprint that has radial symmetry and compound shape?
- How do we design a tall building to withstand high wind velocity & be structurally solid at the same time?
- How do builders estimate the total construction cost of a building?
- How do interior designers estimate cost of "finishing" permanent walls of a building?
- How do mechanical engineers calculate the heating or cooling requirements of a building?

Members	Status	Competency Content	Presentation Content	Work Ethic	Collaboration	Design/Critical Thinking	Oral Communication Category (20 pts each)					Oral Proficiency	Written Proficiency
1:	Fired! / Not in proper attire / Absent on presentation	100	100	200	100	100	Proper attire & Neatness	Voice, Posture & Confidence	Not reading & Eye contact	Presenting to an audience	Presence (EQ verbal part)	100	100
2:	Fired! / Not in proper attire / Absent on presentation	100	100	200	100	100	Proper attire & Neatness	Voice, Posture & Confidence	Not reading & Eye contact	Presenting to an audience	Presence (EQ verbal part)	100	100
3:	Fired! / Not in proper attire / Absent on presentation	100	100	200	100	100	Proper attire & Neatness	Voice, Posture & Confidence	Not reading & Eye contact	Presenting to an audience	Presence (EQ verbal part)	100	100

Presentation Content

Unsatisfactory	Proficient	Advanced
• Group is not ready with content	• During presentation, each member correctly explained and answered content questions based on the following topics:	In addition to "Proficient" descriptors: • answers were given without the use of leading questions
	Required Skills (per Geometry Standard 8, 9, 10, 11, 12, 13, 15, 18, and 19) • Able to identify and propound properties of different shapes • Able to use formulas to find area and volume • Able to establish relationship of angles within or adjacent to polygons • Able to use Pythagorean theorem and trigonometric functions	Additional Advance Skills • Able to present higher order logical conclusion to derive or extrapolate formulas on complex shapes
Must re-present the project (late policy applies)		
0 pts	Needs to grasp content & re-present *or* 90 pts	95…**100**…110…120 pts

Work Ethic

Unsatisfactory	Required Components	Proficient
• Project is Inappropriate • Not all of the required components are in place	• The presentation media has all minimum required components specified by this rubric the entry document, and the competency list. • The packets and presentation media is unique from other groups and the contents of the entire presentation are school appropriate (does not suggest / imply sexual content, gang related markings, orientation / racial / religious bigotry, violence, weaponry, animal cruelty, comically inappropriate, etc.)	Prototypes/Prints are part of presentation +30 / Presented the day of presentation (unless IEP) +20 / ALL deliverables checked off before presentation +20 / All components correct & complete (nothing to fix) +20 / No last minute changes/modifications/additions +5 / Members respectful to presenters and audiences +5
		Advanced
		Finished ahead of time for feedback/ polishing Extra 50 pts / Used advance CAD software (as approved) Extra 50 pts / Used rigid materials for scale model building Extra 50 pts
Must re-present the project (late policy applies)		
0 pts	100 pts	105………………………………………**200**…250…300 pts

Collaboration

Unsatisfactory	Satisfactory	Proficient	Advance
Worked alone, Quit or fired from a group	Project presented **LATE** (68 pts. MAX) • (6pts) No member was fired • (6pts) All members presented at the same time (unless part of IEP/504 accommodation) • (6pts) Presentation was properly coordinated • (6pts) No part of the project needed to be fixed	Project presented **ON TIME** (74 pts. MIN) • (6pts) No member was fired • (6pts) All members presented at the same time (unless part of IEP/504 accommodation) • (6pts) Presentation was properly coordinated • (6pts) No part of the project needed to be fixed	**Finished ahead** of time to do advance items
0 pts	44 … 50 … 56 … 62 … 68 pts	74 … 82 … 88 … 94 … 100 pts	+50 pts

Design/Critical Thinking

Unsatisfactory	Proficient	Advanced
• Final product does not correctly address the driving questions	• Addressed the driving questions correctly in the design of the final product • The final product is complete, per the requirements of the project	In addition to "Proficient" descriptors: • articulated and identified the following elements in their design: ➢ Sustainability ideas, green products, energy efficiency, materials & finishes, design philosophy or theme, etc.
Must re-present the project (late policy applies)	See Driving Questions Above	
0 pts	Needs fixing *or* 90 pts	95…100 pts

Oral Proficiency

Unsatisfactory	Proficient	Advanced
• Not in proper Attire • Too little oral part • Below 70 points	A majority of the following are present: Presenting to an audience of 7 (min), Proper attire & Neatness, shows clear audible voice & confidence (posture), not reading slides/cue cards and making eye contact with audience most of the time, has unquestionable presence with an equal part in the presentation of the group.	All of the proficient items are present.
Must re-present the project (late policy applies)		
0 pts	70……………………… 90 pts	100 pts

Written Proficiency

Unsatisfactory	Proficient	Advanced
• Text Information about the project is virtually non-existent or • Information is wrong	• Presentation text contained no spelling and/or grammatical errors • Presentation text did not use long sentences (>5 words) or paragraphs • Information text was in bulleted list, appropriate, readable and relevant • Text types (i.e. heading or body) are of constant size & fonts	In addition to "Proficient" descriptors: • Text presented needs no fixing • Final Literacy Deliverables exceeds grade level expectations in both writing style and content / Additional Advance Skills • Used built-in animation to present bulleted information one information at a time (+10 pts)
Must re-present the project (late policy applies)	**Final Literacy Deliverable is Acceptable**	
0 pts	Needs fixing *or* 90 pts	95…100 pts

Geometry Content Competency List

Specific Skill (Learning Objective)	Pre-Content Assignment (Scaffold)	name	name	name	Project Content Deliverable (Evidence of Learning)	name	name	name
Students will analyze existing structures and respond in writing.					**Deliverable A** – Analysis Literacy Task Outline and 1st draft Due Date: _____ A separate handout will be given with writing prompt. Students will respond to this prompt by writing an essay.			
Students are able to construct complex figures with basic 2-D shapes	A09, A11 Identifying Quadrilaterals Identifying Regular Polygons Due Date: _____	Date checked	Date checked	Date checked	**Deliverable B** – Hand-drawn concept Due Date: _____ The skyscraper shall be designed where it tapers vertically. There should be at least three (3) sections. Each section should be different in footprint or scale from the previous section/ground. Each group member will create a foot print of one of the sections for approval. Each footprint will be composition of: - Multiple (3 or more) basic geometric shapes - Dotted lines to clearly identify the composing basic geometric shapes - Contain a regular, polygonal atrium - Exhibit radial symmetry no greater than 72° mapping - Exhibit a feasible and logical tapering of the structure per its elevation	Date checked	Date checked	Date checked
Students are able to analyze all the defining properties of geometric shapes applied in the project	A12, A13, A14 Analyzing properties of: - Quadrilaterals - Circles - Polygons Due Date: _____	Date checked	Date checked	Date checked	**Deliverable C** – Compound Footprint Due Date: _____ Each footprint design (Deliverable B) will be analyzed for critical geometries, based on the appropriate properties of your design. Each critical measure and/or dimension must be: - Stated in complete sentences - Accompanied by supporting diagrams of the footprint shapes and elements - Labeled with appropriate variables and/or markings EXAMPLE: If a wing of the building is shaped like a rhombus, then all the walls could be labeled *w* to show that the walls are of equal length.	Date checked	Date checked	Date checked
Students are able to verify dimensions of complex shapes and work within the constraints of the project	A16 Due Date: _____	Date checked	Date checked	Date checked	**Deliverable D** – Vertical Tapering and Arrangement Due Date: _____ Before you transfer your Deliverable C to AutoCAD, your group needs to verify your building will vertically taper. Start by constructing a simple <u>paper mockup</u> of the three footprints. The paper mockups must: - Include clearly labeled logical dimension (in meters) for key design elements - Ensure that no footprint protrudes beyond the footprint below it - Have dimensions that ensure the building will taper vertically when assembled	Date checked	Date checked	Date checked
Students are able to transfer a hand-drawn design into an AutoCAD design file while maintaining key geometric properties of a design.		Date checked	Date checked	Date checked	**Deliverable E-** CAD Drawing (for CAD Model use) Due Date: _____ Each group member will now transfer their footprint design into AutoCAD. Be sure to abide by the key dimensions specified in Deliverable D. Student will use metric version of AutoCAD. A separate Verify the defining properties of design element by: - Labeling the key elements (Rectangle, Right Triangle, etc.) of your footprint with the TEXT command - Annotating the key dimensions and defining features: • Right angles are annotated 90° • Congruent angles are annotated with the same angle measure • Congruent lengths are annotated with the same length measure	Date checked	Date checked	Date checked
Students are able to quickly create a 3D CAD model of their skyscraper		Date checked	Date checked	Date checked	**Deliverable F-** CAD Model (for PowerPoint presentation) Due Date: _____ - Use AutoCAD 3D modeling feature to create a cad model of the skyscraper - the floors of the cad model has light alternating colors - no details like door, windows, plants etc. are present	Date checked	Date checked	Date checked

Students are able to create a scale model/prototype of the skyscraper		Date checked	Date checked	Date checked	**Deliverable G-** Scale Model/Prototype (for Art show & PowerPoint) Due Date: _____ The prototype produced has: - accurately clean cut edges (students are encouraged to use the laser engraver/cutter) - used 5mm thick light color foam core material for each floor - monochromatic in color or light alternating floor colors - affixed on top of sturdy base (at least 1/8" mdf board/plywood/or equal) - a designer's statement is affixed to the based (per a certain format - TBD)	Date checked	Date checked	Date checked
Students are able to apply defining features and properties of geometrics to create a design created with compound shapes	A17, A18 Due Date: _____	Date checked	Date checked	Date checked	**Deliverables H1, H2, H3, …** Verifying Key Elements Due Date: _____ Allocate 3 blank pages on the back of the ibook a page as H1, H2 and H3 (or more if applicable): - Draw a diagram for each key element (e.g. Pentagon, Rectangle, Right Triangle, etc.) of your footprint design - Title each key element with the most descriptive geometric shape name possible and write a brief description of its location in your footprint (e.g. Pentagon: Used in the atrium design of the footprint, Rectangle: Used in the design of all the wings of footprint) - Copy down key annotated dimensions from AutoCAD - For each key annotated dimension and defining feature, state the property in a complete sentence below the diagram. *NOTE: Project managers (teachers) can limit quantity of Deliverable F's for footprint designs with a very high level of complexity.	Date checked	Date checked	Date checked
Students are able to evaluate the area of basic and compound geometric shapes	A19 Due Date: _____	Date checked	Date checked	Date checked	**Deliverable i1, i2, i3, …** Floor Area and estimated construction cost Due Date: _____ Allocate 3 blank pages on the back of the ibook a page as i1, i2 and i3 (or more if applicable) : Determine the total floor area of your building: I. Begin by determining the area of each geometric element: - Show a step-by-step area calculation - Start with an area formula - Specify the units II. Sum the individual areas to find the total area of your footprint: - Write the sum as a single expression set equal to T.A. (Total Area) - Specify the units III. Determine the total floor of the entire building: - Consider number of floors with each footprint - Collaborate with group members for their area data - Specify the units IV. Determine total construction cost of the building. - an easily understandable table break down is provided - no format is prescribed, as long as it is correct, complete and easily understood by an algebra 1 student.	Date checked	Date checked	Date checked
Students are able to evaluate the Volume of basic and compound geometric shapes	A22, A23 Due Date: _____	Date checked	Date checked	Date checked	**Deliverable J1, J2, J3, …** Air Volume of each floor & entire Building Due Date: _____ Allocate 3 blank pages on the back of the ibook a page as J1, J2 and J3 (or more if applicable) : Determine the total VOLUME of your building: I. Establish a height for each floor on your footprint II. Begin by determining the volume of each geometric element: - Show a step-by-step volume calculation - Start with a volume formula - Specify the units II. Sum the individual volumes of each floor to find the total volume of each floor's footprint: - Write the sum as a single expression set equal to T.V. (Total Volume) - Specify the units III. Determine the total air volume of the entire building: - Consider number of floors with each footprint - Collaborate with group members for their volume data - Specify the units - an easily understandable table break down is provided - no format is prescribed, as long as it is correct, complete and easily understood by an algebra 1 student.	Date checked	Date checked	Date checked

Objective	Code/Due	Date checked	Date checked	Date checked	Deliverable	Date checked	Date checked	Date checked
Students are able to evaluate the Surface Area of basic and compound geometric shapes	A24, A27 Due Date:	Date checked	Date checked	Date checked	**Deliverable K1, K2, K3, …** Interior Surface of the Building to be 'finished' Due Date: _____ Allocate 3 blank pages on the back of the ibook a page as K1, K2 and K3 (or more if applicable) : Determine the total INTERIOR SURFACE AREA of your building: I. Begin by determining the surface area of each geometric element: - Show a step-by-step volume calculation - Start with a surface area formula - Specify the units II. Determine the actual interior surface area - Reduce surface area for shared interfaces (assuming no walls) - Begin by calculate the area for LATERAL FACES that interface another shape - Eliminate these areas from the surface area above - Specify the units II. Sum the footprint's interior surface areas - Write the sum as a single expression set equal to T.S.A. (Total Surface Area) - Specify the units III. Determine the total interior surface area of the entire building: - Consider number of floors with each footprint - Collaborate with group members for their interior surface areas - Specify the units - an easily understandable table break down is provided - no format is prescribed, as long as it is correct, complete and easily understood by an algebra 1 student.	Date checked	Date checked	Date checked

Students are able to create a 3-D model based on geometric shapes and solds		Date checked	Date checked	Date checked	**Deliverable L** 3-D Model in Google® SketchUp Due Date: _____
					- Transfer your Footprint design into Google® SketchUp.
					- Transfer should retain the key features and properties for each design element
					- Completed 3-D may
					  - Include color
					  - Include components from online library
						Date checked	Date checked	Date checked

Students are able to effectively communicate research findings by creating a visual representation in PowerPoint or other similar medium		Date checked	Date checked	Date checked	**FINAL Deliverable M** – Presentation Media Due Date: _____ Create a PowerPoint (or other Presentation Media) which: - Contains clear HOOK-LOOK-BOOK-TOOK setup - Discussion slide(s) for **DRIVING QUESTIONS** - Includes a Title Slide, a Client Needs Slide, 2-D Footprint Slides, 3-D Model Slides, Solution Slide, totals (T.A., Construction Cost, interior T.S.A., etc). a Summary Slide, etc. - Is checked before presentation day for ADVANCED CREDIT -	Date checked	Date checked	Date checked

VIEWING GUIDE
Linked Learning: A Guide to Making High School Work DVD*

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Chapter 1
Introduction

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This viewing guide is designed to facilitate discussion and further thinking about *Linked Learning: A Guide to Making High School Work.* The viewing guide includes a brief summary of the elements presented in the video and poses questions designed to encourage discussion. Additional information about each featured pathway is available at the end of the video viewing guide. The viewing guide was created with practitioners in mind, but will promote understanding of Linked Learning at work amongst other stakeholders including parents, students, and policymakers.

The video is designed to complement the main publication by demonstrating what Linked Learning looks like in practice. The video presents information in two sections:

The first section of the video demonstrates the Linked Learning components in action.

1. **Academic Core**
2. **Technical/Professional Core**
3. **Real-World Learning Opportunities**
4. **Individualized Supports**

The second section illustrates the changes in culture and key processes that make Linked Learning work.

1. **Authentic Assessments**
2. **Student Collaboration**
3. **Teacher Collaboration**
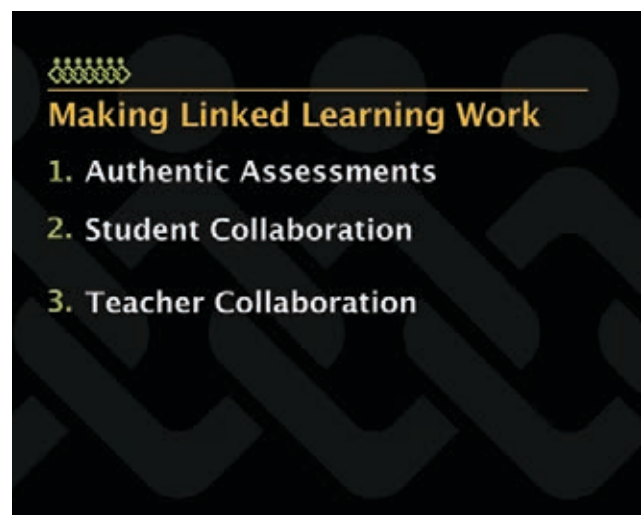
* Available online at www.ucla-idea.org

SECTION ONE: LINKED LEARNING COMPONENTS

This chapter illustrates how schools use project-based learning to integrate the academic and technical/professional components of Linked Learning. Chapter 2 features projects at three schools.

DMD – Crime Time Project

Grade level: 10th grade

Courses integrated: English, geometry, biology, web design.

Integration strategy: Each class contributes a component of the final product. The components are combined in the web design class.

Culminating product: A forensics website for 7th graders at a local middle school that allows students to follow a series of clues to solve a crime.

Culminating product audience: 7th graders, the school principal, their teachers and a panel of experts in web design.

CTA – Green Community Design Project

Grade level: 9th grade

Courses integrated: English, Algebra I, science, and 9th grade theme-elective.

Integration strategy: Each class contributes a component to the final product; they are combined during students' advisory period.

Culminating product: A scale city model of a Green Community accompanied by a proposal outlining the green components, measurements, and costs.

Culminating product audience: Teachers, upper-level students, and a panel of industry professionals.

HTLA – "Pop Day Project" (Creating a Newspaper in One Day)

Grade level: 9th-12th grade, mixed groups

Courses integrated: All courses.

Integration strategy: The entire school participates in a one-day project. Students are placed in multi-grade groups to complete the project. Students are responsible for organizing themselves and completing the project assignment. Teachers collaboratively structure the assignment, provide supervision, and then offer tutorials throughout the day for specific components of the paper (editorials, interview skills, layout, etc.).

Culminating product: A complete newspaper layout on a large poster.

Culminating product audience: Students present their project to their teachers, principal, and community members.

Questions for Discussion

1. What content and skills are students exposed to in each project?

2. What are some of the challenges to cross-curricular integration? Are some subjects more challenging to integrate than others? For example, what are the challenges to integrating mathematics standards with social justice and English standards? How do you cover the technical standards with academic content?

3. What projects would fit well with the theme(s) of your school?

4. What structures/supports would you need in order to successfully plan and implement a project like those featured in this section? For example, scheduling, staffing, assessments, etc.

5. How are teachers' roles different before, during, and after completion of the projects?

6. What are some additional challenges and strategies?

Chapter 3
Real-World Learning Opportunities: Expanding Learning Beyond the School Walls

This chapter features two schools that provide real-world learning opportunities to students through internships and job shadowing opportunities.

MetWest

With support and assistance from their advisor and the internship coordinators, students at MetWest are responsible for finding their own internships. Students attend their internships for the majority of the school day twice a week. At the end of each semester, students present on their internship projects, experiences, and learning to their advisor, classmates, family, community members, and internship supervisors. The projects that students do at their internships can be complex, detailed, and take the entire semester to complete, or they can be a series of shorter, less complicated projects.

Grade levels participating in internships: 9th-12th grade.

Internship length: One semester.

Internship theme: MetWest connects each student with an internship that is of interest to him/her.

Featured internships:

- Social justice nonprofit organization
- Animal shelter
- Video production organization

Life Academy of Health and Bioscience

Life Academy has developed relationships with many health-related businesses and organizations so that students have a variety of options for their internships. The school maintains these relationships and builds new relationships through the work of an internship coordinator. Students receive support throughout their internships and are required to keep a log of their activities and present an end-of-internship report.

Grade levels participating in internships: All 11th and 12th graders participate in internships. A few 10th graders begin preparations to intern at Oakland Children's Hospital.

Internship length: One semester.

Internship theme: Medical, physical/mental health, bioscience.

Featured internship: Faces for the Future is a program at the local children's hospital that engages high school students in one year of classes during their 10th grade year and then facilitates job shadowing and internship opportunities for students at the hospital during their 11th and 12th grade years.

Questions for Discussion

1. What are the benefits of providing internships or other real-world experiences to high school students? (For example, exposing students to careers, giving students a different worldview, applying learning, etc.)

2. What organizations, businesses, and/or governmental agencies might be appropriate partners for your school's location and theme(s)?

3. What structures/supports would you need in order to successfully implement an internship program at your school? (For example, what are the transportation needs in your community? How do you assess students' interests? How do you ensure equity in opportunities?)

4. What are some of the initial steps your school could take to create an internship program? How would you scaffold or roll-out a program across grades?

5. What are some additional challenges and strategies?

Chapter 4
Individualized Supports: Meeting the Needs of All Students

Chapter 4 features some of the ways schools provide individualized supports for students.

The Center for Advanced Research and Technology (CART)

A teacher helps two students who are struggling with their first collaborative experience. Co-teaching and the classroom structure at CART allow teachers to provide individualized support.

MetWest

A student at MetWest interns at a video production organization two times per week. The internship structure at MetWest allows students to explore their individual interests through internships.

Questions for Discussion

1. What academic supports do your students need? What structures would you need in order to successfully provide those supports? How are these supports related to Linked Learning? How do you take into account the need for "traditional" support such as CAHSEE preparation within a Linked Learning approach?

2. What socio-emotional supports do your students need? What structures would you need in order to successfully provide those supports?

3. What types of enrichment opportunities would benefit your students?

4. What structures need to be in place in order to successfully provide academic and social support to all students (for example, looping, advisory, expanded learning time)?

SECTION TWO: MAKING LINKED LEARNING WORK

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Chapter 5
Authentic Assessments: Rethinking How We Measure Student Learning

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In this section, the video illustrates some of the key strategies needed to support the implementation and maintenance of the components of Linked Learning.

As shown earlier in the video, Linked Learning utilizes project-based learning to integrate multiple content areas, career-based themes or courses, and "21st century skills" into the curriculum. Traditional paper and pencil tests cannot sufficiently capture the depth and breadth of knowledge that students are acquiring. In this section, two schools demonstrate their use of authentic or performance-based assessments to measure students' learning.

The schools featured in this section are exhibiting culminating projects. Prior to these large-scale projects, students participate in multiple projects similar to those featured in section one of the video.

Construction Tech Academy (CTA) – Senior Gala

Grade level: 12th grade

Courses integrated: Courses integrated into students' Senior Gala project depend on the project the senior chooses to exhibit.

Integration strategy: Students are required to revisit the learning that took place in past courses and integrate learning in current courses to further develop and improve the selected project.

Culminating product: Students select a project that they did in the past and revise and improve upon that project. In addition to a model (scaled or digital), students must prepare a poster board.

Culminating product audience: Administrators, teachers, students, families, community members, and experts in the field of architecture, engineering, and construction.

Center for Advanced Research and Technology (CART) - Showcase

Grade level: 11th and 12th grades

Courses integrated: CART is lab-based and each course that comprises the lab is integrated.

Integration strategy: The lab-based structure of CART is designed for integrating multiple content areas on a daily basis.

Culminating product: The products vary depending on the lab.

Culminating product audience: School principal, teachers, students, families, community members, and industry experts.

Questions for Discussion

1. What content knowledge are students demonstrating through these projects?

2. What skills are students demonstrating through these projects?

3. How do you know that students at your school are meeting the school's goals/objectives?

4. What structures/supports are needed to implement authentic or performance-based assessments at your school?

5. How would these new assessments complement state or district assessments?

Chapter 6
Student Collaboration: Transforming Classroom Interactions

Collaboration is a critical skill that is necessary to engage in complex project-based learning activities that take place within Linked Learning pathways. It is also a skill that must be taught to students. In this section, teachers at the Center for Advanced Research and Technology (CART) discuss the challenges experienced by two students who are struggling to work collaboratively to complete a project.

Center for Advanced Research and Technology (CART) – Photo Mini-Project

At the beginning of the year, teachers at CART use scaffolding activities and assign multiple mini-projects that students must complete collaboratively. The assignment featured in the video is a "photo mini-project." Its purpose is to teach students the skills required to work collaboratively before they embark on larger projects.

Grade level: 11th and 12th grades

Time of year: First week of school.

Project length: 1-2 hours.

Project description: Students are given random images/pictures. A team of two to three students works collaboratively to determine common elements contained within the assigned image and develops a "theme" to describe it. Students are required to jointly write a paragraph explaining the theme.

Questions for Discussion

1. What challenges are the students in the video experiencing?

2. How does the teacher facilitate the learning of the students?

3. What mini-projects have you taught/could you teach that would facilitate collaborative learning among students?

4. What tools/supports would your students need to successfully collaborate?

SECTION TWO: MAKING LINKED LEARNING WORK

Chapter 7
Teacher Collaboration: Multiplying the Power of Good Teaching

At Linked Learning pathways, collaboration is a key practice among teachers. Teacher collaboration takes place before, during, and after the school year to plan, implement, and reflect on projects. It is also an approach that teachers use to discuss and strategize around personalizing the academic, socio-emotional, and enrichment needs of their students. In this section, a teacher from the Center for Advanced Research and Technology (CART) discusses strategies for collaborative teaching, the need for time to collaborate, and the value of having multiple perspectives within a collaborative team.

Questions for Discussion

1. What collaboration strategies are the teachers using in the video?

2. What supports are provided to the teachers in the video to facilitate collaboration?

3. What challenges do the teachers in the video experience?

4. What collaboration structures and strategies would work best at your school?

As emphasized in the video, each of the featured schools has had many years to experiment with and implement Linked Learning. Within that time, the administrators and teachers at these sites have designed, revised, and refined academic and career-thematic projects and assessments; they have created (and revised) school structures and roles to support integrated instruction and teacher collaboration; and they have had a multitude of conversations around what quality teaching and learning looks like. These transformations and conversations start with some important questions about teaching and learning.

Questions for Discussion

1. What does a graduate from your school look like? What skills, knowledge, and habits of mind do they possess?

2. What does quality teaching and learning look like to you?

3. How do you assess the learning of your students?

4. What structures, roles, and supports are needed to implement Linked Learning at your school?

5. What kind of conversations should you have with parents and the community about quality teaching and learning?

6. Dr. Oakes references the "hard conversations" that the schools featured have carried out. Some of these conversations relate to issues of offering AP/honors classes vs. a no-tracking policy; prioritizing common conference periods or athletics; and whether or not all students can access challenging coursework if provided the necessary support.

   What hard questions should you be discussing at your school? What support would you need from district administrators to overcome some of the challenges you might encounter?

School of Digital Media and Design (DMD)

DMD is featured in the "Academic Core and Technical/Professional Core" section of the video.

District: DMD is a small autonomous high school sharing a campus with three other schools on the Kearny High Educational Complex in the San Diego Unified School District.

Students: Average 475 students.

Theme: DMD exposes students to experiences and careers in website design, graphic design, and video production through project-based learning that integrates academic and career/thematic coursework.

Schedule: Students attend a 4x4 AB block schedule. All classes are taught separately, but teachers are grouped in grade-level teams and share the same students. Projects incorporate all subjects and are anchored in the themed elective class at each grade level.

Construction Tech Academy (CTA)

CTA is featured in the "Academic Core and Technical/Professional Core" and "Authentic Assessments" sections of the video.

District: CTA is a small autonomous high school sharing a campus with three other schools in the San Diego Unified School District.

Students: Average 475 students.

Theme: CTA is designed to prepare students for careers in the field of architecture, engineering, and construction.

Schedule: Students attend a 4x4 AB block schedule. All classes are taught separately, but teachers are grouped in grade-level teams and share the same students. Projects incorporate all subjects and are anchored in the advisory classes at each grade level.

High Tech Los Angeles (HTLA)

HTLA is featured in the "Academic Core and Technical/Professional Core" section of the video.

District: HTLA is an independent charter school in Los Angeles.

Students: Average 320 students.

Theme: HTLA uses an individualized theme approach and does not have a specific career theme. The school focuses on integrating academic subjects with a variety of real-world technical applications and problem-solving skills.

Schedule: Students attend a six-period AB block schedule. The projects typically take place within the individual classes, but integrate technical and problem-solving elements. The project featured in the video is school-wide and takes place over the course of one day.

MetWest

MetWest is featured in the "Real-World Learning Opportunities" section of the video.

District: MetWest is a small school in the Oakland Unified School District.

Students: Average 130 students.

Theme: The focus of MetWest is to provide students with academic, technical, and life literacy through a-g alignment, internships, and an individualized theme-based approach. Every student participates in a deeply involved internship every semester.

Schedule: Students are grouped into small (approximately 20-student) grade-level advisories led by an advisor who is responsible for facilitating the students' internship experiences and teaching them English, social studies, and science. Students attend math classes outside of their advisories, and in the upper grades, students take many classes at the community college. Students attend the majority of their coursework on Monday, Wednesday, and Friday. Students spend the majority of the day on Tuesday and Thursday in their internships.

Life Academy of Health and Bioscience (Life Academy)

Life Academy is featured in the "Real-World Learning Opportunities" section of the video.

District: Life Academy is a small autonomous school in the Oakland Unified School District.

Students: Average 250 students.

Theme: Life Academy's dual mission is to prepare students for college and expose them to the fields of health and bioscience through project-based learning and internship/job shadowing experiences.

Schedule: Life Academy's schedule has changed each year. During the visits for the guidebook and video, each grade had its own schedule. The 11th and 12th grade schedule included core classes in the morning and the electives in the afternoon so that students could have afternoon internships.

The Center for Advanced Research and Technology (CART)

CART is featured in the "Individualized Supports," "Authentic Assessments," and "Teacher Collaboration" sections of the video.

District: CART serves 13 high schools in both Clovis Unified and Fresno Unified school districts.

Students: Average 1,500 students (grades 11th and 12th only), split between a morning and afternoon session.

Theme: CART is comprised of 14 labs within four thematic clusters. The type of labs offered at CART shift every year based on the needs and interests of the students, but generally fall within Advanced Communications, Professional Sciences, Global Dynamics, and Engineering fields.

Schedule: Students attend a three-hour program (morning or afternoon session) at CART and spend the rest of their day at their "home school" (the traditional public high school or alternative school in their district and attendance area). Students spend their time at CART within one lab. Each lab is taught collaboratively by two to four teachers.

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