Handbook for Linked Learning
Clinical Teacher Preparation

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Acknowledgements

This Handbook is the collective work of many dedicated people who have been in the forefront of Linked Learning implementation in the schools and its articulation with higher education. We believe that Linked Learning builds bridges among subject areas within the high school curriculum, between schools and their local communities, between the often artificial nature of high school learning and the exciting and challenging world beyond the school grounds. We believe that Linked Learning adds relevance and rigor to the school curriculum by inviting students to think deeply, apply what they learn to the real world, work together on actual problems, and clearly articulate their ideas and solutions in professional environments. Perhaps most important, we believe that Linked Learning has the potential to level the educational “playing field” and provide more equitable educational opportunities for all students. Emerging research bears out all of these beliefs.

It is our sincere wish that this work serve as a guide for schools and universities who seek to collaborate on Linked Learning projects. These chapters will be of special interest to those wishing to prepare both pre-service and in-service teachers for work in Linked Learning settings, those seeking to develop deeper school-university partnerships, and those blending Linked Learning and the new state standards. It is not our intent that any should try to replicate the experiences described herein. Linked Learning must meet the needs of local communities and individual students, so no two projects are alike. Rather, we hope that you will take what we have done and thoughtfully apply it to your own settings. We hope that you will learn from our mistakes chronicled here and find ways around similar obstacles. Most of all, we hope that you will join the Linked Learning community and share your difficulties and accomplishments so that we may all learn from each other. Collaboration, after all, is the heart of Linked Learning practice.

In that spirit of collaboration, we would like to acknowledge the many who have contributed to this work. None of this would have been possible without the generous and sustained support of the James Irvine Foundation through a grant titled Expanding Preparation of California’s New Teachers for Linked Learning: Partnership Models of Clinical Teacher Preparation and Induction. Overall direction for the grant was provided by Beverly Young, Assistant Vice Chancellor for Teacher Education and Public School Programs, California State University with assistance from Joan Bissell, CSU Director of Teacher Education and Public School Programs. Grant partners included Long Beach Unified School District led by Superintendent Chris Steinhauer and the CSU Long Beach College of Education led by Dean Marquita Grenot-Scheyer.
Marquita Grenot-Scheyer and Jared R. Stallones, CSU Long Beach University Single Subject Credential Program Coordinator, served as co-editors of this volume.

Other valued contributors include Veronica Evans, Sharon Schreiber, and Nader Twal of LBUSD. Nancy Farnan of San Diego State University and Arlene LaPlante of ConnectEd contributed valuable resources included as the Appendix to this handbook. We also want to thank Nikki Gilman, Penni Hudis, and Charlie Stephen of ConnectEd.

Finally, we wish to express our gratitude to all of the pioneering teachers, students, and school administrators who saw the promise of Linked Learning early and laid a foundation for the future. This guide should help others follow in your steps.
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CHAPTER 1

Introduction to Linked Learning

High School Reform Movements: Past and Present

Linked Learning is a high school reform movement whose time has come. Why do we need to reform the American high school? The United States was the first nation to make secondary education available to the general public, when its first public high school opened in New England in 1821 to provide an alternative to private schools. In 1826, new legislation required free public schooling, although primarily for males. The curriculum varied from school to school and there was no agreed-upon purpose. The lack of uniformity among high schools, coupled with the need for colleges to be able to evaluate students’ high school experiences, led the National Council of Education in 1891 to appoint the Committee of Ten, chaired by Charles Eliot, President of Harvard University. In the following year its members met to consider how and when high-school subjects should be taught and the optimal time that should be devoted to them. (http://www.jstor.org/stable/1074830).

In 1906, to create greater transparency and help colleges and universities make enrollment decisions, the Carnegie Foundation for the Advancement of Teaching developed the Carnegie Unit (CU) as a measure of the time a student spent in class. The intent was to create a standard for the quality of education, using a measure connected to time but not to learning. The traditional comprehensive high school resembles in many ways its 19th-century counterpart. While some of the curriculum has changed, its focus on outputs, like the Carnegie Units, has remained unaltered. Students are still placed in rigorous academic classes based on the knowledge they bring with them to school, not on their potential to learn within a differentiated support system that meets individual needs. In other words, tracking persists as it has for more than a century, assigning students into classes based on their perceived ability, and thereby restricting courses that prepare students for both college and career to only a select group.

Whether tracking has ever helped students is questionable. What is not in doubt, however, is that tracking fails to support all students in acquiring the rigorous academic knowledge and 21st century skills that prepare them for the range of postsecondary options, including a viable career path, community college, university, or the military. The world of work today requires skills and proficiencies that did not even exist thirty years ago. Moreover, it is neither equitable
nor wise for a democratic society in a competitive global economy to allow only some students the benefit of an education that prepares them for a life of meaningful work, or to track students into courses that prepare them for either college or career. Replacing the conjunction “or” with “and” represents a major shift in conceptualizing high school education.

Reform-oriented high schools have an important role to play in reversing the inequity of educational opportunity for many students. These schools and programs invite teachers to embrace a new, collaborative, and interdisciplinary instructional model aimed at dramatically increasing student engagement in learning. They also ask teachers to learn new skills that connect rigorous academic content to challenging technical standards and real-world experiences in order to make learning relevant. While the dropout rate in California has been declining, nearly 24% of students in traditionally underserved groups failed to complete high school in 2012 (http://www.cde.ca.gov/nr/ne/yr12/yr12rel65.asp). This achievement gap must be eliminated so that all students have the full range of future possibilities available to them.

**Why the Linked Learning Approach?**

A growing body of evidence suggests that students educated in high schools with a Linked Learning approach achieve at higher levels than their peers in traditional high schools and have higher earning capacity after graduation. For example, the Manpower Demonstration Research Corporation (MDRC) found that for eight years after scheduled graduation from high school, career pathway academies produced graduates with sustained earnings gains that averaged 11 percent (or $2,088) more per year for academy group members than for individuals in the non-academy group — a $16,704 boost in total earnings over the eight years of follow-up (in 2006 dollars). Through a combination of increased wages, hours worked, and employment stability, real earnings for young men in the academy group increased by $3,731 (17 percent) per year — or nearly $30,000 over eight years (http://www.mdrc.org/publication/career-academies-long-term-impacts-work-education-and-transitions-adulthood).

In addition to earning more in the years after high school, California students in Linked Learning pathways, compared with their peers, attend school at higher rates, are less likely to drop out, and are more likely to score proficient or higher on the California Standardized Tests in English, science, and social studies (http://www.connectedcalifornia.org/downloads/other/insightreport.pdf and http://casn.berkeley.edu/resources.php?r=158&c=1).

The growing research base is persuasive, strongly pointing to Linked Learning as an approach to high school reform that makes a positive difference in the lives of adolescents. This reform prepares them to exercise choice among post-secondary options that include four-year
universities, two-year colleges, apprenticeship positions, and the military. It also addresses several other nagging issues in American secondary education.

**College bound.** The last half century saw an increasing trend toward preparation for post-secondary education in American high schools. Cold War alarmists raised the specter of the Soviet Union becoming dominant in technical expertise due to the poor quality of American secondary education (Bestor 1953; Rickover 1959, 1962, 1963). Similar critiques were leveled at the schools in the 1980’s and 1990’s, often raising alarms about declining American economic competitiveness. The 1983 publication of *A Nation at Risk* famously warned that, “If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war” (National Commission on Excellence in Education 1983, 5).

Policy responses to these critiques usually resulted in a hardening of the curriculum and greater efforts at preparation for students to enter higher education. Curricular rigor has often been interpreted as the imposition of college preparatory curriculum, even though most students never enter four-year postsecondary institutions, and college going falls off dramatically among underserved populations (Richmond, 2010). In California, roughly one-third of adults hold a college degree. If high schools insist on preparing all students to complete a four-year degree they may be miseducating many.

**College ready.** Even those who do enter college often find that they are ill-prepared in the “soft skills” necessary for success. Time management, problem-solving, collaboration, clear articulation of ideas, and persistence toward a goal are among the abilities and dispositions required for success in college. Coincidentally, those same skills are required for success in the workplace as well. Secondary education that serves all students should develop these skills and dispositions.

**Applying Knowledge.** Literacy expert Carol Jago insists that “students do not fail in high school because it is too hard. They fail because it is too easy.” Her prescription is for schools to offer challenging and engaging curriculum. High school students frequently question the relevance of their school work. Information is better remembered when it is learned in the context of its applications. New knowledge is developed as minds apply what they know to authentic problem-solving situations, yet most high school curriculum is presented in discreet, departmentalized formats isolated from other fields. It focuses on theory more than practice. The most effective secondary curriculum should interconnect the various fields of knowledge and focus on real-life uses of information.
The dawning recognition that a focus on traditional curriculum for college preparation leaves many, in fact, most, students behind has led to a new approach. Studies reveal considerable commonality between the work skills required for success in business and those personal habits needed for success in higher education (Richmond 2010). The result is to unite efforts at preparation for college and the world of work under the umbrella of “college and career readiness.” College and Career Readiness (CCR) education differs from education for college or career eligibility in that it emphasizes those skills that bridge the two goals. CCR was a key component of the Obama administration’s call for reauthorization of the Elementary and Secondary Education Act and it plays an important role in the Common Core State Standards (USDOE, 2011). A number of states have taken up this call and developed even more ambitious projects. California’s ambitious CCR high school reform is called Linked Learning.

What is Linked Learning?

Linked Learning is a systemic approach to high school improvement that combines rigorous academic preparation, interdisciplinary project-based learning, career and technical education and extensive student support in an effort to prepare all students for college and career. Linked Learning organizes the curriculum around career-oriented themes to maximize student engagement, but it differs from other career-themed educational formats in that Linked Learning career pathways for student investigation are very clearly defined. In addition, Linked Learning presents a challenging four-year academic curriculum that prepares students for success in colleges and universities, a work-based learning component that complements the academic program with real-world application of knowledge and skills, and a technical component that offers authentic, high quality instruction in a technical field and encourages practical application of academic skills. (http://linkedlearning.org/about/)

Linked Learning Systems and Pathways. Linked Learning employs a “pathways” structure derived from California’s fifteen industry sectors. School districts develop career-themed pathways which combine rigorous academics with real world relevance in the particular pathway. For example, students in an engineering pathway learn algebra and geometry within the context of engineering, perhaps in the process of designing and building a structure. Students in an arts and media pathway might learn persuasive writing skills while developing business plans. Students have the option of self-selecting the pathway in which they wish to participate, which increases their engagement and interest. Though pathways differ in how academics and career readiness are incorporated, all pathways adhere to four guiding principles:

1. Pathways prepare students for postsecondary education and careers.
2. Pathways lead to the full range of postsecondary opportunities.
3. Pathways connect academics to real-world applications.
4. Pathways improve student achievement.

In addition to the guiding principles, each pathway adheres to four Core Components which lie at the heart of pathway design. **Rigorous academics** include college preparatory English language arts, mathematics, science, history, and foreign language courses. **Real-world technical skills** mark the challenging technical component of three or more courses that helps students get a head start on a successful career. A series of **work-based learning opportunities** begin with mentoring and job shadowing and evolve into intensive internships, school-based enterprises, virtual apprenticeships, or projects with industry professionals. Finally, **personalized student supports** include college and career guidance, academic counseling, and supplemental instruction in reading, writing, and mathematics to help students master academic and technical learning.  


For additional information on pathways and the 15 industry sectors, see resources on the ConnectEd website:  
and  

**The Field of Linked Learning: Underlying Philosophy and Goals**

**Equity, Access, and Choice.** High quality Linked Learning pathways programs are firmly committed to student choice, access, and equity. Choice anchors the students’ Linked Learning experience in their interests, rather than imposing criteria that often discourage participation. Linked Learning operates on the assumption that interest engenders effort and that students whose pathways match their passions will eagerly look forward to challenges when they can see the relevance of investing their efforts. In the Long Beach Unified School District, access and equity become the natural anchors and metrics for the efficacy of the choice process. If students’ interests shape their choices, then they must have access to pathways that match those interests. The success of Linked Learning formats is directly related to the degree of access students have to a range of career pathways. If educational equity may be defined as equal access to high quality instructional programs for all students, then Linked Learning formats encourage equity and can only succeed in environments that value equity by providing access to a menu of career pathways. So, student interest determines choice, choice requires access, and access defines equity.
**Student Engagement.** Access and equity presume that the instructional program within each pathway maintains the same high standard of quality and that programs differ only in the industry themes with which they affiliate. Given these conditions, natural interest becomes the fundamental lens through which students learn the content and apply it in a meaningful context. As such, pathway programs capitalize on student engagement, which rests ultimately in the student’s ability to connect the content to him or herself—to make meaning of the material and practice its application in real world contexts. As noted in the Linked Learning Pathway Quality Review Guide: “In supportive learning communities, students meet technical and academic standards and college entrance requirements through real-world applications, integrated project-/problem-based instruction, authentic assessments, and work-based learning.” In other words, “Individually and collectively, pathway teachers work to connect learning (both in and out of the school setting) with students’ interests in order to increase their motivation and engagement.


**Teacher Collaboration.** Linked Learning naturally encourages greater collaboration among K-12 faculty. Teachers work together to plan and implement cross-disciplinary projects and assessments, develop common work-based experiences, and monitor student performance on project goals. This collaboration fosters greater communication among teachers, as well as deepening their knowledge of how diverse content curriculum elements fit together in practical application. Teacher candidates prepared in Linked Learning settings reported observing a greater degree of collaboration and cooperation among the school faculty than did those in traditional settings. Teacher candidates in Linked Learning settings also expressed a deep understanding of the importance of faculty collaboration on a high school campus, as well as significant development of the interpersonal skills needed for effective collaboration. Additionally, university faculty involved in preparing candidates for teaching in Linked Learning settings experienced a greater degree of collaboration as a result of their work (see chapter 4).

**Student Supports.** Traditionally, student support services have reserved their resources for students in need of remediation or those who have been labeled “at-risk” of not graduating. Providing personalized supports distinguishes Linked Learning from other career-based educational formats and indeed are one of its essential core components (Linked Learning Fact Sheet). In the context of Linked Learning, support services reflect the ongoing commitment to allocate resources to all students with a focus on academic and career counseling, additional instruction in academic content, and enhanced support for students in the most rigorous classes requiring more personalized supports. The effort blends both prevention and intervention to serve the needs of all students from second-language learners to advanced
placement students needing one-on-one tutoring. It balances the scales to ensure that both the struggling and accelerated learners have opportunities to excel within the pathway experience. Some universities align teacher preparation program field work assignments with the needs of their Linked Learning school partners. For example, the School Counselor preparation program at California State University, East Bay is developing specialized curriculum elements for counselors to help them support students in Linked Learning settings.

**A New Kind of Instruction: The Learning and Teaching Framework**

ConnectEd California has developed a learning and teaching framework that defines key characteristics of student and adult learning and teaching practice within Linked Learning pathways and illustrates how these characteristics might be observed in the behaviors of teachers and learners, both inside and beyond the classroom. The distinctive characteristics of Linked Learning instruction include student-centered approaches, collaborative work, and relevant learning that is based in real-world projects and workplaces. Instruction is outcome-focused, rigorous, and integrated across the curriculum.

**Student-Centered Approaches.** Linked Learning pathways are inherently student-centered because they are organized around students’ career options and interests to engage them in learning. Pathways are intentionally student-centered by enlisting students’ imaginations in real world problem-solving. Pathways honor students’ intelligence, abilities, and skills by providing work-based learning opportunities that employ their creativity and allow them to excel in actual workplace situations. Linked Learning provides enhanced academic and other support to ensure that students succeed.

**Collaborative Work.** Linked Learning pathways emphasize professional collaboration as teachers develop interdisciplinary projects to teach and assess students. Often, these projects involve professionals from the community as developers or assessors, adding to the layers of collaboration. Pathways further collaborate with the community by placing students in work settings to enhance their academic and technical instruction. Teachers in traditional academic subjects collaborate with career technical instructors, school counselors, and others to provide a holistic educational program. Finally, the students themselves collaborate in groups as they develop their projects. They have the unique opportunity to collaborate with career professionals in the work-based component of their pathway.

**Relevance.** The curriculum and assessment initiatives of the past twenty years have been criticized for their undue focus on decontextualized learning. Mastering facts in isolation to reproduce them in isolation on standardized tests has not proven to be an effective or engaging
school experience for most children. Linked Learning seeks to place curriculum content in real life context. To do so, Linked Learning incorporates problem/project-based learning and work-based learning.

Problem-based learning is as old as humanity itself. It is the natural process whereby people acquire knowledge through activity and experience. John Dewey described the process in his educational philosophy of experimentalism. Dewey reasoned that human beings, as rational creatures, hypothesize a course of action that will solve some problem encountered, then try it out. If the experiment proves successful, the action tends to be repeated, and it becomes knowledge. If the experiment fails, some other course of action is attempted. This sequence of trial and error is repeated until a person, or a culture, has an accumulated knowledge base, which may then be passed on to others (in Childs, John Lawrence. American Pragmatism and Education: An Interpretation and Criticism. New York: Henry Holt and Company, Inc., 1956). The process was codified, popularized, and made usable for teachers by William Heard Kilpatrick in his landmark essay “The Project Method,” published in a 1918 edition of Teachers College Record (Kilpatrick, William H. “The Project Method.” Teachers College Record 19 [September 1918]: 319–334). Kilpatrick argued that students learn best when allowed to apply knowledge and skills to authentic, real world problems. Linked Learning embraces this conviction. Teachers in Linked Learning settings collaborate across content areas, and often with the aid of industry professionals, to design projects through which students apply knowledge and skills learned in their various classes to high-interest, real-world tasks. The results are often assessed with the help of community partners according to industry standards. This lends legitimacy to the projects and increases students’ diligence in producing high-quality work.

Work-based learning is one of the four Core Components of Linked Learning (Linked Learning Fact Sheet). Work-based learning offers students opportunities to learn through real-world experiences that enhance classroom instruction. Learning through real-world experiences allows students to attain skills needed in their chosen career areas and to experience how those skills relate to what they are learning in school. Students may learn geometry and algebra while designing and building a structure, persuasive writing skills while developing business plans, or creative writing skills while drafting scripts. Work-based learning creates a connection between academics and real-world application and students gain both competence and confidence through their interactions with industry professionals. Assessment of work-based learning activities often involves business and industry partners who provide students with accurate and constructive feedback from the field and who provide teachers with career area knowledge.
Outcome Focused. Academic instructors in Linked Learning pathways teach their subjects with depth and fidelity while career technical instructors teach the knowledge and skills connected with their particular fields. However, these teachers all work within the framework of the authentic project students engage in. Both groups teach their subjects with an eye toward preparing students to succeed on their final project. School subjects are not dead or “siloded,” but taught in light of their original relevance to a well-rounded education.

Rigorous and Integrated. Linked Learning pathways prepare high school students in the a-g requirements for admission to California public universities, but they seek to do so through an integrated curriculum approach. Knowledge does not come our way in separate, refined, neatly organized packages, except in school. In real life, information enters the mind as unfiltered, disorganized sensory input from which we distill meaning and knowledge. We may conceive of knowledge in discrete content categories, but in real life we typically pull from many categories, recombining bits of knowledge to address the problem at hand. Linked Learning mirrors this process by teaching the traditional high school curriculum, but with an eye to connecting subject areas in real world applications. Teachers continue to teach their own content in depth, since rigorous academics are one of the four core components of Linked Learning (Linked Learning Fact Sheet). But teachers also encourage students to make connections to other content areas through their common experiences with an integrated project, work-based learning, or other practical applications. Although Linked Learning does not prescribe the means by which teachers will integrate curriculum elements, it does recognize the well-documented benefits of such integration (see Drake, Susan M. and Rebecca Crawford Burns. Meeting Standards through Integrated Curriculum. Alexandria, VA: ASCD, 2004).

Models of Linked Learning

Linked Learning takes many forms: National Academy Foundation academies, National Career Academy Coalition academies, California Partnership Academies, other career-themed academies, themed small high schools and small learning communities, themed magnet programs or schools, High Tech Highs, and Big Picture Schools. What these models share is a commitment to several organizing principles. All of them prepare students for both college and career; offer integrated, interdisciplinary projects that combine academics with career technical education; and maintain a laser-like focus on improving student achievement. In addition, these programs share four core components that make Linked Learning distinctive:
• an academic component for all students that meets the admission requirements of many four-year colleges and universities
• a technical component that meets industry standards and provides opportunities for industry certification, when available
• work-based learning opportunities
• support services that include counseling and additional instruction in reading, writing, and mathematics to assist struggling students

It Takes A Coalition: Partnerships with Linked Learning

There is no typical K-12/University Linked Learning partnership model, but there are some characteristics that partnerships share. Most center on preparing new teachers to function in Linked Learning settings, so that teacher candidates must spend significant fieldwork time there. For those of us from traditional school settings, it is difficult to truly grasp Linked Learning practices without seeing them in action. Focused fieldwork of this type demands a greater degree of communication and coordination between the university and the school than is often the case, and the need for coordination often results in each partner assigning a liaison to manage the logistics. Many partnerships insist that candidates be placed in Linked Learning settings for their culminating clinical experience. Once again, this requires a significant degree of coordination between the school and the university to ensure that candidates receive a rich Linked Learning experience. In addition, many programs find that they must alter their evaluation instruments to capture the knowledge and skills unique to teaching in a Linked Learning setting. School district partners are often brought into this conversation to help define the competencies to be measured.

Linked Learning principles and practices must be taught as well as observed. While teacher preparation curriculum need not be overhauled, elements unique to Linked Learning must be infused into the coursework. At a minimum, the elements identified above as essential for learning to teach through a Linked Learning lens are added to existing curriculum. Here, school district partners can be invaluable, demonstrating how they collaborate to design and deliver inter- and intra-disciplinary curriculum in the schools. Partners may also show how Linked Learning teachers design and implement problem- and project-based learning and may even lead university faculty and candidates through simulated project planning. Finally, school partners can assist university faculty in teaching credential candidates how to establish industry and postsecondary education partnerships for their students’ benefit, and demonstrate to skeptics how they integrate career-technical standards and work-based learning approaches with academic standards.
**Districts and Schools.** As the educational landscape shifts dramatically in response to the “flattened world” of the 21st century, the K-12 system becomes a fertile ground for reforming the instructional approach (Darling-Hammond, Linda. *The Flat World of Education: How America’s Commitment to Equity will Determine our Future.* New York: Teachers College Press, 2010). K-12 districts and their schools, as the only compulsory part of the American school system, offer the fiscal, social, and human capital needed to prepare students for this world. In particular, secondary schools, where academic content is fragmentary and disconnected, invite us to rethink content through an industry theme. In the most effective models, large high schools adopt a smaller learning communities approach, in which a cohort of students complete a themed program of study with a cadre of teachers who orient their content toward the industry theme. Students in small “academies” within a large high school get to know each other well and learn to collaborate closely as they complete their university admission requirements, applying their academic content through project-/problem-based learning, work-based learning, technical courses, and connections to experts outside the classroom.

**Business and Industry.** Business and industry partners are a valuable resource for both teachers and students, keeping the school’s connection to the workplace strong and authentic. Academic teachers need career area experts to guide implementation of career-related learning activities. Students benefit from business and industry partnerships, which provide not only career-specific skills but also the “soft skills” needed for success in both college and career: the ability to communicate, a strong work ethic, professional demeanor, and so on. Business and industry partners may also provide equipment to schools, job shadowing and internship opportunities for both students and teachers, guest speakers, entry level positions, career counseling, mentoring, and any number of other benefits. Partners often lend important assistance in evaluating student work products from a professional standpoint, inspiring students to do better work. Business and industry partners benefit, in turn, from a well-prepared workforce they can rely on for years.

**Community.** For Linked Learning to saturate a system and transform the student experience, becoming the “engine” for high school reform, communities must summon a great deal of political will. While the pathway experience calls on students to learn outside the classroom walls, school systems have only limited resources, making community involvement essential. Parents, guardians, businesses, non-profit organizations, advocacy groups, and community members must pool their interests, talents, passions, and funds to create meaningful opportunities for students to extend their learning and develop the skill sets they need to succeed in the 21st century. Or as one program puts it, “The community as a classroom, and the classroom as a community.”
Higher Education. Institutions of higher education are critical partners in the Linked Learning approach. Pathway programs and community colleges collaborate to create dual enrollment classes through which students earn high school as well as college credits for academic and/or Career Technical Education classes. Dual enrollment agreements can range from including accelerated academic courses for pathway students to courses that, upon completion, confer an industry certification that complements a pathway’s industry theme. One example might be a community college course that certifies students in basic phlebotomy. An even more ambitiously vertical partnership invites students in a pathway for future teachers to attend the teacher preparation program at the local community college. By completing the program, they are admitted to the nearby university with a significant number of units earned toward teacher certification.

Recently, attention has focused on the need for more partnerships between pathway programs and institutions of higher education that prepare teachers. As Linked Learning expanded and the research evidence grew, teachers and administrators from career academies and pathway schools became increasingly aware that they were providing professional development to teachers with no experience in these new learning environments and little idea of how to teach in them. Consequently, teachers and administrators in the field developed a comprehensive list of the unique skills needed by Linked Learning instructors and a crosswalk indexed to California’s Standards for Teacher Preparation. The crosswalk was then used to build the Linked Learning lens within California’s SB 2042 Single Subject Credential.

Prior to this work, Single Subject Credential Programs in California had not tackled the task of preparing teachers for this challenging educational environment. While most elements on the list of Linked Learning teachers’ skills and proficiencies were already part of the curriculum and experiences of a Single Subject Credential candidate in California, several critical elements were left out. For example, one item on the crosswalk-issues related to equity and diversity-is central to California’s Single Subject program. However, intra- and interdisciplinary collaboration and working with industry partners are not skills currently emphasized in most credential programs. The elements that are not part of the traditional credential program became the Linked Learning lens. The goal was not to create a new credential program, but to create a curricular and experiential lens within the existing state-approved California Single Subject Credential program. That lens includes the following:

- designing and delivering inter- and intradisciplinary collaboration in curriculum
- designing and implementing problem- and project-based learning
- establishing industry and postsecondary education partnerships
integrating career-technical standards and work-based learning approaches with academic standards

In 2008, with funding from the James Irvine Foundation, San Diego State University (SDSU), working with ConnectEd: The California Center for College and Career, began to develop a model for Single Subject Credential Programs to prepare new teachers with the unique skills and knowledge to participate fully as professional educators in Linked Learning pathways and schools. The partners then set out to create a statewide consortium of teacher preparation institutions that would collaborate as part of a network community of learners in this initiative. By 2013, that work expanded to include more teacher preparation programs and their partner schools and districts, with much potential to expand further across California and the nation.

There are many ways to conceptualize postsecondary partnerships in the Linked Learning work. But rather than attempt an exhaustive list of possibilities, we can focus on what is currently happening. One example is the university-based Induction program for new teachers, in which California educators are mentored through their first two years of teaching. Elements of Linked Learning are being integrated into its curriculum, with mentors for new pathway teachers. A second example is doctoral students who conduct research in Linked Learning and its various models designed to prepare students for both college and career. The questions are various and complex, and serious research through doctoral work can contribute importantly to the field’s knowledge base.

**Pathway Quality: What Does This Mean?**

In order to ensure fidelity to the principles and practices of Linked Learning, interested parties have teamed to develop a process for pathway certification based on seven essential elements:

- **Student Outcomes-Driven Practice.** The progress of every student is the goal for each pathway’s community of practice. Data on student and pathway performance are used regularly to ensure the pathway prepares all students for college and career.

- **Culture of High Expectations, Equity, and Inclusion.** Linked Learning pathways establish a culture of high expectations for all students; maintain non-discriminatory and inclusive policies, practices, and instruction; and are accessible to any interested student.

- **Industry Themed Program of Study.** An industry-themed pathway program of study brings coherence to the four core components of Linked Learning: rigorous academics, career-based learning in the classroom, work-based learning, and personalized supports.
The program is designed to ensure that all pathway students have the opportunity to earn postsecondary credit, and are prepared for success in the full range of postsecondary options, including a four-year college.

- **Inquiry and Project-Based Learning and Teaching.** Linked Learning pathway students engage in inquiry and project-based learning that is relevant, rigorous, outcome-focused, and collaborative in nature. Every student’s progress towards mastery of college- and career-ready learning outcomes is monitored and supported.

- **Work-Based Learning.** The progress of every student is the goal for each pathway’s community of practice. Data on student and pathway performance are used regularly to ensure the pathway prepares all students for college and career.

- **Personalized Student Support.** All Linked Learning pathway students participate in a personalized and coordinated continuum of work-based learning experiences designed to help them master and demonstrate academic and professional skills necessary for college and careers.

- **Distributed Leadership and Engaged Partners.** The Linked Learning pathway staff, school site and district leaders, and industry and community partners share responsibility and accountability for the program’s effectiveness and successful student outcomes. These stakeholders represent the community and assure that conditions are in place to establish and sustain pathway quality.

As of 2015 there are thirty-nine certified pathways spread across California’s industry sectors throughout the state ([http://www.connectedcalifornia.org/schools_districts/certification](http://www.connectedcalifornia.org/schools_districts/certification))

**Linked Learning in Today’s Schools**

**21st Century Skills in Action.** Cultivating 21st century skills in all students is a key aim of Linked Learning. In the Linked Learning approach, inquiry methods build students’ literacy in the processes and skills of learning in order to meet the needs of an ever-changing and competitive global economy. This metacognitive practice is essential to a 21st century education. In a Linked Learning pathway, through a cohesive, themed course of study, students prepare to interact with ideas, mechanisms, and systems that are essential to industry. Students in these pathways experience collaboration, critical thinking, and creativity on a daily basis. They also employ effective and appropriate communication skills.
For example, the daily interactions of students in one Digital Media and Design pathway call for fluent application of these skills. Students shoot and produce the school news on tight time frames, manage the lighting, set design, and filming of all stage performances on their campus, and produce their school’s literary magazine. They have real deadlines, real problems, and have to devise real time solutions. They will be the first to declare that none of these tasks could be accomplished without a collaborative and professional approach. When asked, the students quickly credit their teachers for preparing them to meet the daily demands of their industry. Due to teachers’ consistent high expectations for professional products, as well as for team work and problem solving, all these students feel prepared to enter this field or to utilize their skills in the pursuit of other careers.

Teacher Candidates prepared through a Linked Learning program will gain experience working in rich and diverse programs, and will understand what the multifaceted learners of the 21st century need in order to thrive. Linked Learning teacher candidates will know how to facilitate student interaction and discovery in the major areas of 21st century literacy and be able to set meaningful parameters for students. They will also be flexible enough to accommodate new developments in the world of work as well as the needs of each individual student. This pedagogy requires advanced understanding of inquiry learning and the skills to be effective as a facilitator and manager in the classroom.

**A Foundation in Literacy.** Literacy is fundamental to academic learning and Linked Learning follows this dictum. However, Linked Learning approaches develop literacy within the context of the career-themed pathway. For instance, students may develop expertise with concise, attention-getting writing as they design an advertisement for a real business as part of their digital and media arts project. Students in a construction and engineering pathway may discover the value of clarity in writing as they read instructions that accompany a schematic diagram. In repeated surveys, industries highly value workers who can communicate clearly and understand written and oral instructions and reports (Job Outlook 2008, National Association of Colleges & Employers). While students complete a four year standard English curriculum, their teachers stress the practical uses of literacy skills. In addition to the traditional study of great literature, students devote significant time working with informational text. Some Linked Learning programs employ the CSU Expository Reading and Writing Curriculum to assist with this approach.

**Common Core Standards in the Curriculum.** The Common Core State Standards (CCSS) dovetail nicely with the Linked Learning approach. For instance, the new standards require three key pedagogical shifts in stressing literacy across the curriculum; The CCSS call for:
• Building knowledge through content-rich nonfiction and informational texts
• Reading and writing grounded in evidence from text
• Regular practice with complex text and its academic vocabulary

The new standards stress college and career readiness through critical thinking and emphasis on depth over breadth. The authentic instruction and assessment inherent in Linked Learning encourage teachers and students to move in these directions. Many of the career themes teach facility with nonfiction and informational texts and require students to engage such texts using academic and industry-based vocabulary. They also require students to apply critical thinking and text-based evidence to practical problems, then clearly articulate in written and spoken language the processes and reasoning employed.

Implications for Practice

Linked Learning is a high school reform movement that promises to revitalize teaching and learning, but it should not be undertaken lightly. Teachers in Linked Learning pathways often find themselves working longer and harder than in traditional settings. The fact that many do so happily is testament to Linked Learning’s power to transform the teaching profession. The nature of Linked Learning requires teachers to be flexible in allowing both space for student creativity and deviations that adjust to changing conditions. Teachers must be patient, skillful collaborators with their colleagues, students, and the local community. Above all, they need to put students at the center of their work. Since Linked Learning is experiential, teachers must look for opportunities to provide meaningful learning experiences, sometimes permitting students to complete projects independently. Teacher preparation must change to meet the challenge of developing educators for these conditions.

Linked Learning formats call for similar flexibility from school administrators. School schedules must allow for student internships and other work-based learning activities. Teachers must be provided ample time for collaborative planning and assessment, and to pursue community connections for the school. In schools and districts with multiple pathways, curriculum coordinators and school counselors must develop systems that allow students to move between pathways without academic penalties. School administrator preparation must change to meet the challenge of developing administrative professionals for these conditions.

Traditional high schools often operate as oases or fortresses in troubled neighborhoods, cloistering their students and teachers behind walls and fences. By contrast, Linked Learning sites are more open to community involvement in order to allow students to interact with local businesses and other institutions. This openness can add complexity to already complicated school logistics. Greater resources may be required to allow time for school and community
participants to collaborate. Our notions of the school’s role in its community must change to meet the needs of Linked Learning pedagogies.

Many career-themed curricula exist that mimic Linked Learning, but genuine Linked Learning pathways exhibit fidelity to the standards for certification described above. Certification is a rigorous process for schools that undertake it and may be seen as “just one more hoop to jump through” by teachers and school administrators. However, achieving certification is an important step in assuring the larger community that instruction and other elements are based on sound, tested principles and that the pathway has been vetted for quality by peers and experts. Adolescents’ time in school is too precious to settle for anything less than high-quality, rigorous instruction for college and career readiness within a framework that has demonstrated its effectiveness.

Finally, Linked Learning coincides with the new wave of pedagogies and curricular goals embodied by the Common Core State Standards, Next Generation Science Standards, and College, Career, and Civic Life (C3) Framework for Social Studies State Standards. Although the development of Linked Learning predates the new standards, these reforms share important characteristics. The new standards represent the “what” of college and career readiness education, while Linked Learning can serve as the “how.”

**Using This Handbook**

Linked Learning promises to revitalize teaching, learning, and educator preparation. This introductory chapter described what Linked Learning is and why it was developed. The chapter detailed the principles, practices, and philosophical foundations upon which Linked Learning is grounded, then described some models of the reform in practice. The process and requirements of pathway certification were outlined, and the place of Linked Learning in the universe of college and career readiness reforms was described.

Other chapters in this Handbook describe research studies that demonstrate the effectiveness of Linked Learning, how a school-university-community partnership over Linked Learning developed, how Linked Learning transformed a university teacher preparation program, a school district’s teacher induction program organized around Linked Learning, and an in-depth look at the intersection between Linked Learning and the new curriculum standards movement. Each chapter is intended to share experiential knowledge and offer examples of Linked Learning in practice. Each chapter ends with an “Implication for Practice” section to assist others who want to prepare educators for service in Linked learning settings.
References


CHAPTER 2

Benefits of Linked Learning

How does Linked Learning affect student achievement? Although research is still in an early stage, there are survey data, case studies, and observations to suggest that it stimulates student engagement and builds the organizational capacity that schools require to help their students succeed. Building on these findings has been central to the scope and vision of the James Irvine Foundation in providing support for the CSU’s. Initial funding to San Diego State University looked to build capacity between participating school districts and their CSU partners in developing Teacher Preparation strategies in training new teachers to enter the professional field ready to successfully teach in Linked Learning Pathways. In addition, fellowships were provided to doctoral students to engage in research targeting important aspects of Linked Learning to inform practice. In cooperation with ConnectEd, annual gatherings of Linked Learning educators, CSU faculty, and related organizations provided a forum for meaningful exchange of best practices and developing research. The intent of this chapter is to describe how Linked Learning fosters academic success and career preparation; strengthens support services; and promotes teacher collaboration as well as reforms in school leadership. In fact, our title could just as well be “Linked Learning, Teaching and Leading,” the capacities that ensure 21st century high school students a successful preparation for college and career.

Student Engagement

Linked Learning strives to address the compelling issues that face our high schools as they prepare students to graduate ready for college and career success. Many studies identify engagement as a major factor in predicting success in high school and thereby reducing dropout rates. The framework for certified Linked Learning pathways allows students to choose a pathway theme that not only interests them but relates their studies to their college and career aspirations. By progressing through a series of classes focused on the pathway’s career theme, they become more involved in their schoolwork because so much of it is connected to a career that interests them. Moreover, the multidisciplinary approach to curriculum promotes hands-on learning and work that is meaningful and exciting because it relates to the pathway’s career. Throughout their high school years, students are thrust into the real world of work, discovering “hands on” opportunities to learn within real industries and professions.
The positive impact of Linked Learning on student engagement can be seen in the case of Maria, a northern California health pathway student, who explains, “I learned by doing. School started to seem more real to me. We had projects that were fun and challenging—that made me do far more than just memorize facts” (Darche and Stam, 2012, p. 21). A report by SRI International found that Maria’s experience may be common among pathway students, who demonstrate greater engagement than non-pathway peers (Guha et al., 2014). In five of the eight school districts studied, students in Linked Learning pathways missed fewer days of school and were more likely to remain enrolled in their district than peers who did not participate in a pathway (Guha et al., 2014). This report confirms earlier findings that students are engaged and hopeful about their participation in Linked Learning pathways (Adelman, Guha, Padilla, & Stites, 2011). In a study conducted by Felicia Anderson (2014) as part of the Linked Learning doctoral fellow program, African American students participating in these pathways reported high levels of engagement which they attributed to the structure and articulation of their chosen pathways (Anderson, 2014).

Additionally, students involved in Linked Learning pathways participate in work-based learning opportunities that help them make connections between the classroom and the real world. Darche and Stam (2012) share Maria’s explanation of how her work-based learning opportunity provided a real-world context for her classes and kept her engaged in the work:

> I helped people who were sick. I had real responsibility. I felt important. I loved being part of a team too; we had to work together for the patients’ sake, so everyone gave their all. And I realized how important it was to do things carefully—you can’t mess around when you are drawing blood! I felt really competent for the first time in my life. It kept me motivated even though my courses were really hard (p. 22).

In addition, the February 2014 Linked Learning evaluation report found that 89 percent of pathway students reported participating in a work-based learning opportunity (Guha et al., 2014). The majority of these students reported a high sense of satisfaction with their work-based learning, indicating a high level of student engagement (Guha et al, 2014).

**Student Success**

**Success in high school.** Before students can be successful in college and career, they must first graduate from high school. SRI’s 2014 evaluation report shows promising results for pathway students’ high school success. Ninth and tenth graders had earned significantly more high school course credits (equal to roughly one full-year course) than their non-pathway peers (Guha et al., 2014). Pathway students also were six to seventeen percentage points more likely than their non-pathway peers to be on track to complete a-g graduation requirements (Guha et
al., 2014). Students participating in Linked Learning also demonstrated more confidence in their academic abilities and were eleven percent more likely than non-pathway peers to believe they could learn difficult content (Guha et al., 2014). A 2013 study by the Institute for Democracy, Education, and Access (IDEA) at UCLA found that graduation rates among Linked Learning students in California exceed the state average by eight percent (Saunders, Rogers, & Terriquez, 2013).

Preparation for college and career. One of the primary goals of Linked Learning is to prepare students for success in their post-secondary endeavors, whether at a four-year university, community college, or trade school, or as they embark upon a career. Combining rigorous academics with the technical skills relevant to a career is a powerful way to provide students with the knowledge and skills necessary for success in the 21st century. A 2011 study of the Center for Advanced Research and Technology high school in Clovis, California, found that the hands-on approach utilized by Linked Learning schools “can lead to a higher percentage of enrollments in both community colleges and four-year universities” (CART, 2011, p. 3). Similarly, IDEA’s 2013 study found that Linked Learning alumni who participated in an internship or other work-based experience while in high school were more likely to attend a two- or four-year college compared to graduates who participated in internships at non-Linked Learning schools” (Saunders et al., 2013, p. 13). This study also found that Linked Learning students believed they were prepared for college because of their rigorous and authentic high school curriculum (Saunders et al., 2013).

While data on students’ post-secondary enrollment across Linked Learning districts is still forthcoming, there is evidence that pathway students possess the 21st century skills and “soft skills” required for college and career success (Guha et al., 2014; Saunders et al., 2013). Specifically, students in Linked Learning pathways are more likely than their non-pathways peers to have demonstrated knowledge of professional behavior, completed a resume and/or job application, collaborated with others in a professional setting, made a public presentation, communicated with adults, researched careers of interest, and used information from multiple sources to make decisions (Guha et al., 2014). According to SRI’s study, 95 percent of pathway students surveyed plan to attend a two- or four-year college after they graduate from high school (Guha et al., 2014).

Student Support

Linked Learning provides a rich opportunity for articulated student support services that guide students in choosing a pathway, progressing through it, and deciding on a college and career. For one thing, students form close relationships with one another and with their teachers, institutionalizing support for pathway students. For another, teachers help their students draw
connections among subjects and show them the ways in which classroom lessons relate to career readiness and work-based learning. In one study, Anderson found that Linked Learning teachers had dedicated time to address the individual needs of students, in this case African Americans, and to provide seamless articulation between pathway teachers (Anderson, 2014). These students emphasized the importance of experiencing connections within the curriculum and the value of assignments carried over from one pathway teacher to another. They also appreciated the fact that an entire team of teachers supported them. In another study, pathway teachers were found to play an active role in providing postsecondary guidance to their students (Guha et al., 2014).

Linked Learning empowers counselors as well. Bobbie Clark reports that counselors in Linked Learning schools provide valuable guidance to students in pathway choice and subsequent success in the chosen pathway. Clark’s study also revealed that within the two high schools studied, counselors are underutilized and can benefit Linked Learning when they are included on its implementation team (Clarke, 2014). In Maria’s case, it was her relationship with the counselor that helped her recognize her strengths and pursue education at a community college (Darche & Stam, 2012). Linked Learning provides an articulated structure for communication between counselors and teachers to maximize the student experience.

Collaboration

Besides engaging students, Linked Learning inspires new forms of collaboration and leadership among school personnel. Its pathways invite teachers to engage in cross-curricular planning while providing a measure of autonomy in the process. District and site leaders promote distributive leadership practices that encourage structures to support teachers in their important work. Whereas isolation has long been known to weaken and demoralize teachers, Linked Learning requires that distributive practices be honored and promoted. Building teacher capacity within these structures – that is, creating a culture of “Linked Teaching and Leading” -- is an exciting prospect for teachers, staff, and school leaders alike. It favors collaboration over hierarchy and honors teachers and support staff in unison with site leaders and community partners. One advantage to Linked Learning is that it makes good use of Professional Learning Communities, a major component of high schools in California. By organizing PLCs around Linked Learning Pathways, teachers, support staff, and school leaders acquire a shared vision for student learning through articulated curriculum wrapped around the pathway theme. Resources such as time, facilities, and teaching assignments are part of this collaborative fabric in guiding and building certified pathways. Curriculum, instructional strategies, and common and formative assessments are integrated across disciplines. Research shows that teachers who believe they are equal partners in determining their school’s vision will be all the more
committed to realizing it. This does not escape the notice of parents, who sense a greater
degree of community among educators who work collaboratively to instruct their students.

Leadership

In a report prepared by SRI International and commissioned by the James Irvine Foundation,
district and site leadership was explored within the partnership districts. The report cited
several emerging trends in leadership structures that support Linked Learning implementation
and suggest crucial leadership development at district and site levels (Adelman et al., 2011).
For example, Linked Learning in the partnership districts report district leadership is invested in
Linked Learning as the primary reform initiative at the high school level (Adelman et al., 2011).
While at first glance the assertion is not surprising, it does underscore the system-wide
commitment of energy and resources to successful Linked Learning implementation.

Leadership is also the focus of a fourth-year evaluation of Linked Learning, “Taking Stock of the
California Linked Learning District Initiative (2014).” Its authors assert:

As a major 21st century redesign of high schools with far-reaching implications for how
a given district does business, Linked Learning can succeed and be sustained as a
district-level initiative only when it is positioned and supported as a long-term priority.
(p. xi).

The report goes on to identify key leadership structures that include:

- Visible and public champions of Linked Learning, including the superintendent,
  executive cabinet, and school board, who demonstrate their commitment by enacting
  supportive district and board policies, setting and enforcing expectations for educators,
  creating and improving data systems, and marshaling funds and resources.
- A dedicated Linked Learning director with the appropriate resources and authority to
  oversee implementation and the support of a broadly representative cross-district
  Linked Learning leadership team.

School boards in these districts are promoting Linked Learning throughout the community,
serving to build strategic coalitions that provide students with meaningful College-Career
Readiness, supported through strong work-based experiences. The benefit of this shared vision
has led to dedicated support through commitment of necessary resources to ensure successful
implementation. Districts have added centralized staff to support high schools through the
certification process. The Stanford Center for Opportunity Policy in Education (SCOPE) provides
leadership institutes for district and site leaders to strengthen implementation strategies. In
conjunction with supportive agencies, these leaders also serve as coaches and mentors.
High school principals are at the center of leadership development as more and more California high schools move forward with Linked Learning. The SRI report calls for this, as do existing coalition agencies. Stanford University (2013) found that principals who are accustomed to making decisions on their own, or with little input, must learn to relinquish their authoritative role. If they can do so, distributive leadership provides a way to empower all team members within a Certified Linked Learning Pathway High School. As Fullan (2014) puts the matter, “We need to shape the role so that principals are helped to work with groups and to learn from other principals as a way of changing the culture of an organization” (p.37). High schools that implement Certified Linked Learning Pathways should be led by principals who utilize distributive leadership to design, build, and sustain the unique and dynamic nature of this approach.

With a shared vision articulated by the Board, conveyed through the superintendent, and in harmony with district high schools, Linked Learning is providing districts with an unprecedented opportunity to align reform, resources, and results in preparing our 21st century high school learners. Linked Learning high schools are experiencing emerging leadership from the teacher counselor ranks as well as from community members. Capacity building is a by-product of these schools that will yield many benefits as well. Building a bridge between professionals on campus and those in the community, a bedrock principle of Linked Learning, gives students an authentic real world experience to propel them forward with success in their chosen path.

Implications for Practice

Although we need longitudinal data that follow Linked Learning students from ninth grade though college, the existing evidence shows that Linked Learning deepens student engagement, promotes success in high school and beyond, and provides benefits for targeted support services, teacher collaboration, and school leadership. The 2013 SCOPE case study of three Linked Learning Districts spells out four lessons from districts that have implemented Linked Learning:

1. Make reforms coherent: have a clear vision, reshape the organization around it and the work to it, and maintain the vision through transitions.

2. Distribute leadership: build the capacity to lead, and change ingrown habits.

3. Begin with the end in mind: create an environment for change and get the right people on the bus.

4. Communicate: stay on message and walk the talk.

Several detailed implications for Linked Learning districts have emerged from the 2014 SRI evaluation report. These findings are divided into essential district structures, essential components of Linked Learning pathways, and essential external supports:
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| It is essential that educators across the district understand and buy in to a common vision for Linked Learning, requiring district leaders to first establish and then communicate that vision. | School and pathway staffing is critical to the success of the Linked Learning approach.  
- Active and knowledgeable principal leadership and support  
- Pathway leads with sufficient time to fulfill their responsibilities  
- Collaboration among a team of engaged teachers  
- Clear expectations and aligned training for staff to provide personalized college and career counseling | District-level coaching is essential, particularly at the beginning stages when coaches can help district leaders strategize to create the strongest possible plans and systems. |
| • Establishing a clear vision for how Linked Learning will improve student outcomes  
• Creating a communication plan that positions key district leaders as visible and public champions of Linked Learning in the district and surrounding community  
• Using the district’s communication plan to engage stakeholders at all levels | Beyond ideological support and clear communication, district leaders need to consistently demonstrate active commitment to Linked Learning  
- Integrating Linked Learning into the district’s broader strategic plan and enacting supportive district and board policies  
- Setting and enforcing expectations for | Aligned and sequenced work-based learning experiences are also central to the academic experience in a Linked Learning pathway.  
While the frequency and intensity of pathway coaching and other specialized technical assistance vary widely across districts, pathways tend to benefit from whatever coaching and other support is available. |
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| school- and pathway-level educators:  
  • Overseeing the creation or adaptation of appropriate data systems:  
  • Marshaling necessary funding for pathways  
  • Ensuring that Linked Learning structures, policies, and practices explicitly focus on equity and access | Students’ pathway academic experiences—including technical coursework—should be not only authentic and integrated, but also sufficiently rigorous to achieve desired outcomes. | Initial district investments in developing a strong broad-based coalition can pay considerable dividends later. |
| Each district requires a dedicated Linked Learning director with high-level positional authority and access to the appropriate resources to support Linked Learning. | A supportive master schedule that allows for pure cohorts of pathway students and collaboration time for pathway teachers is essential. | Networking opportunities within and across districts can be especially valuable when they account for local context and include collaboration time. |
| Beyond the Linked Learning director, districts benefit greatly from a cross-district Linked Learning leadership team that includes invested representatives of relevant district departments, as well as principals and pathway leads. | Strong pathway-level advisory boards, working alongside engaged pathway leads and staff, are essential in helping pathways develop curriculum, assess student performance, and identify work-based learning opportunities. | |

(Guha et al., 2014, pp. 57-65).
References


CHAPTER 3

The P-16/University Linked Learning Teacher Preparation Partnership

Since 1994, the Long Beach Unified School District (LBUSD), California State University, Long Beach (CSULB), and Long Beach City College (LBCC) in collaboration with local, regional, and national partners, have distinguished themselves as leaders in the creation and support of a seamless, P-16 approach to education. This approach has led to significant gains in teacher performance and student achievement through the establishment of demanding PK-12 academic standards and a deep and broad commitment on the part of higher education administrators and faculty to the needs and concerns of our PK-12 partners. We work together. We are committed to all our students every day, including the 5,300+ who are homeless and our many students with special needs. We have nearly 2,000 business partners. In this chapter, the authors describe the establishment of this successful partnership, three key initiatives, and lessons learned from our work together.

History of Long Beach Education Partnership

The partnership between LBUSD, LBCC, CSULB, and the community emerged during a time of economic devastation in the early 1990s. As suggested by O’Connor & Cohn (2004), out of conflict emerged collaboration. They described the economic and civic collapse of Long Beach in the early 1990s that led to the partnership:

“The Navy announced that it was leaving, McDonnell-Douglass (aerospace company) was on the verge of collapse, tourism was in decline, real estate values were dropping, new car dealerships were leaving, public safety was threatened by the emergence of seemingly permanent gang warfare, and test scores and the image of the public schools were both going down.” (p. 10).

From this “perfect storm” emerged a partnership with leaders from all three educational institutions as well as business and civic leaders committing to work together on behalf of all the citizens of the Long Beach community. The early years of the partnership focused on five initiatives: K-3 Literacy, Seamless Education (Standards-Based Education), Technology, Westside Development, and Middle School Reform. LBUSD wrote its first-ever private grant proposal to the Edna McConnell Clark Foundation to support middle school reform. From here we sought outside partners to help with our work.
These early years of the partnership brought us regional and national recognition. In 1995, LBUSD was the first school district in the United States to require school uniforms in K-5, a bold move to ensure safe schools and students focused on learning. In 1996, President Clinton visited Long Beach to acknowledge the collective work of the partnership, saying, “America is in your debt.” Additionally, the Mayor of Long Beach devoted an entire segment of the State of the City Address to the progress of our three educational institutions working together as Seamless Education. That speech changed the notion of “Seamless Education” from simply a process of education sectors working together to “The Long Beach Way,” a comprehensive partnership philosophy embraced by the entire community. In 1997, Seamless Education representatives presented their work to the US Senate Health, Education, Labor, and Pensions Committee under then-Chair Senator James Jeffords and Vice Chair Senator Edward Kennedy.

By 2000, the partnership had grown to a point that collaborative work was written into job descriptions and job applicants for leadership positions within the three institutions were expected to have experience in K-16 collaborative work. Counseling Reform, Teacher Preparation Reform, and other important initiatives became part of the work. In 2000, we turned to building sustainable business partnerships with the Long Beach Chamber and reviving the ‘Principal for a Day’ initiative. In 2003, LBUSD was awarded The Broad Prize for Urban Education for its efforts to close the achievement gap between rich and poor and among ethnic groups. Also in 2003, LBUSD replanted the seeds to securing outside funds for schools and programs, working with key stakeholders to rebuild the Long Beach Education Foundation.

Leadership changed, and budgets grew tight, but over the past decade our mission has remained the same-- “Every Student Every Day: The Long Beach Way.” This became a kind of mantra for our work on behalf of students. Leaders and staff in all three institutions are engaged in a process of continuous improvement. All three of our systems use a variety of data to improve our practices, sharing information and serving on each other’s advisory boards.

In March 2008, the three leaders signed a pledge, The Long Beach College Promise, to ensure the opportunity of a college education to every student in the Long Beach Unified School District. Staff in each of the three institutions work together to guarantee that students and their families have information, services, and resources to help them prepare for college.

**Lessons Learned: Two Initiatives**

**The Urban Teacher Education Academy.** A nationally recognized, site-based residency teacher preparation program, UTEACH prepares elementary teachers while fostering positive change in urban schools. Following a medical residency model, all teaching and learning takes place in
diverse urban school environments where university students teach and learn alongside their district mentors. The UTEACH model revitalizes schools by engaging future teachers, veteran teachers, and university faculty in collaborative research and education. All its content-area methods courses and student teaching take place in urban partner schools so that pedagogical knowledge develops in a collaborative learning community.

UTEACH began as a pilot program in 2001 at Bret Harte Elementary in North Long Beach, an urban school all of whose 1,300 students qualified for free or reduced-price lunch. The pilot was modeled on a Professional Development School framework, which holds that the best preparation of teachers takes place in an applied setting. Participants soon discovered that working collaboratively with a school district not only helped prepare future teachers but also enriched the skills of experienced ones. The pilot evolved into many cohorts of the master teachers collaborating with student teachers in action research in the classroom as part of the master’s degree program offered onsite by the University. University faculty soon noticed that the student teachers emerged well-prepared while test scores rose and the school milieu improved. Although no direct causal relationship can be inferred, it seems the students had a positive impact on pupil learning. Gains were even greater when clinical preparation and the site-based master’s degree program took place simultaneously. As further work confirmed the phenomenon, Dr. Linda Symcox and Dr. Felipe Golez, the faculty developers and coordinators, were led to call it a “loop of learning.” The program won recognition from both the National Commission on Teaching and America’s Future (NCTAF) and the American Association of Colleges for Teacher Education (AACTE). It was also featured in a web-cast sponsored by the American Association of State Colleges and Universities (AASCU). Below are excerpts from a press release on the initial program.

The current UTEACH model emerged from this initial pilot program at Bret Harte Elementary School. Current efforts are focusing on increasing STEM education which is supported by a grant from the S. D. Bechtel, Jr. Foundation. The faculty believes that a good clinical program, integrated with a strong co-teaching component, serves as an excellent conduit for getting ideas into urban schools. The UTEACH program is built upon more than a decade of working in university and school district collaborations. At the heart of the effort is a strong belief by both parties that together we can do an even better job of providing teacher preparation and development in urban schools. These are the key ingredients of the UTEACH program:

- Student teacher preparation occurs during an entire school year with both the teaching methods classes given by university faculty and the applied student teaching experience located at one of our clinical school based sites.
• Master teachers and student teachers meet regularly in seminar with university faculty supervisors during the school day at the clinical sites.

• A Special Education faculty member, part of the UTEACH faculty team, helps staff determine how best to educate students with special needs.

• Sixty UTEACH student teachers and thirty-five UTEACH Master Teachers receive year-long professional development in STEM Education.

• Sixty UTEACH student teachers receive support to earn an additional authorization in Math or Science to increase their employment chances.

• Master teachers and student teachers participate in supervising rounds and rotations, mirroring what is done in a teaching hospital.

• UTEACH student teachers are in high demand both within the Long Beach Unified School District, where clinical sites are located, and by school districts outside it. UTEACH operates with no support other than the funds already designated for teacher credentialing at CSULB.

• Clinical school based sites include two free and reduced lunch Title I schools, the district-designated deaf and hard-of-hearing site, a site for special needs children, and a K-8 school.

• A team of CSULB doctoral students are evaluating the UTEACH program and its role in providing STEM education in urban schools.

Combining theory with application, and setting master teachers inside an urban school, UTEACH can be seen as a forerunner to the Linked Learning Clinical Program. In the Linked Learning model, graduates emerge knowing the theory behind small learning communities and the art of teaching within them. They learn how to collaborate on interdisciplinary teams as they build students’ technical or career-entry skills. And to get the knack of such an innovative approach means having the support of school-based master teachers and university faculty who are committed to the Linked Learning movement.

**Linked Learning.** A promising secondary education reform initiative, Linked Learning combines academic preparation with college and career readiness. Together CSULB and the LBUSD embarked on a project in 2011 to prepare secondary teachers in the district’s Linked Learning
academies, which are situated in some of the district’s small learning communities. Teacher education candidates take most of their core course work on site in these career-themed academies, facilitating deep and sustained interactions with campus students, faculty and staff. Candidates then complete the clinical practice phase of their professional preparation at the same campus utilizing a co-teaching model. In the pilot phase of this project, we discovered that the culture of Linked Learning challenged traditional university practices in teacher preparation. For instance:

- Linked Learning provides instruction and assessment in context through work-based learning and projects. University faculty, however, are accustomed to focusing on content pedagogy apart from applications of content knowledge. We have had to encourage faculty to include real-life applications for the benefit of the teacher candidates, a shift that conforms to the new Common Core State Standards with their emphasis on broad, practical mastery rather than the learning of isolated facts.

- Linked Learning calls for development of curriculum for college and career readiness. University faculty have been challenged to incorporate more examples of problem-solving, collaboration, and articulation of understandings in their content areas so that teacher candidates may emulate Linked Learning emphases. In addition, faculty and teacher candidates must consider the needs and skills of career-bound as well as college-bound students and provide high quality instruction for both.

- Linked Learning proposes an integrated approach to instruction instead of the traditional content silos in our programs. This challenge is formidable as it questions the entire organizational structure of the university and the single subject programs. To meet the challenge, university faculty are grouped in cross-curricular discussions and performance-mapping exercises led by school district personnel so that they may understand the preparation district teachers undergo. In some cases, these meetings have spawned ongoing conversations about how to better integrate our instruction. Some faculty are investigating ways to team teach and co-plan courses in their programs.

- Linked Learning has built a firmer bridge between the university and our school partners. Working together, we have come to appreciate one another’s strengths and shortcomings and have learned to be mindful of each other’s primary missions. Our cooperation was most pronounced as we offered credential program classes on high school sites in LBUSD. Many issues required close coordination, such as parking, school bell schedules and the university course time modules, technology availability and
compatibility, student identification and campus access, and dozens of other matters. We also realized that the schools and the university value some things differently: faculty research and publication, campus security, the role of theory versus practice in instruction. Each area of contention calls for negotiation and forbearance. To expand our pilot project, we must establish campus liaisons for each partner in order to maintain strong lines of communication.

- Finally, the co-teaching format that CSU Long Beach chose for the clinical practice phase of Linked Learning instruction demanded a good deal of preparation for cooperating teachers, university supervisors, and teacher candidates. The high school teachers and university students had to be paired much earlier in the process than is our custom in order to get to know one another and plan their work. It helped that we recruited flexible and easy-going people in these roles, but the relationships still had to be carefully considered in the matching process and managed during clinical practice. Likewise, university supervisors had to be prepared to observe, coach, and assess within this non-traditional mode of teaching. We found the format worked best when we trained the three groups of the triad together, but this required more time and work as we paired them earlier in our process. In a word, the co-teaching model is powerful, but calls for a great deal of effort to accommodate more than a handful of placements in our service area.

**Moving Forward: Opportunities & Challenges**

The need for closer collaboration among K-12 institutions, community colleges, universities, and community partnerships has been increasingly apparent as the nation moves toward more effective vehicles for college and career readiness for all students. California’s Assembly Bill 790 ([http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120AB790; http://www.cde.ca.gov/nr/ne/yr13/yr13rel2.asp](http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120AB790; http://www.cde.ca.gov/nr/ne/yr13/yr13rel2.asp)) created consortia of school districts and community partners to engage in this work, and establishment of the Career Pathways Trust has spawned partnerships among all levels of educational institutions and the local community. Clearly, partnership is the means by which this reform movement is making its mark.

Long Beach Unified School District (LBUSD) took the lead in developing an innovative professional induction program to serve unemployed teachers. The two-year program infused Linked Learning principles and practices into the regular induction curriculum. The induction program is highlighted in chapter six of this work.
In addition, LBUSD has helped develop powerful partnerships around Linked Learning in other school districts. This mentorship is strengthened by LBUSD’s well-developed Education Business Advisory network that helps provide internships and externships for Linked Learning students and teachers and otherwise brings real-life experience into the schools (http://www.lbschools.net/Main_Offices/High_Schools/Linked_Learning/EBA/). Building authentic work-based learning experiences into the school curriculum is one of the most challenging aspects of Linked Learning for most schools and LBUSD’s groundbreaking work provides a valuable model.

Likewise, California State University Long Beach (CSULB) reaches out to local school districts to provide technical support for developing Linked Learning pathways. CSULB’s Single Subject Credential Program conducts one of its core program courses on local school sites. The genesis of this program is described in chapter five of this work. This course focuses on curriculum development, especially the kind of cross-disciplinary units and projects that Linked Learning pathways employ. Students do extensive fieldwork on the school site, lending helping hands in the classrooms and afterward, the school community is invited to view the interdisciplinary projects they produce. This exchange of ideas enriches both the CSULB credential candidates and the school site teachers, forging deeper partnerships between the university and the schools.

Finally, CSULB is now the site of the CSU Collaborative for the Advancement of Linked Learning, an ambitious project to increase the number of teachers, school counselors, and school administrators prepared to work in Linked Learning environments. The Collaborative includes seven CSU campuses-- CSULB, San Diego State University, CSU Fullerton, CSU Los Angeles, CSU Northridge, CSU Fresno, and CSU East Bay-- charged with developing partnerships among schools, community colleges, and businesses to prepare Linked Learning educators. As part of the project, San Diego State University has been delivering a five course online graduate certificate program in the principles and practices of Linked Learning through their College of Extended Studies. CSU East Bay is specifically tasked with developing curriculum for school counselor preparation centered around Linked Learning and shared across the state. Similarly, CSULB will work with other campuses to develop Linked Learning curriculum elements appropriate for the educational administration programs around the state. CSULB will also take the lead in coordinating Linked Learning research to be carried out by candidates for the Doctor of Education degree at each campus. That research will add to the growing body of knowledge about Linked Learning and its effects.
Implications for Practice

The challenges of implementing Linked Learning are formidable. This type of highly-engaging, authentic learning requires new collaborations among teachers and between schools and the larger community. It requires recasting the roles of school counselors and administrators and expects more from students and their families than does traditional secondary education. At the same time, Linked Learning holds the potential to reinvigorate the school as a site for innovation, sophisticated learning, preparation for the workplace and higher education, and a focus of community involvement. None of this can happen, though, unless deep and enduring partnerships are formed between the schools and their many stakeholders. In order to form and sustain those partnerships, all participants should commit to several governing principles. First, the partnership will be deeper than usual. This means more work, investment of resources, and transparency than is common in school-university collaborations. Partners will agree on a common set of values and practices in operating the partnership. These will be reiterated often to remind original and new members. Second, finding the right participants matters more than finding the right positions. We may need to look beyond our usual partners and ignore leadership titles to enlist people with the passion and time to make the partnership work. Third, partners must be adaptive because as conditions change, flexibility is vital. New partners will be invited to join intentionally and strategic objectives will govern any future expansion of the partnership. Fourth, practices must be periodically renewed and refreshed. Resources will be shared to further the mission and locations for activities will be chosen for the convenience of all parties, and rotated periodically. Finally, partners must be transparent about resources so that they can trust one another.
CHAPTER 4

Professional Development of University Faculty for Linked Learning Clinical Preparation

A Pilot Program to Incorporate Linked Learning into Teacher Preparation

Before beginning our professional development plan, we decided to educate a small group of California State University, Long Beach faculty in the principles and practices of Linked Learning. Starting in 2009, this group attended Linked Learning Alliance events and convening meetings and came to be known as the Linked Learning Planning Committee. Then, to spread the information to the broader faculty group, we, along with the Linked Learning Planning Committee, hosted four days of professional development sessions for the entire Single Subject Credential Program (SSCP) faculty.

Because of our longstanding partnership with Long Beach Unified School District, we tailored our professional development to meet the needs of the district while also preparing our teacher candidates to use the most current research-based teaching practices of Linked Learning and secondary education. To prepare for the professional development prepared by CSULB faculty and the Linked Learning Planning Committee, over the course of two years, the College of Education convened monthly design meetings in which LBUSD faculty shared the essential elements of secondary reform including Linked Learning. At the same time, CSULB faculty shared their course content and Student Learning Outcomes with the LBUSD faculty, as they began to integrate Linked Learning concepts into Single Subject Credential Program courses.

As part of the design meetings, the LBUSD Linked Learning curriculum staff offered workshops to CSULB faculty and our teacher candidates. These provided instruction in the following: Linked Learning Pathway criteria for small learning communities; the student learning outcomes for the various small learning communities; Linked Learning terminology; and curriculum development and assessment in small learning communities.

Essential to our Linked Learning collaboration has been the trust between LBUSD and CSULB which has been cultivated over many years through various modes. In this project, LBUSD teachers serve as adjunct faculty at CSULB while CSULB is adapting its Teacher Preparation Program to meet many of the LBUSD needs. Strikingly, 80 percent of the teacher workforce in
LBUSD comes from CSULB’s teacher preparation program – a precondition that accelerated our ability to “break down walls” and build on the long history of a seamless education partnership.

CSULB Experience with Linked Learning Professional Development

Beginning in 2011, faculty and teacher candidates participated in the CSULB professional development offerings. The format for delivery included group presentations from experts, collaborative sessions that allowed participants time to try out new ideas, and time for faculty to revise their course syllabi to reflect the principles and practices of Linked Learning.

Rather than mandate faculty attendance, we chose to invite faculty to join us in the Linked Learning professional development opportunities. We hoped to create an environment for willing participants to begin to engage in the principles of a Linked Learning approach. As a result, we were able to build a “critical mass” of early adopters, who then became advocates and successful models for their postsecondary peers.

Participatory Collaborative Professional Development: Aligning the CSULB Secondary Education Core Curriculum with Linked Learning. To deliver the professional development sessions we enlisted the expertise of our partners at ConnectEd and San Diego State University, the Linked Learning curriculum staff at Long Beach Unified School District, and our own secondary education faculty. Over the course of four days we offered the following topics to help faculty incorporate Linked Learning concepts into their own courses:

- Overview of Linked Learning principles, components and design approaches
- Evidence-based Linked Learning practices that include research on Linked Learning and career academies
- Performance Mapping
- Project-based and Problem-based learning
- Work-based Learning
- Performance Assessment
- Course-alike sessions to integrate Linked Learning concepts into the core secondary education standard course outlines
- Professional development topics related to the needs of partnering districts
- Evaluation of professional development sessions
Professional Development Topics and Outcomes for Faculty and Teacher Candidates. In order to reach all CSULB single subject faculty we conducted the four days of professional development during each of three semesters. The participants attended the four sessions to establish an understanding of Linked Learning presented by members of the partnership. Following are the topics, presenters, and outcomes for each session:

Session 1
Topic: How Linked Learning Works
Presenter(s): ConnectEd and San Diego State Partners
Outcomes:
- Provide participants with a short history of current high school reform available, with particular attention paid to the history of Linked Learning in secondary schools, the basic tenets and principles of Linked Learning and effective Linked Learning practices.

Session 2
Topic: How Small Learning Communities Enhance Teaching and Learning
Presenters: Long Beach Unified School District staff
Outcomes:
- Create or refine a meaningful and inspiring vision statement and/or mission statement for a given Small Learning Community Pathway Program to build a unique interest-based experience for Linked Learning students.
- Understand the purpose and process of developing Small Learning Community pathway outcomes charts to describe what students within each pathway should know and be able to do upon graduation.
- Develop Pathway Student Outcome Charts anchored in industry standards to assure an authentic and meaningful pathway experience.
- Develop Small Learning Community/Pathway Program Student Charts with embedded service learning to guide program design, integrated project development, and aligned work-based learning experiences.

Session 3
Topic: How Performance Mapping and Curriculum Mapping Are Different
Presenters: Long Beach Unified School District staff
Outcomes:
- Identify elements of a quality, integrated curriculum.
- Learn a focused sequence for project design that honors content standards and district pacing guides, and that maintains rigor.
- Distinguish between curriculum maps and performance maps.
• Determine how performance mapping can be used in project development.
• Practice using maps to find content connections.
• Design a sample project aligned to student outcomes for a pathway in a Small Learning Community.

Session 4
Topic: How to Connect Linked Learning, Common Core State Standards, and the Expository Reading and Writing Course (ERWC)
Presenters: CSULB faculty and guests
Outcomes:
• Introduce faculty to the structure of the Expository Reading and Writing Course (ERWC) a high school English curriculum created by CSU professors and high school teachers to teach the rhetoric of reading and writing required in the 21st Century.
• Discuss the relationship between and among the Common Core State Standards, the ERWC elements, and Linked Learning principles and components.
• Revise course syllabi to integrate Linked Learning principles into course content and fieldwork.

Session 5
Topic: How to Use Co-Teaching within Linked Learning (CSULB and LBUSD received a James Irvine Foundation grant to include Co-Teaching within our Linked Learning project as session 5. This training was included only in the first rotation and was not a part of subsequent Linked Learning Professional Development.)
Presenters: St. Cloud State University trainers (initially a trainer-of-trainers session)
Outcomes:
• Build the capacity of on-site trainers to explain the essentials of Co-Teaching, the data that support it, and the roles of individuals in Co-Teaching situations.
• Allow participants to practice the seven Co-Teaching strategies that anchor the “clinical student teaching” model adopted by the Linked Learning cohort.

The Planning Committee Sequence: An Overview. To educate the larger group of faculty, the Linked Learning Planning Committee trained LBUSD faculty, visited Linked Learning sites both local and regional, and helped plan Single Subject Credential Program (SSCP) core courses to be taught at Linked Learning high school sites within the school district.

Our goal was to immerse teacher candidates in the Small Learning Community culture. For this, the Linked Learning Planning Committee planned to offer three CSULB courses at local LBUSD high schools rather than on the CSULB campus: EDSE 435 U.S. Secondary Schools: Intercultural
Education; EDSE 436 Curriculum, Instruction, Assessment, and Classroom Management; and EDSE 457 Reading and Writing in Secondary Schools. Three faculty members were selected for the courses because of their expertise in the subject matter, their experience teaching the courses, and their familiarity with LBUSD personnel and procedures. These three members of the Linked Learning Planning Committee worked in Fall 2011 to adapt their courses to the new format. Since that time, two other CSULB faculty have joined the group who also teach EDSE 436 Curriculum, Instruction, Assessment, and Classroom Management and EDSE 457 Reading and Writing in Secondary Schools. After our first experience teaching three Single Subject Credential Program courses at a single high school site, we now alternate the on-site teaching between two high schools and teach only one of the courses -- EDSE 436 Curriculum, Instruction, Assessment, and Classroom Management -- because it best exemplifies Linked Learning practices.

Teaching at a high school site, magic can happen. For her EDSE 436 class, taught in a Long Beach high school, one of our faculty asked her SSCP candidates to create and present an integrated unit and assessment that could be used in a Linked Learning Small Learning Community. She invited high school students to assess the Single Subject Credential Program candidates as they presented their units and assessments to their peers. Using a rubric and checklist, the students gave the candidates feedback about the viability and interest level of their projects, producing a powerful learning experience that could happen only because the class was conducted at a high school site.

The Linked Learning Planning Committee also invited faculty and teacher candidates in the Linked Learning cohorts to participate in the following:

- Visits to Linked Learning school sites in San Diego and the Long Beach Unified School District
- Sessions of “Dr. Marc Chun Performance Assessment” sponsored by ConnectEd, in which participants created and field-tested performance assessments
- Co-Teaching Pairs Training, in which student teachers and their cooperating supervisors were introduced to Co-Teaching methods and strategies for relationship-building

**Evaluation of CSULB Professional Development Experience**

The five sessions we’ve described (including the co-teaching workshop offered just once) were assessed using both quantitative and qualitative measures. Participants were asked four questions which they rated with a Likert Scale. They were asked to rate the usefulness of each session they attended, its relevance to future application, whether it helped them to
understand Linked Learning and, finally, how deeply the session engaged them. Of the 44 faculty who participated, the majority indicated that the sessions were informative, engaging, and useful both immediately and in the future. A summary of reports for each of the five sessions concluded that the CSULB workshop presenters achieved their goals. They provided a clear and coherent review of Linked Learning Concepts, Performance Mapping for Small Learning Communities, and Curriculum Mapping. They also explained how to infuse Linked Learning into Secondary Education courses and embed Co-Teaching within the CSULB Linked Learning experience.

**Faculty Experiences.** Most faculty agreed that their professional development experience helped them explore the ways in which Linked Learning could be used with teacher candidates. While their responses naturally varied, we chose these examples that seem to capture the essence of the experience:

“I was surprised and pleased that the workshops weren’t redundant or superficial, and my thinking on the issues was stimulated by the presenters, organizers and fellow participants.”

“I was pleased with all 4 sessions! They were mostly hands-on and very informative. They definitely increased my knowledge and comfort level with the Linked Learning process.”

“The information presented was valuable to me as a connecting piece to the information received in the prior sessions for Linked Learning. The session was well organized and implemented well.”

**Single Subject Cohort Student Experiences.** Cohort students reported that the Linked Learning cohort enhanced their experience in the single subject program and that the Co-Teaching model was invaluable. They had this to say about their experiences in the final semester before student teaching:

“Linked Learning is something that benefits our future generations as a whole. It will provide students with an education that is relevant to their lives by giving them the opportunity to see how each content area relates to them as individuals in a changing society.”

“On day two of our PD days, we explored mission/vision statements. This activity broadened my view of Linked Learning and SLCs. I realize now that without a clear, adaptable purpose, nothing will get done. I was paired with a group of teachers and administrators. Agreeing on the wording of our statements was difficult and it gave me insight into one of the challenges in Linked Learning: Teachers are generally strong willed and opinionated. It can be hard to compromise.”
“What I am stuck by is how much pride each student has for his or her Small Learning Community. Students really feel part of a family, possibly then helping them become more involved in their schooling and their high school experience. This feeling ‘part’ of something will help the students to get better grades and take a greater part in their education.”

Challenges and Learning Outcomes

Challenges. Some of the challenges met during the first year of the professional development sessions for faculty can be addressed in the near future, while others invite more consideration of how the Single Subject Credential Program can foster a clinical teacher preparation Linked Learning model. As we address these challenges, we face many questions:

- How do we support the professional growth of faculty relative to Linked Learning once initial professional development is accomplished?
- How can we encourage on-going faculty collaboration across courses relative to Linked Learning?
- How do we provide for the professional development of new faculty or staff and/or faculty new to teaching courses with a Linked Learning emphasis?
- How does the university continue professional development for faculty and teacher candidates when there is no longer funding for these activities?
- How do we incorporate information on work-based experiences into university secondary education core courses?
- How can/will student teaching change in light of Co-Teaching?
- How will the student teaching evaluation process change within classrooms that embrace Co-Teaching or Linked Learning?
- How can CSULB continue to support Co-Teaching and cooperating teacher professional development?
- How will the university and/or school district offer Co-Teachers monetary incentives to continue the process because it is more labor intensive than is the standard method of student teaching?

Learning Outcomes. It was helpful that the College of Education convened monthly design meetings in which LBUSD faculty shared the elements of secondary reform, including Linked Learning, performance mapping and curriculum mapping, and that CSULB faculty shared their course content and Student Learning Outcomes with LBUSD faculty.
• To build capacity, we began with willing participants rather than mandating that all faculty attend the offered professional development. Therefore, we offered the professional development three times over three semesters and were able to include more faculty than a one-time event would be able to capture.

• To move the work forward, we had faculty from the local school districts teach courses in the Single Subject Credential Program, exploiting their knowledge of the cultures of both district high schools and the university.

• We found that since CSULB had a partnership with LBUSD, our Single Subject Credential Program Linked Learning faculty needed to keep abreast of the special terminology used by LBUSD teachers and staff as well as the professional development LBUSD provided its staff. Single Subject Credential Program faculty needed to be able to impart these to Single Subject Credential Program pre-service candidates.

• It will help to establish a process for inducting instructors new to CSULB as well as those new to a single subject course infused with Linked Learning.

• Needless to say, faculty skills improve with practice. Teachers from the initial implementation in Spring 2012 found it difficult to remember the Linked Learning connections they identified for their courses, since this was new information integrated into a standard course outline.

• As a result of their work, the Spring 2012 Linked Learning Planning Committee realized they had become a Small Learning Community themselves. Their initial meetings focused on discussing how to incorporate Linked Learning into their courses (EDSE 435-History of Secondary Education and Interculturalism, EDSE 436-Curriculum, Instruction, Assessment, and Classroom Management, and EDSE 457- Reading and Writing in the Content Areas) by identifying unifying questions, creating common assessments, and defining common field-work tasks for the courses. Once the pilot began, they continued to meet to discuss progress, troubleshoot, share insights, and lay the foundation for the next semester’s work. In fact, as the group evolved to include two more faculty members, it continued to meet to refine its work and discuss more systematic integration of Linked Learning principles into the Single Subject Credential Program.

**Future Perspectives**

Given that Linked Learning partners will assume responsibility for the program, we suggest that the following components become part of professional development:

• Professional development for faculty that includes, by course, revisions to learning outcomes which take account of the principles of Linked Learning. By eliciting participation from faculty, we hope that Linked Learning will be more consistently integrated into all courses in the Single Subject Credential Program.
• Opportunities for all partners to engage in joint professional development to provide consistency for students, teachers, and faculty engaging the Linked Learning model.

• Opportunities for collaboration through professional development by LBUSD and CSULB partners.

• Professional development that incorporates feedback from teacher candidates, faculty, and school district partners.

• Professional development for CSULB faculty that emphasizes revisions in fieldwork experiences related to the Linked Learning practices embedded in the course work.

• Discussion of how to prepare teachers for the move toward Common Core State Standards, over testing, standardization, and curriculum mandates.

• Examination of the sociocultural, cognitive, and non-cognitive factors in teaching high school teacher candidates and high school students.

• Assistance to cooperating teachers and CSULB faculty/supervisors and uniform placement in exemplary field experiences with cooperating teachers who model the principles of Linked Learning.

• Integration of Co-Teaching professional development into training for co-operating teachers at LBUSD and CSULB, as well as supervisors in Single Subject Credential Program content areas. Training in Co-Teaching will ensure that all partners appreciate its benefits and know how to implement its models.
References


ConnectEd http://www.connectedcalifornia.org/linked_learning


UCLA/IDEA. [http://www.idea.gseis.ucla.edu/](http://www.idea.gseis.ucla.edu/)
Chapter 5

Development of the Clinical Preparation Model

Clinical Teacher Preparation Programs in the United States

Early teacher credentialing in the United States focused on teachers’ subject matter knowledge and classroom management (Labaree, 2008). Teaching credentials in California and other states were granted simply on the basis of academic achievement. In some states, individuals who had completed a certain grade level were eligible to teach all lower grade levels. For instance, a young woman who had completed eighth grade was considered qualified to teach grades 1-7. This assumption prevailed as long as teaching licenses were granted largely at the county level. The advent of high schools, the scientific study of pedagogy, and compulsory attendance laws changed the system.

High schools required a greater degree of subject matter knowledge than did the lower schools, and high school administrators preferred to hire college graduates as teachers. This preference gave rise to pedagogy endorsements being added to college diplomas. Endorsements were normally earned by taking one or two courses in the pedagogy of the major subject, and states routinely issued teaching licenses based on these endorsements. The college faculty who taught these pedagogy courses increasingly took an interest in the study of teaching and learning. The combination of this interest and Wilhelm Wundt’s educational psychology making its way to America gave rise to departments and schools of education in colleges and universities in the latter part of the 19th century.

Passage of state compulsory attendance laws obligated the states to manage the supply and quality of teachers in their classrooms. State governments increasingly partnered with colleges and universities to establish standards and programs for teacher preparation. By the early decades of the 20th century, some form of practice teaching was added to college coursework as a requirement for teacher certification. Many colleges and universities developed laboratory schools to accommodate teacher candidates’ clinical experiences and to conduct educational research (Clifford and Guthrie, 1988).

Lab schools declined in the postwar era for two reasons. First, the postwar “baby boom” led to an enormous expansion in the number of schools across the United States. The need for teachers to staff those schools overwhelmed the small numbers that lab schools could accommodate. In addition, there was increasing distrust of the pedagogical research the
emerged from these schools. Often, the schools were close to their parent university and drew pupils from the university community. The children of professors, deans, and college presidents were hardly representative of the school population in general, so the results of research conducted in lab schools was increasingly subjected to the criticism of bias in favor of the privileged educational elite. Many felt that lab school pupils would achieve academically no matter what due to the intellectual richness in their homes. Teacher preparation programs sought other means of providing clinical experiences for their teacher candidates.

The model that emerged featured formal agreements between teacher preparation programs and local school districts to place candidates as “student teachers” in the classrooms of more experienced teachers. The experienced teacher serves as a coach and mentor while the university provides a supervisor to observe the teacher candidate’s progress on a periodic basis. In the best arrangements, there is close communication among all parties, regular, explicit, constructive feedback, and gradual growth on the part of the teacher candidate. Unfortunately, sometimes communication is poor, the university supervisor or mentor teacher is unhelpful or inexperienced at coaching, or the teacher candidate has too little previous experience in a classroom to grow sufficient skills in the allotted time. Therefore, preparation programs have sought more productive arrangements.

The Historical Component at CSULB

Many teacher preparation programs attempt to copy the medical intern model for professional preparation, in which the teacher candidate spends prolonged time in a classroom working with teachers, students, and generally acclimating to the life of schools. Some programs have followed the Holmes Group’s Professional Development School (PDS) format, in which a close relationship is maintained between school and university, resources and benefits are shared, faculty from each campus teach at the other, educational research is conducted in naturalistic settings, and teacher candidates become a part of the school structure as classroom aides before they take responsibility to teach classes themselves. The PDS format has demonstrated promising results in more effectively preparing pre-service teachers and deepening the pedagogical and curriculum expertise of veteran faculty (Robinson, 2006-PDS Conference Orlando, Florida). The PDS model also emphasizes action research by teachers, even student teachers, setting the stage for lifelong scholarship and leadership. CSU Long Beach initially adopted this model to develop teachers for Linked Learning settings.

CSU Long Beach had seen great success with its Urban Teacher Education Academy in a Clinical Home (UTEACH) model for clinical preparation of elementary teachers, and so it became a model for the Linked Learning project. UTEACH graduates exit the program with both a
theoretical and practical applied understanding of how to teach in an urban setting. The UTEACH program designers felt that the best way to learn to teach in this environment was to spend extended time in clinical practice in such settings. UTEACH is profiled in chapter three of this work.

Similarly, Linked Learning teachers need both a theoretical and applied understanding of how to teach in Linked Learning small learning communities and in interdisciplinary secondary teaching teams focused on technical and/or career entry level skills. The best way to learn how to engage in such an innovative approach to secondary education is to experience it with the support of school-based master teachers and school-based university faculty equally committed to the Linked Learning movement.

The Linked Learning Clinical Preparation Model at CSULB

How Linked Learning Was Planned. In 2011, California State University, Long Beach and Long Beach Unified School District took advantage of their already strong partnership and explored ways that they could collaborate in preparing teachers to work in Linked Learning settings. Long Beach USD is committed to Linked Learning principles and practices as the guiding ideology for its secondary schools and many CSU Long Beach credential candidates hope to teach in Long Beach USD, so the partnership made sense.

The first step was to educate CSU Long Beach faculty in the principles and practices of Linked Learning. Since 2009, a small group of faculty in the teacher education programs had attended Linked Learning Alliance events and convenings sponsored by San Diego State University and ConnectEd. In order to spread the information to a broader faculty group, we planned a series of professional development sessions for all of the Single Subject Credential Program (SSCP) faculty. The series spanned four days spread throughout the semester and included a variety of topics. The content and delivery of these professional development sessions are detailed in chapter four of this work. The highlights of the sessions were days 2 and 3 when faculty trainers from Long Beach USD (LBUSD) led us through the same process LBUSD faculty follow to map student performance tasks in their Linked Learning Small Learning Communities (SLC’s).

The professional development sessions were offered in three consecutive semesters in order to capture all SSCP faculty.

Meanwhile, a select group of faculty engaged in in-depth training with LBUSD faculty, extended visits to Linked Learning sites, and co-planning to offer SSCP core courses at Linked Learning sites. We planned to offer EDSE 435 U.S. Secondary Schools: Intercultural Education, EDSE 436 Curriculum, Instructions, Assessment, and Classroom Management, and EDSE 457 Reading and
Writing in Secondary Schools on the Millikan High School campus in spring 2012 to immerse our teacher candidates in the SLC culture. The three faculty members chosen to teach the courses, Dr. Olga Rubio, Professor Sandra Rogers, and Professor Pia Alexander were selected for their deep expertise in the subject matter, their experience teaching the courses, and their familiarity with LBUSD personnel and procedures. The three faculty members worked together throughout fall 2011 to adapt their courses for the new format.

Also during fall 2011, we recruited students to join our pilot project by visiting sections of our Introduction to Secondary Education course, showing the ConnectEd video “What is Linked Learning?” (http://www.connectedcalifornia.org/video), describing our project, and inviting participation. Through an application process we gathered twelve candidates to take their core courses on the Millikan High School campus in spring 2012 with the goal that the candidates would become an integral part of the Millikan SLCs as the clinical preparation model suggests. In fact, we elected to adopt the co-teaching model for the clinical practice portion of the pilot. Candidates would take courses on the school site, do their required fieldwork in the SLC classrooms, and engage in clinical practice at Millikan High School the following semester.

Our pilot candidates joined the CSULB faculty for the Linked Learning professional development series in spring 2012, learning alongside their instructors. In addition, we organized co-teaching training sessions for our candidates and prospective master teachers from Millikan High School.

**Lessons Learned.** Our experiences during the 2011-2012 academic year taught us some important lessons. We learned that teacher preparation faculty must see Linked Learning in action to truly grasp its implications. To that end, we utilized the rich collection of videos archived by ConnectEd Studios, and we organized a field trip for interested faculty to visit Kearny High School in San Diego, a pioneer in Linked Learning pedagogy.

We also learned that placing university courses, faculty, and students on high school campuses requires consistent communication and intricate coordination to deal with such issues as campus security and visitor check-in procedures, student and faculty parking, compatibility of district and university computer equipment, different school schedules, and many more. We found that designated liaisons were required on both the university and the school side in order to facilitate solution of these issues. The Professional Development School model calls for similar liaisons.

We also found that the small number of students we could recruit for the pilot classes formed a tight cohort that took on characteristics of a small learning community. These students took greater responsibility for their own learning than is normally the case, even requesting learning
experiences of their own design to enhance their knowledge. Likewise, the long hours of planning together created an SLC among the course instructors as they enhanced their understanding of Linked Learning principles and practices and found novel ways to combine them with their traditional course content.

Unfortunately, we were not able to carry that close collaboration into the candidates’ clinical teaching experience. We employed the co-teaching format as articulated by St. Cloud State University (http://www.stcloudstate.edu/soe/coteaching/) for their clinical experience. Ideally, we would have paired candidates with their cooperating teachers early in their onsite course semester so that they could work together before co-teaching. However, we could not make those pairings that soon, so the candidates and prospective cooperating teachers engaged in pairs training in spring 2012, but without final matches being arranged. As a result, we had to repeat the pairs training in fall 2012 once the matches were made. In addition, we found that the university supervisors had to be specially trained in what to look for during a co-teaching clinical experience. Our LBUSD partners worked with us to create addenda to our observation and evaluation instruments to accommodate co-teaching settings.

Due to shrinking state support for teacher preparation, we could not recruit students in sustainable numbers for our cohorts the following semester. So, in fall 2012 we opened our second semester of onsite classes to all who could attend. Those classes met at Cabrillo High School while candidates from the first cohort engaged in clinical practice at Millikan High School. We were able to fill the onsite courses, and actually recruited a number of new students to the program. This posed problems for the course instructors in differentiating instruction for Linked Learning and non-Linked Learning cohort students, but they solved the problem by finding ways to make the content relevant to all. This experience led us to move toward an all-program model of secondary teacher preparation for Linked Learning settings.

The third semester of onsite course offerings moved back to Millikan High School while students from the second semester cohort engaged in clinical practice at Cabrillo High School. The third cohort joined in Linked Learning professional development alongside the last contingent of program faculty and entered clinical teaching practice in fall 2013. They engaged in co-teaching training with their cooperating teachers in late summer 2013.

In spring 2013, all SSCP faculty met for a culminating project summit meeting. At that time, we made final decisions about where and how to place Linked Learning content throughout our program so that all graduates are equipped to teach in these settings. That summit meeting proved so successful that it has become a regular fixture for the maintenance and improvement of our program.
Implementing Linked Learning in the Future. Drawing lessons from our experiences to date, we have decided to offer one of our core courses on a high school site each semester. This marks a significant cultural shift for CSULB from our students taking- and faculty teaching- late afternoon and evening classes on the university campus. It also requires consistent close communication between the school sites and the university to arrange logistical details. We are seeking resources to sustain this liaison work.

Likewise, we are persuaded that the co-teaching format promises greater benefits for novice teachers, veteran teachers, and most of all, their students, than does traditional student teaching. So, we are slowly building our capacity to place co-teachers in all of our partner school districts and seeking ways to document these successes so that more schools will want to take part.

Implementing change in a large, complex organization is difficult. The task is even more difficult when that institution has achieved success by following traditional models. However, teaching and learning is changing with or without us. CSU Long Beach is convinced of the promise of Linked Learning and co-teaching to prepare teachers for the deep content exposure, experiential learning models, and collaborative work of 21st century schools. Therefore, we are willing to expend the effort required to bring about fundamental change in our single subject credential program.

Clinical Preparation for Teachers: The Implications for Practice

Clinical preparation for teachers is generally most effective when it is closely supervised and well-coached, is supported by both the host teacher and the university faculty, and lasts long enough for teachers to truly experience the life of the school. These qualities are even more necessary when the clinical experience is designed to prepare new teachers for Linked Learning settings. Linked Learning places greater demands on the teacher than do traditional settings. Linked Learning teachers must co-plan, assist students with work-based learning (WBL) activities, incorporate those WBL experiences into their curricula, teach and assess in authentic ways, and provide additional academic support to students. These demands go beyond traditional student teaching and may be overwhelming for novices.

Linked Learning clinical settings, then, should be developed with care. Veteran teachers may want to interview prospective student teachers to determine their compatibility with an existing Linked Learning team. University faculty who supervise teacher candidates in Linked Learning settings should be well-versed in the principles and practices of Linked Learning, and should be committed to the reform format. They will likely visit the student teacher more often
than usual, especially in the early days of clinical practice, in order to provide extra support. Some universities create special seminar sessions for students in Linked Learning settings to address their unique needs. Many use customized feedback and assessment instruments that focus attention on Linked Learning practices.

Many universities report difficulty in finding suitable Linked Learning placements for their teacher candidates at this early stage of the reform movement. Since placements sites are rare, they cannot be abused. Frequent, thorough communication among all parties, including school administration, is necessary to avoid misunderstandings that could damage the school-university partnership. This communication may involve higher administrative levels at each institution than has traditionally been the case, and may result in formal agreements that detail the expectations of each party, resources each will invest, responsibilities of each, anticipated outcomes, and means for settling disputes.
References


Chapter 6

Linked Learning in Induction

What is Induction?

Beginning teachers with a SB2042 Preliminary Credential are expected to participate in a two-year California state approved induction program ideally during their first years as contracted teachers in order to complete the state’s requirements to earn a Professional Clear Credential. Under the umbrella of the “Beginning Teacher Support and Assessment” (BTSA) system, the Long Beach Unified School District offers an approved Induction Program, as described at http://ca-btsainduction.org, “BTSA Induction provides formative assessment, individualized support and advanced professional development for newly-credentialed teachers, and is the preferred pathway to a California Clear Multiple or Single Subject teaching credential. The BTSA Induction program is co-administered by the California Department of Education (CDE) and the Commission on Teacher Credentialing (CTC).”

Induction is designed to be a job-embedded experience in which beginning teachers receive a well-proportioned combination of support, professional development, and formative assessment in a self-reflective, non-evaluative environment. An approved California Induction program must adhere to the specific components of the identified Common Standards and Program Standards. Each approved program determines how its specific local education agency (LEA) will meet the criteria in each set of standards. The BTSA California Induction website provides a thorough overview of Induction in California with several resources and videos available for review.

The Long Beach Unified School District Induction Experience

Looking specifically at the BTSA Induction requirements for participating teachers, the Long Beach Unified School District organizes the Induction experience into the three distinct categories suggested: support, professional development, and formative assessment.

Support. Support is provided by Support Providers who are Teachers on Special Assignment and who have extensive expertise in their content area and in the various Induction Standards. The Support Providers are assigned to Participating Teachers in Small Learning Community cohorts where the groups work together for the entire school year. Groups are sometimes reassigned in year two based on the Participating Teacher’s numbers and needs. These pairs
(Support Provider and Participating Teacher) meet face-to-face monthly and for support seminars and cohort meetings. Support Providers also visit Participating Teachers in their classrooms both formally and informally for conferencing and classroom observations. In addition, Support Providers post online discussion threads twice monthly for group discussion about professional growth, research topics, or induction standards focus items. Finally, Support Providers are available to Participating Teachers for individual face-to-face meetings, phone calls and email.

**Professional Development.** Participating Teachers are offered various types of Professional Development throughout the Induction experience including workshops, seminars, book and article studies, on-line discussion boards and video/webcasting opportunities. All Professional Development is designed to meet the Induction requirements and district focus areas which include the California Standards for the Teaching Profession (CSTP), Induction Standards (Pedagogy, Equity, English Learners, Advanced Learners, and students with disabilities), connections to the Common Core Standards of the Participating Teacher’s assignment and ongoing district Professional Development Focus Areas: Essential Elements of Effective Instruction (EEEI); Science, Technology, Engineering, and Mathematics (STEM); Linked Learning; and the needs of special populations. In addition, Participating Teachers observe in classrooms, participate in co-teaching experiences and observe demonstration lessons.

**Formative Assessment.** LBUSD utilizes the Formative Assessment System for California Teachers (FACT) which includes context for Teaching; Initial Assessment of Teaching Practice where the Participating Teacher assesses his or her own teaching by using the California Standards for the Teaching Profession Continuum and reflecting on professional strengths and areas of growth with critical feedback from their Support Provider; Inquiry; and, finally, Summary of Teaching Practice.

**The Alternative Induction Pathway**

**Overview.** In September 2011, Long Beach Unified School District became the first California district to pioneer the concept of supporting unemployed teachers in earning a California Clear Credential through an Alternative Induction Pathway (AIP). This highly successful project was launched with critical support from the S.D. Bechtel, Jr. Foundation for elementary and middle schools, and the James Irvine Foundation for high schools with a focus on Linked Learning. This summary focuses on the support of the James Irvine Foundation and how this support enabled the program to offer single subject candidates the Alternative Induction Pathway program. The Alternative Induction Pathway provides a rich induction experience geared toward deliberate exposure to Linked Learning principles and practices.
The Alternative Induction Pathway enables newly qualified teachers affected by layoffs or those who have been unable to secure a teaching position because of the fiscal crisis in education to participate in a specialized Induction program that includes significant attention to Linked Learning. Before this project, Linked Learning had not been directly addressed in Induction.

Because Induction programs across the state prepare teachers to earn their California Clear Credential, preliminary certified teachers have normally had to be the “teacher of record” in order to fulfill the critical clinical fieldwork requirements. The Alternative Induction Pathway enables unemployed new teachers to clear their credential by participating in an innovative clinically-based Induction program that builds and supports their knowledge, instructional expertise, and confidence.

**Alternative Induction Pathway Participating Teachers.** The applicants to the Alternative Induction Pathway program are single subject candidates who fall into the following categories: LBUSD laid off teachers, LBUSD day-to-day substitutes without a regular teaching contract, California State University Long Beach (CSULB) preliminary credential graduates unable to find employment in teaching, and other local university preliminary credential graduates unable to find employment in teaching. Supported by LBUSD, Single Subject candidates are expected to complete the same requirements as a regularly employed teacher in the district’s BTSA program. Actually, the two types of candidates, contracted teachers and Alternative Induction Pathway candidates, are all in the same program. The only difference between a regularly employed Participating Teacher and an Alternative Induction Pathway Participating Teacher is that employed candidates have their own classrooms for fieldwork and the Alternative Induction Pathway candidate must borrow a classroom from a host teacher, or Induction Mentor. To fulfill California Commission on Teacher Credentialing (CTC) recommendations, single subject Alternative Induction Pathway candidates meet the classroom fieldwork component of the Induction requirements by teaching one period a day. This format allows the Participating Teacher to plan instruction for the same group of students each day, analyze student work and behaviors, monitor and adjust instruction, and differentiate teaching as needed just as an employed teacher would do in his or her own classroom. The goal is for the Participating Teachers to teach the same group of students in order to get a full teaching experience even though they are not the teachers of record.

**Alternative Induction Pathway Induction Mentors and Classroom Fieldwork.** Ideally, Induction Mentors are highly qualified, experienced, and innovative LBUSD teachers who are willing to allow a Participating Teacher who holds a preliminary credential, but does not have a current teaching assignment, to teach one of their classes for a full year in order to fulfill the
clinical fieldwork component of the state of California’s Clear Credential Program. The Induction Mentor and Participating Teacher attend a co-teaching training in order to learn specific strategies for collaboration and to share the teaching roles in the classroom. It is important that the Induction Mentors and the Participating Teachers be flexible and collaborative and willing to share teaching responsibilities.

The Induction Mentor role differs from that of a Support Provider in that the Induction Mentor is more like a job-share position. The Induction Mentor and Participating Teacher establish a schedule for the Participating Teacher to take over primary responsibility for the classroom. As with any teacher, the Participating Teacher will plan instruction, teach in the classroom, and assess students. The Induction Mentor will not be responsible for scoring portfolios, conducting observations, or other established Support Provider duties. The Induction Mentor differs from a Master Teacher in that the Induction Mentor is a peer to the Participating Teacher and they share, on a level, the one group of students. The Participating Teacher is a preliminary credentialed teacher who may have had a teaching position or been a contracted teacher at some point.

**Emphasizing Linked Learning in Induction**

Though the James Irvine Foundation funding was key to the beginning steps in designing and infusing Linked Learning into the LBUSD Alternative Induction Pathway, LBUSD soon realized that both could be done even on a limited budget. The majority of the Irvine Foundation funding was spent to implement the Alternative Induction Pathway, not to infuse Linked Learning into the existing program. In determining how to infuse Linked Learning philosophies into the induction program, considerations about connections with the California State University, Long Beach community and its impact on Induction made it easier to develop a protocol because the CSULB Single Subject Program is already invested in Linked Learning. The LBUSD working in concert with CSULB continued to use the established “support + professional development + formative assessment” model to organize and implement professional development.

Before establishing a comprehensive Alternative Induction Pathway Induction Program that includes the principles of Linked Learning, LBUSD had to consider the prior experiences of its participating teachers. It is critical that participants get an induction experience that builds on their current knowledge and practice and does not overlap with what they received at the university level. The following questions were asked and the results were used in planning learning experiences for potential candidates.
• Where did you complete your preliminary single subject credential program and what is your content focus?
• What did you learn about Linked Learning in your preliminary credential coursework?
• Did you student teach in a Linked Learning environment? If so, where?
• Did the Teacher Performance Expectations (TPE) and the Teacher Performance Assessment (TPA) include elements of Linked Learning that can be used as a form of self-assessment in this Alternative Induction Pathway?

Support. An important initial step in infusing Linked Learning principles and practices into both the Induction Program and the Alternative Induction Pathway was identifying appropriate Support Providers and offering them professional development in Linked Learning principles and philosophies if they did not already have the information. Because the Induction Programs are based on the idea that support via personalized mentoring relationships between Participating Teachers and Support Providers is the primary vehicle to produce growth over time in beginning teachers, the Support Providers are expected to have a deep understanding of the Participating Teachers’ content areas.

Professional Development. Professional Development is key for all involved in new learning and has different purposes and is offered at different times throughout the program. To embed Linked Learning in the existing Induction professional development plan required a determination of which Linked Learning topics could be offered to all participants regardless of grade level and content area and which topics could be offered to the single subject candidates in the program. To address the district’s initiatives and specific site and/or department focus areas, specialized small group learning worked best. To provide such a variety of options, “Professional Development Nights” were offered three times each year. Participants chose which relevant sessions to attend.

Topic options included an overview of LBUSD’s Linked Learning Initiative including college and career readiness for all, the purposes of Small Learning Communities (SLC), specific active participation strategies as ways to engage all students (a district mandate), and available district resources. Everyone also participated in Performance Mapping to begin to learn about the district’s Performance Mapping and Curriculum Integration Strategies. All participants also took the Rigor and Relevance Framework workshop and learned about how it applies to planning rigorous units and how it relates to college and career readiness.

Some were also offered instruction in how to use “culturally relevant” technology applications in the classroom to enhance instruction, engage students, and differentiate instruction,
including examination of digital work samples and integration of technology in the “one computer” classroom. Later, participants could work on integrating Linked Learning into an Inquiry Process. To satisfy the BTSA requirements, participants could do even more research on Linked Learning through On-line Discussion Boards.

Co-Teaching Training is also part of the Alternative Induction Pathways and the Participating Teacher and their Support Provider were offered the seven co-teaching strategies developed by St. Cloud State University. They developed a plan for their own implementation in the Alternative Induction Pathways classroom environment.

Formative Assessment for California Teachers (FACT)

The LBUSD BTSA and Alternative Induction Pathway Programs utilize the Formative Assessment for California Teachers (FACT) system to assist beginning teachers in the cyclical process of planning and delivering instruction and reflecting on their practice. As teachers progress through each FACT module, they follow a delineated cycle: planning for instructional activities; teaching a specific lesson, series of lessons, and/or groups of students; reflecting on that teaching experience; and applying new knowledge to future practice. The process provides a way for participating teachers and support providers to identify teaching strengths and areas of need based on the state’s Induction Standards, the California Standards for the Teaching Profession, and the California K-12 Academic Content Standards and/or Common Core State Standards.

The Inquiry component of the FACT system involves each Induction candidate in a formal action research project. The Long Beach Unified School District Induction Program asks each participant to complete three inquiry projects during the two-year Induction experience. Each inquiry project is based upon three of the core Induction Standard topics: Pedagogy, teaching English Learners, and teaching Special Populations. The goal in adding Linked Learning philosophies to the formative assessment cycle was to enrich the concepts already in place with the Induction Standards by including a college and career readiness research component as well. In preparing secondary teachers for their upcoming inquiry projects, district personnel provided substantial assistance specific to secondary candidates to learn about the four Core Components in Linked Learning (challenging academics, technical courses, work-based learning components, and support services). Once a topic is determined based on the needs of the individual beginning teacher, the Inquiry process includes research by the Alternative Induction Pathway Candidate on teaching a topic and utilizing the instructional strategies from their research in the design of a unit of study. The unit of study includes lesson planning, pre-and post-assessments and reflection, analysis of student work, and then, based on that analysis, planning the next steps for instruction. In planning for the second year of implementation, the
program has altered the two major Inquiry documents from the state’s formative assessment documents to include areas of focus for Linked Learning.

**Challenges, Obstacles, and the Strategies to Mitigate Them**

One challenge to implementing the pilot Alternative Induction Pathway program was to create an avenue for beginning teachers to meet the state’s requirements for field experience without having their own classrooms. This required employed LBUSD teachers to serve as Induction Mentors who would host beginning teachers in their classrooms so that they could try new teaching strategies that might differ from what the Induction Mentors had done in the past.

The closest parallel to this process is the master teacher/student teacher paradigm that the Induction candidate recently completed in which the master teacher is the expert who instructs the novice on “how to teach” in the classroom. In the Alternative Induction Pathway project, LBUSD worked closely with CSULB, drawing upon its innovative pre-service co-teaching design. This new scenario features the host teacher and beginning teacher as equals in the classroom. It is feasible because the novice teacher has already participated in a one-semester student teaching experience where he or she taught three different classes and gained some experience. The goal, of course, is for the two teachers to collaborate in every aspect of teaching. The real plus is having two credentialed teachers in the classroom which reduces the student to teacher ratio and provides opportunities to meet the diverse needs of LBUSD students through the various co-teaching strategies they use.

Still, some veteran teachers, although eager to have the beginning teachers in their classrooms, were hesitant to relinquish their own best practices or well-planned, long-standing content units to someone wishing to try new or different strategies. Anticipating the problem, the district tried to match Participating Teachers and Induction Mentors who had a prior professional relationship developed during student teaching. Here, trust in the relationship had already been built and the veteran teachers were less fearful of relinquishing the primary teaching role.

Second, the program created a “Frequently Asked Questions” document that was distributed with each Induction Mentor application, presented to program staff and Executive Board training, and distributed and discussed with site administrators prior to establishing Mentor/beginning teacher pairs at a site.

These proactive approaches helped to minimize anxiety in the veteran teachers, although there still were instances when host teachers were nervous about relinquishing teaching responsibilities, especially in high-stakes content areas like mathematics. To mitigate this
challenge, the program organized a series of Induction Mentor meetings in which the Program Coordinator identified strategies to help veteran teachers address their concerns. The District’s Mathematics experts identified solutions and provided support for the veteran teachers. Moreover, the program has developed a mandatory Induction Mentor/Participating Teacher joint experience that deepens understanding of co-teaching strategies by using a “pairs activity” to help Mentors and Participating Teachers collaborate and foster mutual trust in the classroom. In addition to this joint experience, the pairs also attended professional development together, and new sessions directly relevant to the project’s Linked Learning focus were designed for them.

Another challenge that the program anticipated was how to integrate the support and collaboration for the unemployed Alternative Induction Pathway candidates and the fully employed beginning teachers in the District’s BTSA program. It was decided that the Alternative Induction Pathway candidates would not be separated or treated differently from the regularly employed BTSA participants. Some program candidates, both employed and unemployed, worried about possible inequities between the two groups, such as greater or reduced responsibilities based on employment status.

The program quickly mitigated this challenge by addressing the issue in program orientation meetings and subsequent cohort meetings. All Alternative Induction Pathway and regular BTSA participants were intermingled within their small learning communities. Program requirements for each group of participating teachers were identical. In fact, a small learning cohort was created to include only secondary teachers in the BTSA and Alternative Induction Pathway programs. This has allowed for planning and implementation of support and professional development needs that are focused solely on secondary teachers, including mastering the principles of Linked Learning. This continues to be program practice. No further action has been needed.

An additional challenge was anticipating the number of participant drops in the initial months of the pilot Alternative Induction Pathway program. There were 43 single subject participants enrolled in the program but due to participant drops, only 31 completed the 2011-2012 school year. Two situations arose that contributed to this decline in enrollment. First, the program realized that in order to meet the state’s requirements for induction, the secondary teachers must be responsible for one period per day. This provided a financial strain for some candidates because they could not find substitute jobs while participating in the Alternative Induction Pathway and/or had difficulty finding employment elsewhere because they needed to be at the school site daily. Second, Single Subject candidates enrolled in the Alternative Induction Pathway were beginning to be offered employment in surrounding school districts,
private schools, and charter schools and no longer needed to participate in the program. For the Alternative Induction Pathway candidates in our program who were employed by Long Beach Unified School District, the program continued to provide support without interrupting the BTSA experience. The program was able to simply shift funding from the James Irvine Foundation to the Long Beach Unified School District.

The program developed two other solutions for participants as well. First, Induction Mentors were recruited for the single subject Participating Teachers in schools that were on block schedule so that the candidates needed to be at the school site only two or three days a week rather than five and were offered opportunities to teach in after-school settings as well. The block schedule proved to be very beneficial to many high school placements and allowed them to complete year one of the Alternative Induction Pathway. Additionally, one participant was placed in an after-school setting and was able to substitute during the school day, as assignments were available. The program will continue to look for similar venues that provide an alternative to teaching every day in the Alternative Induction Pathway classroom scenario.

A second solution has been to enroll an additional cohort of single subject teachers for the 2012-2013 school year based on the analysis of current single subject candidates still enrolled in the program. Of the 31 participants who completed the 2011-2012 school year, 16 candidates graduated and two others found teaching jobs in the summer, leaving the cohort with 13 participants. During the application process for the 2012-2013 school year, 17 additional single subject teachers were accepted to begin the Alternative Induction Pathway program in fall 2012 and finish in June 2014. LBUSD implemented a frugal but robust program that allows continued support for the new cohort of teachers and remains within the current budget. The program has been able to keep costs low while serving more teachers.

Lessons Learned

This project is the first of its kind. Other districts across California can easily utilize the processes and lessons learned as they create additional Alternative Induction Pathway programs around Linked Learning. As is so often true when implementing new structures, the biggest challenge was trying to create a system even as it was implemented.

A major asset to the Alternative Induction Pathway design is the access that teachers have to professional development. Survey data reflect that Alternative Induction Pathway participants are not only grateful for the wealth of professional development opportunities in the program but are also applying their learning in the classroom.
The Induction Mentors developed expertise in professional development through Mentor trainings and in real-time professional learning by observing the beginning teachers who put new strategies to work in their classrooms. The co-teaching training and Alternative Induction Pathway co-teaching expectations have added a depth of collaboration that is unique to the Alternative Induction Pathway scenario. Both mentors and participants were more comfortable with the elements of co-teaching, using its vocabulary, philosophies, and instructional strategies without anxiety.

The Support Providers and professional development team continuously challenged themselves with new instructional strategies to address teachers’ needs to develop students’ college and career readiness. Induction Mentors and Support Providers found that they could apply their new knowledge immediately. The lesson learned is that effective Linked Learning support for beginning teachers requires district experts in these subjects to provide professional development to the entire team. As a result, the BTSA Induction Team was able to weave elements of Linked Learning into the induction experience with ease. The longstanding effect of this work is that LBUSD will continue to emphasize Linked Learning in Induction without weakening the requirements for state Induction standards or hindering a quality Induction experience for all beginning teachers—employed teachers or Alternative Induction Pathway candidates!

The future impact of this project is highly promising. Replicating it appears to be feasible, as shown by the Alternative Induction Pathway replication project undertaken in Sacramento and supported by the Bechtel Foundation. There, the LBUSD shared all its resources with the Sacramento City Unified School District, whose leaders found these exceptionally useful in rapidly initiating the Alternative Induction Pathway program.

There is substantial interest in the project among BTSA providers and educational leaders across the state, creating further potential for broad impacts.

Participants from Professional Development offerings made these comments about their experiences with the Long Beach Unified School District BTSA/AIP:

“I have only very positive comments regarding all the professional development and support meetings that I attended. I feel very fortunate to have joined this program. I have learned so much and I am implementing it to my teachings.”

“It was nice that my inquiry study in the spring had PD options that applied to what I was studying. It was helpful to talk to a "professional" to get ideas on my inquiry and apply it in the classroom.”
Participants made these comments about professional development with a Linked Learning focus:

“Great presentation by Nader [Twal]! I learned that LBUSD is setting up small learning communities to prepare high school students for college and job preparedness specific to employment needs. It gave me a better understanding of how Linked Learning works in LBUSD. I will apply this new learning by making sure that I let my students know why Linked Learning is relevant to them and why it is important in the real world.”

- Brian Garvey, Social Science AIP candidate

“Very good information, thank you!” I learned about SLCs, performance mapping, and industry pathways. We also talked about the Rigor and Relevance Framework (quadrants A, B, C, D). The SLCs require dedicated teachers that must all work together. I will apply this by giving students a purpose that will engage them and utilize others classes to also get them involved.”

- Mark Cardwell, Math AIP candidate

“Excellent! Very useful and informative. Linda’s presentation on Integrated Problem Based Project was excellent. I plan to apply these concepts as I continue to teach. It’s a great opportunity to work with other teachers.”

- George Alexander, Social Science AIP candidate

The program’s webpage also gives a complete description of the Long Beach Unified School District’s BTSA and Alternative Induction Pathway (AIP) programs. (For a visual representation of a participant’s journey through the LBUSD Induction experience, please find the Participant Journey Graphic Calendar available on the BTSA home page as well.)

For more information regarding the FACT system, access the FACT User Guide or click here for the module graphics.

Implications for Practice

The Alternative Induction Pathway was a unique experiment, but many of the principles that drove AIP can be employed in more traditional Induction programs seeking to acculturate teachers in and for Linked Learning settings. For instance, the AIP confronted the challenge of providing unemployed teachers with significant classroom experiences by employing a co-teaching model that paired novice teachers with veterans in the same classroom. The classroom benefits of co-teaching are well documented but the format may hold greater benefits still for helping new teachers master Linked Learning principles and practices (http://www.stcloudstate.edu/soe/coteaching/benefits.asp). Pairing novice teachers with Linked Learning veterans may provide a quicker, more powerful scaffolding into Linked Learning than traditional professional development formats. In addition, since professional
collaboration lies at the heart of interdisciplinary project-based instruction, co-teaching may develop collaborative capacities and expectations early in teachers’ careers.

The AIP designers wisely realized the importance of clear and well-articulated information widely disseminated. Transparency regarding goals for the induction program is vital. If those goals include induction in Linked Learning, that expectation must also be clear. New teachers who compare their induction experiences with colleagues from non-Linked Learning must be able to articulate why and how their induction program and their classrooms differ from the norm.

The AIP found it helpful to create a cohort of single subject credential holders within the larger induction program, since the Linked Learning content was primarily for them. Similarly, it may be helpful for other induction programs to create cohorts for induction. They may be divided between credential types, but they may also be interdisciplinary groups. This makes sense for their collaborative work developing career-themed projects.

The AIP also found it useful to creatively schedule their induction activities since so many of their participants had outside jobs. Likewise, induction for teachers in Linked Learning settings must take account of the unusual schedules in place in many pathways. Linked Learning teachers typically have a heavier meeting load outside of school hours in order to accommodate collaborative instructional planning needs, to provide enhanced academic support for students, and to participate in work-based learning activities. Induction programs customarily meet on afternoons after school ends, but planners must be mindful that Linked Learning teachers may already meet frequently in that time slot.

Long Beach Unified School District is a “wall-to-wall” Linked Learning district, so the AIP naturally infused Linked Learning principles and practices into its pilot program. However, that infusion was found to be so successful that it has become a regular feature of induction in LBUSD. School districts may want to provide a thorough grounding in Linked Learning during induction for several reasons. First, it helps set district norms for beginning teachers new to the schools. Second, the school district may not have access to teachers prepared for Linked Learning settings in pre-service preparation. Third, it may prove more cost-effective to combine novice teachers with veterans for professional development in Linked Learning, and that will encourage the collaborative relationships that are inherent in Linked Learning pathways.
CHAPTER 7

The Intersection Between Linked Learning and California’s New Standards

In the new generation of content standards and curriculum reforms, literacy, problem-solving, and extended thinking skills are emphasized over the simple mastery of facts reflected in the previous standards. The new guidelines – including Common Core State Standards (CCSS), Next Generation Science Standards (NGSS), C3 Social Science Standards, and related frameworks -- all define a different approach to instruction and assessment that is frequently termed “college and career readiness” education. College and career readiness education differs from both traditional college prep and career training by emphasizing the skills that are central to both of these programs. The Blueprint for Reform of the Obama Administration articulates the shift in public education goals that is required for all students to be college and career ready when they graduate high school.

The goal for America’s educational system is clear: Every student should graduate from high school ready for college or a career. While all states have developed and implemented standards as required under the Elementary and Secondary Education Act (ESEA), in many cases, these standards do not reflect the knowledge and skills needed for success after high school, either in further education or in a job. Four out of every 10 new college students, including half of those at two-year institutions, take remedial courses, and many employers comment on the inadequate preparation of high school graduates (United States Department of Education, 2011).

By focusing on college and career readiness through rigorous academics, the new standards complement work underway since 2008 within Linked Learning districts and several university teacher preparation programs across California – two years before the Common Core and five years before the Next Generation Science Standards were adopted. In other words, through Linked Learning, many California educators were already helping students develop these college and career readiness skills, years before the new standards even existed. Specifically, Linked Learning relates closely to all three of the “dimensions” put forth in the Next Generation Science Standards adopted in 2013. It also intersects with the four key principles of the Common Core State Standards: a focus on literacy and informational text; greater rigor and depth of knowledge; teacher collaboration; and students’ ability to see the “big picture” by synthesizing content and applying their learning to new contexts.
**Linked Learning and the Next Generation Science Standards**

The NGSS identifies three “dimensions” that delineate proficiency in science. Dimension 1, called “practices,” describes the behaviors unique to scientists as they perform their work. These behaviors represent a common behavioral foundation that crosses subject-specific areas of knowledge and skills including a range of cognitive, social, and physical practices. Dimension 1 underscores the everyday relevance of science, technology, engineering, and mathematics for students in much the same way as Linked Learning places knowledge acquisition in real-world contexts. Dimension 2, “crosscutting concepts,” connects the various domains of science so that they are seen not as isolated fields but rather as components of a coherent and rationally-based view of the world. Linked Learning encourages the same coherent worldview through its integrated curriculum approaches. In dimension 3, known as the “disciplinary core ideas,” parameters are established for teachers and students to determine which elements of a subject are most worth their attention. Core ideas are broadly important across multiple fields of science, relevant to students’ interests and life experiences, and capable of further investigation as students progress through school. As school districts strive to implement these new standards, they can rely on Linked Learning structures that are already in place.

**Linked Learning and Common Core Literacy**

Literacy in all subjects is a critical component of the Common Core State Standards. In addition to new English Language Arts standards for grades K-12, the CCSS contain three entire sets of standards (two for reading and one for writing) devoted to literacy in grades 6-12 across social studies, science, and technical subjects (National Governors Association, 2010a). Further, the Common Core applies distinctive standards to the study of literature and greatly increases the amount of informational text students will read. As the National Governors Association declares, “Because students must learn to read, write, speak, listen, and use language effectively in a variety of content areas, the standards promote the literacy skills and concepts required for college and career readiness in multiple disciplines.” (National Governors Association, 2010a). The same emphasis on college and career readiness can be found in Linked Learning. Many of its pathway outcomes (derived from the California CTE standards) also focus on literacy with a special concentration on informational text. As a result, students participating in Linked Learning pathways were already working toward these outcomes several years prior to the advent of the CCSS. The correspondences between Linked Learning pathways, CCSS, and Career Technical Education (CTE) standards are evident in the following table:
<table>
<thead>
<tr>
<th>CCSS</th>
<th>CTE Standards</th>
<th>Sample Linked Learning Pathway Outcome</th>
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<tbody>
<tr>
<td>Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features. (CCSS.ELA-Literacy.RI.11-12.9)</td>
<td>Demonstrate how to analogize or distinguish the facts of one case from the facts of a given legal problem. (Public Services Standard C2.7)</td>
<td>Given political cartoons and primary documents, students will analyze point of view, motivations and biases. (P.E.A.C.E. Academy, Millikan High School, Long Beach Unified School District)</td>
</tr>
<tr>
<td>Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., an equation) into words. (CCSS.ELA-Literacy.RST.9-10.7)</td>
<td>Interpret nutritional or ingredient information from food labels and fact sheets and analyze menu items to meet the dietary needs of individuals. (Hospitality, Tourism, and Recreation Standard B6.5)</td>
<td>Students will interpret nutritional or ingredient information from food labels and fact sheets and analyze menu items to meet the dietary needs of individuals. (CHOP Pathway, Bell Gardens High School, Montebello Unified School District)</td>
</tr>
</tbody>
</table>

Along with their emphasis on literacy, the Common Core standards prescribe a shift from literary fiction to informational texts – a shift that is already reflected in the Linked Learning pathways. Students in a pathway learn skills related to a specific industry and their English courses focus on the type of reading and writing that industry professionals and college students do. Since all their courses in a pathway address issues that are relevant to the career theme, students become not only literate but familiar with the kinds of texts that have a real-world application and appeal. Technical manuals and reports, legal documents, industry communications, and all manner of primary sources are the heart of pathway students’ literacy development, giving them a head start on exactly what the Common Core demands.
Linked Learning and Common Core “Depth of Knowledge”

By “depth of knowledge,” the Common Core means the “cognitive rigor” required by an assignment (Webb, 1999; Hess, Jones, Carlock & Walkup, 2009). Depth of knowledge suggests that, in addition to breadth of content, students ought to be confronted by complex material that provokes sustained thought, the use of multiple sources, and the capacity to address subject matter from a variety of points of view. The Common Core defines four levels of depth of knowledge ranging from simple recall to complex reasoning (Webb, 1999). Students are no longer expected to simply memorize and recite isolated facts, as the previous standards asked them to do, but to think deeply and analytically, synthesize material from multiple sources, reflect critically on the information they are given, and apply their learning to novel situations.

As with literacy, students in Linked Learning pathways have a head start on developing these cognitive skills. Table 2 illustrates the parallels in rigor between the CCSS criteria and pathway outcomes:

<table>
<thead>
<tr>
<th>CCSS</th>
<th>CTE Standards</th>
<th>Sample Linked Learning Pathway Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally. (CCSS.ELA-Literacy.CCRA.SL.2)</td>
<td>Collect and synthesize information or data about the patient’s symptoms and vital signs. (Health Science and Medical Technology Standard B4.4)</td>
<td>Students will be able to evaluate various emergency and nonemergency medical situations and be able to apply skills and knowledge gained in the use of medical diagnostic tools and terminology. They will also apply personal safety procedures based on OSHA and CDC regulations. (Health Medical Pathway, McBride High School, Long Beach Unified School District)</td>
</tr>
<tr>
<td>Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios) (CCSS.Math.Content.HSG.MG.A.3)</td>
<td>Choose between alternative solutions in solving a problem and be able to justify the choices made in determining a solution. (Engineering and Architecture Standard B6.3)</td>
<td>Uses multiple perspectives to define problems, brainstorm, and comes up with solutions to engineering challenges. (Engineering Partnership Academy, Richmond High School, West Contra Costa Unified School District)</td>
</tr>
</tbody>
</table>
As the table suggests, Linked Learning intends to provide students with real-world experiences that demand the kinds of rigorous thinking required in their chosen career field. For example, students involved in work-based learning experiences must apply what they have learned in the classroom to solve authentic industry problems. On its web site, ConnectEd has posted sample units and lesson plans that illustrate the opportunity for students to be involved in extended thinking (Level 4 DOK): http://www.connectedcalifornia.org/curriculum/integrated_units.

**Linked Learning and Teacher Collaboration**

Both Linked Learning and the new standards require teacher collaboration for successful implementation. The Linked Learning approach involves a team of teachers whose course content is taught in relation to a pathway’s career theme, helping students master the pathway’s student learning outcomes. An integrated curriculum that spans several subjects at once is a critical feature of Linked Learning. Examples of integrated curriculum and courses can be found on the websites of ConnectEd and the University of California Curriculum Integration: (http://www.connectedcalifornia.org/curriculum/integrated_units and http://ucci.ucop.edu/integrated-courses/a-g-table.html). Clayton et al. (2010) describe Linked Learning’s approach to integrated curriculum:

What does a new multidisciplinary, integrated curriculum look like? It looks like the real, thorny, and exciting problem solving that engages professionals in their daily work lives. It brings authenticity to students’ schoolwork, homework, and work-based learning situations. For example, in their mathematics and health sciences classes, Arthur A. Benjamin Health Professions High School students, in Sacramento, California, learn about the calculations that insurance underwriters make, while they ponder a highly relevant question: how do high-risk lifestyle decisions and behaviors affect access to and premiums for health insurance? While the students address this important question, their Spanish class provides a venue for studying differences in mortality rates and causes of death in many Spanish-speaking countries and across ethnic groups in the United States. Spanish becomes an important tool for researching and understanding national and cultural differences in rates of illness and injury and causes of death (p. 2).

The integrated curriculum requires collaboration from all teachers in the pathway, the CTE teacher as well as the core content teachers. Multidisciplinary units are designed around a career-themed central topic so that in each class students learn a portion of what they need for a project or outcome and synthesize these pieces in the final product. As they work, they rely on their teachers to plan learning opportunities that help them connect content areas.
Teachers participating in Linked Learning pathways have already begun the difficult work of breaking down barriers between departments and subjects by collaborating with their colleagues across the curriculum to help students achieve the pathway outcomes.

Teacher collaboration is equally important in the new standards with their multi-disciplinary approach to planning and delivering the curriculum. Adding the CCSS literacy standards in social studies, science, and technical subjects means that all teachers will have a hand in developing students’ literacy. By shifting the emphasis from fiction to informational text, the new standards require teachers across the curriculum, not just in English, to take part in literacy education. For example, students who read The Grapes of Wrath in an English class may be reading President Roosevelt’s New Deal legislation in a history class and articles about the effects of drought on a landscape in their science class. In other words, CCSS invites exactly the same cross-curricular reinforcement of content that Linked Learning pathways currently require, and teachers on a Linked Learning pathway team are already at work designing these courses. For instance, teachers in a Linked Learning Agriculture and Natural Resources pathway might extend the example from science class, about drought and its effects on the landscape, to the present drought in the American Southwest and its economic, social, and environmental implications.

**Linked Learning and the Big Picture**

In addition to preparing students for college and career, Linked Learning and the CCSS seek to help them connect what they learn in school with the real world outside it. The multidisciplinary instruction used in Linked Learning helps students make connections between their classes and the career that is the focus of their pathway. Similarly, the CCSS asks students to make connections among subjects, especially reading and writing across the curriculum. For example, many of the text exemplars contained in Appendix B of the English Language Arts CCSS are informational texts about social studies or science (National Governors Association, 2010b). Much of the emphasis of the CCSS is on students synthesizing the material learned in classes and applying their learning to solve a problem, an approach that is nearly identical to Linked Learning’s multidisciplinary approach to instruction.

Students who can connect what they learn in school to the world and, especially, the community in which they live are more likely to be engaged in their learning. A case study of Maria, a health pathway student from northern California, illustrates the benefits when students are able to see the big picture:
In her junior year, Maria did an internship at the community hospital. “I helped people who were sick. I had real responsibility. I felt important. I loved being part of a team too; we had to work together for the patients’ sake, so everyone gave their all. And I realized how important it was to do things carefully—you can’t mess around when you are drawing blood! I felt really competent for the first time in my life. It kept me motivated even though my courses were really hard (Darche and Stam 2012, 22).

With their common focus on real-world application of skills, Linked Learning and the new standards help students see the big picture and stay on track while pursuing their high school diplomas and post-secondary educational goals.

**Implications for Practice**

Districts and schools involved with Linked Learning already have the structures in place to help them implement California’s new standards. The rigor and relevance for students which the standards require are already inherent in pathway outcomes, so that folding the new standards into Linked Learning is a natural and manageable step for pathway teachers. Above all, since the student-centered, collaborative approach to education is a vital part of Linked Learning environments, the cultural shift needed to implement the CCSS has already begun in Linked Learning pathways. For districts that are adopting the CCSS and are just beginning to implement the Linked Learning approach, it is important to consider some practical ways to help pathway teachers fully implement the CCSS:

- Teachers need time to collaborate
- Teachers need workshops/professional development opportunities that focus on *both* Linked Learning and the CCSS and connect the two
- Teachers need tangible tools

**Time to collaborate.** One of the challenges to implementing Linked Learning is that pathway teachers need collaborative time to connect student learning outcomes across disciplines and plan their students’ multidisciplinary learning experiences. Although a well-designed master schedule and pathway structure can provide teachers with a common planning period, frequently this does not occur, and pathway teams are left with merely a few designated days per school year or must make these plans in their free time. Collaborative time has always been precious, and with the advent of the new standards teachers will need even more time to adjust pathway outcomes and curriculum. School calendars, bell schedules, and teaching schedules must be adjusted to allow for regular collaboration time in order to implement Linked Learning and the new standards.
**Professional development.** Linked Learning teachers who are implementing the new standards need well-designed professional development that addresses both the standards and Linked Learning in a cohesive way. However, since teachers are wary of being pulled out of class and away from students, it is critical that these sessions be carefully designed to provide coherent, meaningful information. Professional development should illustrate the congruence of the new standards and Linked Learning so that teachers get practical help for the needs of their classrooms. Rather than provide separate training in the new standards and Linked Learning, districts should plan workshops that treat them both as pieces of the same puzzle.

**Tangible tools.** Teachers engaged in creating multidisciplinary, authentic, and rigorous learning experiences for students will need resources to complete this new work. While these may vary by teacher and subject, all teachers will need sample unit and lesson plans relevant to their content area as a starting point. Many of these are already available on the ConnectEd web site or at ConnectEd Studios, and expanding them will benefit teachers. Some teachers, especially in Career Technical Education, may need specialized technical training and equipment to bring industry standards into the classroom, while others may need updated technology for student or funding for work-based learning experiences.
References


### Depth of Knowledge

<table>
<thead>
<tr>
<th>DOK Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>Level 1: Recall</td>
<td>• Recall of a fact, definition, term, or simple procedure</td>
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<tr>
<td></td>
<td>• Perform a simple algorithm</td>
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<td></td>
<td>• Apply a formula</td>
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<td></td>
<td>• Identify</td>
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<td></td>
<td>• Recognize</td>
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<tr>
<td></td>
<td>• Use</td>
</tr>
<tr>
<td></td>
<td>• Measure</td>
</tr>
<tr>
<td>Level 2: Skill/Concept</td>
<td>• Explain</td>
</tr>
<tr>
<td></td>
<td>• Describe</td>
</tr>
<tr>
<td></td>
<td>• Interpret</td>
</tr>
<tr>
<td></td>
<td>• Explain the purpose and use of experimental procedures</td>
</tr>
<tr>
<td></td>
<td>• Carry out experimental procedures</td>
</tr>
<tr>
<td></td>
<td>• Make observations and collecting data</td>
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<tr>
<td></td>
<td>• Classify, organize, and compare data</td>
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<td></td>
<td>• Organize and display data in tables, graphs, charts</td>
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<tr>
<td>Level 3: Strategic Thinking</td>
<td>• Reasoning</td>
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<tr>
<td></td>
<td>• Using evidence</td>
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<tr>
<td></td>
<td>• Explaining thinking</td>
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<td></td>
<td>• Drawing conclusions from observations</td>
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<td>• Making conjectures</td>
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<td></td>
<td>• Citing evidence</td>
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<td></td>
<td>• Developing a logical argument from concepts</td>
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<td></td>
<td>• Explaining phenomena in terms of concepts</td>
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<td></td>
<td>• Using concepts to solve problems</td>
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<tr>
<td>Level 4: Extended Thinking</td>
<td>• Complex reasoning</td>
</tr>
<tr>
<td></td>
<td>• Relating ideas within and among content areas</td>
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<td></td>
<td>• Designing and conducting experiments</td>
</tr>
<tr>
<td></td>
<td>• Making connections between a finding and related concepts</td>
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<tr>
<td></td>
<td>• Synthesizing ideas into new concepts</td>
</tr>
<tr>
<td></td>
<td>• Critiquing experimental designs</td>
</tr>
</tbody>
</table>

(Webb, 1999, p. 31-32)
### Cognitive Rigor Matrix

#### Revised Bloom’s Taxonomy levels

<table>
<thead>
<tr>
<th>Cognitive Rigor Matrix with curricular examples.</th>
<th>Webb's Depth-of-Knowledge Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remember</strong></td>
<td><strong>Level 1</strong></td>
</tr>
<tr>
<td>Retrieve knowledge from long-term memory, recognize, recall, locate, identify</td>
<td>Recall, recognize, locate basic facts, ideas, principles</td>
</tr>
<tr>
<td><strong>Understand</strong></td>
<td><strong>Level 2</strong></td>
</tr>
<tr>
<td>Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer a logical conclusion, predict, compare/contrast, match like ideas, explain, construct models</td>
<td>Compose/decompose numbers</td>
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<tr>
<td></td>
<td>Evaluate an expression</td>
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<td></td>
<td>Locate points on a grid</td>
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<td>Symbolize math relationships</td>
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<td>Write simple sentences</td>
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<td></td>
<td></td>
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<tr>
<td><strong>Apply</strong></td>
<td><strong>Level 3</strong></td>
</tr>
<tr>
<td>Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (apply) to an unfamiliar task</td>
<td>Select a procedure according to task needed and perform it</td>
</tr>
<tr>
<td></td>
<td>Solve a one-step problem</td>
</tr>
<tr>
<td></td>
<td>Calculate, measure, apply a rule</td>
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<tr>
<td></td>
<td>Apply an algorithm or formula</td>
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<tr>
<td></td>
<td>Represent in words or diagrams a concept or relationship</td>
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<tr>
<td></td>
<td>Apply rules or use resources to edit spelling and grammar</td>
</tr>
<tr>
<td><strong>Analyze</strong></td>
<td><strong>Level 4</strong></td>
</tr>
<tr>
<td>Break into constituent parts, determine how parts relate, differentiate between relevant-irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct (e.g., for bias or point of view)</td>
<td>Retrieve information from a table or graph to answer a question</td>
</tr>
<tr>
<td></td>
<td>Identify or locate specific information contained in maps, charts, tables, graphs, or diagrams</td>
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<tr>
<td></td>
<td>Identify or locate specific information contained in maps, charts, tables, graphs, or diagrams</td>
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<tr>
<td><strong>Evaluate</strong></td>
<td><strong>Level 4</strong></td>
</tr>
<tr>
<td>Make judgments based on criteria, check, detect inconsistencies or fallacies, judge, critique</td>
<td>Cite evidence and develop a logical argument for concepts</td>
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</tr>
<tr>
<td><strong>Create</strong></td>
<td><strong>Level 4</strong></td>
</tr>
<tr>
<td>Reorganize elements into new patterns/structures, generate, hypothesize, design, plan, construct, produce</td>
<td>Brainstorm ideas, concepts, or perspectives related to a topic or concept</td>
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(Hess et al., 2009, p. 8)
Epilogue: The Challenges Ahead

Purpose of This Handbook

Our purpose in providing this handbook is to assist with the development of teacher preparation for Linked Learning settings. We have attempted to provide context for the work, as well as practical advice drawn from our experience. We realize that each institution has its own conditions that pose both challenges and opportunities, and it is appropriate that each teacher preparation program will exhibit its own unique characteristics. We sincerely hope that our experiences in this work, while not exhaustive, are helpful to others implementing teacher preparation for Linked Learning settings.

Reform for College and Career Readiness

California is on the cusp of a major reform in its secondary education system. The solid work done by the California Partnership Academies laid the foundation for Linked Learning to come to fruition. California’s adoption of the Common Core Standards, Next Generation Science Standards, and other college and career readiness reforms gives impetus to Linked Learning. Linked Learning formats are well-suited to the new standards, as teachers throughout the state are finding. In 2011, with the passage of AB 790, the California Legislature lent its imprimatur to Linked Learning by establishing and funding regional consortia to implement Linked Learning in schools.

The AB 790 funding stream was enhanced in 2014 by competitive grants from the U.S. Department of Labor under its Youth CareerConnect program. Two California consortia were granted a total of $11.5M to pursue Linked Learning-like projects. Youth CareerConnect was followed nearly immediately by a $250M infusion of funds for similar projects through the California Career Pathways Trust program. That funding has recently been increased to $500M. Together these programs introduce the principles and practices of Linked Learning to over 600,000 California high school students in nearly 100 school districts.

The CSU Collaborative for the Advancement of Linked Learning

With so many schools engaged in Linked Learning, the next phase of development must include building capacity to sustain that growth. The CSU Collaborative for the
Advancement of Linked Learning (CSU CALL), housed at California State University, Long Beach, was created for that purpose. Six CSU campuses have joined the Collaborative to date.

**Educator Preparation for Linked Learning**

CSU CALL has ambitious goals. By December 2015, it will have prepared 300 educators for service in Linked Learning pathways. This number includes school counselors and administrators, as well as classroom teachers. The roles of the counselor and site administrator are crucial to the success of Linked Learning pathways, so CSU campuses are revising curriculum in those preparation programs to support such service. Of these 300 educators, at least 50 will be specially prepared in an online course sequence provided through the College of Extended Studies at San Diego State University (SDSU).

**Recognition of Study Program**

The SDSU online course sequence (Graduate Certificate in Linked Learning) will take on added importance as more school districts implement Linked Learning pathways. Developed to provide just the kind of in-depth preparation that teachers and administrators need to enact Linked Learning principles and practices on the high school campus, the course sequence leads participants through the essential elements of Linked Learning in a convenient online format. Each course focuses on a crucial component of Linked Learning and stands somewhat independent of the others so that busy educators can take just what they need from the program. The five courses vary in duration and successful completion of all five earns the participant a SDSU Graduate Certificate. Until the California Commission on Teacher Credentialing develops its own certificate program standards, this certificate serves as an assurance of quality educator preparation in Linked Learning. The courses in the sequence are as follows:

- Foundations of Linked Learning (12 weeks)
- Pathway Design and Delivery (12 weeks)
- Work-based Learning (8 weeks)
- Integrated Curriculum Design, Implementation, and Assessment (8 weeks)
- Rethinking Teacher Roles in Linked Learning Pathways (8 weeks)

The first offering of the entire course sequence spanned January 2014-March 2015. A second cohort will begin the sequence in January 2015.
Collaboration

Just as Linked Learning’s interdisciplinary projects break down the silos between disciplines on the pathway campus, and work-based learning blurs the boundaries between school and community, educator preparation for Linked Learning settings requires deeper, more meaningful collaboration to break down the traditional divisions between school and university. At times, the universities that comprise CSU CALL take the lead and provide professional development for the schools in their areas. This is one way in which the CSU serves the AB 790 school districts and those involved in Career Pathways Trust grants. In other instances, university faculty and students learn from veteran Linked Learning teachers from San Diego USD, Long Beach USD, and other districts. In this way, we build capacity and collaboration across the state. An important recent addition to this professional development is Long Beach USD’s excellent work infusing Linked Learning principles and practices into its new teacher induction program. This induction model will be shared across California in a number of ways.

Work-based learning (WBL) is an essential element of Linked Learning. In fact, authentic WBL experiences are one of the key components that set Linked Learning apart from similar learning formats. Linked Learning provides actual work experience, not simulations. However, this commitment poses a significant challenge to Linked Learning pathways because high schools have long separated themselves from their communities, often with fences and security gates. Teachers and administrators have grown unaccustomed to reaching into the community to collaborate with local businesses. Even where schools have been able to place students in quality experiences in the community, teachers have rarely followed, although these authentic experiences are crucial to teachers planning instruction and assessment within a pathway. The Career Pathways Trust grants are an effort to change this relationship by drawing workforce development organizations and schools together for this common purpose. These collaborations will increase the opportunities for significant work-based learning experiences for teachers and students.

Research

The first wave of research on Linked Learning was conducted by university faculty and research organizations to establish the efficacy of the reform. The second wave of research invited CSU doctoral students to explore Linked Learning’s effects in particular school settings. These pioneering researchers investigated Linked Learning’s impact on African-American students and those with special learning needs, as well as the role of
the school counselor in Linked Learning pathways. Now, a third wave of research is underway at the CSU campuses within the Collaborative. Topics underway include:

- The impact of Linked Learning on Latino/Latina students
- The role of the school principal in Linked Learning pathways
- The effects of Linked Learning on student success in higher education
- The intersections of Linked Learning with California’s new standards
- The characteristics of effective Linked Learning pathway administrators
- The role of second-career teachers in Linked Learning pathways
- Effective linkages between high school pathways and community colleges

At least twelve new research projects will be completed or nearly completed by the end of 2015. Added to the work already underway by university faculty and others, these projects will contribute to the substantial and growing body of literature on Linked Learning.

**Conclusion**

Linked Learning is one of the most promising high school reform movements of the new century, but it is in a fragile stage of development. The hard work and long-term planning involved in implementing effective pathways could get choked out by more immediate concerns over new standards and assessments, new funding formulas and accountability plans, and the like. But that does not have to happen. The existing research shows that Linked Learning should be an ally of the new standards and promote the cause of access and equity in education. Linked Learning is a natural vehicle for developing college and career readiness in adolescents, and it is largely blind to demographic differences among students by rewarding competence and creative thinking in authentic settings. Visionary individuals in schools, universities, foundations, the Legislature, and the community see this and are working tirelessly to create a culture of Linked Learning across the state. They see Linked Learning as not merely another high school reform initiative, but as the answer for developing college and career readiness and providing educational equity and access for all students.
APPENDIX

Key Linked Learning Resources

This chapter is designed to offer key resources to the various stakeholders within the Linked Learning field. For example, the Linked Learning Data and Research section can inform teacher preparation faculty, credential candidates, and other educator preparation programs about the growing and compelling body of evidence that supports Linked Learning as an approach to high school transformation. The Curriculum and Implementation Tools section offers a rich array of information related to authentic learning and teaching; engaging and motivating students; project-based, multidisciplinary curriculum and instruction; and more.

Readers will notice that the categories are presented in alphabetical order. In addition, the chapter is not intended to provide an exhaustive list of resources. Each one was chosen specifically to provide access to the breadth and depth of knowledge, research, and best practices related to the Linked Learning field currently available. When there is repetition across categories, it occurs to draw attention to a key feature(s) within a resource.

The authors would like to note that the resources in this chapter are intended to be relevant to a broad audience, from those who are just learning about Linked Learning and want to learn more, to those who are already immersed in the field and want to avail themselves of the expanding array of resources and stay abreast of related materials, events, and activities. In other words, the chapter is for all educators, or anyone interested in education and committed to ensuring that all students are prepared for a life in which they can be successful, that is, prepared for both college and career.

Based on their extensive experience in the Linked Learning field, preparing Linked Learning teachers and providing professional development to education practitioners, the chapter’s authors selected key resources on a variety of topics relevant to the Linked Learning approach. To help readers select from among the resources and be critical users of the chapter, each item is annotated to highlight the content presented and resources available.

College and Career Readiness

- ConnectEd: The California Center for College and Career Linked Learning Resources pages, http://www.connectedcalifornia.org/linked_learning/resources, include the report titled Career Academies: A Proven Strategy to Prepare High School Students for College and
Careers. Readers will also find the document *College and Career Readiness: What do we mean?* at http://www.connectedcalifornia.org/about/publications.

- Education Trust-West (http://www.edtrust.org/west/our-work/college-and-career) describes on its website key elements of college and career readiness and provides numerous links to relevant publications. At http://www.edtrust.org/west/resources/publications, the publication titled *Expanding Access, Creating Options: How Linked Learning Pathways can Mitigate Barriers to College and Career Access in Schools and Districts* (March 2013) asks the question: *How well are California high schools meeting the challenge of preparing students for success in college and career?* The report’s authors answer the question by examining tens of thousands of high school transcripts over the past five years. The findings provide evidence that highlights the value of a Linked Learning approach to high school transformation.

- McKinsey on Society Report, *Education to Employment: Designing a System that Works* at http://mckinseyonsociety.com/education-to-employment/report/ examines the following critical issue: “Around the world, governments and businesses face a conundrum: high levels of unemployment and a shortage of job seekers with critical skills. How can a country successfully move its people from education to employment? What are the challenges? Which interventions work? How can these be scaled up? These are the crucial questions.” One of the findings is that education providers, students, and employers often have very different views of education and learning outcomes. Because of that, researchers recommend that employers and educators actively step into one another’s worlds. For example, employers might help design curriculum and offer their employees as faculty, while educators may ask students and teachers to spend time on a job site. The researchers concluded that, “in the best programs, employers and education providers work with their students early and intensely.” At this website, an Executive Summary and the full report are available.

**Curriculum and Linked Learning Implementation Resources**

- Collay, Michelle (2011). *Everyday Teacher Leadership: Taking Action Where You Are*. San Francisco: Jossey-Bass. The words of Parker Palmer open this book: “Good teaching cannot be reduced to technique; good teaching comes from the identity and integrity of the teacher.” This book is about teachers but is written for all educators. The author describes how teaching, collaboration, partnerships, and inquiry all represent important areas of leadership that can transform schools. The book includes the voices of “urban teacher
leaders who have dedicated their lives to teaching and leading others.”

- **CTE Online** at [http://www.cteonline.org/](http://www.cteonline.org/) has thousands of lessons, developed by teachers, across all of the main Career Technical Education sectors. Lesson plans across disciplines ranging from food sciences to graphic arts to agricultural business to engineering, robotics, and media are available.

- The **Curriculum Mapping Tool** found at [http://www.connectedcalifornia.org/schools_districts/connected_studios](http://www.connectedcalifornia.org/schools_districts/connected_studios) supports teachers and pathway collaborators in the process, as the website states, of “integrating curriculum and developing lessons with real-world applications.... lessons designed to help both teachers and students access a range of resources that will enhance teaching and learning in a Linked Learning pathway.” The Curriculum Mapping Tool is found under the heading *ConnectEd Studios Users Guides*.

- **Pathway Quality Review and Certification** documents, found at [http://www.connectedcalifornia.org/schools_districts/certification](http://www.connectedcalifornia.org/schools_districts/certification), together provide core information about high quality pathways. At this site, readers will find links to three documents that are important to the Linked Learning field. They are the *Criteria for Linked Learning Pathway Quality Review and Continuous Improvement*, the *Rubric for Linked Learning Pathway Quality Review and Continuous Improvement*, and the *Guide for the Linked Learning Pathway Quality Review and Continuous Improvement*.

- Oakes, Jeanie & Saunders, Marisa (2008). *Beyond Tracking: Multiple Pathways to College, Career, and Civic Participation*. Cambridge, MA: Harvard Education Press. The term *multiple pathways* described in this book has become what we now refer to as the Linked Learning field. Readers will find some of the earliest voices that call attention to the failure of the traditional American high school and offer a remedy that includes a college-preparatory core; a professional/technical core; field-based learning and realistic workplace simulations; and additional support services to meet the needs of students and communities. As the research on Linked Learning, much of which is identified in this chapter, grows, *Beyond Tracking* becomes an increasingly visionary text.

structure relevant and focused learning that occurs outside the classroom and, often, the school. The authors challenge traditional schooling by turning the issue of high expectations upside down—to focus on students’ expectations. In a highly readable text, the authors show, based on extensive experience and research, how leaving to learn is an experience that should be an urgent imperative for all students.

Linked Learning Data and Research

- America’s Edge California (http://www.americasedge.org/what-we-support/california/) describes its 2013 policy priority this way: “America’s Edge California is supporting efforts to provide high school students with real-world experiences and help them graduate with the skills California businesses need through Linked Learning, a promising education approach that combines rigorous academics, relevant career technical education and hands-on learning opportunities that connect to actual needs in the state’s economy.” On this website readers will find an informative fact sheet on California’s students and a research report (link to Research) on closing the achievement gap that is important to all educators.

- The California Department of Education (CDE) at http://www.cde.ca.gov/ci/gs/hs/cpagen.asp features extensive information regarding California Partnership Academies (CPAs), one of the first and most implemented of California’s career academy models in what has become the Linked Learning field. Readers will be able to link to a list of statewide CPAs, research reports, and more.

- The College and Career Academy Support Network (CCASN) at http://ccasn.berkeley.edu/ is located at the University of California, Berkeley and is a hub of professional development and research related to California Partnership Academies and other career academies. Recommended reading on this website: the latest 2013 research report on California Partnership Academies.

- ConnectEd: The California Center for College and Career (http://www.connectedcalifornia.org/linked_learning) is a central provider of information and materials for the Linked Learning field. It provides a wealth of research reports, information about the Linked Learning field, implementation tools, and evidence related to Linked Learning. Readers can link to key web pages in sections titled Evidence and Resources.

- Farrington, C.A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T.S., Johnson, D.W., Beechum, N.O. (June 2012). Teaching Adolescents to Become Learners: The Role of
Noncognitive Factors in Shaping School Performance, University of Chicago Consortium on Chicago Schools Research. This report summarizes research on five factors related to academic performance. As the abstract notes, it “challenges the notion that hard work and effort are character traits of individual students, instead suggesting that the amount of effort a student puts in to academic work can depend, in large part, on instructional and contextual factors in the classroom.” This important work, with strong relevance to the Linked Learning field, is available at http://ccsr.uchicago.edu/publications/teaching-adolescents-become-learners-role-noncognitive-factors-shaping-school.

- MDRC’s website (http://www.mdrc.org/finding-what-works), focused on “Building Knowledge to Improve Social Policy,” includes a rigorous study of career academies called Career Academies: Increasing Earnings Through Education. This work is recognized as seminal career academy research, funded by the federal Institute of Education Sciences. One of the critical findings is that career academies increase students’ earning power through education.


Organizations with Valuable Related Materials

- The Buck Institute for Education (www.bie.org) provides a valuable resource for, as the title of the website indicates, Project-Based Learning for the 21st Century. Here readers will find research reports; videos; and tools to support professional development and implementation of project-based learning, including student handouts and rubrics.

- ConnectEd: The California Center for College and Career at http://www.connectedcalifornia.org is inarguably one of the richest collections of Linked Learning resources available. Some of the resources found here have already been described in this chapter. Also found at the ConnectEd website are extensive resource documents and materials, an online tool kit, information about Linked Learning schools and districts, relevant policy and legislation, and more. In addition, ConnectEd Studios at www.ConnectEdStudios.org, can be accessed through this website. The site is extensive yet
easy to navigate and a must visit for anyone who would like to know more about Linked Learning.

- The College and Career Academy Support Network (CCASN) at http://ccasn.berkeley.edu/, was mentioned earlier in this chapter. It is worth mentioning again because of its central role with the California Partnership Academies and the Linked Learning field. It provides a link to the latest 2013 research on CPAs and is a central resource for the Linked Learning field.

- Linked Learning Alliance: Pathways to College and Career Success at http://www.linkedlearning.org/ is a hub of information about Linked Learning. As the website states, “The Linked Learning Alliance is a statewide coalition of education, industry, and community organizations dedicated to improving California’s high schools and preparing students for postsecondary education and career.” Click on About Linked Learning to watch an engaging video and access a wealth of information. Readers will find information about Linked Learning sites, and we recommend visiting this website regularly to become informed about crucial policies and legislation that are relevant to Linked Learning and to all stakeholders committed to this transformative approach to high school education. Also, readers will learn about the Linked Learning Alliance and how to get involved in the work of this important organization.

- National Academy Foundation (NAF) at http://naf.org/about-naf is an organization that began 30 years ago and has long been a “leader in the movement to prepare young people for college and career success.” Across the United States, the number of NAF academies is increasing rapidly. Central to experiences of students in NAF academies is extensive Work-Based Learning experiences that are connected to rigorous academics. In addition, readers will find useful information and research reports available at www.naf.org.

- Partnership for 21st Century Skills at http://www.p21.org/ is a national organization “that advocates for 21st century readiness for every student.” Its Framework for 21st Century Learning is widely referenced. The organization’s tools, resources, and policy information are relevant to all educators. Its focus on critical thinking and problem solving, communication, collaboration, and creativity and innovation embodies an approach that lies at the heart of the Linked Learning field, in which the goal is to prepare all students for both college and career.