



Building a System of College and Career Pathways in New Mexico

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ConnectED: The National Center for College and Career

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Executive Summary

The Learning Policy Institute (LPI) conducted research in New Mexico to provide state leaders and stakeholders a research perspective on the challenges facing education and to identify evidence-based ways that state policy can address them. This report complements the main report, *Improving Education the New Mexico Way*, and is one of a series stemming from this research. It focuses on developing high school pathways that integrate college and career preparation and combine classroom and work-based learning to make high school more engaging and relevant, while also advancing opportunities to develop high-level cognitive skills in the core academic disciplines.

New Mexico is committed to enabling all of its young people to graduate from high school ready to succeed at college and in careers. Yet, in 2018, statewide only 74% of New Mexico high school students were graduating on time, and the percentages were even lower for African American (69%) and Native American students (66%), as well as those who are economically disadvantaged (69%). Academic proficiency rates for high school students in English language arts and mathematics are also stubbornly low. Career and technical education (CTE) could have an important role in improving the academic outcomes and economic prospects of New Mexico students.

While the state offers a rich array of CTE courses, our analysis indicates breadth often seemed to take priority over depth, with relatively few students enrolling in the second or third course of a career pathway cluster—if one was even available. Further, data reveal significant patterns of over- and underrepresentation of demographic groups in major industry sectors. For example, female students were significantly underrepresented (19%, versus 49% in the total population) in science, technology, engineering, and mathematics (STEM), as were African American (0.7%, versus 2% in the total population) and Native American students (6.4%, versus 10% in the total population).

There were, however, bright spots across the state. Particularly in some of the larger districts with multiple high schools, we found Early College high schools, where students can simultaneously earn a high school diploma and an associate degree, as well as evidence of career academies operating within some of the larger comprehensive high schools. In 2019, the Legislature passed H.B. 91, intended to lay the groundwork for expanding and modernizing CTE in New Mexico. The legislation, among other things, called for professional development addressing project-based learning, integration of CTE curriculum, and attention to social and emotional learning. It also funded a 7-year pilot project to promote CTE programs. The state can meet the great need for more challenging, richer educational experiences for students across the entire curriculum, both academic and CTE, by building on the momentum of recent progress.

A growing body of research supports making CTE an integral part of students' larger secondary and postsecondary educational experience through the design of local systems of college and career pathways. This comprehensive approach connects CTE to core academics and offers students a broader, more coherent high school experience. Research finds that participation in CTE is most likely to produce positive effects on high school completion, postsecondary transition, and future earnings only when students pursue a focused program of study consisting of three or more courses during their high school years. The effect of participating in these pathways appear to be strongest in technical fields such as information technology, advanced health professions, and engineering, as well as select aspects of construction.¹

An analysis of the Linked Learning District Initiative in California, a multiyear effort to design and implement districtwide systems of comprehensive “Linked Learning” college and career pathways, indicates the promise of the pathways approach. Research shows that students in high-quality college and career pathways experienced a range of positive outcomes compared to peers in traditional high school programs. They were better prepared to succeed in college, career, and life; earned more credits in high school; were less likely to drop out and more likely to graduate on time; had greater confidence in their life and career skills; and reported experiencing more rigorous, integrated, and relevant instruction. Students who had low achievement scores in earlier grades made significantly better academic progress when they participated in pathways in high school.²

In this report we offer both short- and long-term recommendations intended to build on New Mexico’s recent efforts to expand career and technical education. These recommendations focus on making CTE a fundamental part of secondary and postsecondary education in New Mexico by creating a system of college and career pathways that integrate CTE and core academic curriculum, combine classroom and work-based learning, and align secondary and postsecondary programs to prepare all students for postsecondary education and career success.

Immediate, low-cost steps to be taken during the COVID-19 recovery period:

- Develop CTE curriculum and work-based learning experiences that can be delivered virtually and build the capacity of academic and CTE teachers to teach remotely.
- Convene a task force to develop a state college and career pathways framework and establish quality standards that can guide the launch of pilots and the eventual design of the new system. This framework should include four essential components:
 1. **College preparatory core academics** (math, science, English language arts, social studies, world language, and the arts) emphasizing real-world application, project-based learning, and performance assessment
 2. **A cluster or sequence of four or more challenging CTE courses** embracing industry standards in the sector that is the theme of the pathway and, wherever possible, offering related dual enrollment and industry certifications
 3. **A continuum of work-based learning experiences**, beginning with career awareness, mentoring, or job shadowing in grade 9 and evolving into internships and/or school-based enterprise by 12th grade
 4. **Personalized student supports** including college and career counseling, accelerated instruction in mathematics and English language arts, and attention to social-emotional learning
- Establish state standards for pathways that ensure quality and equity of access, participation, and success.
- Adopt a system of metrics that can be used to monitor pathway implementation and quality and to support continuous improvement, both locally and statewide. Integrate data from the pathway assessment system with New Mexico’s existing data systems at the state and local levels to promote pathway quality and continuous improvement in integration.

- Amend New Mexico’s Graduation Requirements Statute (§ 22-13-1.1) to encourage and support students’ participation in high-quality college and career pathways.

In the longer term, the state can adopt policies and make new investments that create a system of college and career pathways that prepare all students for postsecondary education and career success.

- As part of the continuing implementation of the H.B. 91 CTE pilot, create a demonstration of college and career pathways systems in 6 to 10 districts throughout the state.
- Incentivize k–12 to postsecondary articulation and alignment of college and career pathways with both 2-year and 4-year institutions by ensuring an appropriate distribution of state funding to participating institutions for dual credit courses that are part of pathways, without double-funding these courses.
- Incentivize employer engagement and work-based learning, including industry certifications and entrepreneurship.
- Build the capacity of educators, district leaders, and communities to implement well-designed, high-quality college and career pathways. Such an effort could include professional development for site leaders and both academic and CTE teachers as well as incentives for teachers to earn dual academic and CTE credentials. Local communities could also develop graduate profiles defining what graduates of their schools should know and be able to do to guide the design of each college and career pathway.
- Establish a College and Career Pathways Trust as a public–private partnership among the state, the business sector, and philanthropic organizations to fund and implement a system of high-quality college and career pathways. This joint effort would integrate CTE and core academic curriculum, combine classroom and work-based learning, and align secondary and postsecondary programs.

Introduction

New Mexico is committed to enabling all of its young people to graduate from high school ready to succeed at college and in careers.³ Yet, in 2018, statewide only 74% of New Mexico high school students were graduating on time, and the percentages were even lower for African American (69%) and Native American students (66%), as well as those who are economically disadvantaged (69%).⁴ Moreover, while data are not available for New Mexico specifically, if the state mirrors national patterns, of those graduating, many lacked sufficient academic and technical proficiency to pursue some form of postsecondary education without remediation and advance beyond entry-level employment.⁵

Statewide, only 14% of high school 10th-graders were proficient in mathematics, and 37% were proficient in English language arts. Among 11th-graders, 25% were proficient in science.⁶ Additionally, 17% of New Mexico students attended less than 90% of school days during the year, missing more than 3 ½ weeks of class.⁷ It is hard for students to do well in school if they do not show up. In short, in an era of rapidly increasing global competitiveness, the state is relegating too many young people to life on the margins, barely subsisting in low-wage jobs that offer little prospect for advancement and are extremely at risk of elimination through automation.⁸

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This would be a dire situation even in normal times. Now, it is made even worse by the COVID-19 pandemic, school closures, and economic disruptions that threaten to widen achievement gaps and further erode the future prospects of those furthest from opportunity. Making this even more challenging is the rapid erosion of state revenue resulting from widespread unemployment and implosion of oil and gas prices.

Before the current crisis, New Mexico had embarked on an effort to improve the economic prospects of young people by undertaking an important examination of career and technical education (CTE) and its role in the larger k–12 and postsecondary education systems. We briefly summarize state efforts below. To be sure, CTE could have an important role to play in revitalizing New Mexico’s education system. Research shows that participation in CTE—especially three or more courses of focused, high-quality technical instruction—can produce positive impacts on high school completion, postsecondary transition, and future earnings.⁹

However, these gains are relatively modest and do not include any positive impact on student achievement.¹⁰ This is not surprising. Most high school students will not take more than two or three CTE courses while in high school. CTE alone, no matter how good it is, cannot produce major improvement in student outcomes. If we do not do something to improve the rest of students’ high school experience—the 20 or more core academic courses needed for graduation—we will continue on a course of disengagement, dropping out, underachievement, diminished opportunities, and limited economic and social prospects.

Based on a yearlong study of the challenges facing New Mexico schools, this report recommends that New Mexico maintain its commitment to college and career readiness for all, while also being mindful of the current pressures and limitations on state policy and school operations.¹¹ Specifically, it recommends that, over the next several years, New Mexico redesign its traditional high schools to become part of local systems of college and career pathways. These pathways would make career and technical education an integral part of secondary and postsecondary education in New Mexico by integrating CTE and core academic curriculum, combining classroom and work-based learning, providing personalized student supports, and aligning secondary and postsecondary programs to prepare all students for postsecondary education and career success.

In what follows, we provide a framework for that approach for New Mexico and offer important policy recommendations—some that can be adopted immediately, even within the constraints of the current crisis, and others that can provide a long-term vision for further consideration as the state and the nation are able to move forward and recover from the worst impacts of COVID-19. These recommendations reflect a growing body of research that supports making CTE an integral part of students' larger secondary (and postsecondary) educational experience through the design of local systems of college and career pathways. In New Mexico, moving in this direction builds on the state's current efforts to support innovative approaches to CTE.

Career and Technical Education in New Mexico: A Brief Profile

To provide some context for exploring this promising approach, we first briefly describe the current state of CTE in New Mexico. In 2018, about 62,000 high school students (63% of all New Mexico high school students) participated in CTE in New Mexico, with many students enrolled in two or more courses.¹² Overall, females were somewhat underrepresented in CTE (43% of CTE enrollment, versus 49% of the total school population), as were African Americans (1.3% of CTE, versus 2% overall), and Native Americans (8.8% of CTE, versus 10% overall). Hispanics represented 62% of CTE enrollment, exactly the same as their percentage of the total school population; Whites, constituting 23% of the total school population, comprised 24% of CTE participants. English learners, constituting 16% of the total population, were significantly underrepresented in CTE (10.3%).

Table 1 shows that New Mexico offers a rich array of CTE course offerings. It also displays, by industry sector, the demographics of students enrolled statewide in CTE courses in 2018–19. The table reveals significant patterns of over- and underrepresentation of demographic groups in some of the major industry sectors. For example, in the state’s second-largest program offering (science, technology, engineering, and mathematics, or STEM, which serves nearly 14,000 students), females were significantly underrepresented (19%, versus 49% in the total population), as were African Americans (0.7%, versus 2% in the total population) and Native Americans (6.4%, versus 10% in the total population). Similarly, while constituting on average 62% of total CTE enrollment, Hispanics were underrepresented in agriculture (54%) and overrepresented in human services (73%), government (72%), education (71%), and marketing (69%).

While in the aggregate New Mexico offers a menu of diverse program offerings, access to CTE varies widely across the state. In interviews, many state and local policymakers and educators expressed strong concerns about the limited opportunities available to many students, especially those attending smaller high schools in more geographically remote regions. Our analysis of CTE offerings by school in a sample of the state’s school districts appeared to confirm this concern.¹³

When we examined remote high schools with fewer than 500 students, it was common to find only a smattering of CTE courses offered, often with little connection to each other. For example, one of these high schools offered four unrelated CTE courses: General Computer Applications, Topics in Automotive Technology, Welding, and Photojournalism. There were no clusters or sequences of courses in any of these program areas, so students could not engage with any depth, even in a single program.

Additionally, even in larger districts with multiple high schools able to offer a range of more complete CTE clusters or sequences of courses within different industry sectors, breadth often seemed to take priority over depth, with relatively few students enrolling in the second or third course of a career pathway cluster.¹⁴ For example, in a school of 1,800 students in one of the state’s largest districts, 116 students enrolled in Automotive Technology I, but only 23 in Automotive Technology II, and just 11 in Automotive Technology III. Similarly, while 103 students enrolled in the introductory culinary arts course, only 15 enrolled in Pro Start I, and 17 in Pro Start II, the 2-year course sequence developed for high schools by the National Restaurant Association.¹⁵

Table 1
Course Enrollment in Career and Technical Education in New Mexico
in 2018–19

Industry Sector	Course Enrollment Total	Course Enrollment Percentage						Students With Disabilities	English Learners
		Female	African American	Caucasian	Hispanic	Native American			
Agriculture, Food & Natural Resources	7,801	41%	1%	34%	54%	9%	13%	9%	
Architecture & Construction	9,102	20%	0%	22%	58%	16%	17%	13%	
Arts, A/V Technology & Communications	21,448	54%	2%	26%	60%	8%	15%	10%	
Business Management & Administration	9,747	50%	1%	22%	64%	8%	10%	10%	
Education & Training	3,977	80%	1%	19%	71%	5%	12%	13%	
Family Consumer Science	782	61%	0%	26%	54%	18%	17%	12%	
Government & Public Administration	980	52%	0%	18%	72%	7%	11%	14%	
Health Science	9,629	63%	1%	21%	65%	9%	9%	9%	
Hospitality & Tourism	9,045	57%	3%	19%	67%	8%	15%	12%	
Human Services	448	26%	2%	13%	73%	6%	15%	14%	
Information Technology	7,810	38%	2%	24%	61%	9%	12%	10%	
Law, Public Safety & Security	2,279	53%	1%	23%	62%	10%	9%	9%	
Manufacturing	2,007	12%	0%	24%	62%	10%	16%	13%	
Marketing, Sales & Services	1,139	57%	1%	15%	69%	6%	10%	11%	
Science, Technology, Engineering & Math	13,716	19%	1%	26%	62%	6%	15%	9%	
Transportation, Distribution & Logistics	4,310	15%	1%	24%	64%	9%	19%	12%	
TOTAL	104,220	43%	1%	24%	62%	9%	14%	10%	

Note: These data count enrollment in CTE courses. As some students enroll in more than one course during an academic year, these totals represent “duplicated” enrollment, rather than the unduplicated counts required by the Perkins Act. There are pros and cons to either way of reporting. Duplicated counts provide a better picture of the overall scale of the CTE enterprise.

Data source: Data provided by the New Mexico Public Education Department by special request.

Finally, while we were unable to visit high schools throughout the state, we did examine a sample of high school websites and course catalogs to supplement our discussions with program leaders. While these are imperfect indicators, it appeared that in most of these high schools CTE continued to function separately from the rest of the high school curriculum and that core academic subjects were taught traditionally, with heavy emphasis on content knowledge and less attention to real-world application, project-based learning, communication, interdisciplinary problem-solving, and performance assessment.

There were, however, exceptions across the state. Particularly in some of the larger districts with multiple high schools, we found Early College high schools, where students can simultaneously earn a high school diploma and an associate degree, as well as evidence of career academies operating within some of the larger comprehensive high schools. For example, in Albuquerque Public Schools, there are a number of existing career academies that, while currently isolated, would be strong candidates for a more integrated, systemic, and districtwide college and career academy approach. The superintendent has even named college and career readiness as one of his top five priorities, stating, “We want to improve the educational experience of our secondary students.... [This] will mean helping them find their passion and providing them with real-world opportunities through internships, shadowing opportunities, and mentorships supported by the local business community.”¹⁶ In many districts, we also found explicit attention to dual enrollment opportunities, and growing numbers of New Mexico high school students are taking advantage of these.

There is further evidence that schools and districts across the state are advancing CTE in ways that can be leveraged to develop comprehensive college and career pathways. The Bridge of Southern New Mexico, operating in Las Cruces and Gadsden school districts, is working to develop CTE pathways of sequenced courses and dual credit courses. Students in these pathways are graduating at a rate of over 90%, a 10- to

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15-percentage point increase above districtwide rates.¹⁷ Carlsbad High School in the southeastern part of the state enrolls 1,600 students and has a rich set of CTE offerings that include Automotive/Transportation, Culinary Arts, Digital Film Production, and Health Occupations.¹⁸ The district also offers an Early College high school. In the northwest part of the state, Miyamura High School in Gallup-McKinley County Schools is working with Johns Hopkins University, the New Mexico Public Education Department (NMPED), and ConnectED to create a high school redesign model aligned with Linked Learning, an approach to college and career pathways described below.¹⁹ In addition to Miyamura, Crownpoint High School, Gallup High School, and Thoreau High School all have significant numbers of students enrolled in a range of CTE courses and clusters.²⁰

Santa Fe Public Schools’ biomedical science academy in middle school and high school is another example. The biomedical science academy is one of several CTE pathways offered at Capital High School; others include business and management, digital design and arts, and production. The medical sciences pathway is a sequence of eight biomedical courses beginning in 6th grade using Project Lead the Way curriculum. The pathway culminates in a capstone project involving mentorship from a chosen medical professional, hands-on training, and the option of dual credit from Santa Fe Community College.²¹ Recently the district partnered with Santa Fe Community College to expand its biomedical program by offering a Licensed Practical Nurse career pathway.²²

Though there is considerable variability across the state, New Mexico does have a strong CTE foundation upon which to build a more comprehensive system of college and career pathways. And in recent years, the state has done much to improve the quality of CTE. For example, New Mexico has made important progress on this front by adopting the Common Career Technical Core (CCTC), developed in partnership with 41 other states.²³ CCTC not only specifies 12 career-ready outcomes desired of all students but also details more specific standards for each of 16 career clusters. This is a strong base on which to build a broader “college and career readiness” graduate portrait—what the state expects graduates of their schools to know and be able to do.

The increase in attention to dual enrollment is contributing to the strengthening of CTE pathways and standards (see Appendix A for additional details). In 2008, the New Mexico Legislature authorized the Public Education Department and Higher Education Department to establish the Dual Credit Program allowing high school students to enroll in postsecondary courses that award students both high school and college credit. Since then, the number of students enrolled in dual credit courses in New Mexico grew from 9,727 in the 2008–09 school year to 20,981 in 2017–18. Among some of the most popular academic courses are mathematics and statistics, English language and literature, physical sciences, and foreign language. Among some of the most popular CTE courses are Visual and Performing Arts, Biomedicine and Health Professions, Computer and Information Sciences, and Business Management.²⁴

Most recently, in 2019 the Legislature enacted H.B. 91, which created and funded a 7-year pilot project to promote “high-quality” CTE programs that: (1) include rigorous content aligned with academic standards and relevant career technical content that align secondary and postsecondary education; (2) incorporate permeable pathways through postsecondary education; (3) include potential for dual credit courses; (4) require competency in science, technology, engineering, and mathematics; (5) require training in soft skills and social skills; (6) lead to an industry-recognized credential at the postsecondary level or to an associate or bachelor’s degree; (7) establish partnerships among the local school district or charter school, postsecondary institutions, and local business and industry; and (8) provide the data necessary to the department and the participating public schools to evaluate each program and the pilot project.²⁵

The bill’s sponsors saw the legislation as laying the groundwork for expanding and modernizing CTE in New Mexico. Accordingly, the legislation explicitly called for professional development addressing project-based learning, integration of CTE curriculum with core content areas, and attention to social-emotional learning and trauma-informed instruction. However, in many respects, the legislation continued to situate CTE largely in isolation from the rest of students’ high school experience and overlooked the need to make CTE part of a larger initiative to transform high school education. Moreover, some legislators we interviewed were concerned that the pilot was not being implemented by NMPED’s College and Career Readiness Bureau (the bureau responsible for administering the Carl Perkins Act) in ways that allowed it to realize its full potential.

In short, while there is much recent progress to build upon, throughout New Mexico there is a great need for more challenging, richer educational experiences for students across the entire curriculum, both academic and CTE. This includes the kinds of experiences that can excite and engage young people, open them to a much wider range of postsecondary and career opportunities, and help them better understand “Why do I need to know this?” It is a fair question, and we owe students better answers. We turn, therefore, to how New Mexico, through a coordinated initiative of state and local policy focused on delivering systems of college and career pathways, could do just that.

What Does Research Tell Us? The Evidence Base for College and Career Pathways

“Pathway” means different things to different people. For some, it is simply a cluster or sequence of related CTE courses, which, if delivered with quality and completed by students, increases the likelihood that students will gain a level of industry-related knowledge and skills that gives them a leg up in the workforce. This is certainly a worthwhile outcome, and many communities are content to stop there.

There is considerable research on whether—and if so, how—participation in CTE produces positive impacts on a range of student outcomes, especially for students considered to be CTE “concentrators” because they have taken a focused cluster or sequence of two or three courses. Among some of the key findings reported over the past decade are the following:

- While evidence on the relationship between CTE concentration and high school graduation is inconclusive,²⁶ this is not surprising. Because students tend to take CTE courses during the final 2 years of high school—and a high percentage of students who drop out do so before their final 2 years—the influence of occupational CTE coursework on their likelihood of dropping out is limited.²⁷ Nevertheless, there are some rigorous studies, especially of particular delivery systems (e.g., full-time technical schools) or in states with robust CTE systems (e.g., Arkansas) that have found significant impacts on high school completion, postsecondary transition, and future earnings, especially when students complete three or more courses of focused, high-quality technical instruction.²⁸
- In general, research has found that CTE course-taking has little or no effect (positive or negative) on academic achievement in high school.²⁹ One notable exception is an evaluation of an experiment in which CTE teachers worked closely with math teachers to create “math-enhanced” lessons for CTE instruction and curriculum. After 1 year of these lessons, students in the experimental classrooms performed equally on technical skills and significantly better than control students on two standardized tests of math ability.³⁰
- Research on the impact of CTE on postsecondary transition, persistence, and attainment is inconclusive. Where researchers have found positive impacts, they appear to be primarily, if not exclusively, for students completing three or more focused CTE courses within a single program area (e.g., agriculture or information technology).³¹
- Among high school graduates who did not enroll in postsecondary education, studies have found mixed results on employment and earnings outcomes for CTE concentrators. The labor market benefits of CTE education stem mainly from in-depth study of a specific area consistent with the recent trend toward “pathways of study” within CTE; CTE participation, primarily in technical fields, is associated with higher wages, with the increase driven entirely by upper-level coursework, defined as courses within a sequence beyond the introductory class, in more technical fields. Each additional year of upper-level CTE coursework is associated with a nearly 2% wage increase.³²

In summary, research that meets high standards of quasi-experimental or experimental methodology concludes that participation in CTE is most likely to produce positive effects on select student outcomes only when students pursue a focused program of study consisting of three

or more courses during their high school years. These effects appear to be strongest in technical fields such as information technology, advanced health professions, and engineering, as well as select sectors of construction. These are important effects. However, continuing to concentrate on CTE in isolation from the rest of students' high school experience or as a series of one-off courses misses opportunities to achieve much greater impacts that research suggests can come from addressing CTE as part of a larger focus on transforming students' entire high school experience. A more comprehensive approach can realize the benefits of CTE and much more. We strongly urge New Mexico to pursue this expanded path to school improvement.

To that end, a small but growing body of research supports pursuing a much more comprehensive strategy, one that very intentionally connects CTE to core academics and offers students a broader, more coherent high school experience. The gold standard for this research is an experimental evaluation of "career academies," conducted by the research organization MDRC in the 1990s.³³ Among the study's most notable findings was that, during each of the 8 years following high school, males in career academies earned as much as 17% more than peers in traditional high school programs. There were additional positive effects, including better attendance, increased academic course-taking, and increased likelihood of earning enough credits to graduate on time. The study concluded that four critical features of career academies contributed to their impact:

During each of the 8 years following high school, males in career academies earned as much as 17% more than peers in traditional high school programs.

1. Small learning communities with support for academic and career-related course combinations
2. Career-themed curricula
3. Career awareness and partnerships with employers providing work-based learning opportunities for students
4. Increased interpersonal student supports

For more than a decade, this MDRC study remained the only rigorous evaluation of career academies or other approaches to designing and delivering comprehensive, integrated programs or college and career pathways. Then, beginning in 2009 and continuing for 7 years, SRI International undertook a quasi-experimental longitudinal evaluation of the California Linked Learning District Initiative, a multiyear demonstration effort in nine large, high-need districts to design and implement districtwide systems of comprehensive "Linked Learning" college and career pathways.³⁴

In Linked Learning pathways, students are organized into pathways or academies of 300–600 students in grades 9–12 and attend their classes as grade-level cohorts, each served by an interdisciplinary team of academic and CTE teachers. Pathways focus on fields such as digital media arts, education, engineering, energy, health professions, and more.

That evaluation showed that students in high-quality college and career pathways were better prepared to succeed in college, career, and life compared to peers in traditional high school programs. Specifically, compared with their peers, students in high-quality pathways earned more credits in high school; reported greater confidence in their life and career skills; and said they

experienced more rigorous, integrated, and relevant instruction. They were less likely to drop out and were more likely to graduate on time. Furthermore, students who had low achievement scores in earlier grades made significantly better academic progress when they participated in pathways in high school. Pathway students also performed better on assessments of proficiency in English language arts. Lastly, the 4-year college-going rate for African Americans in these pathways was 12 percentage points higher than peers not participating in pathways.

It is important to stress that the positive impacts on student outcomes from participating in Linked Learning pathways occurred only for students in pathways that had been independently certified as achieving a level of implementation quality on seven important dimensions: (1) student outcomes-driven practice; (2) a culture of high expectations, equity, and inclusion; (3) industry-themed program of study; (4) inquiry- and project-based learning and teaching; (5) work-based learning; (6) personalized student supports; and (7) distributed leadership and engaged community partners.

Based in part on these findings from the SRI evaluation, in 2013, the California Legislature created the California Career Pathways Trust and funded it with \$500 million to support the expansion of pathways in the state. Today there are more than 500 Linked Learning pathways in California, spread across more than 60 districts and together serving more than 140,000 students. Many of these pathways offer students the opportunity to enroll in dual credit courses, giving them a head start on industry certifications, as well as a running start for fields requiring a 4-year degree (see Appendix A for more on the role of dual credit in pathways).

In summary, the research strongly suggests that a more comprehensive approach to high school improvement, one that integrates CTE with core academics and provides students work-based learning opportunities and personalized student supports, will have a much greater impact on student outcomes than focusing on CTE alone. Achieving this potential, however, depends critically on implementing with fidelity pathways that attend to critical aspects of quality that both the MDRC and SRI evaluations identified as contributing to student success.

A Policy Agenda for High-Quality Systems of College and Career Pathways

Keeping in mind the CTE foundation on which New Mexico can build, as well as the findings from research, we turn now to outlining a policy agenda for advancing college and career pathways in New Mexico. We begin with an overarching policy goal and follow with 10 more specific recommendations. We offer a set of low-cost recommendations and immediate steps that can be taken as schools and the economy recover from the COVID-19 pandemic. We also provide a set of longer-term recommendations that give directions for policy changes as revenues recover in the post-pandemic period.

Policy Goal: Make career and technical education an integral part of secondary and postsecondary education in New Mexico by creating a system of college and career pathways that integrate CTE and core academic curriculum, combine classroom and work-based learning, and align secondary and postsecondary programs to prepare all students for postsecondary education and career success.

As described above, a growing body of research strongly suggests that this overall approach, when designed and implemented with fidelity to key quality criteria, can produce important improvements in such critical student outcomes as credits earned, student achievement, on-time grade-to-grade transition, high school completion, and postsecondary transition.

Immediate Low-Cost Steps to Be Taken During the COVID-19 Recovery Period

Recommendation 1: Direct the NMPED, either internally or through external organizations, to **develop CTE curriculum and work-based learning experiences that can be delivered virtually and build the capacity of academic and CTE teachers to teach remotely.**

The school closures required by the COVID-19 pandemic revealed just how poorly prepared America's educators are to teach in a virtual world. Internet access and other technological challenges notwithstanding, teachers had neither the curriculum, the instructional methodology, nor the familiarity with online delivery platforms to provide rich, engaging learning experiences for their students. CTE teachers, who traditionally employ instruction that is experiential and "hands-on," were especially challenged to maintain high-quality instruction.

It is impossible to predict how soon teachers will be able to return to regular face-to-face instruction. As schools have reopened during the 2020–21 school year, staggered schedules have required some continued reliance on online learning, and new infection clusters may still require closing some schools and a return to remote learning for indefinite periods.

More focused attention to online curriculum and instruction, as well as hybrid strategies that align virtual teaching with in-person classroom teaching, would not only better position New Mexico's schools to better respond to challenges posed by the COVID-19 pandemic; it could also provide some important resources for delivering richer and more diverse curriculum in the state's geographically remote schools and districts that have always found it difficult to offer students the kinds of educational choices and experiences available to students in larger schools and districts.

Recommendation 2: The NMPED and the Department of Workforce Solutions could **convene a task force to develop a state college and career pathways framework and establish quality standards** that can guide the launch of pilots and the eventual design of the new system.

Its charge could be to adopt an approach that includes adherence to evidence-based principles while respecting local context, needs, assets, and preferences. The framework could be used to guide program design by individual districts and industry partners, as well as to establish criteria for state funding and structure technical assistance by state or regional providers.

This framework should include four essential components:

1. **College preparatory core academics** (math, science, English language arts, social studies, world language, and the arts) emphasizing real-world application, project-based learning, and performance assessment
2. **A cluster or sequence of four or more challenging CTE courses** embracing industry standards in the sector that is the theme of the pathway and, wherever possible, offering related dual enrollment and industry certifications
3. **A continuum of work-based learning experiences**, beginning with career awareness, mentoring, or job shadowing in grade 9 and evolving into internships and/or school-based enterprise by 12th grade
4. **Personalized student supports** including college and career counseling, accelerated instruction in mathematics and English language arts, and attention to social-emotional learning

Concurrent with the task force’s work, and to capitalize on the increased impact on student outcomes through a more comprehensive college and career pathways approach, the state could expand the focus of the previously enacted H.B. 91, which created a 7-year career and technical education pilot project to promote “high-quality” career and technical education as described above.

Recommendation 3: Establish state standards for pathways that ensure quality and equity of access, participation, and success.

The Legislature could direct and fund the NMPED to develop quality standards for college and career pathways that reflect the framework above.

Such standards could include:

- **Student outcomes-driven practice:** The progress of every student is the driving focus for evaluating pathway quality. Data on student and pathway performance are used regularly to ensure the pathway is preparing all students for college and career.
- **Culture of high expectations, equity, and inclusion:** Pathways establish a culture of high expectations for all students; maintain nondiscriminatory and inclusive policies, practices, and instruction; and are equitably accessible to any interested student.

- **Industry-themed program of study:** An industry-themed pathway program brings coherence to the four core components of college and career pathways. The pathway is designed to ensure all students are offered the opportunity to earn postsecondary dual credit and are prepared for success in the full range of postsecondary options, including a 4-year college.
- **Inquiry- and project-based learning and teaching:** Pathway students engage in inquiry- and project-based learning that is relevant, rigorous, outcome-focused, and collaborative in nature. Every student’s progress toward mastery of college- and career-ready learning outcomes is monitored and supported.
- **Work-based learning:** Every student participates in a personalized and coordinated continuum of work-based learning experiences designed to help them master and demonstrate academic and professional skills needed to be prepared for college and careers.
- **Personalized student supports:** Pathway staff, in consultation with families and service providers, identify and address the academic, personal, and social-emotional needs of all students so that they make progress toward achieving personalized college and career goals and pathway student learning outcomes.
- **Distributed leadership and engaged partners:** Pathway staff, school site and district leaders, and industry and community partners share responsibility for the pathway’s effectiveness and successful student outcomes. These stakeholders are representative of the community and ensure that conditions are in place to establish and sustain pathway quality.

Recommendation 4: Adopt a system of metrics that can be used to monitor pathway implementation and quality and support continuous improvement, both locally and statewide.

Direct and fund the NMPED to lead a process for **developing and selecting metrics that can be used to periodically assess pathway quality**, in addition to establishing standards for pathway quality. Examples of standards and metrics could include evidence of pathway student outcomes aligned to the local and state “graduate portrait”; percentage of students annually participating in industry-centered, multidisciplinary project-based learning; percentage of students annually participating in work-based learning experiences; percentage of teachers engaged in common planning time; percentage of students “cohorting” and moving together through a pathway program of study; and percentage of students earning dual college credit in a course aligned with their pathway. This process should include developing a pathway quality assessment rubric tied to state quality standards, as well as incentives for pathways to achieve increasingly higher levels of quality implementation.

Integrate data from the pathway assessment system with New Mexico’s existing data systems at the state and local levels to promote pathway quality and continuous improvement in integration. Tracking student performance within and across pathways on such key indicators as enrollment; attendance; credits earned; grade point average; work-based learning experiences; high school completion; and postsecondary transition, persistence, and attainment is critical to ensuring that pathways are promoting equity and not regressing into old systems that led to tracking and inequitable outcomes for students with respect to race, ethnicity, gender, and special needs.

Recommendation 5: Amend New Mexico’s Graduation Requirements Statute (§ 22-13-1.1) to encourage and support students’ participation in high-quality college and career pathways. For example, one modification could be to establish a process whereby certain CTE courses (e.g., environmental science, biomedical science) could satisfy some of the academic course-taking requirements. Another could be to establish a “college- and career-readiness” seal on the diploma, which students could earn by successfully completing a college and career pathway.

New Mexico could also modify the Next Step plan to incorporate pathways participation and preparation for college, career, and life as a way to provide context and meaning for students’ high school course-taking plans.

Longer-Term Steps to Be Taken When Funding Recovers

Recommendation 6: As part of the continuing implementation of the H.B. 91 CTE pilot, the NMPED could **create a demonstration of college and career pathways systems in 6 to 10 districts** throughout the state.

Direct the NMPED to draft and issue a request for proposals to New Mexico school districts interested designing and implementing districtwide systems of comprehensive college and career pathways, consisting of the four core components defined in Recommendation 1 and organized around major industry themes reflecting the most promising opportunities in New Mexico for careers in high-wage or high-demand occupations. The demonstration sites could provide models that show how this innovative approach to high schools can work in the New Mexico context.

The demonstration should include a representative sample of 6 to 10 New Mexico school districts with respect to size, geography, and demographics.

- A. Large districts with multiple high schools
- B. Districts with only one high school⁵⁵
 - i. More than 1,200 students
 - ii. Between 400 and 1,200 students
 - iii. Fewer than 400 students

Recommendation 7: The Legislature could **incentivize k–12 to postsecondary articulation and alignment of college and career pathways** with both 2-year and 4-year institutions by ensuring an appropriate distribution of state funding to participating institutions for dual credit courses that are part of pathways, without double-funding these courses.

Recommendation 8: Incentivize employer engagement and work-based learning, including industry certifications and entrepreneurship.

Direct the Public Education Department, Higher Education Department, Economic Development Department, Department of Workforce Solutions, and any other related state agencies to collaboratively develop recommendations about how the state can incentivize employer involvement in work-based learning.

A continuum of high-quality work-based learning experiences, spanning grades 9–12 and continuing into postsecondary, is a critical component of all high-quality college and career pathways (see Appendix B). Too often, work-based learning is perceived as mainly student internships, paid or unpaid. New Mexico state policy should clarify that, in addition to internships, work-based learning includes mentoring, job shadowing, informational interviews, employer-directed project-based learning, and school-based enterprise.

New Mexico’s Job Training Incentive Program (JTIP) reimburses 50–75% of wages of newly hired, eligible trainees for up to 6 months in eligible companies (manufacturers, non-retail service companies such as software developers and product testing laboratories, and certain green industries). Currently, the program serves mainly postsecondary students and adults. New Mexico could consider adapting this program to partially fund work-based learning experiences that are a core component of college and career pathways in high schools. Such a strategy would strengthen connections between employers and pathways in their associated industry, as well as create a stronger through line for JTIP.

Recommendation 9: The NMPED, in collaboration with the regional education cooperatives, could **build the capacity of educators, district leaders, and communities** to implement well-designed, high-quality college and career pathways, with attention to the framework and quality criteria.

Encourage **local communities to develop a “graduate portrait”**—what the community expects graduates of their schools to know and be able to do—aligned with concomitant efforts to craft a state-level graduate portrait.⁵⁶

A graduate portrait, specifying the student outcomes, cultural and linguistic responsiveness, social and emotional learning, and college and career readiness the community expects students attending its schools to attain, can guide the design of each college and career pathway and the accompanying program of study spanning grades 9–12.

Provide **professional development to site leaders** (principals and assistant principals) that builds their capacity to support pathway design and implementation, deepening their understanding of the importance of providing common planning time for teachers, scheduling students in pathway cohorts, using master scheduling more effectively, and offering effective professional development for pathway teachers.

Provide **professional development to both academic and CTE teachers** that enables them to realize the potential of pathways to transform learning and teaching in ways that better engage students, elevate relevance, and stress demonstrating competence and understanding that go beyond performance on standardized tests.

Provide **incentives for teachers to earn dual academic and CTE credentials** as a strategy for building capacity to integrate academics and CTE. These might include tuition waivers or reimbursement and special recognition of dual credentials into salary schedules.

Having dual-certified teachers not only allows high schools to better align academic and CTE curriculum and instruction, but it also makes it easier for them to offer college and career pathways on a smaller scale. For example, small high schools do not need to dedicate a full cadre of academic and CTE teachers to a particular pathway and cohort of students.

Recommendation 10: The Legislature could establish a **College and Career Pathways Trust as a public-private partnership between the state, the business sector, and philanthropic organizations** to fund and implement a system of high-quality college and career pathways that integrate CTE and core academic curriculum, combine classroom and work-based learning, and align secondary and postsecondary programs. In New Mexico, legislation establishing a Career and College Pathways Trust should define “college” to mean the full range of postsecondary options—4-year college, 2-year college, apprenticeship, and other forms of formal postsecondary employment training. It should explicitly call for districts to design pathways that include the four core components and adhere to explicit standards for pathway quality. Additionally, the legislation should have a strategy for accountability and ongoing evaluation.

California provides an example of such an approach. To enable and support this approach, California created the California Career Pathways Trust—a public-private partnership authorized by the Legislature to create grants to schools to develop college and career pathways. Today, there are more than 500 Linked Learning pathways in California, spread across 60 districts and together serving more than 140,000 students. These pathways are often linked to dual credit courses in community colleges, which give a head start on certifications for a range of fields as well as a running start for fields requiring 4-year degrees. As noted earlier, studies show that compared to peers who are not in pathways, students who experience Linked Learning pathways earn more credits; are less likely to drop out; and demonstrate stronger self-management, communication, collaboration, and career navigation skills.⁵⁷ They are more likely to graduate from high school on time and go on to college at rates 6 to 12 percentage points higher than their peers.

Appendix A: Aligning Secondary and Postsecondary Programs

In 2008, the New Mexico Legislature authorized the Public Education Department and Higher Education Department to establish a Dual Credit Program allowing high school students to enroll in postsecondary courses that award students both high school and college credit. The number of students enrolled in dual credit courses in New Mexico grew from 9,727 in the 2008–09 school year to 20,981 in 2017–18. Among some of the most popular academic courses are mathematics and statistics, English language and literature, physical sciences, and foreign language. Among some of the most popular CTE courses are Visual and Performing Arts, Biomedicine and Health Professions, Computer and Information Sciences, and Business Management.³⁸

The Dual Credit Program expects students to select a pathway that guides their selection of the dual enrollment courses they take. However, for most students, “pathway” in this context has very limited meaning, based primarily on a student’s career interest inventory and Next Step Plan that helps students chart postsecondary interests and appropriate courses to take while in high school.

A more robust system of college and career pathways, with well-defined programs of study specifying the expected core academic and CTE courses that students will take during their 4 years in high school, can bring greater coherence and focus to students’ selection of dual credit courses. Additionally, situating postsecondary technical courses clearly within college and career pathway programs of study strengthens the connection between dual enrollment opportunities and the rest of a student’s high school curriculum. It also can facilitate filling gaps in a secondary program of study that cannot be met by offering a secondary CTE course (e.g., because of funding or staffing shortages).

Lastly, developing comprehensive systems of college and career pathways at the secondary level can provide more impetus for better pathway alignment between secondary and postsecondary systems. For example, mapping a full program of study from grade 9 through grade 14, and preferably through grade 16, not only helps students better understand where a particular dual credit course fits in their high school curriculum but also provides them with better guidance on how to effectively transition into related postsecondary majors should they decide that they want to continue their postsecondary education under the same pathway theme that was the focus of their high school work.

Appendix B: Work-Based Learning

A growing number of states throughout the country are seeking to offer high school students the opportunity to earn a variety of industry and occupational certifications when participating in college and career pathways. For example, students in a health professions pathway could have the opportunity to earn a certificate in phlebotomy or as a certified nursing assistant or emergency medical technician. These kinds of certifications can give students an important leg up in the labor market, especially while they are pursuing postsecondary education. The danger is that they become narrow pathway objectives that undermine the broader learning aims of high-quality pathways. With sufficient safeguards, encouraging pathways to offer industry certification, and even tracking the number of students earning them, can be sound state policy.

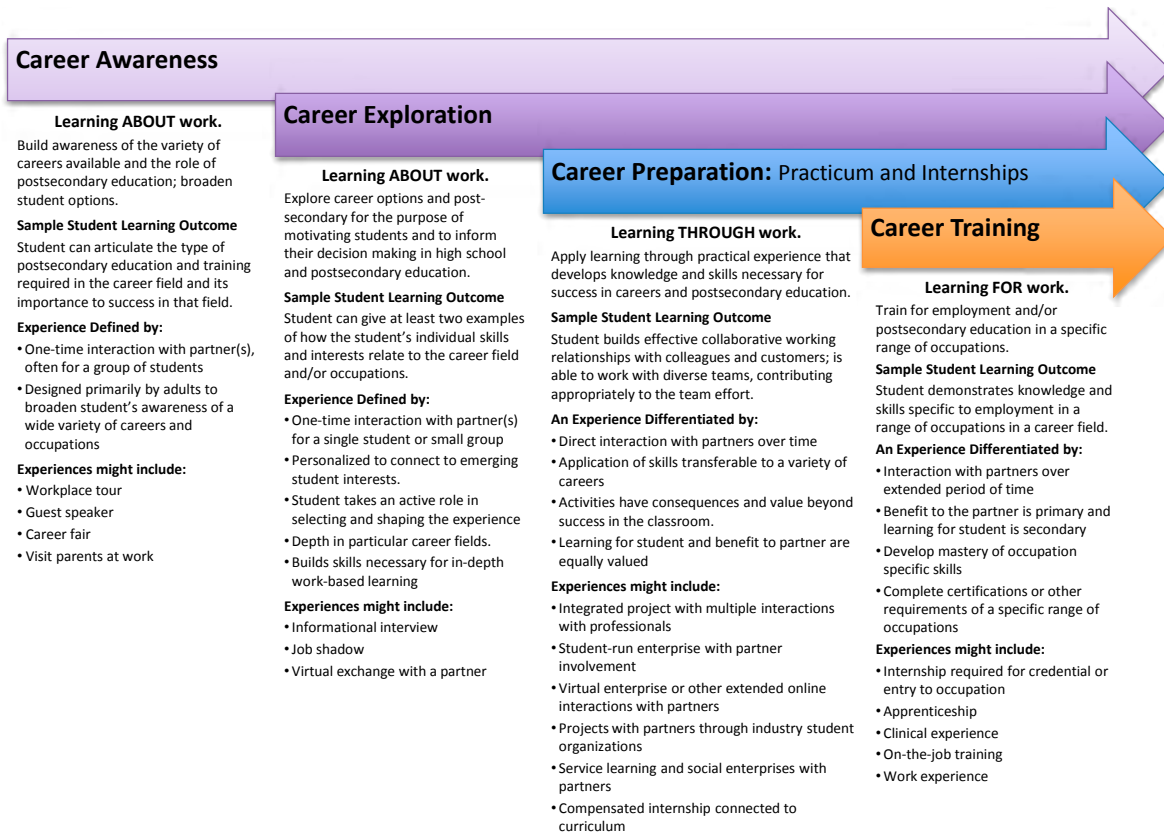
Figure B1 illustrates what a more comprehensive continuum of work-based learning should seek to embrace.

Perhaps the biggest challenge in scaling work-based learning in the United States is determining how best to incentivize employers to support these opportunities in large numbers and for the long term (e.g., 3-year paid internship opportunities versus 6- to 8-week summer jobs). In the United States, to date there is nothing that begins to approach the breadth and depth of the Swiss apprenticeship system, for example, or similar initiatives in other parts of Europe and places like Singapore. However, a growing number of states have designed and implemented programs that reimburse employers for paid internships and other forms of work-based learning.

In fact, New Mexico's Job Training Incentive Program (JTIP) reimburses 50–75% of wages of newly hired, eligible trainees for up to 6 months in eligible companies (manufacturers, non-retail service companies such as software developers and product testing laboratories, and certain green industries). The program appears to serve mainly postsecondary students and adults. However, New Mexico could consider adapting this program to partially fund work-based learning experiences that are a core component of college and career pathways in high schools. Such a strategy would strengthen connections between employers and pathways in their associated industry, as well as create a stronger through line for JTIP.

As part of state policy supporting college and career pathways, New Mexico could also encourage stronger coordination and alignment of pathways with other employment initiatives, including the Workforce Innovation and Opportunity Act, the American Apprenticeship Initiative, state and local summer jobs initiatives, and after-school programs. A summer job is a good thing. A summer job in the industry that is the theme of a student's college and career pathway and reinforced with related classroom instruction and counseling is even better.

Figure B1
Work-Based Learning Continuum



Source: ConnectEd. (2012). *Work-based learning in Linked Learning: Definitions, outcomes, and quality criteria.* <https://connectednational.org/learn/key-resources/work-based-learning/> (accessed 02/16/2021).

Endnotes

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