ALLIANCE FOR EXCELLENT EDUCATION

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The Linked Learning Approach: Building the Capacity of Teachers to Prepare Students for College and Careers

Following decades of failure, the nation is charging full-steam ahead with efforts to transform American high schools, with the goal of preparing all students for the rigors of both college and careers. Yet in order to transform the classroom experience for high school students to create a college- and career-ready focus, equal attention must be paid to transforming the way teachers are prepared to lead their classrooms. One approach to preparing teachers for twenty-first-century classrooms is to blend academic and career-focused instruction, which requires more than most traditional training provides. This brief will highlight efforts in California to redesign the traditional training options available to high school teachers in an effort to align teacher education with high school reform efforts. The brief concludes with implications for federal policy.

Transforming the High School Experience

Like those in so many states and districts, stakeholders in California are increasingly focused on how best to transform failing secondary schools. Only two thirds of students in the state graduate from high school on time,[1] and even among those who do graduate, many are often lacking the necessary knowledge, skills, and dispositions needed for postsecondary education and work.[2] Just one third of high school graduates complete the entrance requirements for state universities—called "A-to-G"—and roughly 60 percent who enter college need remedial coursework in reading or mathematics.[3]

The Linked Learning Approach

The Linked Learning initiative in California is a reform effort aimed at improving high schools by pairing a rigorous college-preparatory curriculum with career technical education courses centered on an industry theme while offering the supports and workplace exposure that can be critical to students' success. It provides multiyear programs of study that are rigorous, relevant, and directly connected to regional and state economic needs. By setting up students for success in the full array of options after high school, Linked Learning seeks to bridge the college-career divide that has long characterized the American education system.

One statewide approach, Linked Learning, connects strong academics with real-world experience in a wide range of fields, such as engineering, arts and media, and biomedical and health sciences, with the goal of preparing students for postsecondary education, work, and life. The approach has garnered support from state agencies, business leaders, industry and trade organizations, community and advocacy groups, education organizations and associations, public agencies, research and policy groups, and individuals, and is referred to as the Linked Learning Alliance.[4] The approach has also received support from policymakers. In 2008, Assembly Bill 2648 called for the superintendent of public instruction to develop a report to explore the feasibility of expanding Linked Learning programs in California.[5] The final report, released in the spring of 2010, concluded that Linked Learning is indeed one of the most promising strategies for transforming California high schools.[6]

A Linked Learning program can be markedly different from a traditional high school—for both students and staff. The focus on college and career readiness with clear, relevant industry connections adds a component of complexity to the already demanding requirements of high-quality teaching at the secondary level. And the additional teacher and leader capacities needed for a Linked Learning approach are traditionally not found in teacher preparation programs. Beyond basic pedagogy and subject-area knowledge, teachers need to be able to collaborate in the design and delivery of curriculum; develop lessons using problem- and project-based learning; forge industry and postsecondary partnerships; and blend academic-, career-, and work-based learning experiences.[7] And while many teachers in the current pipeline are not fully prepared to deliver on these practices in the classroom, it is these types of activities and responsibilities that are often the growth and development teachers yearn for in a secondary setting.

For teachers, Linked Learning expands the traditional siloed classroom approach, and opens up opportunities for interdisciplinary collaborations, including collaboration between academic and career-technical education (CTE) teachers; developing innovative approaches to engaging students, including problem- and project-based learning; taking on a leadership role within the school; and expanding their own learning through real-world internships directly from business and industry. These skills and abilities, coupled with California's Teacher Preparation Expectations, represent what is called the Linked Learning lens in the Single Subject Credential Program.

Preparing Teachers to Meet New Expectations

In 2008, San Diego State University, supported by a grant from the James Irvine Foundation, was joined by the California state universities at Fresno, Sacramento, and San Bernardino to establish a network in collaboration with ConnectEd—a group that focuses on advancing practice, policy, and research for Linked Learning—to tackle the issue of better preparing teachers for the Linked Learning classroom. Since the network's inception, California State University Long Beach and the University of California, Los Angeles, have also joined, bringing the total to six higher education institutions. Within a year, the network plans to expand to a total of eight teacher preparation programs in California. The new program for training interested secondary teachers brings a Linked Learning lens to the state-approved Single Subject Credential Program, in an effort to better align teacher education with classroom-level reform efforts.[8] In addition to incorporating many career and technical components, prospective teachers also student teach in a Linked Learning setting, giving them an opportunity to experience the approach firsthand.[9]

What follows is a discussion of the major areas of practice included in the training programs that build upon traditional teacher preparation programs to incorporate college- and career-ready training necessary for engaging students in the twenty-first-century high school classroom: creating integrated or interdisciplinary curricula; encouraging collaboration and open practice; ensuring project-based, real-world applications; and managing work-based learning.

Creating integrated or interdisciplinary curricula

Linked Learning teachers must have the skills to draw out connections to other content within their discipline, whether by identifying the core academic content within a CTE course or by applying industry skills and content to the academic core. The knowledge of most incoming teachers varies greatly depending on the preparation route taken and prior experiences. Although most career changers entering the teaching profession have a strong understanding of the skills used in the industry where they previously worked, the ability to actually impart them and integrate core content can often be lacking. Similarly, teachers entering the profession through traditional routes may not have a strong or firsthand understanding of particular

industry skills.[10] With a focus on preparing students for college and careers, Linked Learning teachers must work to integrate the necessary college prep academics with a rigorous technical core. To do so, teachers must be able to design meaningful instructional tasks based on real-world problems, stay abreast of changes in their field, identify cross-sections between academic and career-technical focuses, coordinate school- and work-based learning, simulate workplace environments, identify career paths, and understand labor trends and projections.[11]

Encouraging collaboration and open practice

The Linked Learning approach can be delivered in a number of ways, but all of them require teachers to open their practice and collaborate with their peers. One school, for example, might build its approach around a multidisciplinary course that meets daily and is alternately taught by a number of teachers from the core disciplines or career-technical education, and may even feature the involvement of an industry representative. Most teachers in traditional schools, particularly those at the high school level, teach in isolation from the rest of the school. To move from an isolated classroom environment to a shared, collaborative endeavor can be challenging—and collaborating effectively can take training and practice. However, research has demonstrated that teachers who share a common philosophy and curricular focus, collaborate, and have structured opportunities to learn and work with other teachers are generally more effective than those who do not have those experiences.[12]

Ensuring project-based, real-world applications

A critical component of the Linked Learning approach is an instructional model that conveys the unique curricular content through engaging, project-based applications that emphasize real-world connections. Research suggests that this approach fosters engagement, and results in higher rates of comprehension and retention.[13] Although it is central to improving student outcomes, many teachers are not exposed to this pedagogy before teaching in a Linked Learning setting. Teachers must learn to develop and implement project-based lesson plans that reflect curriculum content as well as real-world connections, and to individualize and appropriately pace projects to engage each learner in the classroom. Linked Learning teachers must also have the classroom management skills to organize, assess, and lead students in a variety of tasks during a single class period. An individual Linked Learning teacher may have a class of thirty students working on different projects or at different levels of completion, but it is expected that all students be engaged and working. This student-focused, efficient learning system will only be successful through well-planned and implemented projects in combination with effective classroom management.

Real-World Connections

The majority of secondary teachers and principals (71 percent and 83 percent, respectively) report that connecting classroom instruction to the real world has a major impact on improving student achievement. Yet, only one quarter of secondary students strongly agree that teachers give examples of how things they learn in school can be used in the real world.

Source: *The MetLife Survey of the American Teacher*, 2009.

Managing work-based learning

A specific subset of real-world applications is work-based learning. Whether they are internships, job shadowing, or other types of experiences, these opportunities add relevance and concrete connections from the classroom to real life. They also require teachers and leaders to be proficient in developing partnerships with local businesses willing to host students, able to make strong connections between the placement and

coursework, and skilled in navigating the logistical and legal requirements of running such a program.[14] These skills are rarely covered in traditional teacher preparation programs, leaving teachers in the position of having to swim upstream as they navigate making these outside connections after being placed in a Linked Learning classroom.

San Diego State University: Preparing Teachers to Meet Linked Learning Expectations

In response to a mismatch between traditional teacher credentialing and the skills and knowledge needed for college- and career-focused instruction, San Diego State University developed a program that has a Linked Learning lens, leading to a single-subject credential. The overarching goal of the program is "to prepare teachers who empower students to be successful in the full range of postsecondary options and life." The program incorporates the more traditional preparation elements *and* the skills and knowledge needed to teach in a Linked Learning setting. For the teacher, this means leaving the program prepared to teach not only in a Linked Learning high school but also in a more traditional academic program. The program provides teacher candidates with more information on authentic, problem-based learning, interdisciplinary learning, planning integrated units, and managing and incorporating work-based learning. In addition to coursework emphasizing Linked Learning strategies, student teaching experiences occur at Linked Learning schools to ensure related field experiences.

The first cohort of twenty-seven students completed the one-year credentialing program in 2009. That number doubled in 2010. The training prepared the teachers to plan and teach integrated units, collaborate, and create work-based learning experiences. Although the goal is to place graduates in Linked Learning schools, many will end up in traditional high schools because there are not enough job openings in Linked Learning schools to provide all graduates a position. Program director Nancy Farnan and cohort leader Rochelle Treger have noted that support is provided for their teachers with the hope that graduates will be leaders in whatever school they enter and will use their skills to transform the classroom and schools to prepare all students for both college and careers.

As these training programs increase in number and size, a major evaluation is planned to provide feedback to the programs and inform development.

Supporting Teachers in a Linked Learning Environment

Building an effective Linked Learning teaching force takes more than pre-service training alone; developing human capital is an ongoing process that requires constant attention, resources, and support systems long after a teacher enters the classroom. Professional development and teacher support are central to successful practice in all schools, not just Linked Learning programs. Effective professional development should be ongoing, collaborative,[15] and job embedded.[16] And the best support for teachers comes when teacher education, professional development, and induction programs are aligned and interconnected. However, in addition to the attributes of all high-quality professional development programs, there are also specific characteristics of teacher support systems that can be especially important for teachers in a Linked Learning setting.

Professional development

There are specific, unique professional development needs for Linked Learning teachers. Some of the most crucial areas of need for development and preparation include curriculum development, curriculum integration, and building and leveraging partnerships effectively. Linked Learning curriculum involves integrating academic and technical education, requiring an understanding of the role of academics in business, industry, and community organizations, and an understanding of the role of out-of-school experiences in academic learning.[17] A challenge for many is developing lesson plans that embed specific

skills or content not traditionally in their discipline—for an academic teacher that may mean getting guidance in how to appropriately represent industry requirements.[18] The onus on lead teachers or curriculum leaders can be even greater: they are responsible for developing an integrated curriculum and helping the staff to implement it. However, the knowledge and expertise required to complete these activities often do not already exist in schools. Developing the ability to successfully design and implement a curriculum requires support through observations of model classrooms, from universities, or from other outside experts.

Another critical area where staff may need additional support is in forging partnerships with local businesses and universities to offer students a variety of work and academic experiences. The persons responsible for this kind of networking vary from program to program; occasionally teachers must take the task upon themselves, or in other cases department heads or a school-wide partnership coordinator take the lead in building outside relationships. However, most teachers new to Linked Learning need help creating these partnerships and designing appropriate projects or activities in collaboration with the partners. Externships for teachers, usually offered over a summer, are one way to help prepare teachers for these experiences. Externships allow teachers to gain a clear understanding of the skills and knowledge students need to be successful in a specific work environment, and provide the opportunity to pull together information helpful to the design of curriculum.[19] The ongoing nature of these experiences is important even for those teachers who came from an industry background in order to ensure that they remain on top of industry standards—particularly in quickly growing fields like biomedical and health sciences or digital media and design.

A similar ongoing need, in addition to staying informed about fast-moving industries, is to constantly reexamine and improve the delivery of changing content. As job requirements and real-world problems evolve, Linked Learning teachers need to adapt their curricula, strategies, and projects to effectively impart new material. Tools such as observing other classrooms, visiting high-performing schools, and opening practice to university and business representatives are important opportunities that allow teachers and leaders to remain as dynamic as their fields.

The role of leadership

For Linked Learning to be completely successful, administrator, staff, and teacher buy-in and commitment are crucial. Many of the key components for Linked Learning are not possible without administrator support in scheduling time, facilitating professional development, and lending general support to the teachers to forge partnerships and develop new curriculum. For example, at the building level, working student internships into a school's schedule and ensuring that internships support academic and technical learning goals can be extremely challenging, often requiring some inventive planning. Add in the teacher time needed for peer observation and collaborative planning, and even the most seasoned teachers will be challenged without strong administrative support. Many schools have acknowledged this need by giving grade-level pathway teams of teachers the same planning periods. Others have tried using in-service time or otherwise tweaking the schedule already in place to facilitate teacher collaboration. This is just one of the many arenas in which the administrative buy-in for a school or district is critical to the success of Linked Learning.

One strategy that can be especially successful in a Linked Learning environment is the creation of small teacher teams or communities of practice. Small teams not only facilitate shared planning activities, but they also promote a sense of community and ownership. Teams must be developed with clear criteria, templates, professional development, and technical assistance[20] to promote effective collaboration. In a study of a program that integrated math in the CTE curriculum, teachers reported that the formation of communities of

learning was particularly helpful and found that the students whose teachers participated most in communities of learning had the highest gains on test scores.[21]

Grossmont Union High School District and Linked Learning

As schools begin to implement Linked Learning, they must address the fact that the majority of teachers will not have the knowledge, skills, or buy-in needed for success at the outset. Since the knowledge and skills needed to teach in a Linked Learning school differ from those taught in most traditional preparation programs, new and novice teachers from all training backgrounds will need to learn how to effectively plan and teach in a Linked Learning school. Such a change in schools will only be successful and sustainable if there is true teacher buy-in. To ensure that all teachers develop the necessary knowledge, skills, and investment, ongoing development opportunities must be offered and strong support structures put in place.

The Grossmont Union High School District in San Diego, California, recently undertook the challenge of beginning to implement Linked Learning in all thirteen of their high schools. The goal of the school district, which includes both urban and rural areas, is for all schools to offer a clear Linked Learning curriculum organized around selected industry sectors. This promising movement in Grossmont has largely been driven by the district's career-technical education office, which began building CTE teacher support, skills, and knowledge through workshops focused on pathways. These initial volunteer CTE teachers began the preliminary work for implementation by learning, planning, and developing pathways.

Recognizing the importance of collaboration and support for all pathways teachers, Grossmont has encouraged traditional academic content teachers to join in the trainings and observations. As a result of positive exposure to the CTE teachers implementing pathways and receiving support, many academic teachers have begun to partner with the CTE teachers. Professional development workshops and trainings as well as opportunities for observations at model sites have been offered to interested teachers in the district. In fact, virtually all Perkins funding for school year 2009–10 is devoted to sending CTE and partner academic teachers to observe model sites throughout the state. The majority of the trainings are based on ConnectEd's model for pathways, and the district draws on the organization's expertise whenever possible. Many districts and schools rely on ConnectEd for this support. The group offers a wide array of professional development services that are designed to educate both district and school site personnel on the implementation of Linked Learning.

The Grossmont school district is a prime example of using professional development and support to implement pathways into a school, or even an entire district. By identifying experts in the field and focusing on training, collaboration, and observation of best practices, Grossmont has begun to build a faculty that has not only the knowledge and skills to implement pathways but also the buy-in to make it sustainable.

At another level, district administrators who generally oversee budgets and infrastructure issues are critical partners and supporters for teachers in a Linked Learning setting. Starting and maintaining a Linked Learning approach can mean new facilities or remodeling costs to create the physical space teachers need, in addition to giving teachers access to the most up-to-date equipment.[22] This is no small feat in an era of budget shortfalls, and again, it is just one of the examples of the importance of administrator support.

Consistency of leadership is also critical to success, especially in districts and schools that are just starting the process of change. In some areas, implementation of the Linked Learning model and placement of Linked Learning teachers has been delayed or brought to a halt as a result of superintendent or principal turnover.[23] In other instances, major strides have been made as the result of supportive, consistent leadership from these same players.[24]

Implications for Federal Policy

Nothing is more critical to ensuring that students have the opportunity to learn in an environment that prepares them for both college and careers than developing a core of effective teachers and leaders. The efforts in California highlighted in this brief illustrate what many across the nation are grappling with: how to build the capacity of teachers and leaders to guide twenty-first-century classrooms. There are important ways that federal policy can support and promote innovation as California—and the nation—moves to transform the high school experience for both students and teachers.

- **Invest in aligning teacher education with high school reform efforts.**

  As the focus of high schools shifts to a curriculum based on college and career readiness, it is critical that teachers have the necessary skills, knowledge, and dispositions to lead those classrooms. The federal government should provide incentives to fuel the development of innovative and effective approaches to align teacher training to reform efforts. Teachers need to be able to collaborate in the design and delivery of curriculum; develop lessons using problem- and project-based learning; forge industry and postsecondary partnerships; and blend academic-, career-, and work-based learning experiences—all elements generally lacking in current teacher preparation efforts.[25] The federal government should invest in both traditional training programs and alternative preparation routes, with an eye toward both pre-service and in-service support for teachers, including mentoring.[26] These routes should help attract qualified candidates with skills in subject areas that lead to high-skill, high-demand, and high-wage occupations. At the same time, it is critical that the federal government provide funding to those programs already in development to ensure expansion and evaluation to better inform the field. The federal government should also encourage states to work with practitioners to develop quality standards for what teachers need to know and do to prepare students for college and career success. States should then ensure that professional development resources are aligned with these standards.

- **Encourage the adoption of school-level strategies that promote a supportive environment for college and career instruction.**

  Beyond training and mentoring, it is equally vital that other school-level policies and practices are aligned to create and foster a college and career focus for leaders, teachers, and students. For example, federal policy should support reform efforts that allow schools more flexibility in scheduling. This includes leveraging time to facilitate the work of professional learning communities and fostering opportunities for team teaching using block schedules. Using time in these innovative ways enables teachers and support staff to pinpoint students' educational needs and deliver content in an interdisciplinary and engaging manner.

- **Invest in college- and career-focused education for district and school administrators.**

  In addition to training teachers, reforming the nation's secondary schools requires greater attention to the preparation of district and school leaders. Much of the focus of transforming the high school classroom is on how best to prepare teachers. Yet as this brief has highlighted, administrators play a vital role. The federal government should promote investments in training school leaders—superintendents, principals, curriculum directors, and lead teachers—to create and sustain a college- and career-focused environment for learning. The active support of district and school leaders is often the linchpin to the successful implementation of approaches such as Linked Learning by leveraging community partnerships, ensuring the necessary physical infrastructures are in place, securing funds, and purchasing technology and developing curriculum.

- **Remove barriers and create incentives that promote new and innovative partnerships for supporting teachers.**

  Partnerships that align various teacher preparation options, teacher professional development and support, and changing college and career requirements are essential to a comprehensive approach to human capital development. However, there can be difficulties in creating the kind of partnerships required. For example, Perkins and other authorizing legislations limit schools from being able to contract with intermediaries with specific areas of expertise in professional development, curriculum development, and coaching. Federal policy should encourage the creation of partnerships among school districts, institutes of higher education, local industry, and other major stakeholders for the purpose of developing high-quality teachers and leaders who are prepared to lead classrooms, and should encourage states to streamline the arduous bureaucratic process of forming alliances with schools.

  Similarly, federal policy needs to build increased flexibility into the professional development components of various laws to meet the needs of approaches like Linked Learning that utilize teams of teachers and cross-discipline collaboration. It can be problematic, for example, when only half of a CTE-academic teacher team can attend a career-focused professional development visit because it was paid for with Perkins funds. Innovative programs like Linked Learning need the room to develop effective teachers, regardless of discipline or content area, so that excellent teaching supports the goal of college and career readiness for all students.

Successfully transforming high schools into engaging places of learning for all students—places that prepare students for both college and careers—requires transforming the practices of training teachers. The strategies in California highlight a concerted effort to provide teachers with the knowledge and skills needed to lead a twenty-first-century classroom and offer important lessons for other districts, states, and regions also in the process of transforming teacher education. And while the full impact remains to be seen, a growing body of research supports the Linked Learning approach. The need to align teacher training with classroom reform is unmistakable; without it, the nation will not reach the goal of graduating all students prepared for the rigors of college and careers.

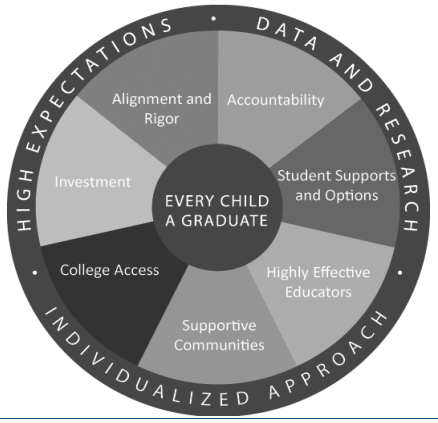
This brief was written by Lori Meyer, a consultant to the Alliance for Excellent Education and former director of research at the Alliance.

The mission of the Alliance for Excellent Education is to promote high school transformation to make it possible for every child to graduate prepared for postsecondary learning and success in life.

The Alliance for Excellent Education is a national policy and advocacy organization, based in Washington, DC, working to improve national and federal policy so that all students can achieve at high academic levels and graduate high school ready for success in college, work, and citizenship in the twenty-first century.

The Alliance has developed a “Framework for Action to Improve Secondary Schools” that informs a set of federal policy recommendations based on the growing consensus of researchers, practitioners, and advocates about the challenges and solutions for improving secondary student learning.

The framework, shown graphically here, encompasses seven policy areas that represent key leverage points in ensuring a comprehensive, systematic approach to improving secondary education. The framework also captures three guiding principles that apply to all of the policy areas. Although the appropriate federal role varies from one issue area to another, they are all critically important to reducing dropouts and increasing college and career readiness.



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